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# Original Articles.

## OBSTETRICAL NURSING.*

BY A. WORCESTER, M.D., WALTHAM, MASS.

In obstetric practice, at least in normal cases, more depends upon the nurse than upon the obstetrician. And even in the extraordinary cases, however able and faithful the obstetrician may be, unless the nurse is well trained, his patients are very liable to suffer unnecessary discomforts and are also exposed to gravest dangers.

The provision of an adequate supply of properly trained obstetrical nurses is or should be a matter of great interest to obstetricians, and I therefore make no apology in again bringing the subject to your attention.[1] It is true that the responsibility of training nurses is rapidly being assumed by nurses. This is as it should be. But it is also fitting that the scope and character of the education and training required in the different special lines of nursing should be agreed upon and set forth by the physicians and surgeons practicing these specialties. Nor is this so difficult of accomplishment as at first thought it might appear to be. In spite of the varying methods and practices of obstetricians in different schools and in different localities, there is nevertheless a sufficiently substantial unanimity regarding the principles involved, and clearly defined ideals for the education of obstetricians have already been formulated. And so there surely can be no insurmountable obstacle to securing at least equally well defined ideals for the education of the obstetricians' lieutenants.

In attempting to formulate these ideals the main question confronting us is that of the proper functions of the obstetrical nurse. And in order to discuss this question intelligently we must have in mind the different stages already attained in her evolution.

When the Pilgrims were sojourning in Amsterdam before their departure for the new world they engaged a deaconess midwife "to serve diligently the sick and the weak, especially the women according to their needs." I have not yet been able to find out if this important personage crossed the ocean with them. But it is certain that among both the Pilgrims and the Puritans the obstetric art for nearly two centuries was practised only by midwives. In this as in many other ways the old English customs survived in New England long after their disappearance in the former homes of our race. You may remember the story of Dr. Boylston, who in the eighteenth century came back from Europe to Salem a trained obstetrician, only to wait ten years before he was allowed a single opportunity to deliver a woman. On the island of Nantucket my great grandmother was one of the first to venture to employ a physician's help in her labors. But in the early years of the last century, after her example had been generally followed and most of the children so helped into the world were swept away by an epidemic of "putrid sore throat," it was held to be a visitation of God's wrath because of the shamelessness of their mothers. For a long time afterwards no woman on the island dared to employ an obstetrician.

In the larger towns there were midwives in these early days, but in the country until within recent years it was the custom for the woman in labor to depend upon the help of neighboring women. And in every community there were some who were held to be especially skilled in giving the needed assistance. My own mother during her lifetime, besides giving birth herself to twelve children, had given neighborly aid at nearly one hundred births. On many of these occasions no physician was present. There were no telephones or automobiles in those days. And unless the labors were delayed and difficult the chances were large against the physician's attendance at the crisis. Such was the predicament when I myself arrived. I now understand what our old washerwoman used to say when as a mischievous boy I splashed the suds at her — "And me that spanked the life into you, you brat, and I'm damned sorry I ever did."

Out of this neighborly volunteer service, which now has for the most part disappeared, there grew the custom of employing regularly monthly nurses, women generally well past middle age, widows often or staid spinsters who by accident rather than by design had acquired more or less experience in such service. In them was gathered the traditions and experiences of former generations, much of it wrong, but some of it not to be despised. Many of these old-timers are still in harness. In many of our New England towns no other nurses are available. Very fortunately for the families of moderate means, who never can afford the luxury of modern trained nurses, there is still a continuous supply of these women helpers. And owing no doubt to the change of opinion regarding the proper age qualification of nurses, young women nowadays take up this trade of monthly nursing. Prevented by one reason or another from taking regular professional training, and attracted by higher wages than can be otherwise earned, they soon pick up the trade. Often they give excellent service not only in nursing the mother and baby, but in doing the housework as well.

Most of the obstetrical nursing in New England is still done by these untrained nurses. And much might be done to improve the character of their service with very little effort or expenditure. Of this possibility I shall speak later on. But I want now to speak of the midwives. There have never been many of them in this country. And now, except among our foreign-born population, they have almost no practice. No school for midwives, so far as I am aware, has ever made headway on this side the ocean. The practice of midwifery once assumed by the physicians has remained for a century in their hands. And only

*Read at a meeting of the Obstetrical Society of Boston, Oct. 20, 1903.

[1] Vide Reports of Obstet. Soc. of Boston, in Boston Med. and Surg. Jour., May 3, 1894, and Dec. 1, 1898.

lately, and even now only in the larger cities, have any physicians ventured to refuse such practice.

It would be profitless to lament any such well-marked tendency in the evolution of our civilization. And yet in contemplating the elimination of the midwife it is well worth our while to consider if no advantages have been so sacrificed. For certain it is that the medical profession is responsible for the midwife's disappearance. Without help from medical societies and institutions the midwife cannot obtain her necessary education, and without the co-operation of medical practitioners she cannot succeed in practice.

It would be very pleasant to believe that the failure to provide such education and to offer such co-operation has been wholly due to the belief that modern science requires in the practice of midwifery a full medical education. But is it not too possible that physicians have preempted this field of service in order more quickly to gain large and remunerative family practice, and have not many men who really hated midwifery undertaken it simply for this purpose? We must admit that the well-trained midwives on the other side of the ocean still give excellent service, and that the honor of many of the improvements in the art belongs to them. Granting all that can be claimed regarding the necessity for the greater skill and strength and higher education of surgical obstetricians in abnormal and complicated cases of childbirth, it may well be questioned if in the conduct of normal and natural labors the midwife does not give equally good service. The midwife certainly gives more time than the physician can who has besides to meet the demands of his general practice. She can well afford to charge for the case much less, and she also saves the family from much of the expense for the nursing needed where a physician is the accoucheur. Moreover, there is intrinsic fitness in woman's service to woman's needs. No one would probably advocate or desire any return to the old-fashioned notions of the indelicacy, if not the indecency, of women's having men's help, even where such help alone can save their health and lives. But we are considering cases where women helpers could serve just as well. And in absolutely normal cases of childbirth it is at least possible that sisters can serve their sisters better than brothers can. They might not prepare so extensively for all possible emergencies; and so they might not impress their importance upon terrified families and thus prepare them for a tremendous bill of expense. Where there is unlimited wealth for only a single heir of course no one would think of employing a midwife, but in families where the children come faster than the dollars, and where the poor mother needs little help in her labor but much in her household, the midwife fits in admirably. But the midwife, useful as she was and still might be, has forever lost her place in the onward march of our race. And it remains for us only to make sure that no advantage that belonged to her service shall be lost. To this part of our subject we shall return.

We have now brought into passing view three kinds of obstetrical nurses, the neighborly helpers, the regular untrained monthly nurses and the midwives. By far the larger part of the obstetrical nursing of this country is still done by these kinds of nurses. In the cities, especially among the foreign born, the midwife still holds sway. As has lately been brought to our attention by Dr. J. G. Blake, there is great need of some official regulation of the midwife's service. But with no opportunity offered for her education it will be difficult for the state to insist upon any educational requirements for giving her a license.

In the towns the untrained nurses occupy the field. They are improving in their methods and in their efficiency. But much more might be done for their improvement.

In the sparsely settled country women in childbirth still depend upon the nursing that kindly neighbors can give them. Without any scientific knowledge, and with only stray bits of information to guide them, these good-hearted helpers do surprisingly well. One cannot help regretting the disappearance of this neighbor nursing. No amount of education in the obstetrical nurse can ever make up for the lack of true neighborly kindness. But there is no necessity for such loss, if its importance is insisted upon in the training of our modern nurses, whose service in obstetrical nursing we have now to consider.

Many of us remember the brave beginning in this country, made a third of a century ago at the New England Hospital for Women and Children, in training nurses. To that hospital belongs the honor of having given the first American diploma of nursing to one [2] who afterwards proved her worth as the first superintendent of the Massachusetts General Hospital and the Boston City Hospital training schools, and of at least a dozen others. Nurses of course had been trained previously in all hospitals since their foundation, but only for the advantage of the hospitals. It was a distinctly forward step when systematic training was offered to women looking to their greater usefulness in the community afterwards. But not until recently has it been considered necessary in the hospital training schools to offer anything more than the opportunities afforded by experience. I myself have the honor of having given the first class instruction in obstetrical nursing to student nurses at the Boston Lying-in Hospital in the summer of 1883. Since then the improvement in the training given in the different schools as well as the number of training schools has made great headway. It would be beyond the limits of my present purpose even to recount these advances. But it would be easier to leave out of consideration the general hospital training schools where perhaps the course includes a lecture or two upon midwifery, were it not for the fact that many of the graduates of these schools, relying upon their knowledge of nursing fevers and fractures, have presumed to offer themselves as trained nurses in obstetrical cases. Such nurses have done much

[2] Miss Linda Richards.

to retard the acceptance by physicians and families of the great advantages of trained nurses in such service. And yet the supply of obstetrical nurses who have been properly trained is still so small that any interference with the growth of the demand for their services may be overlooked.

Within very recent years, however, the leaders of the large hospital training schools have begun to recognize the obligation of giving to their student nurses regular instruction and practice in obstetrical nursing. To this end most serviceable relations have been established between the general and the maternity hospitals whereby student nurses in the one have periods of service in the other. And the time probably is not far distant when every school that pretends to offer a thorough education in nursing will include arrangements for such service.

The schools connected with small hospitals, on the other hand, although not yet recognized at their real worth, have always included obstetrical nursing in the course of training given. Such schools are rapidly increasing in number and in importance. Many of them are striving in every way to follow educational ideals, and they welcome any suggestions regarding their improvement. The times are therefore ripe for the establishment by obstetricians of standards for the education of obstetrical nurses. Upon this subject, in offering the following propositions, I invite discussion:

In the first place I trust that it may be agreed that a general training is prerequisite. Specialists in the practice of medicine are all very well; if complications arise other specialists can be brought in. But even specialists in medicine must have had a general medical education, and it is all the better for their patients if they have had some general practice besides. But in nursing service it is no such easy matter to secure different nurses as complications arise. And in any case of midwifery, knowledge of the nursing required in fevers and in surgical operations may be as needful as knowledge of obstetrical nursing.

In the next place, as regards the scope and character of the education required in obstetrics, I can hardly hope for equally general agreement to my proposition that the obstetrical nurse should have at least as much as is provided for midwives in their best schools. It may be feared by some that such training would make midwives. Not at all. No student nurse of to-day could possibly be induced to undertake the practice of midwifery. The higher her education the less willing she would be to undertake such responsibility. The whole trend of modern nursing is against such a course, and in its professional advance the foundation principle becomes more and more clear that the nurse is the physician's executive officer. It is her duty and her delight not to interpret the symptoms but to observe and record them, not to decide upon the course of treatment that shall be pursued but to carry out the orders. And yet in midwifery work one can never be sure that the obstetrician will be at hand as emergencies occur which require instant action, or even at the crisis of delivery. Moreover, the well-trained obstetrical nurse is often employed simply as a guard against these contigencies in families where the luxury of the constant attendance of an obstetrician during much of the pregnancy and all of the confinement cannot be afforded. There surely can never be found valid reasons for limiting the amount of obstetrical knowledge of the nurse. The more she has the better. Those who harbor such dread of education in nurses have probably had experience not with the really well educated but only with the poorly trained, whose ignorance accounts for their intolerable officiousness.

Before asking assent to my proposition that the obstetrical nurse should have at least as much education as is furnished in the schools for midwives, I ought first to explain what that education is. It will be sufficient perhaps to quote some of the questions asked in the examinations held by the Obstetrical Society of London before granting their certificate that the candidate is in their opinion " a skilled midwife competent to attend natural labor ":

(1) " Describe the passage of the fetus through the pelvis with the face presenting and the chin to the right, and say how you would diagnose the presentation, and in what cases you would send for medical assistance.

(2) " Give mechanism of labor in breech presentation with the left buttock backwards and to the left.

(3) " How would you manage a twin labor?

(4) " Describe the natural appearances of a child's motions during the first week of life. What unnatural appearances are the most usual and what do they show?

(5) " Give the causes and treatment of retained placenta.

(6) " What is the difference between unavoidable and accidental hemorrhage? What would be your treatment in each case? "

If these sample questions seem to imply an impossible standard of education for obstetrical nurses, I can offer my own experience in having fitted a student nurse to pass with honor the examination from which the above questions are quoted.

It may be questioned why nurses need be taught how to conduct a normal labor when it is intended that such responsibility shall always as far as possible be avoided by them. This question forces upon us the consideration of the proper functions of obstetrical nurses. Disagreement is now inevitable. Nevertheless, we must try to reach some agreement in the hope that out of our discussion some progress will be made. And at any rate it behooves those who have definite ideas upon the subject to state them.

I myself believe that the obstetrical nurse should be expected to visit her pregnant patient occasionally, to advise her about all the preparations for her expected confinement, including the baby's wardrobe, and to listen carefully to all her woes and complaints, informing the obstetrician

from time to time of the exact condition of his future patient.

Against this idea of the nurse's function some physicians may believe that these duties belong to them. If the physician prefers to give this sisterly service, let him give it; that should not prevent other physicians having nurses' help in such business.

As the time of the expected labor draws near I believe the nurse should be expected to make sure that the patient is in normal condition, and to report to the physician any deviations from the normal. It is as easy and proper for the nurse as it is for the physician to make sure of the proper action of the kidneys, for instance; nor will a properly trained nurse be any more likely to frighten the patient in so doing.

When labor actually begins it is the nurse's function to decide and report that fact; and during the first stage of the labor it is her function to keep watch of its progress, to give assurance that the conditions are normal, and to report to the physician accurately. During the second and third stages of the labor, in event of the physician's absence, the nurse should be able to manage the natural delivery. She should be able to recognize dangerous complications in order that other medical aid may be secured while waiting for the expected physician. In sudden emergencies she should be able to apply the immediate appropriate treatment.

With the help of such nurses the obstetrician's work is made easy. His knowledge and skill and strength can then be far better employed than when, without such nursing service, he has to dally in the lying-in chamber for days at a time or else keep making unnecessary visits in order to be at hand later on when really needed. But it is not merely for the obstetrician's convenience that such nursing ability is advocated. For the patient herself it is in every way an advantage. During the first stage of the labor, for instance, no physician, unless perchance he is himself a nurse in male attire, can so well as the nurse give the needed service; he is only in the way. Furthermore, for busy practitioners such employment of their time is wholly impracticable. Regarding the function of the obstetrical nurse in the confinement period, there is so much less chance for disagreement that nothing need be said beyond calling attention to the great importance both to mother and child of intelligent and devoted nursing service.

To recapitulate, obstetrical nurses should be expected to exercise precautionary surveillance during the pregnancy, to manage the first stage of labor, to recognize any abnormal occurrence, to be able to conduct a normal labor, to apply appropriate preliminary treatment in emergencies, and in the confinement to care for both mother and baby intelligently.

If these are admitted to be her proper functions, there can be no question as to the kind of education needed by the obstetrical nurse. But this is far from all that should be provided for in the ideal education of obstetrical nurses. Important as it is to include this technical knowledge of midwifery, it is equally important in supplanting the old time neighborly helpers and the untrained nurses to preserve all the advantages belonging to their services. The nurses of the future must therefore be taught how to fit in most helpfully in homes where the mother is under temporary eclipse. To this, my third proposition, I am sure all will agree. The nurse must be taught how to utilize all sorts of make-shift material, how to save every unnecessary expense and how to make the family and even the servants her friends, thankful for her having come into the household.

It is needless to say that these all-important lessons can be neither taught nor learned in hospital wards, where the mother with her newborn baby is merely one in a long row, unnamed and unknown except perhaps for some interesting physical abnormality. How can it ever be expected that a nurse whose only training has been in the wards should know anything about home nursing? She has never had anxious husbands and terrified little children and cranky servants to deal with. Very likely she has never even seen the mother's joyous welcome of her child. So she does her utmost to change the home into a hospital, she delights in a large display of paraphernalia, she establishes rigorous rules for visitors and graciously allows the father and little brothers and sisters one at a time to see the baby for a few minutes after the fifth day. In short, the modern hospital-trained obstetrical nurse too often does everything she possibly can to magnify and distort the normal process of childbearing into an unnatural, extraordinary experience. But she is not to blame for so doing, as she is merely following most conscientiously the wrong teaching she has received. Of course it often is possible for her to learn better ways, but the nurse whose only obstetrical training has been in hospital wards will always be at a disadvantage in comparison with the obstetrical nurse who has been trained in home nursing.

In the maternity hospitals and in the out-patient midwifery service the education of medical students naturally enough is of first importance, and nurses, however well trained as assistants of medical students, cannot be expected to have acquired a proper education. The schools of nursing must provide courses of instruction in obstetrics, and clinical practice under capable teachers, where the education of the nurse is the matter of first and not of secondary importance. In the immediate neighborhood of the medical schools it may not seem easy to arrange such educational opportunities for nurses; but even in such cities there is no lack of midwifery cases where medical students would not be admitted, but where the services of student nurses would be a blessing both to the families and to the physicians in charge.

All that is wanting is the organization of proper courses in obstetrical nursing by the regular training schools. The class work and preliminary drill, including practice upon the manikin and

upon the living model, can be easily provided for at the school. And opportunities for clinical practice can be arranged for in connection with the visiting nursing societies which are now to be found in almost every village and town. These societies would gladly undertake more visiting midwifery work could they afford to do so. Now while under the necessity of hiring graduate nurses for this purpose it is not possible for them to comply with the demand. But with student nurse service available many of these visiting nursing associations could well afford to employ a superintendent nurse competent to teach obstetrical nursing. She might well be one of the faculty of the school supplying the nurses, and so the school might maintain full control over the squads of student nurses sent out on this service.

Such an arrangement as this would afford many great advantages. In the first place the needs would be met of the very poor women and of those who can pay only small fees for nursing service. Again, better methods of helping women in childbirth and in confinements would pervade the community; the untrained nurses who now supply this field, if their co-operation is as cordially welcomed as it should be, would soon learn the new and safer ways. And finally under such an arrangement the best possible opportunities would be provided for the education of obstetrical nurses.

## ON SOME QUESTIONS RELATIVE TO EXTRA-UTERINE PREGNANCY, WITH ESPECIAL REFERENCE TO TUBAL ABORTION.*

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I have been led to prepare this paper by the hope that discussion may throw some light upon certain questions relative to the diagnosis, treatment and after history of this condition that are at present by no means entirely settled in my own mind.

(1) *Diagnosis*, the classical symptoms — amenorrhea, followed by more or less continued irregular flowings, sudden and severe typical pain, usually described as "colicky," expulsion of decidual tissue and the presence of an ill-defined pelvic tumor distinct from a uterus that is not enlarged enough to correspond with the putative duration of pregnancy, combined with anemia and the symptoms suggestive of pregnancy — would if present give are asonable certainty to the diagnosis of a ruptured tube. In my experience, however, the great trouble has been that most of these symptoms are generally absent and especially so in cases of tubal abortion (*i. e.*, discharge of the fetus through the osteum abdominale without rupture of the tube), while in the cases of the rupture of more advanced tubal gestations the patient is very apt to be first seen in a state of collapse too profound to admit much questioning as to symptoms.

I have operated upon seventeen cases of extrauterine pregnancy and diagnosed correctly quite a number more that I had to send to other men for operation. Needless to say, in several of my cases the correct diagnosis was not made until the abdomen was opened. In all these I can recall very few in which even a majority of the classical symptoms were present. On the other hand, I can remember a sufficiently large number of cases having most of the classical symptoms in which a laparotomy showed other conditions.

Take for instance the case of C. H. Married some years, no children. Seen at the end of August. She had passed the period due April 2, began flowing June 13 and had flowed steadily ever since with occasionally more profuse discharge for a day or two. She had had chills and hot flashes and on several occasions severe stabbing pains in the groins lasting an hour or two. Some tissue was said to have come away. Symptoms of pregnancy present. A rather fat woman, she was first seen by me on the operating table. Previously another gentleman had passed a sound and declared the uterus empty and had felt a mass behind it. Overhastily accepting the diagnosis of extrauterine already made for me, although very probably I should have concurred no matter how carefully I had examined, I opened the abdomen and had the pleasure of coming upon a pregnant uterus, from which, returning to the vagina, I delivered a four months' dead fetus. The mass behind the uterus turned out to be two patches of exudate, each the size of one's hand, in the lower posterior segment of the uterus and the right broad ligament. Humiliating as this mistake was, — and it occurred before a large number of spectators,— I got what little consolation I could from the fact that three confrères were equally at fault. The obvious lesson is the necessity of a careful examination under ether just before the operation, which reminds me of a laparotomy for extrauterine pregnancy I was once invited to see by a leading New York operator which revealed nothing, not even a pregnant uterus. Some symptoms and a mass of feces had led him astray when he examined ten days before the operation, and he did not confirm his diagnosis under ether.

Another case of mine, Mrs. L., had this history: Amenorrhea for three months. After "feeling herself pregnant," as women say, some three weeks before I saw her she was awakened from sleep by pain in the lower abdomen so severe that she rolled on the floor in agony. (I remember that one of my earliest medical impressions was that "rolling on the floor in agony" meant in a man an appendix and in a woman a ruptured extrauterine.) This pain was accompanied by nausea. It lasted half an hour and for a few days thereafter she was very pale and fainted easily, then she began to flow a little and was still flowing when seen. The uterus was found to correspond with three months' pregnancy and there was a distinct boggy mass behind it. In three weeks more this mass had gradually dis-

*Read at a meeting of the Obstetrical Society of Boston, Oct. 20, 1903.

appeared, leaving a normal pregnancy. Of course it is possible that here was a normal pregnancy combined with extrauterine with tubal abortion. Such combined cases have recently been reported at the Obstetrical Society by Drs. Perkins and Elliot, but the chances are against it.

Or take this case to illustrate the possibility of a faulty diagnosis. Mrs. H. consulted me for a secondary sterility of four years' duration. After a few weeks' treatment of an endometritis she skipped a period. At the sixth and eighth weeks there was flowing for a few days with sharp pain in the groins. Seeing her at the eighth week, an oval movable tumor the size of a hen's egg was to be felt in Douglas' pouch with hardly any appreciable enlargement of the uterus. While a few more days' observation settled it that it was a normal pregnancy with a catarrhal tube, there was a time when I felt tempted to interfere.

Or take this case seen in consultation. Amenorrhea five weeks, then fairly sharp pain in the left ovarian region, followed for a week by the discharge daily of a small amount of old clot, culminating with fairly active expulsive pains and escape of fresh blood. The uterus was then curetted. The pathologist reported that while there was evidence of a pregnancy there was no trace of an ovum and that he could not but be suspicious from the specimens submitted that there was something going on outside of the uterus. Three weeks later there appeared in the left pelvis an oblong mass the size of a small orange and for twenty-four hours there were rythmical wave-like pains in the left pelvis, almost exactly like the pains one sometimes sees that are premonitory of the rupture of a tube. An exploratory laparotomy showed nothing but a small thin-walled rapidly growing cyst of the ovary.

Sometimes, on the other hand, when an extrauterine pregnancy is actually present, there are practically no symptoms of it or if any are present they are so slight that the case is naturally regarded as one of ordinary miscarriage. Three of my cases came to the hospital to be curetted after a so-called miscarriage, in one of them the plainly felt hematocele being regarded as a pelvic abscess by a leading gynecologist. In another the diagnosis was made by the merest accident. Miss H. (Case VIII). My house-officer telephoned me that a girl had just come in who had been flowing for a month after a miscarriage at five weeks. I told him to curette her and when I saw her next day she was doing perfectly well, so I gave her no more thought. On the day before she was to leave the hospital the house-officer told me that as she had been flowing a little more he had had the curiosity to examine her again and had felt something behind the uterus. Careful inquiry gave no history of pain or anything else except a slight flow for a month after being previously perfectly regular. I at once opened the abdomen and found it full of free blood and clots and a sac the size of a hen's egg in one tube with a rupture with old edges, though free bleeding took place on handling it, and a pelvic peritonitis apparently at least a month old.

Pelvic examination is not always of great assistance or is deceptive. Take this case: Mrs. D. (Case XII). Six weeks previously sudden severe abdominal pain, menstruation having occurred at its normal time a few days before. This was accompanied by nausea, without vomiting (present, by the way, at the time of rupture in over half of my cases); this pain lasted five minutes, leaving the patient prostrated. Two weeks later another attack with flowing for an hour. Three days later another similar attack. She was then examined by a gentleman with great experience in extrauterine pregnancy who inclined against that diagnosis as he could feel absolutely nothing and thought the case might be one of appendicitis. A week later, when under observation in the hospital, she had another attack. No tissue was passed as far as known. From the history I advised an operation. Examination under ether shows a plain enlargement of the right tube, while the left pelvis was apparently free, yet when the abdomen was open I found she had an extrauterine pregnancy on the left side — the mass on the right being only a hydrosalpinx. Even after this left tube was removed it was difficult with one's eyes shut to feel the fusiform swelling in it, which was filled with soft clot. A peritonitis had closed the distal end of the tube. A microscopic examination proved tubal pregnancy present. This condition of tubal pregnancy with closed tubes is not so very uncommon. Dr. C. H. Hare has recently reported a case of extrauterine pregnancy with double pyosalpinx. It is noteworthy that the rupture of this sac — not the tube — in the earliest days of pregnancy caused such marked and persistent symptoms, especially as the tube was not at all tightly filled with the escaped blood. This brings out another point. Some time ago, in a suspicious case at eight weeks, a physician expostulated to me that it was too early for rupture or indeed for any symptoms of an extrauterine pregnancy and I believe there is a somewhat general feeling to this effect. Leaving out the pain from the stretching of the tube which sometimes occurs very early, the dates at which rupture or tubal abortion took place in my cases was approximately as follows — sixth week, eighth, third (sac only 3 mm. long yet the abdomen full of blood), fourth, third, fourteenth, fourth, eighth, sixth, eighth, sixth, eighth. Thus in 10 of the 14 cases of which I have the data, symptoms were noticed at or before the eighth week. These figures are in close accord with those of Weindler,[1] in which 19 of 50 cases were in the first month. Cases in which symptoms occur thus early are generally tubal abortions, in which the pelvis is found filled with adherent blood clots with an enlargement very likely no larger than an almond in the tube. In several such cases I have still found blood coming drop by drop from the abdominal end of the tube, cases in which the tube had been lifted up carefully enough to exclude the hemorrhage being caused by manipulations. It is to be remembered that a very large amount of blood

[1] Arch. f. Gyn., 1900, Bd. lxi, Hft. 3.

can escape by this monotonous drop, drop, drop; fifteen drops a minute, the rate in one of my cases, gives much more than a quart a day and this hemorrhage tends to be persistent rather than otherwise unless the end of the tube gets blocked up by a peritonitis. From Weindler's study it seems evident that the menstrual period following a tubal abortion in the first month is very apt to be much more profuse than ordinary, a point worth bearing in mind in trying to explain the cause of certain cases of pelvic peritonitis in which there is a history of a single profuse menstruation without previous amenorrhea in women who usually flow a normal amount.

In these cases of early tubal abortion no trace of the fetus is likely to be found and the diagnosis can be confirmed only by the microscope, if even by that.

Should tubal abortion be deferred one can generally get a history of amenorrhea, but not always. Take this case: Mrs. C. (Case I). I found in her abdomen a fresh fetus of three and one-half months, three weeks after her first attack of pain; she had not skipped a single period she said and thought. In reality her irregular flowing due to her extrauterine pregnancy had happened to coincide in time and amount approximately with her normal menstrual flow, a possibility to be closely borne in mind in women with a history of more or less irregular menstruation.

As to the classical symptom of grave anemia, in my limited experience this is the exception.

Of my 17 cases 3 were in collapse from acute hemorrhage. In 8 free blood was present in the abdominal cavity without marked anemia. In 5 the pelvis was more or less filled with clots without free blood or any anemia. In one case who had been having symptoms for a week I found the abdomen more filled with blood and clots than in any other case I ever saw, yet her color was good and her pulse only 80 before the operation. I suppose the hemorrhage, though profuse, had been slow enough to allow new blood to be formed as fast as it leaked through the mouth of the tube. In this case the fetus was just about large enough to be seen, yet the total amount of blood lost was very large.

Another classical symptom is the escape of decidual tissue. I have come to place no reliance on this unless it is proved by the microscope. Women are more than apt to regard old blood clots as " tissue," or else when the real tissue does escape it is apt to be regarded as merely blood clot.

I suppose extrauterine pregnancies have been mistaken for almost every conceivable pathological condition in the pelvis and the abdomen too, for that matter, and vice versa, and no wonder, for a sure diagnosis is often impossible. Tubal abortions are especially difficult to diagnose, particularly those in which the hemorrhage is into a tube the distal end of which has become occluded. This is unfortunate, as tubal abortions are perhaps more frequent than cases in which the tube itself ruptures. They formed 56% of my cases.

The symptoms which seem to me of chief importance in tubal aborton are pain and anomalous escape of blood from the uterus. *Pain.* It is quite different from that of ordinary menstruation, short-lived, often stabbing and not " colicky" especially, nor anything like as severe as the agony from the rupture of a tube. This pain is often accompanied by nausea without vomiting and as a rule more or less protracted *metrorrhagia* takes place. Patients are apt not to pay much attention to this pain and think that the flow is due to only a miscarriage, and so first come under observation some weeks later, being led to seek advice on account of the pain from the pelvic peritonitis that generally results. As the abortion occurs when the enlargement of the tube can hardly be felt, and the fetus generally dies at the time of rupture of the sac, all that can be felt is often only a more or less firmly organized blood clot surrounded by exudate and exquisitely sensitive. A few times, in cases of tubal abortion, I have got dullness in the flanks from free blood, but generally the hemorrhage is small, though often persistent, and the blood is all collected in the pelvis and clotted.

The further advanced an ectopic pregnancy is the easier the diagnosis naturally becomes. If three or four months along and the patient is fortunate enough to be examined before rupture, a history such as I have outlined associated with the symptoms of pregnancy, and the presence of a pelvic tumor combined with relatively slight enlargement of the uterus, should attract the attention of the least suspicious, and fortunately the irregular flowing and the pain due to the stretching of the tube are very apt to make a woman think that if she is pregnant something must be wrong.

One little point in diagnosis is worth mentioning. It used to be taught that ectopic pregnancies are far more apt to occur in multiparæ after a protracted secondary sterility. This is not always strikingly so; 41% of my cases were primiparæ.

As to *treatment* there are five questions that have occurred to me and it is with the hope of eliciting a discussion of them that I have been led to prepare this paper:

1. Should a case seen immediately after rupture — in collapse and acute and profound anemia — be operated upon at once, running the risk of operative shock proving the last straw in the scales of life and death, or should we wait until the patient has rallied somewhat from the shock of rupture, aided by strychnia or alcohol and salt infusion and more especially adrenalin?

I recognize that the waiting policy has very able advocates who have had greater experience than I have. One must resist the temptation to dogmatize, but personally I feel that I should prefer to operate at once, no matter how grave the condition, or rather, the graver the condition the more prompt would be my attempt to reach the bleeding point, for while twelve hours or so *may* give a patient some hope of recovery from the primary shock, we have no certainty but that

meanwhile blood may be coming out of the torn tube quite as rapidly as we can introduce salt solution under the breasts — nay, even our efforts to increase the volume of blood in circulation are very likely only increasing the quantity available for pumping out into the abdominal cavity and at the same time replacing the lost blood with a fluid of low coagulability. In a recent discussion on this matter an eminent gentleman said it was his experience that cases of accident operated upon in a condition of shock generally died. This is, of course, true and nobody would dream of operating on a recent tubal rupture if — and the whole point of the matter lies in that " if " — if we could be sure that there was meanwhile no hemorrhage going on into the abdominal cavity. I always understood it was a primary surgical rule to find your bleeding point and then wait if thought best. Common experience shows how marvelously patients recover after bleeding has once stopped. One advocate of the waiting treatment expresses scepticism as to women bleeding to death from the rupture of a tube, saying that the hemorrhage will stop of itself when the woman is sufficiently exsanguinated. Within six months I have heard of four cases of death from such acute hemorrhage occurring within a few miles of Boston. As to the shock of an operation taking away the woman's one chance, I do not think its risk is comparable with the risk that she will bleed to death. It is well enough in a grave case to say " wait, and if she loses ground we will then operate," but if you do so, when that ground is lost her chances have not improved any. As to the argument that one does not like to operate upon a dying woman, I cannot but feel that to let her die without an attempt to relieve her does not bring any great glory to surgery. My rule is to get ready for operation, stimulating the patient meanwhile. If she reacts and holds her own, wait, but at the first sign of losing ground operate. If no reaction, operate and give her her one chance.

Three only of my cases were in collapse when operated upon. One of the two that I lost, Hennesey (Case VI), was thought to be dead in the carriage on the way to the hospital. She responded a very little to stimulation at first, but by the time I could reach her she had begun to fail again and was almost pulseless when the ether was started. She was dead an hour after the twenty-minute operation was completed. She lost no blood from the operation and there was very little handling of the intestines. Bleeding from the torn tube was steady and free, considering how exsanguinated she was. As death from acute anemia was otherwise inevitable in the near future, I feel that reaching the bleeding point gave her her one chance in a thousand and have never regretted that I opened her abdomen.

The other fatal case was a primipara, seen in consultation with Dr. Boland, two hours after the rupture at six weeks. Within an hour of the time she was seen I opened her abdomen at the Carney Hospital, and found it full of blood with free hemorrhage going on. She died on the third day, apparently from exhaustion. I afterwards found that she had been having attacks of heart failure for some months, and it was one of these combined with the profound anemia that caused her death. She was in a state of fairly deep shock when operated upon and was growing worse all the time. To sit still and wait for reaction in such a case seems to me sacrificing most of one's chances.

The third case operated upon in collapse (Case IX) seemed in quite as bad condition as the first, and coming within a week of it gave me a good chance to compare the two. In my notes I read " seems much better after the operation, as now a faint flutter can sometimes be obtained at the wrist." She certainly seemed a pretty hopeless case, yet she did perfectly well, the pulse dropping to 140 within twelve hours. Bleeding was found to be going on freely from a vessel large enough to have practically filled the abdomen in the three hours between rupture and the operation and I think by the time the vessel was tied she had lost about all the blood she could afford. With a case like this in mind, I confess to a good deal of scepticism about waiting for a woman to recover from shock if meanwhile she is going to bleed to death. I do not deny that when a woman is not blanched and percussion does not reveal much free blood it may not be well to give her a chance to react before interfering, but I do wish to protest against sitting with folded hands with a patient showing evidences of acute anemia.

2. The second question that occurs to me is — with a diagnosis of probable unruptured extra-uterine pregnancy is it better to operate at once or wait until the diagnosis is certain? I should feel that a reasonable probability implies an immediate operation. Certainty generally comes only with rupture, which is often not considerate enough to give much warning. One of my worst cases, who was being "watched" by another man, was awakened from sleep by the rupture and came very near dying before she could be operated upon.

3. The third question is — given a tubal abortion, say a month or so before the patient is seen, is it better to operate, supposing one can feel a mass, or to allow nature to take care of it? Nature will, I think, generally take care of it more or less sufficiently after a longer or shorter period of pelvic peritonitis with pain if nothing worse, but it seems to me infinitely more surgical and certain to clear out the pelvis in such cases, remove the old clots, break up the adhesions, patch up the tube by resecting portions of it or by splitting it and removing clots from its cavity and sewing it up again. The whole story seems contained in the observations of a recent writer who compared some three hundred cases treated by operation with an equal number treated expectantly. The mortality was in both cases practically the same, but under operative treatment convalescence averaged eight weeks, while under expectant treatment it averaged eight months.

4. The fourth question connected with the treatment is the old one — below or above? Tubal

pregnancies, of course, are accessible from below. Recently Kablukoff removed a seven months' fetus through an opening in the posterior or anterior vaginal wall, leaving the placenta to discharge later. Of course the men who have done enough vaginal celiotomies to be expert thereat may prefer that route in many cases. I am not one of them, nor likely to become so. A single experience satisfied me. I was once asked to drain a pelvic abscess following a miscarriage. On incising the posterior cul de sac I came upon free blood and in my attempts to deliver through that vaginal wound an adherent tubal fetation I stirred up enough more hemorrhage to make me glad enough when I was finally able to control it by stuffing the pelvis full of gauze and then go in after the bleeding point by the abdomen as rapidly as I could with the patient of course quite unprepared for a laparotomy. An incision in the posterior vaginal wall may, however, be useful to settle doubts as to diagnosis, but it is well to be prepared for an abdominal operation. In some cases it might be well to attempt to control further hemorrhage by clamps from below, delaying removal of the tube by the abdominal route until the patient shall have recovered from shock and acute anemia.

5. I have had no experience with extrauterine pregnancies at full term. The treatment of the placenta in such cases is the fifth question that has occurred to me and I think it is about as difficult a one as the surgeon ever has to meet. Whether it is better to attempt to remove it with the probability of a furious and very possibly uncontrollable hemorrhage, or to stitch the sac to the abdominal wound and allow the placenta to come away gradually with the still great danger of hemorrhage when it separates or sepsis if it sloughs, with conditions very good for a hernia in the future, is certainly no easy problem to solve. Of course if the main blood supply to the placental seat can be found and tied off, the problem becomes much easier, but this is by no means easy. In the only case of the kind I ever saw the sac was stitched to the abdominal wall and very tightly packed with iodoform gauze and in a few days the placenta came away without hemorrhage. Men who have removed the placenta in cases where the child was alive at the time of operation describe it as a nightmare.

The only other point I wish to touch upon is the after history of cases of extrauterine pregnancy. What hope can we give a woman that an extrauterine pregnancy will ever be followed by a normal one? I should say very great hope. My sixth case gave birth to a child fifteen months after I had operated upon her for a typical extrauterine rupture. I came across a woman only the other day four months advanced in a normal pregnancy upon whom Dr. E. Reynolds operated last year for an extrauterine. Prochowik found that a normal pregnancy followed an extrauterine in about 40 out of 80 cases. Curiously enough, the proportion of subsequent normal pregnancies was practically the same whether the cases were operated upon or not. A normal pregnancy may even intervene between two extrauterine ones. I have found two such cases. I think every one is now agreed as to the advisability in young women in leaving at least a part of one ovary in mutilating operations upon the appendages for physiological reasons. This is never more true than in cases of extrauterine pregnancy occurring in primiparæ. In view of the many children following an extrauterine pregnancy it seems to me almost criminal to deprive a woman of the chance of maternity. The old teaching was to remove both ovaries, lest she have another extrauterine pregnancy; my view would be to remove as little as possible, in the hope that she may become normally pregnant. It has always been my hope in a suitable case of unruptured tubal pregnancy to be able to split the tube, remove the sac and products of conception, stitch up the tube and drop it back again. Only the other day I determined to do it in such a case at three months. Unfortunately she fell into another man's hands at the last moment, who removed the tube and ovary.

On the other hand, the possibility of a second extrauterine must be borne in mind. I reported three years ago [2] a case of repeated extrauterine pregnancy on whom I had operated twice. I have since then had an even more striking case.

Mrs. R. 11-para. In December, 1901, I operated for a tubal abortion at one month. The diagnosis was confirmed by the microscope. In May, 1902, she had an attack of pain on the other side after two months' amenorrhea. Irregular flowings took place and the history in brief was a typical one. I first saw her three weeks after the rupture and watched the mass slowly disappear without operation.

In September, 1903, I operated again for a tubal rupture at three months or a little less. Though the fetus was not found, the diagnosis was again confirmed microscopically Thus within the space of three years she had three practically certain extrauterine pregnancies.

I am afraid I have left the question of diagnosis in rather an unsatisfactory condition. I cannot help it, as my own ideas on the subject are very hazy. In many cases a positive diagnosis is out of the question, as it is for that matter in many other abdominal conditions. Often one will have at best but a feeling from the history that in spite of scanty tactile evidence there is trouble in the tube and I am certain that in such cases the " let alone and wait " policy will never give as satisfactory results as operative interference. If you do not find an extrauterine pregnancy you will probably find some trouble that will be the better for plastic work, — building a new osteum, for instance, if the tube be closed by catarrhal inflammation, or an ovary needs partial resection, or some adhesions should be broken up, or something, — while if you find nothing I do not think that a competent man should be blamed if in view of the possibilities of a neglected extrauterine pregnancy he insists in setting his suspicions at rest one way or the other.

[2] Boston Med. and Surg. Journ., Aug. 23, 1900.

## TYPHOID FEVER IN CHILDREN.*

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### INDIVIDUAL SYMPTOMS.

*Nervous System.* — The nervous symptoms of children ill of typhoid are not usually so pronounced as in the case of adults, but individual cases differ greatly from each other. The majority of children are from the beginning in bad humor and whine when disturbed, remaining in this condition throughout the sickness except when the peevishness gives place to a condition of apathy and stupor. Other children are restless from the beginning, tossing about and moaning, the older children complaining of decided headache; these become very apathetic and even fall into a light stupor from which, however, they can be awakened by being taken up, questioned, etc. Still others show an intense restlessness from the very first, crying, screaming and tossing about. During the progress of the disease the mind becomes more and more dull; the little patients become delirious, scream continually, have a tendency to spring out of bed, forget their surroundings and often in great excitement fall back into a deep stupor with which the former symptoms alternate. In some cases I have seen the deepest stupor which lasted for days, in one case even for weeks, accompanied by grinding of teeth and a general relaxed condition of all the voluntary muscles, the child during the entire time scarcely uttering a sound. I have seen complete reduction of the fever besides violent delirium follow the administration of large doses of salicylate of sodium. I cannot remember ever having seen general convulsions in connection with typhoid fever of children, although such cases are recorded. In a case mentioned by Lewy, in a child fifteen months old, laryngismus, rigidity of the neck, general convulsions and anesthesia developed during the course of the illness. The case was probably a complicated affection of the central nervous system. Meningitis is also an occasional complication of typhoid and I have observed one such case which, however, ended fatally. Other cases have been described by Wentworth [26] and Zorm,[27] in which they found the bacillus in the meningitis pus of the spinal fluid. Henoch has observed similar cerebral disturbances, and has called attention to the relative frequency of aphasia in typhoid. The most conspicuous of all the disturbances of the special senses is that of hearing.

*Organs of Respiration.* — The organs of respiration are always affected in typhoid of children, sometimes very early in the sickness. Lewy's above-mentioned case developed such severe laryngeal symptoms that the stenosis required tracheotomy. Catarrhal affections of the bronchial tubes accompanied by cough so frequently appear in the course of the disease that they may be considered regular symptoms. In the more severe cases, however, atelectasis of the lungs and catarrhal pneumonia may develop out of these apparently insignificant symptoms, complicating the course of the disease and greatly diminishing the chances of recovery. The physical signs (räles, dullness, diminished bronchial breathing) show the condition of the respiratory organs.

*Organs of Circulation — Blood.* — The action of the heart and pulse have already been described, but it is important to consider the condition of the blood, which, while not always the same and characteristic, usually shows a certain degree of leucocytosis. I have found a proportion of 1:650–1,200 between the leucocytes and erythrocytes. The number of eosinophile cells was small, from 0.5%–0.8%. The amount of hemoglobin varies from 24% to 52%. The foregoing statement is confirmed by the investigations of Naegeli,[28] Becker,[29] Courmont and Barfarow,[30] and they further state that during the period of high fever there exists a constant decrease of the number of neutrophile cells and lymphocytes. The eosine cells disappear almost completely during the height of the fever and only return shortly before the fever becomes normal or even later. I have not been able to find any certain prognostic sign from the condition of the blood, but the blood condition is particularly valuable for differential diagnosis when other signs are absent. The specific agglutinating ability of the blood for new cultures of typhoid bacilli exists in children the same as in adults and is therefore valuable for diagnosis (Widal's reaction), but it is not an absolutely positive sign. This will be more fully considered under the heading "Diagnosis."

*Organs of Digestion.* — The abnormalities of the digestive tract show themselves even in the lips, tongue and mucous membrane of the mouth. The entire mucous membrane of the mouth is reddened and has a color darker than normal; the lips are dry, the tongue somewhat moist with a gray coating in the middle, red edges and point. If the child remains conscious the picture changes a little during the course of the illness; but if he becomes unconscious and delirious and lies with the mouth open the lips become cracked and bleed easily. A dirty gray coating is formed upon the mucous membrane of the mouth near the edges of the teeth, the tongue looking as if it were smoke-dried, shiny and pointed. The mouth and tongue are also the seat of small ulcers with yellowish coating and red edges, but which is not real aphthæ. Among the real complications we shall have to mention stomatitis and noma. The pharyngeal mucous membrane is reddened and dry; the tonsils are generally enlarged and the seat of follicular inflammation.

*Translated by Dr. C. T. Warner, Marlborough, Mass.

[26] Wentworth: Archives of Pediatrics, 1899.

[27] Zorm: Kinderärzl. Gesellschaft zu Moskau, März, 1899.

[28] Otto Naegeli: Correspondenzbl. f. schwerzer Aerzte, 1899, No. 18.

[29] Ernst Becker: Deutsche med. Woch., 1900, No. 36, p. 571.

[30] Courmont und Barfarow: Société de Biologie, 28 Juillet, 1900; Sémaine méd., 1900, p. 282.

The fact should never be lost sight of that an unusually protracted angina with very high fever may be the only early symptom of typhoid. Wagner and Roemheld [31] describe another form of pharyngitis in which small flat ulcers are formed in the beginning and during the course of the disease but without involving the tonsils, and Cadet de Cassicourt pretends to have seen a catarrhal pseudomembranous and ulcerative form of tonsilitis in this connection. I can confirm the theory that the disease is introduced into the system through the angina. Vomiting is frequently observed in the beginning and during the course of the disease, coming on without apparent cause. I have already spoken of bloody vomiting. In the early days of the illness the abdomen is but little swollen, but it becomes more so as the case progresses, and often develops severe tympanites. The feeling of gurgling in the ileocecal region is not very pronounced, but this part of the abdomen and also along the course of the colon is painful on slight pressure and the spleen is often very sensitive. In children diarrhea may be lacking during the entire course of the disease, or particularly in the beginning, a rather severe constipation may be present, but this gives way later to the well-known and often severe typhoid diarrhea. The spleen, which continues to enlarge till the fever reaches its height, may in the majority of cases be easily palpated below the border of the ribs and when not hindered by tympanites the tumors may be proved by percussion.

*Urinary Organs.* — The urine has a high specific gravity, is scanty and according to Eckert, Hagenbach and Geier rather frequently contains albumen. In case with high fever I have sometimes found this continuing for a week or two. This is usually accompanied by the presence of cast-off and broken-down epithelial cells and casts. It is questionable if we have a real nephritis in these cases, but a nephritis may be a complication and an attempt has been made to fix a renal form of typhoid (Amat, Weil). Ehrlich's diazo reaction is important in considering the excretion of the typhoid bacillus with the urine, as it is a valuable test, particularly during the height of the fever. Since I have paid more attention to this reaction I have not found it absent in a single case, and I therefore consider it a helpful diagnostic aid though not absolutely certain. In the beginning of the illness the excretion of urea is often but not always increased. In the majority of cases also a strong indican reaction is present. The chlorides are diminished, but the excretion of the inorganic salts shows nothing characteristic (Jacubowitsch).

*Skin.* — The most noticeable appearance in the skin of typhoid patients is the roseola. It appears scantily but is rarely lacking, and if one look closely one is almost sure to find the small slightly elevated spots which are scarcely as large as a lentil. In exceptional cases a very abundant rash appears which may almost be mistaken for an accidental exanthem. In relatively numerous cases the roseola reappears even after the fever has disappeared and is usually followed by a relapse. I have never seen the exanthem described by Rendinger,[32] which simulates measles and scarlet fever, neither have I observed the desquamation which he and Jacobi [33] describe. Miliary rash appears on the skin of children very easily and often, and therefore frequently accompanies typhoid. Considering the inclination of severely sick children to soil themselves, deficient nursing may easily be accountable for severe erythema and eczema. However, these complications are not so common as one would expect, and decubitus is really the exception, and when it does occur it appears mostly as a necrosis of the skin over the coccyx. Hemorrhage of the skin occurs but rarely and then in connection with a hemorrhagic diathesis or blood dissolution. Occasionally hydrops of the skin accompanies typhoid with or without albuminuria, or it may appear as a secondary symptom.

ABNORMALITIES.

*Abortive form.* — The most insignificant and shortest forms of typhoid often occur in children and are but a weak reflex of the typical illness. These cases are characterized by slight gastric disturbances, somewhat typical typhoid tongue, moderate fever with evening exacerbations and positive diazo and Widal reaction; but still more significant is the occurrence of other more serious cases at the same time.

*Relapse.* — A relapse is characterized by the reappearance of the fever some days after it has disappeared, the return of the typical fever curve and of the other described symptoms. A relapse may continue as long as the first attack and, as I have recently observed, even longer. They are very disagreeable. I have several times seen such cases with two long and obstinate relapses, seriously exhausting the patient. but ending in recovery, — one of them after a critical sudden fall of the temperature. Children are unquestionably more predisposed to relapses than adults and Montmollin [34] has observed that girls are more liable to this complication than boys. These relapses may of course end fatally. The nervous forms of the fever which I have described and which are accompanied by vomiting, irregular pulse, grinding of the teeth, loud crying and very deep stupor may cause extremely great difficulty in diagnosis. These cases simulate tubercular meningitis very closely and errors can only be avoided by the most careful examination of the spleen, the appearance of the roseola, the condition of the tongue, observation of the fever curve and finally the knowledge of an epidemic or the proof of the typhoid bacillus and positive Widal reaction. The following is a case in point:

A pale, fairly well nourished, but very sick-looking boy of two and one-half years was received into the hospital with a temperature of 40.6° C. (105+° F.). During the

[31] Roemheld (Vierordts' Klinik): Jahrb. f. Kinderheilk, Bd. 48, p. 207.

[32] Rendinger: Rev. de Méd., 1900, No. 2.

[33] Jacobi: Pediatrics, viii.

[34] G. de Montmollin: Inaug. Diss. Neuchâtel, 1885.

first days of the illness symptoms similar to typhoid appeared with the exception of a slight stiffness of the neck. Suddenly, however, great restlessness and jactitation were observed, followed by loud screaming, trembling in all the extremities and a convulsive sucking motion of the mouth. The pupils reacted to light. Cyanosis and dyspnea now appeared. All these symptoms were more marked on the following day, particularly the spasmodic contraction of the muscles. Violent screaming became more frequent. The child became weaker and weaker and finally died on the ninth day after coming to the hospital, but real convulsions never developed. It is noteworthy that on the first days both ears ulcerated after paracentesis. The paracentesis did not at all lessen the nervous symptoms. Aside from the severe congestion of the blood vessels of the pia mater the brain showed scarcely anything abnormal and only a small amount of serous secretion was found in the tympanic cavity. The spleen was greatly enlarged and moderate-sized typhoid ulcers were found in the intestine. The severe nervous symptoms were undoubtedly due to the severity of the general infection.

COMPLICATIONS AND SEQUELÆ.

The frequent complications of the respiratory organs have already been spoken of. Nearly all recent investigations prove that the typhoid bacillus is the cause of the complications ,particularly the frequently observed fibrous and catarrhal forms of pneumonia and atelectasis of the lungs. Severe acute diffuse laryngitis (Lewy, Schuster [35]), largnygeal perichondritis with abscesses, ulceration of the larynx and threatening acute edema of the glottis do not belong to the complications of typhoid. Pleurisy and empyema occur in typhoid relatively seldom, at any rate more rarely than in scarlet fever. Fernet, Achard, Fraenkel and others have proved the bacillus in the sero-fibrinous exudate. Single cases of gangrene of the lung are recorded. On the part of the heart adynamic conditions are less to be feared on the part of children than in adults; however, they do occur in obstinate and severe cases and become particularly dangerous to such children as continually refuse to take nourishment. They may be easily recognized by the slight coolness of the extremities, weak, diminished or rapid and irregular heart action and by a dullness of the heart sounds, particularly the disappearance of the aortic second sound. These deserve careful attention, particularly if on account of the fever we desire to give antipyretic remedies. I have not observed so great a tendency to bleeding in children as in adults, except early in the sickness nosebleed is somewhat frequent; but this rarely becomes serious. However, when the blood is swallowed it may be vomited. Montmollin records a case of embolus of the left brachial artery in a girl eight years old, sick of typhoid, and single cases of pericarditis and endocarditis complicating the disease. I have seen thrombosis of the saphenous vein in connection with typhoid beside severe decubitus in a girl fourteen years old. These, however, are rare cases, Certain anomalies of the digestive organs are occasionally observed in the course of typhoid. Parotitis and noma may occur in this connection and while they are serious fortunately they are rare. Parotitis appears as a swelling on the side of the face in front of the ear and sometimes, but not always, goes on to suppuration. As a rule noma is fatal, but I have had the good fortune to see one such case recover.[36] The affection generally begins on the gums or the mucous membrane of the lips as a dirty yellow or gray-green coating simulating diphtheria. This gradually spreads and advances into the mucous membrane of the cheek which decays into a fetid mass surrounded by a dark infiltrated border. The destruction of tissue in the progress of the disease is enormous and the sight of the child, who spreads a pestilential fetor to a great distance, is disgusting.

Bloody diarrhea is seldom observed in typhoid of children. It does occur, however, in older children, and may become serious on account of the loss of strength caused by it. I have seen a boy six years old recover from typhoid fever complicated by severe nosebleed, intestinal hemorrhage and petechiæ of the skin. In another case the illness, accompanied by high fever and severe general nervous symptoms, came to a crisis with an intestinal hemorrhage. The temperature suddenly dropped to 36° C. (96.8° F.) and from that moment convalescence began. In another case, ending fatally, a boy nine years old developed purulent diarrhea. The autopsy showed very extensive typhoid ulcers of the colon as well as of the small intestine. Peritonitis caused by the perforation of an intestinal ulcer is rare, although Montmollin records 7 such cases of which 3 recovered. In 117 cases mentioned by Roemheld 3 died of perforative peritonitis. I have had the opportunity of seeing two such cases, a boy six years old and a girl of ten. Both cases terminated fatally. The latter case had the following history:

The girl ten years old had been severely ill for fourteen days and was brought to the hospital in a state of collapse and delirium. Everything pointed to severe typhoid fever — stupor, temperature 39–40° C. (102.2°–104° F.), weak pulse, enlarged spleen, slight diarrhea and Widal reaction, 1.60 dilution positive after two and one-half hours. On the third day after coming into the hospital she had a sudden chill and became collapsed and pulseless. Nose and tongue were cold, stools frequent and spontaneous. In spite of the use of all the known internal and external stimulants in addition to the injection of physiological salt solution, the case progressed badly. The abdomen appeared flat, the abdominal walls on their external border seemed stretched and intensely painful on the slightest pressure, area of liver dullness was enlarged. The collapse increased, the eyes became sunken, the abdomen was hard, contracted and painful on the borders under palpation. Vomiting developed and the spontaneous stools were thin, green and foul smelling. The child died the fifth day after coming into the hospital. The autopsy showed a very large number of deep typhoid ulcers, two of which had perforated the walls of the jejunum and ileum. The perforations were scarcely larger than a poppy seed or a lentil, the intestine was covered with a sticky pus and a diffuse peritonitis had developed.

Acute otitis media in the course of typhoid fever is a serious complication and leads to grave cerebral symptoms — dullness, stupor, delirium, and particularly the continued high fever. With the spontaneous discharge of pus or after paracentesis the symptoms soon disappear and the course of the illness becomes more favorable.

[35] Schuster: Archiv f. Kinderheilk., Bd. 12, p. 32.

[36] Archiv f. Kinderheilk, Bd. 13, p. 302 u. 402.

Among the further sequelæ belonging to the disturbances of the cerebral function are mania or melancholia, with chorea, tremor, paralysis of the extremities as a result of peripheral polyneuritis (Judson S. Bury [37]), followed by atrophy and diminished reaction, and aphasia. The aphasia usually appears in connection with an adynamic disturbance of the heart as described above. In these cases, as a rule, the motor form of aphasia is observed and the intended speech is indistinctly articulated. Sensory aphasic disturbances are not altogether unknown and other psychical changes sometimes take place. Deafness often occurs as a result of chronic otorrhea and sometimes without it. Purulent joint inflammation, diphtheritic coating of the vulva of little girls, skin diseases, as boils, abscesses and erythema, are also among the less commonly observed complications and sequelæ of typhoid fever. I have been able to cultivate the typhoid bacillus from the furuncles of an eight year old girl convalescing from the fever. Erysipelas is a frequent sequel and develops as in Rheiner's case from the pure typhoid bacillus or from the erysipelas coccus (Escherich and Fischl). As further sequelæ periostitis, ending in necrosis of the bones, has been described (Freund), total necrosis of one extremity (Drevitt [38]), and the already mentioned case of hydrops (Henoch). Finally, typhoid fever frequently occurs in connection with the acute exanthematous diseases or other infectious processes, as scarlet fever, measles, whooping-cough, diphtheria or membranous croup. I saw in the child of a physician during the course of two months, whooping-cough, broncho-pneumonia, typhoid fever and measles, from all of which the child recovered. With three children in one family whooping-cough complicated severe typhoid. Malaria occurs with typhoid and Russian physicians particularly (Bistrow) point to this peculiar combination. In these cases described by Bristow the abnormal fever curve could only be brought to the more regular form by the administration of large doses of quinine.

### DIAGNOSIS.

The diagnosis of typhoid fever, which is difficult in the beginning, will become easy as the case develops by making continued observations of the fever curve and by a process of exclusion. The chief diagnostic signs are the general appearance of the patient, the characteristic remittent fever, gastric disturbance, diarrhea, condition of the tongue, enlargement of the spleen, roseola and the diazo reaction. The diazo reaction is explained as follows:

Mix an equal quantity of urine and sulphonitic acid solution (sulphonitic acid 5.0; hydrochloric acid, 50; distilled water, 1,000) and add 2–3 gtt. of a solution of sodium nitrite (sodium nitrite, 0.5; distilled water, 100). Add to the above mixture ½% of ammoniac. The whole must be well shaken in a test tube and the color of the rising foam observed, and if it appears dark red the reaction is positive. The sodium nitrite solution must develop a brown vapor when mixed with a few drops of a concentrated hydrochloric acid. This test must be applied from time to time and when necessary a fresh solution be prepared.

The Gruber-Widal reaction is usually but not always another very useful help in diagnosis. I have, however, several times observed that all clinical symptoms pointed to typhoid when this reaction was lacking; nevertheless the diagnosis of typhoid fever has been made essentially easier by the introduction of this test, which it should not be forgotten is a result of Pfeiffer's discoveries. The reaction takes place to a certain extent with normal blood serum, but it is more quickly and certainly performed with typhoid serum, and above all it occurs in high dilutions. It rests upon the common observation that blood serum in a dilution of 1:60 when brought into contact with a drop of a bouillon typhoid culture twelve hours old brings about an agglutination of the bacilli which may be examined microscopically. The test is made in the following manner:

From a small puncture of the child's finger remove a little blood and let it set in a short test tube. Mix one part of this blood serum with 50–60 parts of a very opaque typhoid culture which has been in the thermostat at 37° C. (98½° F.) for six to eight hours. We then examine the mixture microscopically by means of a hanging drop and observe if the naturally lively bacilli remain quiet and form into balls. In case this fails the experiment is repeated in fifteen minutes to one hour, always leaving the preparation in the incubator. The reaction is not considered satisfactory if a large number of bacilli remain movable and single. Microscopically the agglutination can be made certain. If we leave the mixture of diluted blood serum with the typhoid culture in the incubator the bouillon shows a precipitate while the liquid has become clear.

The differential diagnosis between typhoid fever and miliary tuberculosis is often difficult and in many cases we must wait for the appearance of meningitic symptoms, irregular pulse, vomiting, constipation and finally general convulsions before we can be sure we have the latter condition. Among the feverish illnesses, pneumonia, particually in the early stage, may be mistaken for typhoid, but in this case repeated blood examination will undoubtedly greatly assist in differentiating the two diseases, as in pneumonia we usually have an increase of the leucocytes while in typhoid they exist in diminished numbers. Finally, frequent physical examination of the lungs will reveal the pneumonic center and prevent further error.

### PROGNOSIS.

The prognosis of typhoid fever of children is as a rule favorable. I have observed 88 cases in the hospital, of which 5 died, a mortality of 5.6%. In my private practice I have been more successful. This corresponds pretty closely with the experience of others. The majority of authors record a mortality of 7.8% (Steffen, 6.8%; Henoch, 7.5%; Wolfferg, 4.7%; Barbier and Herrensckmidt 8.6 and later 4.3%; Cadet, de Gassés-court, 8%; Variot and Devé, 10%; Comby, 7.26%), but there are more fatal epidemics, as Guinon reports a small series of cases with a

[37] Judson S. Bury: The Medical Chronicle, June, 1892.
[38] Drevitt: Lancet, 1890.

mortality of 17.34%. This depends upon the malignancy of the infection. The prognosis depends very materially upon the treatment and the period at which it is begun. There can scarcely be a doubt that moderate antipyretic treatment with a consideration of the complications improves very considerably the prognosis. It is interesting to compare the results in different institutions, but experience in the hospitals of Lyon, Basel, Paris and other cities proves that judicious application of the cold water treatment has reduced the death rate from 15% to 3.5%. Of course the treatment must be used intelligently. Proper diet and careful nourishment decide the prognosis in many cases as errors in diet and insufficient nourishment often affect the outcome badly. Cleansing the patient and everything coming in contact with him is of the utmost importance.

The prognosis of typhoid is affected seriously when pneumonia, parotitis or other infectious disease or even noma complicate the disease. One of my patients who died had suffered shortly before from chorea with endocarditis. In cases complicated by cerebral disturbances, deep coma, severe delirium, jactitation, severe diarrhea, the chances of recovery are very much reduced. I have had a patient four years old who died from severe diarrhea and a slow but progressive paralysis of the heart undoubtedly brought about by an error in diet; and in the case of the before mentioned boy with purulent diarrhea, the fatal intestinal affection was probably from the same cause. We have very little to fear from a decubitus in the typhoid of children.

### TREATMENT.

In even the light epidemics of typhoid fever the strictest prophylaxis must be exercised. Children should be protected from the use of infected water and food, particularly milk, and during times of danger they should be provided with drink which has been boiled and afterward cooled. It is of the greatest importance to disinfect everything coming in contact with the patient,—the washing, playthings, books, etc., —for only in this way is it possible to prevent the spread of the disease in the family. Adults who have to care for the patients must be careful to cleanse the hands. As Koch has recently very properly pointed out the slightly ill are very often the careless transmitters of the disease to others. Children are often seen who complain of nothing but diarrhea, but who later develop fever and die. These are certainly often the source of typhoid contagion and the excreta of all such cases should be carefully disinfected. Very few diseases develop more urgent therapeutic problems than typhoid fever, and the physician's resources are often severely taxed; but these are cases where his services are of decided value. The knowledge that the typhoid bacillus is the cause of the disease brings to the front the question of a specific antibacteria therapy. Experiments have been made in this department of immunisation therapeutics by means of serum or the treatment by the metabolic processes of foreign bacteria,[39] but for the practical purposes the results have not been satisfactory. For some time calomel has been a much lauded drug as a typhoid abortive remedy and on account of the tolerance of children for this medicine no mistake will be made if we use it in the early stages of the sickness. We may prescribe it in doses of 0.03 to 0.05 ($\frac{1}{2}$ to $\frac{3}{4}$+ gr.) every half hour or every two hours, provided the patient is still in the early stage of the fever. Unfortunately experience has not borne out the early reputation of the drug in this connection, and this is true in a higher degree of naphthaline, sodium benzoate, iodoform, benzo-naphthol, etc. With the knowledge that continued high fever plays an important part in the danger of typhoid the antipyretic method of treatment has the same importance for children as for adults and we have therefore in both classes of patients the two great groups of remedies: (1) The bath and the cold pack. (2) The internal administration of antipyretics, or quinine, salicylate of sodium, antipyrine, antifebrine, phenacetine, lactophenine and others. While we acknowledge the general principles of the above outline of treatment, we object to its routine application. In adults, energetic antipyretics are contraindicated under certain circumstances, *e. g.*, threatening heart paralysis, complications of the organs of respiration (pneumonia, atelectasis) and certain disturbances of the digestive apparatus (diarrhea, dysentery). These contraindications apply in a high degree to children, for we must take into consideration certain physiological peculiarities possessed by them. First of all the well known fact must be borne in mind that the sensory nerves of the skin are very irritable, and also that the reflex irritability of the respiratory centers when cold is suddenly applied to the skin is very great. These peculiarities, which are of advantage in atelectasis, capillary bronchitis and catarrhal pneumonia, are a disadvantage under other circumstances. Rapid, repeated and long-continued cooling of the skin is dangerous to children on account of the risk of overtiring the respiratory centers, but also on account of the danger that this irritation may affect other centers, particularly the motor center. It is still more important to consider the mechanical effect of the external application of cold on the heart through the contraction of the small vessels of the skin and the corresponding dilatation of the internal blood vessels. The weakened heart action brought about by insufficient nourishment or pathological changes of the heart muscle may easily lead to fatigue and heart paralysis. A similar effect may also be brought about by such remedies as directly affect the heart muscle as, *e. g.*, salicylate of sodium and most of the other antipyretics. The rapid radiation of heat from the relatively large surface of the body may easily lead to unpleasant complications. Owing to these peculiarities, therefore, the antipyretic treatment of children is like a two-edged sword,

[39] Versuche von Rumpf und Fraenkel: Deutsche med. Wochenschrift, 1893, No. 41, mit abgetöteten Culturen von B. pyocyaneus.

requiring careful use. Other factors must be taken into consideration. It must be remembered that the antitoxin which neutralizes the toxines circulating in the blood are formed under the influence of the fever; therefore, a forced cooling of the body, instead of assisting the patient, simply keeps down the high fever, prevents the elimination of toxines and does the patient injury. Each case must, however, be dealt with according to its individual needs.

Children with typhoid cannot stand very cold baths. The enormous excitement caused by the application of cold to children counterbalances the advantage we might otherwise expect to gain and dangerous collapse may occur during or afterward. The slowly cooled bath holds the fever down longer than the cold bath; therefore it is best to begin with water not lower than 25° C. and gradually reduce it to 22° C. or 20° C. (77° F.–68°F.). The child remains in the bath about five to ten minutes or till a slight feeling of chilliness appears. Before each bath a dessertspoonful of Hungarian or port wine is given. The younger the child the more careful we must be in the application of the cold water treatment. Children twelve to fourteen years old bear water of 20° C. from the beginning. The permanent luke-warm bath after the method of Riess is apparently to be recommended. By this method the child is laid upon a sheet which is spread out in the tub beneath the surface of the water and there he remains according to the height of the fever for hours or days. Children bear the cold pack very well and it may properly replace the cold bath. By this method a moderately moist sheet is spread upon a woolen blanket and the child is quickly rolled in them and allowed to remain there ten minutes. This procedure is repeated three times in quick succession, after which the patient is rubbed dry and placed in bed under a light covering. The attempt to keep the temperature almost to the normal by means of the cool bath or pack every two hours is decidedly objectionable and no one knows what mischief may be caused by it. A certain degree of fever belongs to the sickness, but excessive temperature must be treated and if possible kept below 40° C. (104° F.), but accompanying circumstances must be considered. I have never ordered more than two or three baths a day for children. If possible, limit the antipyretic treatment to the use of external means for reasons which I have more fully set forth in my brochure on antipyretics [40] Internal antipyretics are used very unwillingly, but among these preference is given to quinine, but the dose must be sufficiently large. For a child one to two years old, I use at night, within one or two hours, 0.5 to 1 gm. (8–15½ gr.). As a rule we get an excellent effect provided the stomach retains the medicine, — otherwise the same quantity is administered per rectum. A. Jacobi says he has had good success with subcutaneous injections of quinine carbamide, but I have had no experience with it. Salicylate of sodium, phenacetine and antipyrine may be very cautiously used and we may perhaps give aspirin (or pyramidon, 0.1–0.15) in doses of 0.5 gm. (8¼ gr.) two to three times a day, but all these remedies depress the action of the heart and may become dangerous to weakened children. I have seen such a result follow the rapid reduction of temperature by aspirin.

Under constant control of the thermometer, antipyretics may be administred in the above manner, but there still remains much more to do for the patient besides the reduction of the fever.[41]

Success in the treatment of typhoid depends largely upon the proper nursing of the patient. Bouillon, wine, yolk of egg with water and wine (1 yolk egg, 2 teaspoonfuls wine, 5 teaspoonfuls water), milk, cornstarch preparations, as encosine, eulactol, peptone preparations, plasmon and somatose, are among the foods that may be given. The intervals of feeding should be short, ¼–½ hour, each feeding to consist of 1 to 2 teaspoonfuls. All solid food is forbidden. For drink we may give water with a little wine or when diarrhea is present thin rice, barley or oatmeal gruel. Diarrhea is best treated with bismuth subnitrate 1 to 2 gm. (15–30 gr.), bismuthose 2–3 gm. (15–30 gr.), or with tanalbin or tanningen 0.5–2 gm. (8–30 gr.). Intestinal hemorrhage is treated with cold applications externally and internally with cold nourishment and lig. ferri sesquichlori 3–5%,or gelatine solution.

The organs of respiration require particular attention. Atelectasis and diffuse bronchitis may be treated by liquor ammonii anisati and benzoic acid. The pulse and heart sounds must be very closely watched and if the second sound weakens and a blowing heart murmur is observed in connection with a weak apex beat and irregular pulse we must omit all antipyretic remedies and in spite of the fever resort to energetic stimulation, as wine, musk, camphor, liq. ammonii succinati, caffein (Jacobi [42]) and good nourishment. Inhalation of oxygen may be used, particularly if the peripheral circulation is weak and the extremities cool.

Delirium, jactitation and stupor follow either continued high fever, cerebral complications or otitis media. In case of otitis media it is not wise to delay too long before resorting to paracentesis of the tympanic membrane. When the hyperpyrexia from the general intoxication shows itself in cerebral symptoms we must resort to antipyretic remedies and apply ice bags to the head.

It is sometimes necessary to resort to narcosis somewhat to quiet the restlessness of the patients, and for this purpose chloral hydrate is the best remedy, given in doses of 0.5–1.5 (8–24 gr.) by the stomach or rectum; or we may use the more

[40] s. Hierzu Baginsky: Die Antipyrese im Kindesalter, Hirschwald, 1901, Berlin.

[41] Respecting the application of these antipyretics I refer to the two following articles: 2 Hagenbach-Burckhardt: Baginsky. Henocksche Festschrift, p. 125, ff. 2 Demme: Jahresbericht des Jenneräschen Kinderhospitals, 1889.

[42] Jacobi: Archiv of Ped., March, 1885, and Therapeutics of Infancy and Childhood, Philadelphia, 1898, 2 Aufl., auch im Deutsch. überselzt von O. Rennert, Berlin, 1898, Springer.

recent drugs sulfonal or trional in the same dose. Morphine is prescribed rarely and unwillingly to little children and then in doses of only 0.002–0.008 ($\frac{1}{33}$–$\frac{1}{8}$ gr). The bromides have but little effect. Albuminuria requires scarcely more than alkaline waters as Vichy, Wildunger, Fachinger and others. Urotropine has a favorable effect when from the presence of pus in the urine we suspect an inflammation of the pelvis, of the kidney or the bladder and we wish to render the abundant excretion of typhoid bacteria harmless. We may give 1–1.5 gm. (15–24 gr.) per day.

Parotitis should be treated by means of ice or cold water compresses and inunctions of ichthyol ointment; but if pus develops in the gland we must make an early and free incision under strict antiseptic precautions.

Complications, as periostitis, decubitus, etc., must be treated on general surgical principles by applications of iodoform, acetic acid, corrosive sublimate, etc., and if diphtheria complicates typhoid the early use of diphtheria antitoxine must not be neglected.

During the period of convalescence it is particularly important to watch carefully the action of the digestive organs. If during this stage of the sickness the tongue becomes again coated and the patient develops a slight diarrhea, heaviness in the region of the stomach and a return of fever it will be necessary to diminish the quantity of the nourishment till these symptoms are past. We must be exceedingly careful in passing from a liquid to a solid diet and particularly to a meat diet. It is not safe to give meat for at least a week after the temperature is normal. Bouillon, beef tea, fresh meat juice with a little wine, Scholl's Puro, Valentine's or Brandt's meat juice, Rosenthal-Leub's meat solution, peptone preparations and well prepared leguminous soups will render a meat diet for some time quite superfluous even in very debilitated children.

## THE FINSEN LIGHT CURE.

BY H. JOHN STEWART, M.D., CHICAGO, ILL.

HAVING read and heard so much about the Finsen Light treatment in the cure of disease, I decided in April of this year to make a personal investigation to see and learn for myself if it was true that such diseases as lupus and rodent ulcer could be cured by light. I visited several institutions where the Finsen Lamp was in operation. In Manchester, England, in the Salford Skin Hospital, they had a Finsen Light department under the supervision of Professor Brooke, who informed me they were unable to treat half the sufferers who applied for treatment, and they had solicited, by public subscription, $125,000 for the erection of a new hospital for skin diseases, where they would be able to enlarge the "light department" so at least two hundred people could be treated daily, as there were people on their waiting list whom they would be unable to treat, with their present facilities, for an indefinite time. Professor Brooke was most enthusiastic over the wonderful results they were obtaining there.

I next visited the London General Hospital of London, England, and found they were just completing an immense light department that had been established by the present Queen of England, then Princess of Wales, in 1900, who presented the first lamp at that time, and as it was found to be far too inadequate, she had just given a second lamp, and Alfred Harmsworth had also given $50,000 for the perpetual endowment of another Finsen Lamp in this department, and they were then building a platform to receive the king and queen, whom they expected to come June 11 to dedicate this new department, and even with these increased facilities, I was informed by Professor Sequirey there were patients on the waiting list who were unable to receive treatments.

I next visited the Light Institute at Copenhagen and found that all the statements that had been made regarding the Finsen Light were not in the least exaggerated. I had the pleasure of meeting and studying under Professor Finsen himself and was extended every courtesy by Professor Finsen and his assistants at this institution. He seemed very much pleased to describe in the minutest detail the apparatus, treatment, etc., and gave me a detailed history of the Finsen Light.

The Finsen Light is a large, specially constructed arc lamp of 20,000 candle power, or twenty times stronger than an ordinary street lamp, and uses from sixty to eighty amperes of current. This lamp burns a specially made carbon which can only be procured at Copenhagen. In the upper holder is a large carbon, while a smaller one is used in the bottom holder; when properly adjusted for arcing a maximum number of violet and ultra-violet rays are produced. The advantage of the Finsen Lamp over others is in the greater number of violet rays produced. The Finsen Lamp produces a much greater number of chemical rays than sunlight, as the atmosphere absorbs a large percentage of these rays. The light is so intense it is impossible to look at it with the naked eye and it is necessary for all the attendants and patients to wear dense smoked glasses while the lamp is in operation; an aluminum hood about two feet wide surrounds the lamp, which hood is fringed on its lower border with a deep crimson-colored paper skirt to further aid in excluding the diffused light from the patients.

The concentrated rays are carried from the arc to the patients through four telescopic tubes, known as converging tubes, suspended at an angle of forty-five degrees, the tubes containing a series of rock crystal lenses so arranged that reservoirs for running water exists between them. By means of the water screen and rock crystal lenses, all rays but the violet are eliminated, and these rays are converged and concentrated, thus vastly increasing the healing and bactericidal effects.

The heat from the original arc is so intense that to prevent cracking of the lenses and discom-

fort to the patients a stream of cold water is kept constantly circulating through the reservoirs or water screens.

To further concentrate and cool the rays a compressor is provided which consists of two rock crystal lenses so arranged that a chamber for running water exists between them. This part of the apparatus is used to compress the affected area and make it bloodless during the treatment, thus facilitating deeper penetration. The Finsen arc light has been used with marked success in curing many skin diseases, thought until this time incurable, especially lupus and rodent ulcer. During a period of six years the Finsen Medical Light Institute at Copenhagen has grown from a very small shed, where they were only able to treat one patient at a time, to a magnificent institution where they are now treating three hundred people daily, and light institutes have been established in London, England; St. Petersburg, Russia; Paris, France; and Chicago, Ill., where they are all carrying on a similar work to the parent institution.

It has been a popular belief that lupus was a very rare disease and common only in the northern countries, and although it was supposed there was no lupus in London, yet the hospitals are now treating 175 daily, and the management was compelled to install two more lamps and build a separate department, so great has been the demand from people seeking relief. Lupus was considered very rare in the United States, but since the establishment of the Finsen Light Institute in Chicago, the author is informed they have been taxed to their utmost capacity, and they, too, have found it necessary to increase their facilities, as there are now patients on the waiting list who are not able to receive treatment. It seems but a question of a short time until light institutes will be established in every large city in America, because it has proven so efficacious in many other skin diseases, besides lupus and rodent ulcer, such as acne, alopecia, areata, localized eczema, chronic ulcers and nevus. The treatments are given while the patients recline on couches. By firm pressure with the compressors on the tissue to be treated, the blood is removed and more heat can be borne and deeper penetration produced; this compression has another important advantage in that the bactericidal effect is greater because it has been shown that the corpuscles absorb a considerable portion of the rays and thus prevent deep penetration.

The affected area is placed about ten inches from the distal end of the converging apparatus, and the treatments, or seances as they are called, take about one hour daily in lupus and rodent ulcer, and in other skin diseases from ten to twenty minutes, depending upon each individual case.

The results attained have been hardly less than marvelous since from carefully compiled statistics covering a series of over eight hundred cases of lupus treated at the Finsen Institute an overwhelming percentage of cures and an insignificant number of failures is shown, and Professor Finsen goes so far as to say that in lupus vulgarus cures can be obtained in 97% of cases, even where the whole face is involved. In these eight hundred patients, with ages ranging from five to seventy-four years, the average duration of disease was eleven years. This treatment has an advantage over the X-ray in that there is no danger of burning and consequent sloughing. With the light treatment we are dealing with a known quantity, while with the X-ray we have an unknown quantity of uncertain action.

The light treatment causes no pain; a red erythematous spot and blister appears where the light is applied, and in five or six days the scab falls off and the ulcer is healed beneath, and the skin is left free from scar or cicatrix, but red, the redness, however, after a variable period fades and leaves the skin white and uncontracted, except where there has been a loss of tissue from the disease before treatment.

In conclusion, the author would state that the possibilities for the light treatment in the curing of diseases are still unknown, and believes in a limited time it will take an exalted position in the field of medicine and surgery.

## Reports of Societies.

### THE OBSTETRICAL SOCIETY OF BOSTON.

Meeting of Oct. 20, 1903; the president, Dr. J. B. Swift, in the chair.

Dr. Malcolm Storer read upon

SOME QUESTIONS RELATIVE TO EXTRAUTERINE PREGNANCY, WITH ESPECIAL REFERENCE TO TUBAL ABORTION.

Dr. F. H. Davenport: Curiously enough I have had very little personal experience with extrauterine pregnancy and any opinions of mine are based rather upon general principles. As to the question of operating when the patient is in a condition of shock I must say that on the grounds Dr. Storer has outlined I would feel it much safer to operate than to wait till the patient reacts.

Dr. J. L. Hildreth: The dangers of waiting have been borne in on me by experience. It seems to me that waiting is not as good surgery as immediate operation.

Dr. F. A. Higgins: While I am by no means in favor of the vaginal operation for this indication, it has so happened that I have recently performed it on three separate occasions, the patients being in such condition that apparently it was merely a question of draining pus cavities. I shall report the cases later at length. As to the question of the after history of such cases I have under my care now a patient whom I delivered two years ago. Next year she had an extrauterine pregnancy and is now four months pregnant normally.

Dr. G. O. Clark: I have seen in my service at the Massachusetts General Hospital eight

cases. In all the blood count gave 15-20,000 whites and this question of the blood count seems a very important one. There is now in the hospital a case that presents an interesting abnormal symptom, *viz.*, a pulse of 76, although the white count is over 20,000. She has had amenorrhea for three months. The first symptom of trouble was a sudden sharp pain in the lower abdomen yesterday without apparent cause.

DR. J. G. BLAKE: My feeling would be to operate in every acute case, while recovery in the chronic cases seems as frequent when they are not operated upon. So seeing for the first time a case some time after rupture I should probably leave her alone.

DR. G. J. ENGLEMANN: I should like to speak of one point, though it is of no great practical importance, as it means operation either way. I think Dr. Storer did not call attention to the possible confusion of a ruptured right tube with appendicitis. In each case the location of pain is about at McBurney's point, the symptoms are practically the same. I published a case in 1891 where it was quite impossible to tell the conditions apart.

DR. F. S. NEWELL: With reference to the question whether it is better with a living child to attempt to remove the placenta or attach the sac to the wound and allow it to separate of itself I recall a case I saw operated upon where the attempt was made to remove the placenta. The hemorrhage was so great that she died some twenty-four hours later. My feeling is that if the placenta is attached to the mesentery or intestine it is better to leave it.

DR. J. B. BLAKE: In deciding whether to operate at once or to wait, the whole question turns of course on whether the bleeding has stopped or not. I remember some three years ago Dr. Cabot raised the question whether there were any constant variation in the blood that would decide this question. At the time we were unable to find anything that was reliable. I remember that at that time certain foreign observers had said that operation with hemoglobine less than 30% practically meant death, yet I remember several cases that were successfully operated upon with a smaller percentage than thirty.

DR. J. B. SWIFT: Bearing on the question of normal pregnancies following extrauterine I have a patient whose first pregnancy was ectopic. She has had four normal ones since then. In the case of an extrauterine pregnancy at full term with a live child the child should be given every consideration. If it is dead the mother's interests are of more importance and it becomes a question of when it is best to interfere. In a case I reported some time ago I waited six weeks after the death of the child, watching the placenta gradually grow smaller. When I finally did operate it was quite easy to remove child and placenta. We do not know after just what lapse of time the removal of the placenta becomes a simple matter. In my case it was so after six weeks.

DR. ALFRED WORCESTER read a paper entitled

OBSTETRICAL NURSING.

DR. F. A. HIGGINS: Dr. Worcester has given us a paper that we might discuss at considerable length. I do not suppose he expects us to agree absolutely with him in all things. I should take issue with his first statement that he considers the nurse as of more importance in a normal case than is the physician. I should also dissent from some of the educational features that Dr. Worcester would supply, not from any feeling that the nurse would be over-educated, but because I think they are impracticable. I agree entirely that all hospitals should give at least some education in obstetrics.

DR. G. H. WASHBURN: A most important matter in training is that the nurse should be taught to look after her patient from the home point of view rather than the hospital point of view. Hospital methods are not adapted to home needs and often the best hospital nurses are complete failures when they try home nursing. Most hospital nurses have to pick up this knowledge of the difference between hospital and home needs as best they can and it certainly would be a great advantage if to their scientific knowledge there could be added some instruction in home nursing. It is only when a nurse can accommodate herself to household conditions that she can do her whole duty.

DR. A. K. STONE: I am very glad to hear Dr. Worcester has come round to acknowledge that there are grades in nursing — that some should have some training and some more — he did not always hold this view. In a discussion like this we must consider the grade of nurses that we aim at turning out. The great trouble with the training schools is that they aim at turning out nurses fitted to go into the families of the very rich. We are now coming, however, to recognize the fact that there are large classes of society who cannot afford to pay for nurses such as the product of our training schools hitherto. The large hospitals have come to the point when they have recognized that they must add to their curriculum many things hitherto excluded. Up to quite recently, however, there has not been by any means the cordial response on the part of obstetricians that would have been desirable.

DR. H. T. SAWIN: One of the things that should be most strongly borne in on nurses is that they must learn to accommodate themselves to the servants they find in houses. This they get no idea of in the hospitals. I would like to ask Dr. Worcester whether he would be willing to take a nurse's word that the first stage of labor was progressing normally.

DR. NEWELL: I do not think it is the nurse's province to say whether a pregnancy is progressing normally.

DR. J. J. PUTNAM: I sympathize with much of what Dr. Worcester has said which I recognize is part of his general view of raising the standard of nurses. It does not seem to me quite clear what chance a nurse has of ever recouping

herself for all the time and money she has spent in getting an education such as the reader would have them have. I do not fear the nurse's assuming too much responsibility and taking the doctor's place under such conditions. If the doctor finds some of his occupation as a nurse gone he will surely find other fields.

Dr. E. Reynolds: I still see some cases of obstetrics in consultation and the mistake that seems to me to stand out most prominently is dilatoriness and neglect of physiological conditions until they become pathological. The modern trend of thought is that labor must be helped in some way. The average man subjects many patients to unnecessary suffering from lack of small aids in the earlier stages.

Dr. J. G. Blake: The point of the paper that impresses me most strongly is the necessity for a school of midwives. In our smaller towns we need a certain number of educated midwives and in our cities too they would be most valuable. The Italians, for instance, depend largely on midwives. I have seen many bad cases of sepsis among them due to the ignorance of the midwives they were forced to employ.

Dr. Englemann: The questions that the reader has brought up are extremely important. We are now to face face with the peculiar condition that in midwifery the mortality is greater in private practice than it is in hospitals. This is partly due to lack of proper nursing. The question is how to obtain that nursing. A very small proportion of people can pay for nurses such as the reader suggests. The foreigners who cannot possibly pay three dollars a day for a nurse have a right to proper care and any move that will replace the midwife whom apparently we are going to lose is a move in the right direction.

Dr. Worcester: In summing up I can only say that I am sorry Dr. Higgins refuses to assent to my proposition that in normal cases the nurse is more important than the doctor.

I cannot claim the honor of conversion that Dr. Stone ascribes to me. I must have failed to make myself plain, as I have changed my views in no way. I see no hope whatever in attempts at educating a low grade of nurses. I agree that the proper education of midwives would be a most excellent thing, but I feel that their day is past. Their place, can, however, be taken by a system of visiting student nurses who will know when to call in help. I believe it is perfectly possible to educate the nurse to the point of recognizing when the time has come to call in help.

I am living in a community where no woman, however poor, has not a nurse when she is confined — women who never in their lives before had a doctor on such occasions. This is accomplished by the student nurse system, she working under a competent superior. I cannot help thinking that much of our difficulty of coming to an agreement comes from our not recognizing the great differences between the classes of patients nurses are called upon to attend. The rich can have the finished product — the poor can have the student nurse, who will eventually be much better trained than the finished nurse of to-day. Is it or is it not an advantage to the people at large to have the whole business of midwifery in the hands of physicians? There are not enough self-sacrificing doctors to do this as it should be done among the poor. The student nurse will. I believe if there is a large body of well-trained student nurses, ready to send for help at the proper time, it will be a great gain to both the community and the nurses themselves, and, furthermore, such student nurses eventually will become thoroughly equipped obstetrical nurses.

## AMERICAN PUBLIC HEALTH ASSOCIATION.

Proceedings of the Thirty-First Annual Meeting, Held at Washington, D. C., Oct. 26, 27, 28, 29, and 30, 1903.

(Continued from Vol. CXLIX, No. 27, p. 739.)

### HUMAN AND BOVINE TUBERCULOSIS.

Dr. M. P. Ravenel, of Philadelphia, made some remarks on this subject. During the past year, interest in the question of the relation between human and bovine tuberculosis, has been unabated, and several papers of interest have been published bearing on the subject. In America, Drs. Theobald Smith and Gideon Wells had isolated cultures of the tubercle bacillus from human sources having the characteristics and virulence of the bovine organism. A number of new cases had been reported of accidental infection of man by bovine material, the most important of which was that of Troje, which appeared able to withstand the most severe criticism.

A young butcher in good health, and with no hereditary taint, wounded his left forearm slightly while working on a tuberculous cow. The wound healed under treatment, but six weeks later showed signs of inflammation, and a tubercle formed on the internal face of the elbow. There were two small fistulæ on the forearm and enlargement of the ulnar and axillary lymph glands. A month later the middle forearm was covered with granulations which steadily increased in area, and, in spite of treatment, at the end of two months assumed the character of lupus. Histological examination at this time proved the tuberculous character of the disease. Two years after the injury Troje found an abscess which extended into the deep muscular layers. The pus contained tubercle bacilli and the tissues showed typical tuberculous lesions. Some months after the glands of the left axilla and subclavicular space were extirpated and proved to be tuberculous. All possibility of infection from human sources was excluded by Troje.

Much interest attached to the report made by the Commission of the Imperial Sanitary office of Germany. In all their tests pure cultures were isolated and used for inoculation. Cultures

were obtained from 39 sources, 23 of which were adults and 16 children. There were 19 cases of pulmonary tuberculosis, 4 cases of bone tuberculosis, 2 cases of cervical adenitis, 1 case of genito-urinary tuberculosis, 6 cases of miliary tuberculosis and 7 cases of the digestive tract. Of the 39 cultures examined, 19 produced no lesion in cattle, 9 caused a slight enlargement of the glands of the shoulder, without tendency to generalization, 7 a somewhat more marked involvement of this gland, while 4, all obtained from children, caused a generalized infection. Two of these 4 cases were described as miliary tuberculosis, beginning from a bronchial adenopathy and a mesenteric adenopathy respectively, while the remaining 2 cases were cases of intestinal tuberculosis. The cultures from the two last showed a very intense virulence for calves. The Commission pointed out that 2 of these 4 children did not die of tuberculosis, hence it was concluded that in only 2 out of 39 cases were they able to say that infection with the bovine tubercle bacillus had caused fatal tuberculosis in man.

PROFESSOR ORTH placed a different interpretation on these results. He held that the seven animals which showed marked involvement of the lymph glands of the shoulder should be considered as infected with human tuberculosis; that the infection was not more grave proved only that in cattle as in man, tuberculosis might undergo spontaneous cure. Of the 39 cultures studied, 11, or 28%, were virulent enough to infect cattle.

The author felt that the genetic unity of the human and bovine races of tubercle bacilli, as well as their inter-transmissibility, had been definitely demonstrated. It had also been proven that a certain proportion of persons, chiefly young children, met their death through infection with the bovine tubercle bacillus, but the knowledge at hand did not enable him at present to define the extent of this danger.

### CHARACTERISTICS OF THE STEGOMYIA FASCIATA WHICH AFFECT THE CONVEYANCE OF YELLOW FEVER.

DR. H. R. CARTER of Baltimore, Md., read a paper on this subject.

Among the special characteristics of the Stegomyia which affected its role as a carrier of yellow fever are:

(1) Its distribution.

This is, generally, between Lats. 43 N. and 43 S. on the coasts and low plains of Africa, Asia and the adjacent islands; Australia and the Mediterranean basin of Europe.

It is also general on the eastern coast of America from 38 N. to 35 S. Lat. On the west coast it is found at Panama and Guayaquil and its existence is implied from Guayaquil to Acapulco.

In the United States it is general on the coast and low plains of the Southern States, except Maryland.

(2) That it is conveyed by vessels indefinite distances (from Cape Town to Savannah Quarantine); in much greater numbers and more often by sail than by steam vessels.

(3) That it lives a long time — one hundred and fifty-four days being recorded by Guiteras of an infected insect.

(4) That once having acquired the power of transmitting yellow fever it retains it apparently as long as it lives — fifty-nine days being recorded.

A consideration of the four postulates above will render it advisable to safeguard the tropical countries of the east when communication is opened up between them and American ports infected with yellow fever, preferably by freeing the American ports of yellow fever.

(5) That it propagates preferably in artificial containers, but will propagate in pools where such containers are not available.

(6) That in America it has been reported only in the vicinity of human dwellings and seems here not to be a sylvan, paludal or campestral mosquito.

From (5) and (6) the war against this insect in America should be waged about the houses of men, and especially against water in artificial containers. The introduction of a water supply, piped to every house so as to do away with cisterns and water jars, is the most important measure of sanitary engineering to free a town of this mosquito. Next to this is a system of drainage by covered drains to carry off the rain water and prevent pools. Cesspools are not objectionable on this score.

It unquestionably hibernates in the United States either as adult, larva or egg, but if the infected adult hibernates, either a very large proportion of them die, or else the infecting parasite must generally die in the hibernating mosquito. The first seems more probable.

(7) It is essentially a house mosquito, and is inclined to stay about the premises where it has fed. Hence the greater safety of the wholesale district of an infected city as compared with the residence portion.

(8) It does not feed in the dark or in bright sunlight. Therefore, in bright daylight or at night without artificial light are the safest times to be in an infected place.

(9) The cycle of the yellow fever parasite in the mosquito before it can be conveyed to men is generally, in hot weather, about fourteen days or over. Prior to the accomplishments of this cycle (once called the " extrinsic incubation of yellow fever ") the mosquito cannot convey this disease.

(10) It is probably usually conveyed aerially less than 100 yards. In Havana the infected insect is believed to be never aerially conveyed 250 fathoms — 1,500 feet — from the Havana shore.

The direction of the prevailing wind during the day influences its aerial conveyance.

### THE EFFECT OF LEMON JUICE IN THE MIXTURE KNOWN AS LEMONADE UPON TYPHOID POLLUTED WATER.

DR. WILLIAM G. BISSELL, Buffalo, New York, presented a paper on this subject. The investi-

gation, he said, was prompted by a newspaper statement purporting as coming from a board of health in one of the leading American cities, that lemon juice in lemonade would render typhoid polluted water safe for drinking purposes. Three different methods of testing were tried: (1) By infecting water with typhoid and adding lemon juice. (2) Infecting glass rods with typhoid and placing them in lemonade. (3) Infecting silk threads and placing them in the lemonade. Culture tests with the first method were faulty. The conclusions drawn were: (1) That lemonade cannot be depended upon in this rôle. (2) That this method of sterilizing typhoid polluted water should be discouraged.

AN EMERGENCY CULTURE MEDIUM FOR USE IN THE ROUTINE DIAGNOSIS OF DIPHTHERIA.

Dr. William G. Bissell, Buffalo, New York, stated in this connection that not infrequently laboratories will run short of their amount of Loeffler's blood serum. The following mixture can be prepared inside of three hours and answers as a good substitute: two parts whole eggs, thoroughly beaten up and 1 part of the 3% dextrose bouillon. Material after being solidified can be autoclaved at 6 pounds pressure.

REPORT OF COMMITTEE ON BACILLUS TUBERCULOSIS IN MAN AND ANIMALS.

Dr. Mazyck P. Ravenel of Philadelphia said that in summing up the available evidence, the Committee felt that there was strong ground for believing in the genetic unity as well as the intertransmissibility of the human and bovine races of the tubercle bacillus.

They considered that it had been positively proven that a certain proportion of persons, chiefly young children, met their death through infection with the bovine tubercle bacillus, but the knowledge at hand did not enable them at present to define the extent of this danger.

STUDIES OF MEDIA FOR THE QUANTITATIVE ESTIMATION OF BACTERIA IN WATER AND SEWAGE.

Mr. Stephen D. Gage and Mr. George O. Adams of Boston, Mass., offered a joint paper which stated that in a report from this laboratory at the Buffalo meeting, figures were presented showing that by simplifying the usual culture media, higher counts of bacteria may be obtained, and that the counts on a new medium, Nahrstoff agar, were much higher than on the usual media. These studies have been continued, and while not completed, certain points are presented for consideration. In standard gelatin or agar, the beef broth is the most fertile source of variation, the amount of the nutrient matter in beef-infusion made by the usual method varying through wide limits. Of the two best-known commercial peptones, Merck's and Witte's, higher bacterial counts are obtained on media made with the latter. Studies of plain agar made with the various kinds of natural water show that in the majority of cases the bacteria naturally present in the given water will develop in greatest numbers in a medium made with the same water. The salts naturally present in commercial agar have a detrimental effect, greater numbers of bacteria developing on media made with agar from which the natural salts have been washed out. Greater numbers of bacteria will develop on media made without glycerin than on the same media containing glycerin. With pure cultures of different kinds of bacteria on standard gelatin, agar or "Nahrstoff" agar the highest counts were obtained, with the species studied, on gelatin and the lowest on "Nahrstoff" agar. A reduction of the amount of "Nahrstoff" in "Nahrstoff" agar from 1% to .5% results in a considerable increase in the bacterial counts with various waters. When cooked in acid or alkaline solution the albumoses of "Nahrstoff" undergo certain changes in composition which render them better food material for bacteria than is the commercial product.

Studies of the efficiency of water filters in removing bacteria when estimated by counts on different media show that there is a considerable variation between the various media, the ratio between the numbers of bacteria in the raw water and in the effluent being affected by the period of incubation, the reaction and the composition of the media. With standard gelatin and Lawrence agar the ratio was less variable between different lots of gelatin.

The writers recommend that a standard nomenclature be adopted for the various culture media, the names used to express, as far as possible, the composition of the media.

(*To be continued.*)

## Recent Literature.

*A Text-Book of Operative Surgery, Covering the Surgical Anatomy and Operative Technique involved in the Operations of General Surgery.* Written for students and practitioners. By Warren Stone Bickham, M.D., Assistant Instructor in Operative Surgery, College of Physicians and Surgeons, New York; Late Visiting Surgeon to Charity Hospital, New Orleans, etc. Philadelphia. New York, London: W. B. Saunders & Co. 1903.

This book is planned to present to the student and practitioner the surgical anatomy and technique involved in the operations of general surgery; to present in these operations the best technique of modern surgeons with a brief summary of the descriptive and surgical anatomy of the structures involved.

The volume is divided almost equally in two Parts:

Part I. The operations of General Surgery. This includes the operations on the arterial, venous, lymphatic, nervous, osseous, and muscular systems, joints, tendons, ligaments, fasciæ, bursæ, amputations and excisions.

Part II. Describes the operations of Special Surgery classified by regions anatomically, *viz.*, operations on the head, spleen and spinal cord, neck, thorax, abdomino-pelvic, male and female genital organs, hernia.

The author considers that operative surgery is largely applied anatomy ; that operative technic is more or less perfect as the knowledge of surgical anatomy and its application during actual operative work is more or less perfect. For this reason surgical anatomy is a conspicuous feature.

In the arrangement of the work in presenting each group of tissues or operations (Part I), or each organ (Part II), the following system is adopted : (1) Surgical anatomy of the region or organ. (2) Surface form and landmarks. (3) General surgical considerations. (4) Instruments required. The above being introductory to specific operations, which latter are considered under the following headings : (1) Title of operation. (2) Description of operation (including its general indications). (3) Preparation of patient. (4) Position of assistant. (5) Landmarks of operation. (6) Incision for operation. (7) Steps of operation. (8) Comments.

In the description of technic the " Incision " receives a separate heading to emphasize its importance. Under " Operation " the various steps are given in paragraphs marked by numbers in heavy type, each paragraph indicating in a general way some change in technique or stage of the operation. The name of the originator of an operation when known is given with its title.

The clinical aspect of the subject is only briefly considered and as a rule with the general consideration of a group of operations rather than specifically in connection with each individual one.

The book is a handsome octavo volume of 984 pages illustrated by 559 excellent cuts which are practically original, and reproductions of specially hand-made drawings. They are well chosen, show unusual clearness, many also great artistic skill. It is satisfactorily illustrated.

Again the author has confined himself strictly to his title, viz., operative technique of general surgery and the operations of specialties, as well as the general considerations usually presented under the title of " Principles of Operative Surgery, Anesthesia, etc.," have been ignored. It is strictly a manual of operative work.

The specific arrangement of the subject is apparently original with the author. It is an excellent one and is systematically observed throughout the volume. The surgical anatomy is fully but concisely given with the operative details. The list of operations selected is a full one and includes practically all those at present in practice, even the most recent. It is fully " up to date " and represents the work of the most noted modern surgeons.

One feature is noted which might perhaps save mental effort on the part of the reader in connection with the illustrations. An illustration is much more readily understood if the explanatory notes are directly connected with it rather than referred to by number or letter. The former method is more graphic and has been adopted with advantage by some of the best books on operative surgery, notably Kocher's.

Taken as a whole the book is distinctly a valuable contribution to surgical literature. It represents a vast amount of careful work and technical knowledge and Dr. Bickham indeed has merited praise and congratulations on the success of his efforts. It is an interesting, instructive manual to the student, and one which he will find quite " solid " reading ; while for the surgeon in active practice it forms a valuable résumé of operative work.

*A Textbook of the Diseases of Women.* By THOMAS A. ASHBY, M.D., Professor of Diseases of Women in the University of Maryland; Consulting Gynecologist to the Mt. Hope Asylum, to St. Agnes Hospital and to the Hebrew Hospital of Baltimore, etc. pp. 661. 233 illustrations. Baltimore: Williams & Wilkins Company. 1903.

As setting forth the personal experience of the author this volume has a certain definite value to the practitioner of medicine; as a textbook it does not reach the high standard of the best of the recently published works on this subject.

A narrative style, an absence of logical arrangement of subjects and crude illustrations give the book the appearance of an amplified syllabus of lectures to students rather than a carefully arranged, comprehensive treatise.

Figure 207, page 576, marked " The Miculitz Drain " (an unusual spelling of Mikulicz, by the way) does not show the gauze handkerchief, and the cord extending through the center of the gauze packing is apparently attached to nothing at the bottom of the pelvis.

In the description of Emmet's operation for laceration of the perineum, page 243, the author inserts a figure taken from Emmet's " Principles and Practice of Gynecology," published in 1884, illustrating Emmet's first operation, now long since discarded by its originator. It is not surprising that the original figures on the succeeding pages give an erroneous impression of the modern Emmet operation. Presumably the printer is to blame for the legend under figures 108 and 109, page 244, which reads, " Emmet's Operation for Complete Laceration," as the figures depict incomplete laceration.

Few modern authors think it necessary to insert in a textbook a diagrammatic representation of the " perineal body," page 31, and we seldom find nowadays a chapter on " Pelvic Hematocele."

The William & Wilkins Company have produced a well-bound book, printed in clear, large type, on heavy paper.

THE BOSTON

# Medical and Surgical Journal.

THURSDAY, JANUARY 7, 1904.

*A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.*

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## THE TRANSMISSION OF PLAGUE.

A further valuable statement on the question of the transmission of plague comes from the Board of Health of Sydney, Australia, being the official report for 1902. In a previous contribution to the subject Dr. J. Ashburton Thompson, chief government medical officer at Sydney, maintained that the epidemic of plague in 1900 was caused neither by direct communication with the sick nor by dispersion of infected articles nor by place infection. The report before us confirms and amplifies the results then obtained.

Regarding the relation of the rat to the spread of epidemic plague evidence heretofore gathered goes to show merely that both the rat and man are susceptible to an identical infection. It is merely a matter of conjecture that plague is primarily a disease of the rat, that it is ordinarily communicated from rat to man, and that man and the rat under ordinary conditions are reciprocally infective. In other words, the coincidence of the appearance of the disease in man and in rats has been observed, but the causal relationship has not hitherto been established. In the report of 1900 it was held as a justifiable hypothesis that plague-rats constituted the sole source of infection. Further investigation seems, however, to have shown that given plague-rats and man with the disease, it is necessary to find an intermediary host capable of conveying the infective agent from rat to man. It is a far-fetched supposition that the infection might be directly conveyed from the rat to man.

In the report of 1900 it was noted that Simond had suggested two years before that the intermediary might be furnished by the flea or bed-bug. The evidence, however, at that time, was not sufficient to establish this claim, which later investigation has shown to be worthy of serious consideration. The steps by which this conclusion was reached form an interesting study in the investigation of epidemic disease. It was found, when special attention was attracted to the matter, that, although the presence of plague-rats appeared necessary to human infection, contact with these rats was certainly not necessary. It was forthermore shown that plague-infected rats in a building did not lead in many instances to infection of the inhabitants. It was likewise observed that when plague-rats and plague in man occurred simultaneously it was usual for but one person of the household to be attacked. On the other hand, it was noticeable that persons coming together in the same place of employment, though living in widely separated localities, were likely to be infected in common.

Admitting the necessity of a penetration of the human epithelium in order that infection might take place, it followed from these observations that an intermediary host would explain the incidence of the disease under the conditions named. The flea best answered these requirements. Granting this, it appeared that many of the difficulties of interpretation of the spread of the disease were removed. It was found also that the species of fleas which infested rats did not infest man, but that they had no repugnance to him. They will feed on human blood if hungry. This also explains the fact that several, although not all, persons under the same conditions may be infected. The flea, having left the plague-rat, may on the one hand never reach a man, and on the other may reach him at a time when its hunger is not sufficient to induce it to bite an unaccustomed host.

From the foregoing observations Dr. Thompson is led to conclude that Simond's hypothesis of the flea as intermediary host best explains the phenomena of plague as seen at Sydney. In reaching this conclusion he maintains rightly, we think, that he is offering certain facts of observation which strongly tend to uphold his opinion. Much naturally remains to be done before the hypothesis may be unreservedly accepted. For example, it is desirable to show that the flea may be able to communicate the virus many hours, or even days, after it has received it, a matter which may be determined only by direct laboratory experimentation.

The advice given in 1900 as to the manage-

ment of epidemic plague is repeated with renewed significance in this report. It runs as follows:

"The promise of safety for the future lies neither with attempts to prevent the importation of plague-rats (which must fail from time to time), nor with attempts to exterminate the rats infesting the locality to be defended (which we have learned is practically impossible), though both of these measures have their valuable uses, but in habitually excluding rats from inhabited premises. This, manifestly, is a defence which can be set up successfully by local authorities; it requires persistent effort, but involves hardly any expenditure of municipal funds."

This most suggestive investigation is of a part with several which have appeared within the last few years regarding the transmission of epidemic disease. It bears a striking analogy to the studies recently made on so-called spotted fever, in which the gopher and the tick were shown to take part in the transmission of the infection. Such an explanation as this offered by Dr. Thompson concerning the spread of plague seems eminently reasonable from our present point of view, and will no doubt in a very short time be adequately substantiated or definitely disproved.

## REPORT OF MASSACHUSETTS HOSPITAL FOR EPILEPTICS.

THE report of the Massachusetts Hospital for Epileptics, dated 1904, is before us. During the comparatively short time of its existence this institution has been doing an increasingly active work in the care of epileptics in this state, and there is now reported a steady advance in the amount of property held and in capability of caring for the inmates. The work of the hospital has increased to such a degree that a third assistant physician has been appointed.

In addition to completing and furnishing several buildings, it has been possible to purchase a farm of three hundred acres located on a hillside directly opposite the present buildings. It is proposed to erect on this land two suitable buildings for the accommodation of sixty patients who are to be separated from the others to do the special work of the farm. This plan will also avert the overcrowding of the present buildings, which is always imminent.

The number of patients in the hospital for the year ending Oct. 1, 1903, was 45 in excess of the preceding year, an increase of about 12%. This has led to a certain overcrowding, and the trustees in their report protest firmly against the unfortunate increase in the number of patients without a corresponding increase in accommodation. They maintain, rightly we think, either that proper accommodations be provided or else that patients should not be admitted, a policy which has not always been carried out in the institutions in this state.

Attention is also called to the fact that no adequate provision is at present made for epileptic children now in the state. Although no definite decision has as yet been reached, it seems probable that the trustees will decide that it is advisable to provide for these children at this institution. No further appropriation is asked this year beyond the ordinary one required for the current expenses of the institution, on the ground that the trustees consider it desirable to complete and perfect work already undertaken rather than burden themselves with an immediate enlargement of its scope. The admirable work which this institution is doing in caring for one of the most unfortunate classes in the community should be generally known. In addition to merely caring for the bodily needs of the patients, systematic investigation of a high chracter is being prosecuted, which will undoubtedly in time lead to conclusions of positive value regarding the care and treatment of the disease. We note in the report that a laboratory is recommended. This certainly should be provided in the interests of present and future patients and of scientific medicine at large.

## DISTRIBUTION OF INSANITY.

DR. WILLIAM A. WHITE, Superintendent of the Government Hospital for the Insane at Washington, has recently made a statistical study of the distribution of mental disorders in this country. In making his investigation he has apparently not been led by the usual methods, has had no preconceived ideas, and has allowed the facts which he has observed to speak for themselves. Particularly in the study of the causes of mental alienation he very correctly thinks that the subject is far too complex to be elucidated by mere statistical inquiry. Temperature, altitude and physical factors generally are not sufficient to give an explanation.

It appears from his study, published in the *National Geographic Magazine*, that New England has more insanity in proportion to population than any other part of the country, and that the

proportion grows steadily less as one goes either South or West, with the one exception that the Pacific Coast states show a proportion almost as high as that of New England. Leaving out of account this exception, Dr. White finds that the cause of the fact is to be sought in density of population and in the general struggle for means of subsistence, together with the predominance of mental work in more thickly populated regions.

The people of the West are as a rule hardy and commonly free from the exciting causes of mental disorders, whereas in the South the negroes are proverbially relatively exempt from such affections. To explain the apparent exception to the general rule, as seen in California, Dr. White finds that the Pacific Coast has not yet fully recovered from the gold fever of '49, that it also suffers from the effects of immigration, and that the seductions of intemperance and vice have been particularly conspicuous in that part of the country.

This investigation, so far as it is a statement of observed facts, is of very great interest, but we are inclined to agree with Dr. White in his opinion that the subtle underlying causes of mental disorder are so far below the surface that definite conclusions must be reached with caution.

## TUBERCULOSIS IN NEW YORK POLICE DEPARTMENT.

At a meeting of the Board of Health held Dec. 30 a resolution was adopted to the effect that all members of the police and fire departments who were found to be the subjects of pulmonary tuberculosis should be suspended from active duty. This action was taken in consequence of a report from Dr. E. T. E. Marsh, chief surgeon of the Police Department, that seventeen members of this department were suffering from the disease in a stage dangerous to their associates. It was explained by President Lederle that while such suspension might seem a hardship for those affected with tuberculosis, it was really in their interest, as well as that of their comrades. To these unfortunates it afforded the one chance of recovery, while others were protected from possible infection. The closeness of the association in which policemen and firemen are obliged by the nature of their duties to pass a considerable part of their time renders tuberculosis especially dangerous to their companions, unless they take precautions more minute and more nearly constant than can reasonably be expected from them.

## MEDICAL NOTES.

Herter Lectures of the Johns Hopkins Medical School. — Under the foundation for a lectureship, made by Dr. and Mrs. Charles A. Herter of New York in 1903, it is announced that Professor Paul Ehrlich has been chosen to deliver the first series of lectures. The object of the lectureship is to promote a more intimate knowledge of the medical research of foreign investigators.

New Eye and Ear Infirmary. — Plans have been completed for a new Eye and Ear Infirmary in Newark, N. J., which will be erected on Central Avenue, near Washington Street, at a cost of $60,000.

Oysters a Cause of a Typhoid Epidemic. — As a result of their investigations regarding the cause of a recent outbreak of typhoid fever in that city, the health authorities of Orange, N. J., have arrived at the conclusion that it was due, not, as at first supposed, to a contamination of the water supply, but to the consumption by the persons affected of oysters procured from infected beds.

Centenarians. — The death of Mrs. Mary Holmes Fuller, at Palatine Bridge, Va., at the reputed age of one hundred and one years, is announced. Robert C. Harper, said to be one hundred and four years old, also died last week in Minneapolis.

New York and New England Association of Railway Surgeons. — At the thirteenth annual meeting of the New York State Association of Railway Surgeons, held at the Academy of Medicine, New York City, Nov. 12–13, 1903, a vote was taken and unanimously carried to change the name of the association to New York and New England Association of Railway Surgeons. This change is expected to greatly extend the work of the association.

French Congress of Climatotherapy. — The first French Congress of Climatotherapy and Hygiene of Towns will be held at Nice from April 4 to April 9, 1904. Professor Chantemesse has been named president, with Professor Renaut (Lyon), Professor Grasset (Montpellier), Professor Calmette (Lille) and Dr. Balestre (Nice) as vice-presidents. The announced discussions will take up five questions: The Climate of the French Mediterranean Coast; Adaptation of the Individual to Climate; Influence of the French Mediterranean Coast Climate on Tuberculosis and Tubercular Patients; The Influence

of Climate on the French Mediterranean Coast on Rheumatism and on those subject to Rheumatism; Disinfection of Towns. Special facilities and rates will be granted to members of the congress and their families.

CHICAGO'S HEALTH. — Chicago's Health Commissioner reports for the week ending Jan. 2: Including the 587 theater-fire deaths, accounted for by the Coroner's office and the Police Department, but not yet reported at the close of the year to the Bureau of Vital Statistics of the Department, the total deaths for 1903 will number 28,940 instead of the 28,353 given in the appended statement of mortality for the year. This will increase the death rate from 15.04 to 15.35 per thousand of population. Deaths from violence were already more than 12% in excess of the average for the period since the census year 1900; but these 587 theater deaths swell the excess to 41.5% over the yearly average of violent deaths.

Even with this addition to the total mortality the death rate is 6% lower than the yearly average since 1892, although it is 8.2% higher than that of 1901 and 5.3% higher than 1902.

ANY comment on the features of the month or of the week would read like the veriest platitudes in the presence of the year-end horror — the inevitable aftermath of which has already begun in sudden death among those with crippled hearts and in dethroned reason among those of unstable nervous organization. All such should shun further excitement, keep away from crowds, and strive to forget.

### BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Jan. 6, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 82, scarlatina 39, typhoid fever 8, measles 215, smallpox 0.

PUBLIC BEQUESTS.— According to the will of the late Mrs. Mary D. Converse of Malden, the Malden Home for Aged People receives $2,000; Roxbury Home for Aged Couples, $2,000; the Woman's Charity Club Hospital, Roxbury, $2,000; and the Malden Hospital, $2,500.

GLANDERS AMONG CAMBRIDGE HORSES. — In the annual report of Dr. C. E. Hadcock, inspector of animals for Cambridge, it is stated that there has been an alarming increase in the number of cases of glanders among horses in that city. During the year 60 horses have been quarantined, and 54 were shot. Action has already been taken toward disinfection and fumigation of possibly infected places.

FIRE IN TAUNTON INSANE HOSPITAL. — On the night of Jan. 4 fire broke out in the linen room of the west wing of the Taunton, Mass., Hospital for the Insane. Notwithstanding a considerable overcrowding of the wards, the patients were rescued. The loss is estimated at about $50,000, in which is included the autopsy room, the pathological laboratory and library.

BOSTON DEATH RATE FOR 1903. — The unprecedented low death rate of 17.70 per thousand of the population of Boston is reported for the year 1903. The death rate in New York for the last year was 18.19, a record which falls behind that of Boston by .49 per thousand.

BRIGHAM WILL UPHELD. — Judge Colt of the United States Circuit Court handed down a decision Dec. 30, by which the Peter Bent Brigham Hospital receives about $5,000,000. This decision is the outcome of an effort on the part of the heirs-at-law to overthrow the will on certain legal technicalities. Unless this decision of Judge Colt be taken to the United States Supreme Court, no legal difficulties will stand in the way of the building of the hospital. The trustees of the fund had already purchased part of the property acquired for the new Harvard Medical School buildings.

DEDICATION OF PEABODY HOME FOR CRIPPLED CHILDREN. — The New England Peabody Home for Crippled Children at Hyde Park was dedicated Dec. 29, with appropriate exercises. An added tract of land was given by Mr. Bleakie, giving the home a street frontage of 372 feet. Dr. R. W. Lovett in his remarks drew attention to the economic value of the surgical treatment of crippled children as being an ultimate relief to the state.

RHODE ISLAND HOSPITAL. — The annual report of the Rhode Island Hospital for 1903 makes the following statement: With an endowment of but $150,000, a portion of which was pledged to raise money for the completion of these buildings, this Hospital opened its doors in October, 1868. In the succeeding year it treated 112 patients; whereas during the year ending Sept. 30, 1903, 4,150 patients were treated, and this is an increase over the preceding year of 663, or 19%. The average daily number of patients was 232, against 211 in the year preceding, an increase of 10%.

Public Institutions Conference. — At the quarterly meeting of the Public Institutions Conference, held at the Mayor's office last week, it was reported that the number of persons admitted to various state and municipal institutions through the registration department was 980, being an increase of 79 over 1902. Twenty more than the preceding year were sent to Tewksbury, and four more to Long Island. It is recommended by the trustees of the Long Island institution that an x-ray apparatus be installed as soon as possible with special reference to the study of rheumatic affections. Both of the city insane hospitals are overcrowded, with a total of 569 patients.

NEW YORK.

President of Board of Health. — Dr. Thomas Darlington, who has been appointed by the new mayor President of the Board of Health, and who is the first medical man to occupy that position during the existence of the department in its present shape, is the most prominent physician in the Kingsbridge district of the Borough of the Bronx. He is a graduate of Princeton, and received the degree of M.D. from the College of Physicians and Surgeons, New York, in 1880. He was a charter fellow of the Medical Association of the Greater City of New York, and belongs to most of the prominent medical societies of the city. Among the positions held by him are those of attending physician to the New York Foundling Hospital, consulting physician for diseases of children to the French Hospital, and attending physician to St. John's Riverside Hospital, Yonkers. In view of the large infant mortality which usually attends the summer season in New York, and of the constant increase of contagious diseases among the children of the tenements, it will no doubt be of considerable advantage to have at the head of the Health Department a man who is especially identified with the subject of pediatrics.

Increase in Insane. — The statistics of the New York State Commission in Lunacy show that there has been an increase in the number of insane in the state during the past year amounting to about 40% above the normal. Their observations indicate that there is a relation between the increase of insanity and the development of industries which is sufficiently pronounced to render doubtful the popular belief that the isolation and monotony of farm life are conducive to insanity, especially among women.

Bequests by Joseph Stickney. — Among other charitable bequests in the will of the late Joseph Stickney of New York are $5,000 each to the Wilkesbarre (Pa.) City Hospital and the Margaret Pillsbury General Hospital, Concord, N. H.

Entering Class, Columbia Medical School. — In the annual catalogue of Columbia University, just issued, it is shown that in the School of Medicine the entering class is the smallest for many years, but the average quality of the class is described as the best in the history of the college, 60% of the students holding degrees, and over 90% having had at least one year of college training before beginning their medical work.

Pneumonia. — Pneumonia has been added to the list of diseases in New York which must be reported to the Bureau of Contagious Diseases as communicable. This action has been precipitated by the somewhat marked increase in deaths from this disease.

Speculative Evidence. — Some two years ago Florence Briggs of Buffalo, while traveling on what is known as the Belt Line of the New York Central and Hudson River Railroad Company in that city, received an injury to the spine in consequence of a collision. On the trial of an action for damages which she brought against the company, expert physicians testified that her injuries were such that several of her internal organs might be affected, and, in the end, permanently. The Court of Appeals has now decided that such evidence was speculative, and should have been excluded. "It is undoubtedly true," it is stated in the opinion, which is by Judge O'Brien, "that in an action to recover damages for personal injuries the evidence of experts as to future consequences which are expected to follow the injury are competent; to authorize such evidence, however, the apprehended consequences must be such as, in the ordinary course of nature, are reasonably certain to ensue. Consequences which are contingent, speculative, or merely possible are not proper to be considered in estimating the damages, and may not be proved. We think this rule of evidence was violated in this case, since the learned trial judge permitted to stand, for the consideration of the jury, evidence which was speculative and conjectural. Indeed, the medical experts in the case, upon the examination of the plaintiff's counsel, were permitted to state numerous things which might result as a consequence of this injury."

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DEC. 26, 1903.

| CITIES. | Population Estimated, 1903. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseases. | Typhoid fever. |
| New York . . | 3,785,156 | 1,321 | 363 | 23.77 | 23.24 | 3.78 | 3.10 | 1.06 |
| Chicago . . . | 1,885,000 | 514 | 146 | 18.48 | 27.03 | 2.92 | 2.72 | 1.36 |
| Philadelphia | 1,378,527 | 554 | 136 | 24.90 | 17.51 | 3.97 | .18 | 1.80 |
| St. Louis . . | 618,481 | — | — | — | — | — | — | — |
| Baltimore . . | 533,712 | 183 | 56 | 21.85 | 19.12 | 3.27 | 1.63 | .54 |
| Cleveland . . | 427,731 | — | — | — | — | — | — | — |
| Buffalo . . . | 387,994 | — | — | — | — | — | — | — |
| Pittsburg . . | 351,745 | 139 | — | 25.90 | 26.61 | 5.03 | 1.44 | 7.19 |
| Cincinnati . . | 335,140 | — | — | — | — | — | — | — |
| Milwaukee . | 315,307 | — | — | — | — | — | — | — |
| Washington . | 295,103 | — | — | — | — | — | — | — |
| Providence . | 191,230 | 77 | 22 | 22.00 | 18.20 | 3.90 | 6.50 | — |
| Boston . . . | 603,163 | 193 | 49 | 22.28 | 19.17 | 1.04 | 1.04 | 1.55 |
| Worcester . . | 132,044 | 40 | 14 | 12.50 | 12.50 | — | 10.00 | 2.50 |
| Fall River . . | 115,549 | 42 | 14 | 19.04 | 28.57 | — | 11.90 | — |
| Lowell . . . | 101,959 | 26 | 4 | 15.40 | 15.40 | 3.85 | — | — |
| Cambridge . | 98,639 | 26 | 11 | 26.95 | 11.55 | 7.70 | — | 3.85 |
| Lynn . . . . | 72,497 | 20 | 3 | 5.00 | 10.00 | 5.00 | — | — |
| Lawrence . . | 69,766 | 22 | 7 | 13.63 | 18.18 | — | — | — |
| Springfield . | 69,389 | 23 | 1 | 4.35 | 26.09 | — | — | 4.35 |
| Somerville . | 68,110 | 26 | 5 | 19.25 | 11.55 | — | — | — |
| New Bedford | 67,198 | 22 | 5 | 31.81 | 36.36 | 4.54 | 9.09 | 4.54 |
| Holyoke . . . | 49,286 | 23 | 6 | 21.74 | 8.70 | — | — | 8.70 |
| Brockton . . | 44,873 | 10 | 1 | 10.00 | — | — | — | — |
| Haverhill . . | 42,104 | 14 | 1 | 14.28 | 21.42 | 7.14 | — | — |
| Newton . . . | 37,794 | 8 | 2 | — | 25.00 | — | — | — |
| Salem . . . . | 36,876 | 15 | 4 | — | — | — | — | — |
| Malden . . . | 36,286 | 15 | 7 | 20.00 | 13.33 | — | — | — |
| Chelsea . . . | 35,876 | 12 | 4 | 8.33 | — | — | — | — |
| Fitchburg . . | 35,069 | — | — | — | — | — | — | — |
| Taunton . . . | 33,656 | 12 | — | 8.33 | 16.67 | — | — | — |
| Everett . . . | 28,620 | 8 | 2 | 12.50 | — | — | — | — |
| North Adams | 27,862 | 9 | 2 | 22.22 | — | — | — | 11.11 |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Quincy . . . | 26,042 | 3 | 1 | 33.33 | — | — | 33.33 | — |
| Waltham . . | 25,198 | 3 | — | 33.33 | — | — | — | — |
| Brookline . . | 22,608 | — | — | — | — | — | — | — |
| Pittsfield . . | 22,589 | 5 | 1 | — | — | — | — | — |
| Chicopee . . | 21,031 | 4 | 1 | — | 50.00 | — | — | — |
| Medford . . | 20,962 | 3 | — | — | — | — | — | — |
| Northampton | 19,883 | 7 | — | — | — | — | — | — |
| Beverly . . . | 15,302 | 3 | 1 | — | 33.33 | — | — | — |
| Clinton . . . | 15,161 | 9 | 1 | 11.11 | — | — | — | — |
| Leominster . | 14,806 | — | — | — | — | — | — | — |
| Newburyport | 14,478 | 10 | 2 | 10.00 | — | — | — | — |
| Woburn . . . | 14,300 | 4 | 1 | 25.00 | 25.00 | — | — | — |
| Hyde Park . | 14,175 | 5 | 1 | 40.00 | 20.00 | — | — | — |
| Adams . . . | 13,745 | 8 | 2 | 12.50 | — | — | 12.50 | — |
| Attleboro . . | 13,677 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 5 | 2 | 20.00 | — | — | — | — |
| Melrose . . . | 13,600 | 3 | — | — | 66.67 | — | — | — |
| Westfield . . | 13,418 | 2 | 1 | — | — | — | — | — |
| Milford . . . | 13,129 | — | — | — | — | — | — | — |
| Revere . . . | 12,722 | 2 | — | 100.00 | — | — | — | — |
| Framingham | 12,534 | 6 | 1 | 16.97 | 16.67 | — | — | — |
| Peabody . . | 12,179 | — | — | — | — | — | — | — |
| Gardner . . . | 11,928 | — | — | — | — | — | — | — |
| Weymouth . | 11,344 | 2 | 1 | — | — | — | — | — |
| Southbridge . | 11,268 | — | — | — | — | — | — | — |
| Watertown . | 11,077 | 1 | — | 100.00 | — | — | — | — |
| Plymouth . . | 10,730 | — | — | — | — | — | — | — |

Deaths reported, 3,439; under five years of age, 881; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 753, acute lung diseases 732, consumption 376, scarlet fever 45, whooping cough 15, cerebrospinal meningitis 7, smallpox 20, erysipelas 11, puerperal fever 6, measles 29, typhoid fever 52, diarrheal diseases 81, diphtheria and croup 111.

From whooping cough, New York 3, Chicago, 1, Philadelphia 5, Baltimore 1, Providence 1, Boston 3, Fall River 1. From smallpox, Philadelphia 14, Pittsburg 6. From cerebrospinal meningitis, New York 6, Chelsea 1. From erysipelas, New York 4, Chicago 1, Philadelphia 4, Pittsburg 1, Cambridge 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Dec. 12, the death-rate was 19.2. Deaths reported, 5,553; acute diseases of the respiratory organs (London) 234, whooping cough 97, diphtheria 67, measles 121, smallpox 3, scarlet fever 30.

The death-rate ranged from 6.3 in Grimsby to 32.0 in Merthyr Tydfil, London 18.9, West Ham 16.1, Brighton 22.0, Southampton 14.2, Plymouth 26.5, Bristol 18.6, Birmingham 21.4, Leicester 15.4, Nottingham 18.9, Liverpool 24.0, Bolton 22.0, Manchester 17.9, Salford 18.6, Bradford 19.7, Leeds 19.8, Hull 15.7, Cardiff 18.1, Rhondda 18.7, Kings Norton 13.1, Sunderland 18.5.

## METEOROLOGICAL RECORD.

For the week ending Dec. 26, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. . 20 | 29.66 | 39 | 54 | 24 | 91 | 97 | 94 | S E | S | 19 | 30 | R. | R. | .60 |
| M . 21 | 29.60 | 42 | 49 | 36 | 62 | 69 | 66 | W | S W | 24 | 7 | C. | C. | .05 |
| T. . 22 | 29.75 | 31 | 40 | 22 | 87 | 51 | 69 | S W | W | 12 | 16 | O. | C. | .03 |
| W . 23 | 30.11 | 28 | 36 | 19 | 63 | 58 | 60 | W | S W | 12 | 16 | C. | C. | 0 |
| T. . 24 | 29.94 | 41 | 47 | 35 | 59 | 71 | 65 | S W | S W | 7 | 18 | O. | R. | T. |
| F. . 25 | 29.56 | 39 | 45 | 33 | 73 | 83 | 78 | S W | W | 8 | 10 | O. | F. | T. |
| S. . 26 | 29.59 | 18 | 33 | 4 | 89 | 69 | 79 | N E | N W | 6 | 16 | N. | C. | .23 |
| ☞ | 29.74 | | 43 | 25 | | | 73 | | | | | | | .91 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING JAN. 2, 1904.

R. O. MARCOUR, assistant surgeon. Detached from the "Franklin" and ordered to the "Dixie" for duty with the Panama Marine brigade.

J. M. BRISTER, assistant surgeon. Detached from the "Isla da Cuba" and ordered home.

J. A. GUTHRIE, passed assistant surgeon. Ordered to the "Franklin."

G. F. FREEMAN, passed assistant surgeon. Ordered to the naval station Olongapo, P. I.

## RECENT DEATHS.

AUGUSTUS D. RUGGLES, M.D., of New York, died on Dec. 27, from carcinoma affecting the liver and other organs. He was sixty-three years of age and was graduated from the medical department of the University of Pennsylvania in 1862. During the Civil War he served with distinction in the medical corps of the Army of the Potomac. He practised for many years in New York, and among the positions of honor which he had held was that of vice-president of the New York County Medical Association. He was one of the organizers and incorporators of the Medical Association of the Greater City of New York and was its treasurer from the founding of the society in 1899 up to the time of his death.

ANTON EIDENBERG, M.D., of New York, died in St. Luke's Hospital in that city, of pneumonia, on Dec. 31. He was eighty-six years old, and was a native of Hessedarmstadt, Germany. He was graduated at Giessen in 1846, and also received the degree of M.D. from the New York University in 1881. During the Civil War he was surgeon of the Eleventh New York Regiment. He had practised in New York for over fifty years, and was long an attending surgeon to St. Luke's Hospital.

JOHN MARTIN OTTO, M.D., of New York, a graduate of the University Medical School in 1888, died in the New York Hospital on Dec. 29, from a fracture of the skull received in a fall.

## BOOKS AND PAMPHLETS RECEIVED.

Blood-Pressure in Surgery. An Experimental and Clinical Research. The Cartwright Prize Essay for 1903. By George W. Crile, A.M., M.D. Illustrated. Philadelphia and London: J. B. Lippincott Co., 1903.

Progressive Medicine. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., assisted by H. R. M. Landis, M.D. Vol. IV. December, 1903. Illustrated. Lea Brothers & Co., Philadelphia and New York.

The Community and Tuberculosis. By Beverley Robinson, M.D., of New York. Reprint. 1903.

The Genesis of Epilepsy. By Louise G. Robinovitch, B. ès L. (Paris), M.D. Reprint. 1903.

The Medical Epitome Series. Organic and Physiologic Chemistry. A Manual for Students and Practitioners. By Alexius McGlannan, M.D. Series edited by V. C. Pedersen, A.M., M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1903.

# Original Articles.

## CARDIAC DISPLACEMENT.[1]

BY ARTHUR K. STONE, M.D., BOSTON,

*Physician to Out-Patients at the Massachusetts General Hospital.*

Cardiac displacement, while not a subject of distinctly practical importance, nevertheless is one which has aroused considerable interest during the past decade, especially in France, where there have appeared a number of excellent papers calling attention to the general erroneous ideas which have been held regarding the subject. As most of what has been said by the members of the Lyons school is also applicable to much of the teaching hereabouts, it has seemed worth while to review the subject and to add my observations, which are based on the study of more than nine cases of permanent cardiac displacement, in addition to a number of cases seen in the ordinary course of acute pleurisy and pneumothorax.

Besides Sir R. Douglas Powell very few other observers have reported more than two or three personal observations, and the total number confirmed by autopsy or X-ray examinations is remarkably small. The most recent and complete résumé of the subject is to be found in the Thesis of Alaux, a student of Professor Pic of Lyons, and doubtless reflects accurately the teaching of that school. It is unfortunate that in his desire to give credit to Professors Bard, Pitres and Pic, he has neglected to quote the correcto bservations of Sir Douglas Powell, made in 1869 and 1876. Powell's results were obtained from the study of a goodly number of cases, not only clinically but also at the autopsy table. And to these accurate observations are added experimental studies serving to explain the conditions found. Not only has Powell's work not been quoted by the French writers, but it has also been forgotten by recent English clinicians, who have speculated much regarding the position of the displaced hearts they had observed, when a reference to these papers would have answered all their questions. Symes of Dublin in 1892 disputed Powell's statement as made in his book on the "Diseases of the Heart," evidently without looking up the work on which Powell based his assertions.

The subject of displacements of the heart naturally divides itself into two general divisions, the congenital displacements of the heart, and the acquired or pathological displacements. About the former probably there has arisen the greater amount of dispute, while the latter has given rise to the greater amount of erroneous teaching.

The question at issue is, does such a condition as congenital dextrocardia without an accompanying transposition of all the viscera in the body exist unless accompanied by other malformations of the heart? Cases of transposition of all the organs of the body have been reported from time to time since the first observation by Petrus Servius was made in Rome in 1643. (Collection of cases by Gruber.) As a part of this process the heart is involved in the general transposition and points towards the right, the aorta also arching to the right instead of the left, with the valves of the heart changed to meet the new condition of things; that is, the mitral valves are found in the right ventricle, which is thick-walled and of course communicates with the aorta, while the left ventricle is thin-walled and has tricuspid valves, and communicates with the pulmonary artery. In every way the hearts in the transposed cases are reversed from the ordinary conditions, that is, they are mirror hearts.

It has been supposed that in a number of cases where the heart either actually or apparently pointed to the right, without any transposition of the other viscera, there was present a congenital dextrocardia. It has been assumed that there was a mirror heart also present, the conditions holding as in cases of complete transposition of all the organs. The reported cases of dextrocardia are few in number, and the autopsies when dextrocardia has been suspected are very few indeed.

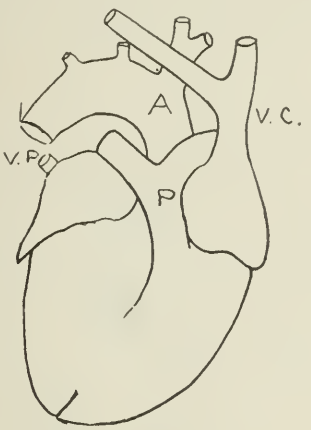



Fig. 1. — Mirror heart.

Of the authentic cases, first of all come a small group where the condition has been noted at the

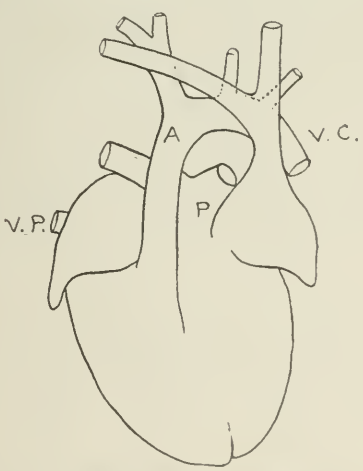



Fig. 2. — Inverted heart. Aorta arches to the left.

[1] Read at a meeting of the Boston Society for Medical Improvement, Nov. 16, 1903.

autopsies of young infants, and here the dextrocardia has practically always been accompanied by malformation of the heart itself, most frequently showing itself in absence of the ventricular septum. There is, however, so far as I can find, no case on record of true mirror heart. Graanboom, however, has a fine case of congenital dextrocardia, which was found in a man of thirty-three, who, dying of nephritis, had never had any manifestations arising from cardiac deformity, although at the autopsy there was found a much narrowed aorta. Here, the axis of the heart was from left to right; the apex, however, was not far beyond the edge of the sternum, although in life the strongest impulse was at the right mammary line. From the right ventricle, which was thick-walled, arose the aorta, but the valves were tricuspid instead of mitral. This is the nearest approach to a mirror heart that has been reported. There are, however, said to be similar malformations to this on record, without any deviation in the usual axis of the heart.

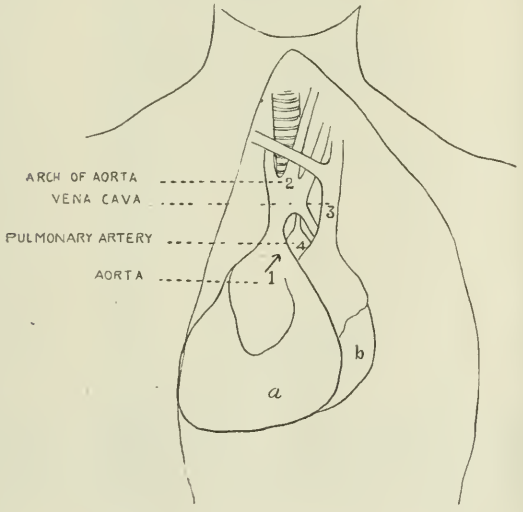



FIG. 3. — Graanboom's case. Like Fig. 2.

Occasional cases have been reported where from clinical observation it has seemed during life that there was a true congenital dextrocardia, but such interpretations received a rude blow in a case which had been under observation since 1888 by Professor v. Bamberger, and demonstrated before the medical societies of Vienna as a case of congenital dextrocardia. The young woman of twenty-two years entered for aortic regurgitation. She had had rheumatism and pneumonia. The heart was found with the apex pointing to the right in the fifth space outside the nipple. In 1896 this patient came to the autopsy table, and Professor Paltauf found all the organs in the normal position excepting the heart, which pointed towards the right. There were present, however, an adhesive pericarditis and extensive pleuropericardial adhesions. There was also a depression upon the dome of the liver, due to the position of the heart. Professor Paltauf refuses to recognize the case as one of congenital origin, but considers that it was consequent to the unrecognized inflammatory processes, which had given rise to the conditions found. He further states that he has met with pericarditis in a seven-months' fetus, and therefore concludes that changes in the heart's axis may possibly be started by such processes, and not be due to real change in the development of the organ.

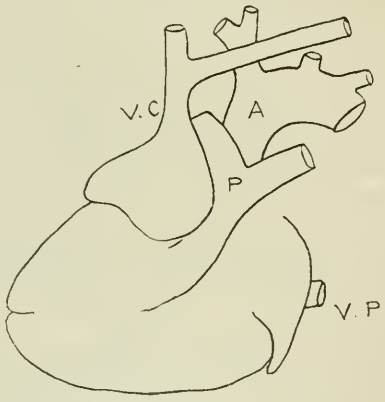



FIG. 4. — Heart drawn to the right.

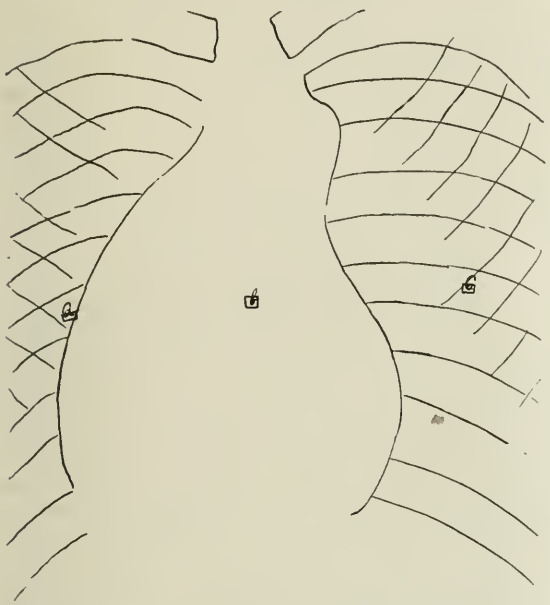
That it is often difficult to get any history of really extensive inflammatory processes I had illustrated in one of my own cases.

Here the heart was in about median position with the apex behind the sternum. The patient declared that he had never been sick, and no questioning could make him acknowledge the fact, and yet when examined with the fluoroscope the whole lower part of the left side of the chest was found to be in shadow, showing that at some time there had been an inflammatory process which was quite sufficient to account for the position of the heart. Other of my patients have only given a history after prolonged and careful cross-examination. From the literature and my own experience I should quite agree with Garel (1902), who refused to diagnose a case as congenital dextrocardia where the apex was undoubtedly to the right, but where a right-sided pleuritic effusion had also been present, as was demonstrated by the shadow showing in the fluoroscopic examination.

One of my cases, however, may possibly come among the rare congenital cases of dextrocardia. The patient is a young man aged twenty-three, who was seen first in 1901. He gives no history of thoracic disease. Since the age of thirteen he has had attacks of epilepsy, much more severe during the past seven years. The hospital record states that the apex is in the fourth right interspace, 8 cm. from the median line. The other organs are in a normal position.

I. A recent careful re-examination shows the greatest cardiac impulse as above stated. With the fluoroscope the heart is much more median than would be expected, and no sign of an apex is to be seen. The portion of the heart at the place of the maximum pulsation is evidently the base. The general position of the shadow shows distinctly that the apex lies behind the sternum.

The space occupied by the cardiac shadow is large. The whole of the right side is slightly hazy when compared with the left side. All that can be asserted is that there is no history to be obtained of inflammatory disease, nor is there any distinct evidence of such having taken place. It is about the picture that a case like that reported by Graanboom would be expected to present. On the other hand, the position, in general that of a heart displaced by mechanical means, and the slight general shadow of the right side of the chest, make all positive assertions in regard to the case impossible at present. All cases where the diagnosis has been



Displaced heart. Congenital (?). Accurately traced from an x-ray photograph. *a*, *b*, *c* show position of the nipples and center of the sternum.

made on the clinical examination alone must be excluded in the light of autopsies and the conditions revealed by the use of the fluoroscope.

My own conclusions are only slightly different from those of the Lyons school, namely, that almost all the known cases of dextrocardia have been accompanied with evidences of extensive malformation of the heart; that no real case of mirror heart, true dextrocardia, is on record. That all cases where the heart does point towards the right, if there are traces of pleurisy or pericarditis having been present, must be considered as acquired conditions unless proved otherwise by autopsy. Nevertheless, the case of Graanboom's shows that a congenital dextrocardia, though not of the mirror heart variety, can exist and give no symptom of defective heart-structure.

II. Displacements or dislocations of the heart due to pathological conditions are to be divided into three general groups: the first due to simple disturbance of the normal atmospheric equilibrium existing in the chest; and the second due to the distorting action of adhesions of an inflammatory origin. The former represent the unrestrained movement of the heart in the presence of pleural exudate, pneumothorax, or of a large cavity within the lung, or any other condition causing sclerosis or shrinking of one lung; the latter, the dislocations due to adhesions forming in the course of inflammatory processes which involve the pleura and pericardium.

The third group is associated with the presence of an aneurism or a new growth within the chest so developing as to displace the heart. With this last group this paper will not deal.

A case where adhesions played an active part in causing dislocation of the heart first called my attention to the subject of cardiac displacements. The patient, a woman of forty-seven, came to the House of the Good Samaritan with the history of having had a double pneumonia which had attacked the bases of both lungs. At entrance the pneumonia in the left lung was said to have been unresolved, although several weeks had elapsed since the attack. I found on examination dulness at the right base, with modified vesicular respiration and a few fine râles. At the left base there was flatness and absence of respiration. After observation for a few days I was tempted to see if I could not discover pus with an aspirating needle, but very careful examination disclosed in several places small areas of distant vesicular breathing, and I concluded that there was no distinct pocket of pus present. At this time the apex beat was noted as being situated 8 cm. to the left of the sternum. The patient gradually gained in strength and was up and about the ward, but very little improvement could be detected in the respiratory signs at the base of the left lung. After a temporary absence from the hospital I found on my return that the patient's condition still remained about the same. To try and get a better respiratory condition hydrotherapeutic measures were adopted. The patient was placed in a bath-tub and cold water was dashed over her by the nurse. It was hoped in this way to cause forced inspiration and to bring into action portions of the diseased lung, This was repeated three times during the week. Preparation for the transfer of the patient to a convalescent home having been arranged, a final examination was made. At the first glance at the chest the heart's impulse was seen to be in the axillary region. There was resonance where before there had been the normal area of cardiac dulness, and the apex impulse was 16 cm. from the median line. A fluoroscopic examination showed clear light transmission occupying the normal area of cardiac shadow, while all trace of the heart itself was lost in the general shadow obscuring the base and outer portion of the left chest.

It seems to me that what had occurred is as follows: Owing to the great gasp which the patient gave at the first application of the water, a portion of the lung which had been previously contracted expanded and escaped from its adhesions and pushed into the place of least resistance; ballooning up, as it were, and pressing the heart outwards so that it was pushed into the space it

now occupies. There was no real disturbance from the movement of the heart more than the severe shock which the patient laid to the first application of the cold water, but I am inclined to attribute the feeling of discomfort to the movement of the viscera then taking place. For some time there were no adventitious sounds to be heard over the heart, but later a soft blowing murmur developed, and a year later some irregularity was noted. The sputum was repeatedly examined for bacilli of tuberculosis without finding any present, although some cough and expectoration continued. At my request Dr. Chandler of Medford. examined her in March, 1903, and reported no murmur or irregularity, and the cardiac impulse 16 cm. to the left of the median line.

The great interest in this case lies in the sudden movement of the heart and the little corresponding shock or discomfort occassioned by the seemingly violent displacement of the viscera within the chest. Very few indeed of the patients whose cases are to be found reported in the literature of the subject experienced any inconvenience from the malposition of the heart. Of sudden movements, the one most nearly approaching the one reported above was the case of a medical student (Cochez) who had tuberculosis, and was known to have had a cavity in the right lung. One night on retiring he heard and felt the heart beating on the right side, and about a week later, when he was again examined by his physician, the heart was found dislocated to the right. There was no discomfort noticed by this specially intelligent patient to tell exactly when the movement took place, and yet it probably occurred during the day in which it was noted. Moutard-Martin had also a case where the change was noted by the house-physician probably soon after it occurred, but as there was no discomfort no report was made to the visiting physician.

In the case of a young man examined by me in 1902. where I found the heart displaced upwards and to the right side I was told that the last time he was examined the upper right side of the chest gave a very hollow sound, and that he was informed that there was a cavity there. Here again there was no discomfort to tell when the marked cardiac displacement took place.

Another case illustrates how marked dislocation can exist and yet give no symptom either at the time of its occurrence or discomfort later, although the patient may lead a laborious life. The patient's heart was not in its usual position, and in the place occupied by its normal dulness there was resonance and a clear transmission of light when examined with the fluoroscope. The greatest cardiac impulse was to be located in the left mid-axillary line, and the sounds were to be best heard in the back, mingled with friction sounds and sounds indicating a cavity in the lungs.

This patient has no history pointing to the time of the dislocation. Indeed the whole process was discovered in the course of a routine examination of the chest for the purpose of explaining the cause of cough and expectoration which occasionally, for the past few years, had given him much discomfort. The patient was a stone-cutter. No bacilli of tuberculosis have been found in his sputum, though the sputum has been examined from time to time for several years. Very close questioning finally brought out the fact that about 1886 he had been so weak and sick from a cough that he had given up work for a month or two, but that he had speedily recovered and had even forgotten the fact, only recalling it on talking the matter over with his family. The cough for which he had come to the clinic had appeared only in the past few years and had not been of such a nature as to cause him to lose strength or stop his hard work, although it was very annoying at times. This patient has been under observation since 1899. The cavity in the base of the left lung evidently dates back to an old destructive process. From the compensatory hypertrophy of the remainder of the lung, and possibly the drag of adhesions upon the pericardium, the heart was displaced downwards and backwards till it occupies its present position. In spite of this condition the patient is able to do the most difficult manual labor in a granite quarry.

Fitzgerald and Everett have reported an interesting case of extreme dislocation of the heart. The patient, a woman of sixty, stated that she had been very sick with pleurisy, but this could not be confirmed. In 1894 it was found that the whole front of the chest was resonant; the heart-sounds were faintly heard on the right side, and the right back was dull; and at the angle of the right scapular was felt the cardiac impulse and the heart sounds were clear. This condition had not been noted in 1890 when she was first seen. Some years later there was dyspnea and in 1900 she died of bronchitis. At the autopsy the lobes of the left lung were found to be practically anterior and posterior rather than upper and lower, as the lower lobe extended from the diaphragm to the apex behind, while the upper lobe extended across the whole front of the chest and was adherent to the costal pleura of the right side of the thorax in the mid-axillary line. The right lung was completely retracted.

The heart's position was nearly vertical, and the right ventricle was so placed that it must have been the portion of the heart giving the cardiac impulse at the angle of the right scapular.

The recent case of Garel (1902), where the heart, following an extensive right-sided pleurisy, had been drawn, so that the apex beat was in the fifth interspace in the right mammary line, is another instance showing the distortion possible from adhesions.

In the many cases of so-called dextrocardia following pleurisy and penumonia the heart is held displaced to the right by adhesions developing in the course of an acute inflammatory disease and either drawing or securing the displaced heart in its unusual position.

None of the above-mentioned patients, and none of my other patients with permanently displaced hearts from whatever cause, have had any

uncomfortable symptoms referable to the heart. Nor in any of the many reported cases has the displaced heart given trouble in virtue of its unusual position. And only a few patients of the reported cases have realized at all that the heart was displaced.

While the movements of the heart influenced by the presence of adhesions and the presence of cavities or sclerosed lung tissue with emphysemata of the remainder of the lung or of the other lung are often erratic, on the other hand the movements of the heart caused by the presence of fluid or air in the pleural cavity, or by the contraction of one lung in whole or in part, are practically subject to certain definite rules or laws when uncomplicated by adhesions.

It has been a matter of surprise to find out how little was definitely known about this condition of frequent occurrence. The number of accurate observations reported is very small, even since the introduction of the x-rays as an aid in the examination of the chest. The post-mortem examinations have been few in number, and many of these make no note of the really important fact, — *i. e.*, the exact position of the heart, — being simply content to make the statement that the heart was found as in life to the right. Many pathologists have never seen the condition or at least never considered it of sufficient importance to have made mental note of any cases they may have seen. One of the reasons why it may have escaped notice is that the heart if not held by adhesions will often slip back into its proper position when the chest is open and the pressure within the pleural cavities has been made equal. Such cases are on record, where the heart has been demonstrated during life to be to the right of the sternum, and at the autopsy been found in its normal place, and the space which it has occupied on the right side over a cavity in the lung been plainly visible. Powell also found that the heart when pressed towards the right tended to sag back into place unless held in position by long pins thrust through the heart. Some pathologists who are inclined to think that the backward movement of the heart cannot take place so rapidly, explain the fact that they have not noted the condition oftener as due to the relaxation of the diaphragm after death, and the consequent greater capacity of the pleural cavity. Thus the heart is drawn back to its original position again.

The anatomists consulted have been decidedly surprised to learn that movements of the heart were at all common and had not considered the matter, only it had seemed on general principles that the base was the immovable portion of the heart, while the heart's apex appears to be freely movable. Probably the erroneous idea which has been held by so many that the heart in case of a left-sided exudate became reversed, with its apex pointing to the right, has been due to the manner in which the heart has been seized by the pathologist, and drawn upwards and to the right at post-mortem examinations after the opening of the pericardium.

The movements of the heart in the presence of effusion, or air in one side of the chest, depend on the following anatomical and physiological conditions, which may be modified by certain pathological conditions which may be present:

The heart, enclosed in the pericardium, hangs from the great vessels at its base and lies between the two pleural cavities, which are vacuum chambers. In these vacuum spaces are elastic, expansile bags, the lungs, in connection with the outside air. If a small wound in the chest-wall occurs, the lung does not at once collapse, but rather the lung seems to put forth almost intelligent efforts to cover the opening and prevent the ingress of air. Even in cases where the lung has been compressed into a small compass by the presence of an effusion the active expansive power of the lung asserts itself as soon as the exudate is withdrawn, as is shown by the force with which the pus flows from an opening in the thoracic wall in the cases of empyema. This active participation of the lung in tending to expand from its internal resiliency is denied by some observers, who believe that all the expansion is due to coughing, which distends the lung by the closing of the glottis and the consequent increase of the pulmonary pressure. These men would deny that any of the movements of the heart were dependent on anything besides the ordinary laws of physics, and consequently that the active resiliency of the lungs does not have to be taken into consideration. However this may be finally settled, the anatomical position of the heart is of the greatest importance as regards the forces leading to its movements. The heart rests on the dome of the diaphragm, enclosed in the pyramidal pericardial sac whose base is continuous with a part of the fibers of the upper portion of the diaphragm, which thus makes a firm flooring on which the heart is bedded. From this base the sac of the pericardium has its origin, being held in position by three supporting ligaments: (*a*) the suspensory, which is attached to the body of the third dorsal vertebra; (*b*) the cervical, which merges in the aponeurosis of the neck, which in turn is attached to the hyoid bone; (*c*) the sterno-pericardial, attached to the anterior face of the sternum and the first rib.

Any weight, like an exudate, in the cavity, tends to depress the diaphragm and to put these ligaments on the stretch and thus presents a firm resisting wall so that the fluid shall not press directly upon the heart and hinder its action.

If the effusion is on the right, the wall of the pericardium becomes a rigid partition, behind which the auricles have protection. If on the left side, the ventricular portion becomes tense and vertical, and thus presses against the apex, moving it laterally till in the extreme it goes behind the xyphoid. When this point is reached the right portion of the pericardium is put on the stretch and opposes further lateral movement. The extent to which the pericardium allows the apex to move is towards the left about 5 to 6 cm. and towards the right about 12 to 13 cm.

The movements of the heart uncomplicated by

pleural and pericardial adhesions are to be divided into three groups:

(1) Those brought about by the presence of fluid in the pleural cavity.

(2) Those caused by pneumothorax.

(3) Those due to the presence of large cavities in the lungs, disturbing the equilibrium of the inter-thoracic pressure.

Although the laws hold good for effusions on both sides of the chest, yet as the displacements to the right following left-sided pathological conditions are more marked and more interesting, these alone will be considered.

A glance at one or two diagrams will show how triangular shaped is the outline of the heart — how its right border is nearly vertical and the lower border nearly horizontal, while really only a small apical portion projects beyond the mass known as the base of the heart. The amount of

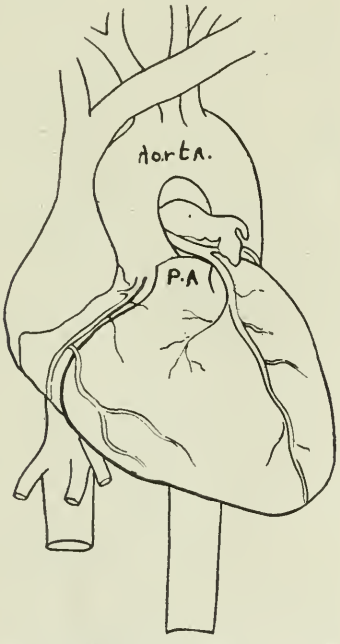



FIG. 5.— Heart from the front (from Quain).

the heart's bulk that lies to the right of the descending aorta makes it probable that any general pressure exerted on the heart would tend to thrust it *en masse* to the right, flattening the arch of the aorta rather than reversing the heart and twisting the vessels. This is what happens in left-sided exudates. When the fluid amounts to about 1,000 cc. pressure is exerted on the heart lying in the pericardium and it is pushed to the right *en masse*. In so doing the apex is depressed and rotated forwards, the heart's shadow in the fluoroscope losing its triangular appearance and becoming simply a mass in the center of the chest, with nearly vertical sides. In two of my cases, where the heart had become retained by adhesions in this position, I have been able to see the shadow of the apex of the heart spring outwards and slightly upwards from the dense central shadow with each contraction of the heart. This showed that when the heart was the smallest it tended to return to its exact normal position.

The movement of the apex can be traced across the left chest by the cardiac impulse, and in large exudates it finally disappears under the xyphoid. Sometimes the apical impulse can still be felt in

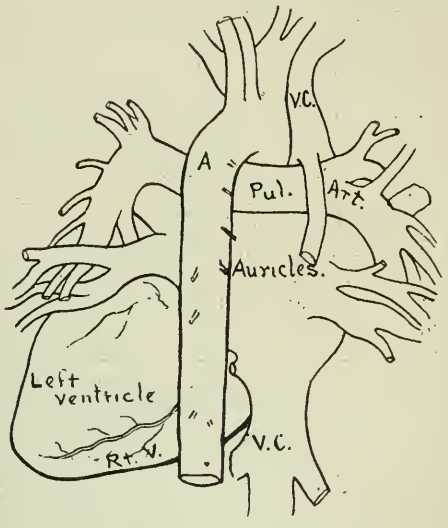



FIG. 6.— Heart from behind (from Quain).

epigastrium and the apical sounds can be distinguished with the stethoscope as being below the xyphoid.

At the same time that this is taking place on the left side of the chest, the movement of the basal mass of the heart brings the right auricle and the aorta closer and closer to the right thoracic wall, and cardiac impulse appears in the third space from the latter, and in the fifth or fourth space to the right, usually in or about the mammary line. Following one's first impression, that the place of the greatest cardiac impact and the loudest heart's sounds is the location of the apex, it has seemed to many clinicians that the apex in these cases of left-sided exudate was directed to the right, and at the place above stated. This too followed the teachings of Wintrich. The sudden deaths which have occurred in the course of pleurisy have been explained as due to the twisting of the great vessels, taking place in the inversion of the heart. This classic explanation has been followed almost implicitly in France, and as late as 1901 almost all the important text-books of medicine are credited by Alaux as having adhered to this teaching. In Germany, however, modern teachers for the most part have not taken this position, but have said that the heart was pushed or drawn to the right.

Professor Bard and others of the Lyons school have done much in France to call attention to the erroneous teaching, and as a result, for the past ten years cases have been reported which show more careful study than formerly and practically all of these have borne out the positions taken by Bard, Pitres and others.

In England, Powell as already said, from a large postmortem experience, recognized that it

was very rare for the apex to pass the sternum, and that the impulse seen in the region of the right nipple was always caused by the base of the heart.

Of the American teachers, Osler, as would be expected, makes the definite statement that he has never seen in simple effusions and pneumothorax the apex pointing to the right. Fitz speaks of the movement of the heart as a whole. Cutler in Loomis-Thompson sums up the whole question very neatly when he writes of " the cardiac impulse to the right, corresponding with the base and not the apex, the heart not changing its parallel." Musser and Eichorst also make correct statements. Cabot, Anders and Vierordt speak or give diagrams of the apex pointing to the right, and many of the other writers do not mention the matter at all.

As has been said above, the number of post-mortem examinations in cases of displaced heart is surprisingly small, and even when made the position of the apex is often not noted. Since the advent of the x-rays as an aid to accurate diagnosis many clinical cases are still reported, and in medical centers too, without any fluoroscopic examination to confirm the auscultation and general impressions. All the autopsies, however, that I have been able to find where any statement of the heart's position has been given, and all cases where the x-rays have been called into service, have (with a few exceptions to be noted later) shown the apex of the heart always pointed to the left.

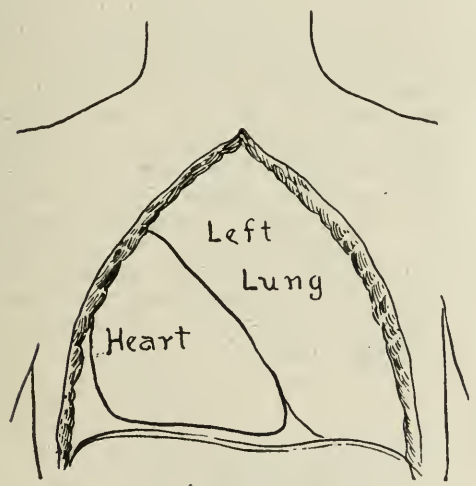
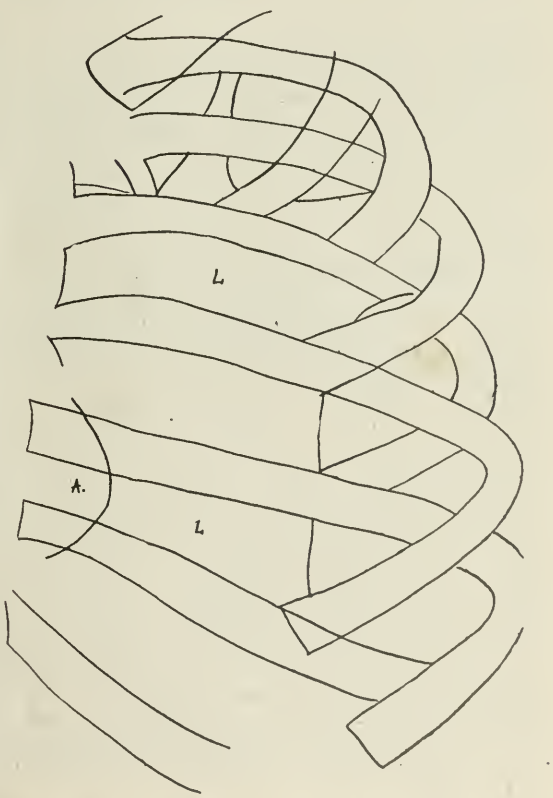



Fig. 7.— Garnier's case.

Carrière states that he has studied carefully with regard to the position of the apex twenty cases of left-sided pleuritis, and finds that in all there was no evidence of rotation of the heart. These observations have been supplemented by experiments upon the cadaver, and in none of these, as also in the experiments of Powell, Bard and Pitres, was there any sign of torsion even though the fluid put into the chest amounted to eight liters. The experiments and observations on pleuritic exudates made it seem that with about 700 cc. of fluid in the chest, the heart remains at its normal place if a vertical position is maintained, but that if the patient lies on the right side the heart's impulse moves from 2 to 4 cm. inwards. With fluid amounting to 1,000 to 3,000 cc. the apex becomes lowered and approaches the median line as described above, and as the fluid passes 2,500 cc. the apex passes beneath the xyphoid.

One of my first cases of displaced heart was a fine example of the fact that the base and not the apex gives the cardiac impulse on the right. The patient was a young girl with pulmonary tuberculosis of the right lung. The thin chest-walls made percussion very easy, and the house-officer who first saw her percussed triangular area of dulness on the right of the sternum which he called the apex. This was so distinct that he was not willing, in the light of his previous instruction, to acknowledge that it could be produced by anything else than the apex of the heart. However, the fluoroscope demonstrated the apex of the heart projecting just beyond the left border of the sternum, and the marked triangular dulness to the right was made by the base of the heart. The case was specially favorable to study, as the patient was a child, and then there was no thickened pleura and no exudate to obscure the field. The region about the heart was clear, so that the cardiac outlines were well defined.

In fluoroscopic examinations it must be borne in mind that a left-sided exudate will obscure the




Case of pneumothorax from the service of Dr. J. J. Minot. Left side of the chest. Traced from an x-ray photograph. A, shadow of the apex; L, compressed lung.

position of the apex, and that old pleuritic adhesions will cause such a shadow that the heart's position is often lost. But if there has been no disease upon the right side the general shape of the heart will show that the point of greatest impulse must be made by the base of the heart and not by the apex.

In an attempt to study the mechanics by which the heart is moved, it is well in the first instance to consider a pneumothorax. Here the air, gaining access to the whole pleural cavity, accumulates until the pressure within the cavity is equal or greater than the outside air. That this intra-thoracic pressure in the case of pneumothorax is great, there is no reason to believe. In the cases where the pressure has been studied, it has usually been from 3 to 7 cm. of water. In the single case I have had a chance to study the pressure has only been from 2 to 4 cm. of water, although in this case there was a marked displacement of the heart to the left. But to return to the mechanics of cardiac displacement: The left pleural cavity being filled with air, the lung is collapsed and the equilibrium previously existing between the two sides of the thorax is destroyed. There is now a vacuum-chamber only on the right side, and into that vacuum there is a tendency for the heart and its attachments to be both drawn and pushed, and unless hindered by adhesions it moves along the lines of least resistance already indicated.

Where an exudate is present the conditions are practically the same. As is well known, an exudate does not simply occupy the most dependent portion of the pleural cavity, but is drawn up, forming a layer on the thoracic wall on a level represented by a curve whose highest point is in the axilla. As the exudate increases in amount the lung is gradually compressed upwards and backwards, the level of the fluid becoming more and more horizontal, and finally the lung is found compressed about the root of the primary bronchus and jammed against the chest wall and the spinal column. The higher the fluid rises about the lung the more the elasticity of the lung is lost and the air disappears from within the lung, and consequently the intra-thoracic equilibrium disappears. After a certain amount of fluid has collected within the chest, the influence of the pleural vacuum on the right side begins to make itself felt, and the heart is drawn gradually towards that side. After a time the weight of the fluid in the affected side of the chest also exerts a force from behind, urging on the movement. In large exudates the intrathoracic pressure may rise, and they have been reported as being as high as 40 to 45 mm. of mercury. Pitres, in the reports of seventeen carefully studied cases, found that the intra-pleural tension when the amount of fluid exceeded 2,000 cc. was from 20 to 44 mm. of mercury; that with an exudate of 1,000 to 2,000 cc. the pressure ranged from 8 to 20 mm.; and below 1,000 cc. the pressure was from zero to 2 or 3 mm.

The amount of the pressure depends on a number of conditions, as for example if the diaphragm is weak and relaxed the amount of fluid may be large and the intra-thoracic pressure be small. On the other hand, with a consolidated lung the amount of the exudate may be small and the tension great.

The experiments in intra-thoracic pressure have been criticised by Bard as being inaccurate, from crude instruments and faulty technique, but as yet he had offered no accurate measurements, and what has been done may at least be accepted as showing approximately what takes place, there being practically the same element of error in all the observations. That there is intra-pleural pressure is obvious by the broad and even distended intercostal spaces which are frequently seen in large effusions. This pressure acts to give an accelerating push in addition to the suction exerted by the vacuum of the other side.

All those who of late have attempted experiments with the injection of fluids into the chest have been unable to produce any eversion of the heart, although very large amounts, even up to eight liters, have been used. Thus, Carriére, Pitres and Bard have maintained, reasoning from their experiments, that the rotation of the heart was impossible under any conditions. In addition, however, to the cases with adhesions or extensive right-sided effusion, already quoted, there has recently appeared a most interesting report by Lafforgue of displacement of the heart to the right, with inversion of the heart and bending of the great vessels. The case occurred in Algiers, where a native was stabbed in the back just outside the shoulder-blade. He bled but little externally, and was found at his home a month later, and a month later still he died. The left side of the chest was much distended. The cardiac impulse was in the fourth interspace to the right. When the chest was opened the heart was found pointing to the right, the apex behind the fourth interspace 3 or 4 cm. to the right of the sternum. The torsion of the heart had twisted the vessels so that the aorta was reduced in caliber a third. The fluid in the left side amounted to five liters. When this was removed the heart of its own accord rotated backwards toward the normal position, but was held at the border of the sternum by adhesions. On the posterior wall there was a firm fibrinous clot reported as 7 or 8 cm. in diameter. Here is a case apparently contradicting all the experiments and other accurate observations that have been made, but its cause is, I think, easy to interpret. The man bled profusely into the pleural cavity after the wound, and the large thick blood-clot must have pushed the heart upwards and held it there. Then as the immense exudate formed, it acted on an already displaced heart in such a way as to produce the torsion of heart and vessels.

In the third condition of displacement — when either there is a large cavity within the lung, causing a collapse of the surrounding wall, or any other cause, as syphilis, leading to a contraction of the lung tissue — there is left a void, and into this the organs of the sound side are aspirated. The heart passes into this cavity *en masse*, and greater

space consequently is given to the un-diseased lung which in turn takes on a compensatory hypertrophy, or emphysema. Special examples of this are to be seen in the diagram of Garnier's case and in the report of Fitzgerald and Everett's case quoted above. The movement of the heart in such cases as has been stated is often modified and accelerated by the presence of adhesions of the pleura of the shrunken lung to the pericardium.

Permanent but partial displacements of the heart are to be accounted for by the formation of adhesions to the pericardium before the heart has a chance to return to its normal position and are due to the slow absorption of the fluid.

In conclusion, it is to be remembered that in cases of displacement the heart tends to move as a mass to the right or left; that rotation is very rare, and accompanied when found by exceptional conditions, or brought about by the presence of contracting adhesions; that practically in all cases the visible cardiac impulse to the right of the sternum is caused by the base of the heart, and not by the apex; that extreme displacement may take place without the slightest discomfort to the patient; and that the sudden deaths occurring in the large pleuritic effusions are not due to the cardiac displacement.

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The work of the coroner in Philadelphia for 1903 exceeded that of any other year in the history of the office. The number of inquests was 3,357—553 more than last year. There were 58 homicides, 202 suicides, 94 deaths by drowning and 932 casualties. Among the latter were 254 on steam and electric railways. — *Medical News.*

# INTERMITTENT HYDRONEPHROSIS — UTERINE FIBROID.[1]

BY M. H. RICHARDSON, M.D., BOSTON.

## INTERMITTENT HYDRONEPHROSIS.

My first operation for intermittent hydronephrosis was performed on Nov. 11, 1896, and was published in the Transactions of the American Surgical Association for 1897. I showed this patient before the Clinical Society of the Massachusetts General Hospital and before the Massachusetts Medical Society in 1897. The operation, which I called ureteroplasty, corresponded in principle to the Heinecke-Mikulicz operation for stricture of the pylorus. The junction of the ureter and the dilated renal pelvis was incised longitudinally, and this longitudinal incision was sewed into a transverse line. The effects of the kink or sharp bend at the origin of the ureter was thereby overcome. In my first patient absolute cure followed.

I found this route for exploring the pelvis of the kidney so easy that I have used it a number of times since in preference to the usual one of going through the cortex for renal stone or for other reasons. The practicability of plastic operations upon the pelvis of the kidney and upon the beginning of the ureter was thus made apparent to me by a considerable number of explorations.

My second case of intermittent hydronephrosis is the one shown here to-night.

Mr. L. N. L., twenty-three years of age, machinist, came to see me on July 14, 1902, sent by Dr. Averill of Brockton. For six months he had had pain in the left side about two inches below the ribs. The longest time that he had been without pain was eighteen days. The pain was sharp in character, lasting for twenty-four hours, and sometimes for longer. He had been completely disabled for some six months.

I found a large, tender mass in the region of the left kidney. It was impossible to say whether the tumor was fluctuating or not. Examination of the urine was negative. At the beginning the temperature was normal. At my first examination the tumor seemed to me to be the spleen, and I supposed the case one of a splenic leukemia. Examination of the blood, made by Dr. Williams, showed nothing but a leucocytosis. Five days later the mass had entirely disappeared. The patient himself had noticed nothing wrong with the urine. There were no constitutional symptoms at any time.

On Oct. 13 I again saw this patient. The history during the summer had been about the same as before. I found in the left renal region a tumor which was without doubt a kidney, and I at that time advised an exploration. The diagnosis was intermittent hydronephrosis.

The operation was performed at the Deaconess Hospital on Oct. 16, 1902. An incision six inches in length was made, starting from the ribs over the site of the tumor and running downward and forward. Throughout this incision the external and internal oblique and transversalis were separated in the direction of their fibers. The peritoneal cavity was opened sufficiently for a thorough exploration of the right kidney and the other abdominal organs. The opening in the peritoneum was then sutured, and the left kidney examined. Though the pelvis of the left kidney was much enlarged and much thickened, it contained no stones. The diagnosis was clearly hydrone-

[1] Read at the Boston Society for Medical Improvement, Nov. 16, 1903.

phrosis, caused by a sharp bend in the ureter at its origin at the pelvis of the kidney. A careful dissection was made of the renal pelvis and of the ureter, to show exactly the relation of the parts and the cause of the obstruction. An incision about an inch in length was then made extending through the pelvis of the kidney and extending down half an inch on to the ureter. The middle of the incision corresponded to the sharp angle of continuity between the pelvis and the ureter. This longitudinal slit was converted into a transverse one by appropriate sutures. A small wick was placed at the line of suture on the left.

The patient made a good recovery, and in a month was entirely healed and perfectly well. He was able to return to his work.

In April he was taken with a severe attack of appendicitis, for which he was advised by Dr. Williams. It was very evident that the trouble was in the appendix. On June 4, 1903, I removed the appendix through an incision an inch and a half in length. Since that time he has been perfectly well.

The operation for hydronephrosis was a very successful one technically, and it has resulted in perfect relief to the symptoms. Whatever may have been in the very beginning the cause of the obstruction, the result was a kink-like or valve-like origin of the ureter. Once the obstruction became sufficient to cause dilatation of the pelvis of the kidney, then that obstruction became more and more complete, the distended pelvis increasing the sharpness of angle and pressing directly upon the ureter.

This origin is, perhaps, somewhat a matter of theory. If the obstruction is caused, or is continued, by the pressure of the dilated pelvis upon the ureter, it is hard to say how the distension is ever released spontaneously, for the pressure needed by the dilatation cannot but increase. In this case, as in the previous one and in the following one, the hydronephrosis was intermittent — a distension of the pelvis of the kidney attended by severe pain. This pain continues more or less severe until the pelvis is excessively distended. Then, for some reason, the urine begins to flow, the pelvis is emptied, the pain and the tumor disappear.

CASE II. The next patient whom I show here, a brother of the last one, has symptoms which are very much like those already related. This young man is twenty years of age. He has had in the region of the left kidney for five years what he calls "side-ache." The pain comes on suddenly and is followed by vomiting. At times he notices a swelling at the site of the pain, "as if the ribs were pushed out some." The pain is described as a heavy, continuous one.

This patient came to me on Aug. 29, 1903, saying that the last attack had begun twenty hours previously. It began suddenly and it ended suddenly. He does not have the pain all the time. Sometimes it comes every month; then he will go for weeks without any. He has noticed nothing abnormal about the urine, except that after the cessation of the pain of the last attack he passed more than usual; he has never noticed any blood; and there has been no retraction of the testicle.

The physical examination was negative; also the examination of the urine.

His next attack was in October. It was like the others, but not so severe. I found tenderness in the region of the spleen and in the greater curvature of the stomach. After careful study of this case Dr. Joslin made a diagnosis of intermittent hydronephrosis.

The last attack was a week ago. The patient came to see me during the attack. He was suffering great pain. I was unable to make out any definite signs. In this case the diagnosis depends upon the history, with intermittent tumor. The symptoms seem to me to justify exploration of the kidney, which exploration I shall make day after to-morrow.

## FIBROIDS.

*The danger of malignancy a strong indication for the removal of supposed uterine fibroids.* — In the early days of uterine surgery the dangers of removing uterine fibroids were so great that we very properly hesitated to advise their removal, except for certain definite indications, such as pain, hemorrhage, rapid growth and pressure. There are many fibroids which neither grow rapidly nor cause pain, bleeding or pressure. In other words, they present none of the ordinary indications for operation; and in the earlier days, no such tumors would have been removed. The chief reason urged against the extirpation of uterine fibroids, or supposed uterine fibroids, was the danger of the operation. At the present time the danger of hysterectomy has been reduced far below the danger of the original operations for ovarian tumors. Practically all hysterectomies for uncomplicated fibroids prove successful. The mortality in the hands of experienced surgeons is about as low as mortality can be in any severe operation, whether performed in the abdomen or elsewhere. True, the safety of the operation is very largely influenced by the experience and skill of the operator. Indeed, I believe that there is no abdominal operation in which the result depends more upon careful asepsis, clean and swift dissecting, rigid hemostasis, and painstaking avoidance of the ureters. The uncomplicated hysterectomy in a strong woman of child-bearing age is certainly as safe as the normal childbirth — always, be it understood, in the hands of an experienced surgeon. Now that the mortality has been brought so low, it is evident that the range of indications is correspondingly widened. When the risks of a hysterectomy were deemed justifiable only in certain grave symptoms, then the dangers were naturally great. Now that the dangers are small, the indications should include symptoms of minor severity and of less danger to life and to health. One of the dangers — and one never seriously considered — is the danger of a wrong diagnosis. I have seen too many errors in diagnosis, even in the hands of the most experienced clinicians, to be willing to accept as final, without exploration, the diagnosis of even the most skillful. I look upon all pelvic tumors as being possibly malignant. It is true that in the great majority of cases a correct diagnosis can be made, and is made. It is quite as true, however, that in the minority of cases the diagnosis is not made and cannot be made. Has not the time come, in the treatment of pelvic tumors generally and uterine tumors in particular, when the danger of overlooking a possible malignancy vastly outweighs the danger of exploration? In other words, are we justified in the palliative treatment of pelvic tumors, even when

they are apparently benign, knowing the great difficulty — not to say the impossibility — of an absolutely accurate diagnosis?

Case I. I have two specimens to illustrate the importance of this subject. The first was from a patient of forty-nine who had been under observation for four years for a uterine fibroid about as large as a Florida orange. This patient had passed the menopause two years. On account of pain and flowing, operation was finally decided upon. I operated upon this patient on Oct. 24, 1903. The uterus contained a single fibroid about the size of an orange. In the lower segment of the uterus, about the cervix, were numerous masses apparently malignant, encroaching upon the uterine cavity and extending beyond the uterine tissues into the layers of the broad ligament. These masses were apparently entirely removed. Dr. Whitney pronounced the disease to be a uterine fibroid with extensive sarcoma.

I show the specimen and also the drawing by Mr. Aitken.

Now this patient was very properly watched and cared for during and through the menopause under the diagnosis of a simple fibroid. It was not, however, a simple fibroid; —it was a complication rare, it is true, but of the most serious nature. Although there had been every reason to think that this was a simple fibroid, it nevertheless had a malignant and almost hopeless complication.

I have seen a number of cases of uterine fibroid either associated with cancer of the cervix or complicated by malignant degeneration of its own tissues.

Case II. The next specimen is from the case of Mrs. O., a woman of seventy, a patient of Dr. Cook of Fitchburg. Four years ago this patient began to flow. The flowing would last for a month, say, and then stop. The pain, hardly worth mentioning at first, gradually became more frequent and more severe. The general condition was good.

I found a uterus enlarged to the size of an orange and filled with small fibroids. Abdominal palpation showed a tumor over the vagina like that of an anteflexed uterus, filled with small nodules, — the whole suggesting a bunch of grapes.

I operated to-day through the abdomen. By bimanual examination I could feel a mass of small tumors, intimately connected with the uterus and was almost sure that the whole was malignant. The uterus between my hands felt as if it were filled with fluid and with small hard masses. The feeling of fluctuation was, however, due to a large and very soft tumor, the remains of which can be seen in this specimen. The gross appearances of this mass seem to me rather in favor of a soft uterine polyp, a non-malignant growth; but I shall not be at all surprised to be told that the soft masses here are malignant and that the main body of the uterus is filled with fibroids. Whatever the microscope may show, this is a case in which the only possibility of cure lay in a total extirpation of the uterus.

It is only by the promptest surgical intervention that malignant tumors of the uterus permit radical cure. Whenever we postpone operation on uterine tumors — no matter how benign these tumors may seem — we are running a risk beside which the dangers of operation are but trivial. I have no hesitation in saying that the dangers of overlooking a malignant tumor — even in the hands of the most skillful and the most experienced abdominal surgeon — are much greater than the dangers of exploration are in the same hands, especially when the tumor is discovered in early middle life. The older the patient, of course, the more imperative is exploration, for the tendency to malignancy increases with age, just as, unfortunately, the dangers of operation increase.

## SOME CASES OF INTUSSUSCEPTION.[1]

BY FRANKLIN G. BALCH, M.D., BOSTON,

*Surgeon to Out-Patients at the Massachusetts General Hospital.*

Dr. Edred M. Corner of London has published an article on intussusception in the November number of the *Annals of Surgery*, in which he writes at some length on the various forms which this obstruction takes. Among other conclusions he decides that the double intussusception is more common than the single. The ileo-colic colic variety occurs most frequently, the colic ileo-cecal variety being next in order. He considers the single ileo-cecal variety quite uncommon. In the hurry of operation in these cases it is not often observed which variety is present, and in the records of some of the cases which I have looked up, the variety of the trouble is not mentioned. As Dr. Corner's observation that the double variety is more common than the single one is not the generally accepted theory, it will be of interest to try to get more accurate information upon this point in future operations.

Personally I have operated for this condition but three times. One case has already been reported in the *Medical and Surgical Journal*. In that case the obstruction was wholly in the small intestine, and was due to invagination of jejunum into ileum. Fifty-six inches of necrotic gut were resected. The patient recovered.

The second case has not been previously reported.

I saw Edith F. in consultation with Dr. Arthur N. Broughton on the 30th of July, 1901. She was a baby of five and a half months, who had had acute symptoms for only ten hours. The mother said she had noticed a minute speck of blood several times lately, but there was no diarrhea, and the baby had been gaining steadily. The night before I saw the child she had seemed feverish and had cried a good deal as if in pain. At 3 A.M. she vomited. Later there was a large movement followed by two bloody stools. The large movement was offensive. The first part was constipated, the last part loose. When I saw the child at 1.30 she seemed in great shock. She was apathetic, with a weak pulse of 144 and a rectal temperature of 98-4. A mass could be felt below the umbilicus. A diagnosis of intussusception was made, and operation showed it to be of the enteric ileo-cecal variety. The invagination was readily reduced, partly by pushing the bowel up from the large intestine, and partly by traction on the small intestine. The end of the cecum had been invaginated, and the appendix was reddened, but not otherwise abnormal. It was not removed. A band of adhesions ran across the cecum. That was cut before it was observed just what its point of origin was, and search later to clear that doubt was impossible on account of the child's condition. The wound was closed by silkworm-gut sutures. Six days later the upper stitch cut out during a fit of crying. The bowel came out, but under ether Dr. Broughton replaced it, and drew the edges of the wound together with crepe lise and collodion. Recovery otherwise was uneventful, and the child is very well to-day. A striking thing about the operation was the fact that as soon as the invagination was reduced the condition of shock began to improve, and the child looked better when put to bed than just before operation.

Another case was operated upon at the Massachusetts General Hospital. Ralph E. F., six months old, was seen May 29, 1903, at 10.30 P.M. He then had a temperature of 101.5, a pulse of 158, and a white count of 48,000. He

[1] Read at the meeting of the Boston Society for Medical Improvement, Nov. 16, 1903.

had felt poorly for a week, but the acute symptoms dated only from the day before. There had been sudden severe pains with frequent vomiting, and on the afternoon of the second day, the vomitus had become brown. The bowels had not moved for forty-eight hours, except a small movement after an injection. The child looked very sick. Nothing was felt by rectum. The abdomen was slightly distended, but not tender except over a tumor in the right side. There was considerable free fluid in the abdominal cavity. On opening the abdomen, several ounces of clear, slightly brownish fluid welled up. An intussusception was found in the ileo-cecal region, but the exact variety is not noted in the record. The bowel was dark and necrotic, so a mass about six inches long was resected. The ends were brought together by a continuous catgut suture, and a second layer of Lembert sutures, also of catgut, was placed outside. The mesentery was closed by an over and over suture of catgut. This controlled the hemorrhage very rapidly and effectually, while at the same time it approximated the cut edges. The patient never rallied after the operation, and died in about seven hours. An examination of the anastomosis after death showed a perfectly tight joint.

Since 1897 there have been ten cases of intussusception at the Massachusetts General Hospital. One of these was apparently reduced during the motion incident to bringing the child to the hospital, and making the necessary examination. The symptoms had been typical, and there was a tender tumor in the region of the cecum when the child was examined. This tumor also disappeared.

The other nine cases have all been operated upon. Three of the nine patients operated upon were over twenty-one years of age. Two of these recovered and one died.

Including my two cases which were operated upon outside the hospital, we have a total of eight cases in children. One of these was sixteen years old, and another three years old. Both lived.

In three of the cases that died resection was done. In one an artificial opening was made into the bowel, as the intussusception extended through the whole of the large intestine and could not be reduced. The fifth case died after the bowel had been reduced after opening the abdomen. In the one case that lived the invagination was reduced at operation.

As far as it is possible to draw any conclusion from such a limited number of cases, it would seem that the mortality decreases rapidly with the age of the patient. In children under one year of age intussusception is usually fatal. Very early operation offers the best chance of recovery.

## THE BICYCLE AS A THERAPEUTIC AGENT.

LUTHER HALSEY GULICK, M.D.,

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FEW cases are more exasperating than those which, without organic disease, are constantly demanding treatment for either real or imagined functional disorders, nor does it make much difference whether the disorder is in the realm of the so-called real or the imaginary. In either case it demands and deserves treatment and cure. A diseased imagination is as potent a cause of disease as a colony of pathogenic bacteria! It may be, indeed, far less susceptible to treatment.

Many of these cases present similar conditions — muscular weakness, ill-defined pains in the back and shoulders, inability to sleep satisfactorily, digestion uncertain, general feeling of worry and depression.

The general indication is for an increase of vigor, of vitality, something that will increase cell metabolism. Strychnia is temporarily effective in many of these cases, but inasmuch as the general conditions of environment remain the same, the patient soon reverts to the unsatisfactory state obtaining on beginning treatment. The agent which meets the conditions presented both theoretically and practically is muscular exercise. By this means, in many cases, the power of the digestive processes can be increased, general muscular tone secured, refreshing sleep and resulting wholesome view of life restored.

Muscular exercise of a general character is frequently prescribed, but often without beneficial results. The form of administration, the size of the dose, the frequency of the dose, and the psychic accompaniments of the exercise each form necessary elements for consideration. Success will depend upon good judgment on each of these points.

In order to secure the general organic effects of muscular exercise it is important, indeed it is well-nigh necessary, that the exercise involve chiefly the large muscular masses of the body. It is true that considerable quantities of energy can be expended by the smaller groups of muscles. One may exercise with the arms alone so as to secure genuine muscular fatigue, but the amount of neural expenditure involved, in order to secure the desired physiologic results, is far greater where the muscles are small than where they are large. To raise the weight of the body one foot, by means of the arms alone, involves expenditure of as many units of energy as is represented by the weight of the body. A person weighing 150 pounds would expend 150 foot-pounds of energy in raising the weight of the body one foot, whether this were done by the arms or by the legs. The sum total of the effect of this exercise upon the heart and lungs and digestive processes would not be essentially different in the two cases, for the organic effects are directly related to the number of foot-pounds of energy expended, rather than is the consciousness of fatigue involved. Where, however, the exercise is done with the legs, it is done with ease; when it is done with the arms it is accomplished, by women at least, with the greatest difficulty. The amount of will, and indeed of nervous energy, varies greatly in the two cases. A person who has by dint of great effort raised the weight of the body by means of the arms will usually find that when the hand is held free the fingers will tremble,

indicating overexpenditure of effort. The same amount of work done by the legs will not leave the individual in this undesirable condition. Thus, my first point in the use of muscular exercise as a therapeutic agent in the cases under consideration is that it should be primarily exercise of the large muscular masses of the body as distinguished from the small muscular masses. Such gymnastics as involve primarily movements of the arms are of slight value from the organic standpoint as compared with those in which the body itself is moved by means of the legs. In bicycle riding we find the work done by the large muscles. The muscles around the shoulder girdle are not exercised to any great extent, but all the muscles attached to and descending from the thorax to the pelvis, practically all the muscles connecting the pelvis with the thigh and leg are constantly involved in bicycle riding. This explains why it is so comparatively easy to affect the appetite, the sleep, the general circulation and respiration by means of bicycle riding as compared with the formal gymnastics usually employed. By means of the bicycle we expend many foot-pounds of energy without great neural exhaustion.

In order to the economy of nerve tissue, it is also important that the size of the load given to the muscular masses shall be small in proportion to their strength. The sum total of force expended in lifting one pound one foot for fifty consecutive times is identical with the amount expended in raising a fifty-pound bell one foot once. The neural results are, however, wholly different in the two cases. In the one case there has been little, if any, conscious effort; the work is done easily. In the other case it is only by great effort that the work is done; there has been strain of will and concentration of effort. The one form of exercise makes for nervous exhaustion, while the other does not. This principle of dividing the dose in those cases in which the effects of muscular labor are to be secured with a minimum of neural expenditure is fundamental in all these cases. We have no other agent by which we secure so readily a large number of minimum contractions of large muscular masses as we have in the bicycle. In ordinary riding on a country road, or a city street, each push upon the pedal involves but slight effort, but the sum total of work done, because of the large number of efforts, is very great.

A third element of great importance is that the conscious attention and deliberate exertion of the will shall be minimized; in other words, it shall be desirable that so far as possible the exercise be automatic. The illustration of the comparative ease of walking on a smooth road where the steps may be automatic, and the fatigue involved in walking railroad ties where the steps cannot be automatic, is familiar. The one demands constant attention, the other is done automatically. Our sense of fatigue is usually from central exhaustion, not from fatigue of muscle. Those activities which are presided over by automatic centers are far less liable to produce fatigue than those which demand conscious attention. Bicycling, after it has become familiar, thus corresponds to this indication. The riding and steering is wholly automatic. The completion of each revolution of the pedals itself acts as a stimulus to the impulse necessary in order to the next revolution. Amounts of work are done because of this automatic nature of the exercise, which would completely exhaust the patient if each effort were directed by the conscious will.

In regard to the psychic accompaniments of the exercise much might be said. The scientific data are not available which completely explain the differences between the effects of exercise when done alone and when done with pleasurable companions. It is probably due, however, to the increase in circulation which always accompanies the pleasurable emotions. If we accept the Lange-James theory of the emotions, we have a working hypothesis of great interest. Whether we have any hypothesis or not, the facts remain that muscular exercise under conditions of pleasant psychic associations has greater beneficial results than where other conditions prevail. The particular group of cases under consideration in this article demand diversion. It is but rarely that they can be persuaded to take systematic exercise for any considerable length of time, unless this exercise is made interesting to them. Gymnastic exercises taken alone, in one's room, are rarely, if ever, interesting, and while they are valuable in many cases, in this particular group they have proved, in my own hands at least, comparatively ineffective. In bicycling, bowling, golf, and such sports, I have found for these cases the well-nigh necessary pleasant associations; but in bicycling alone do we find both the physiologic and psychic conditions adequately met.

The fact that the exercise is taken out of doors is another point in its favor, for but rarely are rooms so well ventilated as to be as perfect in this respect as the country air. Then again, the direct effect of sunlight upon the tissues is secured out of doors and not indoors.

One of the immediate results of bicycle riding is a large increase in the respiration. Each excursion of the diaphragm is far greater than under conditions of quiet. Each minute includes many more respirations than when the individual is not doing muscular work. The effects of these respiratory movements upon the viscera constitutes one of the important beneficial results of the exercise. All those organs below the diaphragm, which include in their circulation the second set of capillaries, depend largely for their circulation upon other forces than that of the cardiac contraction. The alternate pressure and relaxation which the diaphragm exerts upon the liver is a large factor in promoting the various circulations within that organ.

Success or failure depends upon the accurate adaptation of the size of the dose to the individual need. Many of these cases have hearts that are weak. Upon moderate exertion they will

often run up to 120, or even higher, per minute. In these cases, in my own practice, the rule is to take the heart as a guide, and to increase the size of the dose with the increase of cardiac power. I determine the size as follows: Assuming that the patient already knows how to ride, I have him ride at the ordinary rate of speed for five minutes; I then count the heart rate and note its power. If the rate is below 100 I continue for another five minutes and count again. If several such periods of work fail to increase the heart rate above 100, I conclude that the heart is thoroughly able to take care of the work imposed upon it at this rate of speed. I then direct my attention to other considerations. If, on the contrary, at the end of the first five minutes I discover that the heart has run up to over 100, the patient must either then sit or lie down for five minutes. If after five minutes' rest the heart has not gone down to between 70 and 80, it indicates that the heart has done more work than its present degree of strength will warrant it in doing. No further exercise should be given until the heart comes back to approximately its normal rate. Even five minutes of exercise may produce genuine cardiac fatigue in a very weak heart, which may persist for hours or for days. One spring, when I was not in good condition, I played five tennis sets successively with great vigor; it was thirty-six hours before my heart got below 85. The only way to judge in these cases as to what is safe to give the heart is by proceeding cautiously and testing it at frequent intervals. The case is rare, however, in which five minutes' gentle exercise will not completely recover within five minutes' rest. This small dose may almost invariably be repeated for three or four times, the few minutes' rest always intervening. Gradually with the increased strength of heart, the periods of rest may be made shorter, the periods of riding longer, and ultimately the speed of riding somewhat increased. It is, however, never wise, for therapeutic purposes, to ride at a rapid gait, for here the expenditure of nerve tissue in order to stimulate the muscles to greater activity is much greater in proportion to the work done than where the ride is at a moderate gait.

In those cases in which the heart, as shown by the preceding test, is fully competent to meet the work demanded, the test of fatigue is the movement of the fingers when the arm is held extended from the body with the fingers spread. The fingers and hands should be as steady as they are during ordinary daily conditions. As soon as the fingers begin to tremble or to make athetoid movements, the demands upon the nervous system have been greater than is desirable; hence the stimuli to the muscles are not regular, hence the trembling. The doses of exercise should be so divided that this trembling will not be produced.

The patient who could not possibly stand fifteen minutes of vigorous exercise consecutively given, because of weak heart or an exhausted system, will readily endure with advantage fifteen minutes' exercise divided into three doses, with five minutes' rest between each dose. This may be repeated with ease twice or three times, and under certain conditions four times during the twenty-four hours. I have seen patients under this treatment have long quiet nights of sleep, with appetite that began to increase within two or three days, who thought that they were utterly unable to take exercise.

The third guide with reference to the size and frequency of the dose is as to recovery over night. Fatigue should never be allowed to become consecutive. Each night should see complete recovery from the fatigue of the preceding day. This must not be understood to mean that a person who always rises with the sense of fatigue shall immediately upon the beginning of treatment lose this consciousness. It does mean, however, that this consciousness of fatigue should not be increased. In the course of two weeks to a month it should be wholly lost. If so much work is given that the morning fatigue indicates that there has not been complete recovery from the exercises of the preceding day, the result will consist in a gradual decrease in the vigor of the patient.

I have but one word to say in regard to the position on the bicycle. Aside from the proper adjustment of the saddle, the one other important point is that the spine shall not lose its normal relations. It is not of particular significance that the spine shall be erect or inclined forward, provided the spine itself be not bent in the dorsal or the lumbar regions. If the pelvis is tilted forward, the whole spine may be inclined forward at an incline of even 45 degrees without interfering in the least degree with the respiration or circulation; but if bending forward is accomplished by the bending of the dorsal and lumbar spine, the result is an embarrassment both of cardiac and respiratory activity. Both the depth and the width of the thorax are decreased. The heart becomes irregular because of the restricted chest when it would not do so were it not embarrassed by the position of the thorax. The height of the handle-bars thus has comparatively little to do with the wholesomeness or the unwholesomeness of the position. The fundamental question is, is or is not the spine bent?

A small caution needs to be given at this point. In learning to ride we have a new element introduced, we have the acquirement of a habit involving a somewhat complex set of muscular co-ordinations. This is in itself a considerable demand upon the nervous system, so that if the patient has to be taught to ride it should be done with slowness. It may easily increase nervous fatigue and exhaustion.

To summarize, the bicycle is a useful therapeutic agent in those cases in which it is desirable to quicken the general organic functions of circulation, of respiration, of the whole digestive tract, together with ample diversion and out-of-door air. Its particular advantages are that it gives exercise of the large muscular masses, that

the exercise consists of a great number of small efforts; that it is automatic and does not call for great neural expenditure, in proportion to the amount of work done there is but little consciousness of fatigue; that the exercise is out of doors; that it is available anywhere; that with it there may be good companionship and varied scenery.

## MERCURIC CYANIDE AS A SURGICAL DISINFECTANT.

BY CHARLES HARRINGTON, M.D, BOSTON,
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In the course of a series of experiments in the field of practical disinfection, I turned my attention to the determination of the rapidity of action of mercuric cyanide, a substance which of late has come into considerable favor in surgical practice, being used in solutions of 1-1000 and 1-2000 as a substitute for corrosive sublimate, over which it is believed to possess a number of distinct advantages, among which are non-formation of precipitates with albumins, and rapid action. The latter quality is certainly of the very greatest importance, since an agent that destroys bacteria only after prolonged contact may be worse than none at all, because of its leading to a false sense of security. Thus, with full confidence of immediate action, one may proceed in an operation with an agent that serves no useful purpose.

In testing the germicidal property of mercuric cyanide, silk threads impregnated with twenty-four-hours-old bouillon cultures of *Bacillus pyocyaneus*, *Bacillus coli communis*, and *Staphylococcus pyogenes aureus* and *albus* were subjected to the influence of a 1-1000 solution of the pure salt. After varying periods of contact, they were withdrawn and planted in tubes of sterile bouillon, which were then incubated at 37° C. for twenty-four hours. In the first experiment, the longest period of contact was ten minutes. The table below, in which + indicates growth and — indicates sterility, sets forth the results.

| Exposure. | B. Pyocyaneus. | B. Coli. | Staph. Aureus. | Staph. Albus. |
|---|---|---|---|---|
| 10 seconds | + | + | + | + |
| 20 " | + | + | + | + |
| 30 " | + | + | + | + |
| 40 " | + | + | + | + |
| 50 " | + | + | + | + |
| 60 " | + | + | + | + |
| 1½ minutes | + | + | + | + |
| 2 " | — | — | + | + |
| 3 " | — | — | + | + |
| 4 " | — | — | + | + |
| 5 " | — | — | + | + |
| 7 " | — | — | + | + |
| 10 " | — | — | + | + |

The results obtained with the two species of pus cocci led to further experiments to determine how long these organisms can maintain their resistance. *Staphylococcus albus* survived exposures up to twenty-five minutes, but was destroyed in half an hour; *Staphylococcus aureus* was unaffected by contact for no less than three hours. The threads infected with this organism were exposed 10, 15, 20, 25, 30, 35, 40, 45, 50, 55 and 60 minutes, 1½, 2, 2½ and 3 hours, and with the exception of the last, which required 48 hours' incubation, all yielded abundant growths within 24 hours.

Mercuric cyanide is more commonly employed in conjunction with double its weight of borax, which substance serves to prevent corrosion of instruments. Since the combination might, perhaps, prove to exert a more pronounced bactericidal influence than the cyanide alone, it, too, was given a trial. Prepared tablets, one of which in a liter of water gives a cyanide strength of 1-2000, were obtained, and two solutions were made: one with 4 tablets (1-500) and the other with 1 (1-2000). Neither proved to have any influence whatever on *Staphylococcus aureus* up to a half hour, beyond which time the tests were not continued.

The above results can lead to but one conclusion concerning the practical value of mercuric cyanide, for a substance which, when employed in the strength recommended, cannot destroy all known species of pus organisms within three hours, and in double that strength accomplishes nothing in thirty minutes, can hardly be classed among the efficient germicides.

# Medical Progress.

## REPORT ON PEDIATRICS.

BY THOMAS MORGAN ROTCH, M.D., AND JOHN LOVETT MORSE, M.D., BOSTON.

### AN ANATOMICAL STUDY OF THE GASTRO-INTESTINAL TRACT OF INFANTS.

Bloch [1] studied the stomachs of 5 infants that died of other than digestive troubles, and the intestines of 9 normal infants, and of 10 dead of gastro-enteritis. He injected from 100 to 150 cc. of a 10% solution of formalin into the peritoneal cavity immediately after death. In this way he obtained very satisfactory specimens.

He found that in the stomach the number of glands per unit of surface was somewhat less than in adults and that their arrangement was irregular, the glands being grouped. The glands in infants were much smaller and contained much fewer gland cells. The glands were, however, of the same sort as in adults and the gland cells were as well developed. The functions of the glands and of the cells were equally well developed We must believe, therefore, that the gastric juice of infants contains the same ferments as that of adults, but that in the first few months it is feeble both in ferments and in hydrochloric acid.

While the mucous membrane of the stomach in infants is but little developed, the mucous membrane of the intestine is, on the other hand, developed to the highest degree. Almost the same number of glands and villi per unit of surface are found in the intestine of the infant as in the adult. They also are nearly of the same size. The superficial epithelium is also as well developed in infants as in adults. He recognized two sorts of Lieberkuhn's glands, one secreting only mucus

[1] Jahrb. f. Kinderheilkunde, 1903, v. lviii, p. 121.

and one a special intestinal ferment. He found these latter glands throughout the whole small intestine, as in adults, and also in the upper two-thirds or three-quarters of the large intestine. Those in the large intestine gradually diminished in number and had disappeared at two years. The mucous glands, as in adults, were found only in the large intestine.

While the mucous membrane of the intestine is developed to a very high degree in infancy, the other intestinal layers are less developed. The slight development of the muscles of the intestine is especially striking. Both the circular and longitudinal muscles form only thin layers in the intestine of the infant. He found as the average figures of a number of measurements of the equally contracted parts of the jejunum thickness of the mucous membrane in adults .20; in a two months' old infant .18; thickness of the muscular coat, adults .90; two months' old infant .35. His investigations showed conclusively that the muscles were not much stronger at ten months, but that by two years they were decidedly stronger, although not as strong as in adults.

The intestine of the infant is proportionately much longer than that of the adult. This is probably principally due to the slight development of the intestinal muscle. For this reason the valvulæ conniventes and the cross folds in the mucous membrane are less in number and smaller in size. Even if the intestine of the infant is relatively longer than that of the adult it does not follow, however, that the surface of the mucous membrane is relatively greater in the infant.

### A STUDY OF GASTRO-INTESTINAL CATARRH IN INFANTS.

Bloch [2] reviews the literature on the subject and then gives the results of his own study of ten cases of gastro-intestinal disease in infancy. The intestines were hardened by the injection of a ten per cent solution of formalin into the peritoneal cavity immediately after death. In this way he prevented any post-mortem changes. His results differ materially from those of Baginsky and his followers in that the marked degenerative changes described by them were wanting. He believes that these changes which they described were post mortem in origin. He failed to find certain peculiar degenerative changes described by Heubner, Marfan, and others.

He concludes that there is an inflammation of the intestinal mucous membrane in the acute and chronic gastro-enteritis of infants which is most marked about the ileo-cecal valve. The more marked intestinal changes ordinarily extend but a short distance into the small intestine. The inflammation is more generally distributed in the large intestine. In individual cases a less marked inflammation may also occur in the duodenum, but by far the greatest part of the small intestine is free from marked inflammatory appearances. The superficial epithelium and the intestinal glands are for the greatest part well preserved.

Inflammation occurs in the intestine in the same way as in all other mucous membranes.

In the acute forms it shows itself especially by a marked injection, numerous hemorrhages and a slight round-cell infiltration of the mucous membrane. The glands may show cystic dilatation. A large part of the cells of the glands and of the superficial epithelium is destroyed in these places and hemorrhagic ulcerations occur.

In the more chronic forms are found the same changes, but less marked in degree. They are characterized by a marked round-cell infiltration of the mucous membrane and sub-mucosa and by an exudation of round cells. In addition, superficial losses of substance and follicular ulcerations are found.

A sharp differentiation between the acute and chronic forms is no more possible anatomically than it is clinically; they run gradually into each other.

In the stomach occur inconstantly hemorrhagic ulcerations and alterations in the interstitial tissue. The superficial epithelium is always well preserved and normal, and the glands usually so.

### A STUDY OF THE INTESTINES IN INFANTILE ATROPHY.

Among other cases Bloch [3] carefully studied the intestines of three cases of atrophy. No noteworthy pathological changes could be made out microscopically. The intestine was long and its wall was thin as paper. Both conditions were a direct result of the distention of the bowel. The thinness of the wall is, he claims, certainly not due to an atrophy of the mucous membrane, but is merely a necessary result of the distention. Microscopically he found no important pathological changes, no destruction, no cicatricial changes and no extensive degeneration. The mucous membranes were everywhere well preserved with the epithelium, glands and villi of natural form and in normal quantity. No signs of inflammation were made out. The mucous membrane was, on the other hand, anemic and contained few leucocytes.

He also studied the various glands which secrete the ferments necessary for assimilation and absorption. The glands of the stomach showed no alterations, neither did the pancreas, Brunner's glands, or liver. Lieberkuhn's glands were well preserved in all cases and all had their natural form. This was not the case with the gland cells, however. The author studied especially Paneth's cells. In the cases of atrophy which he investigated these cells were either absent or very few in number. This happened only in the cases of atrophy and not in children with acute or chronic gastro-intestinal catarrh. In these Paneth's cells were always found.

It seems, therefore, that the diminution in the number of secreting Paneth's cells is peculiar to

[2] Jahrb. f. Kinderh., 1903, v. lviii, p. 733.

[3] Inaugural Dissertation, Copenhagen, 1902. Abstr. in Jahrb. f. Kinderh., 1903, v. lviii, p. 271.

infantile atrophy. Lieberkuhn's glands are, therefore, in these cases, not in a condition to perform their function as serous glands of digestion.

THE LEUCOCYTES IN THE SUMMER DIARRHEA OF INFANTS.

Zahorsky [4] examined the blood of 7 infants suffering from gastro-enteric infection, but without signs of colitis. He concludes that the leucocyte count in these cases is too variable to be of special diagnostic importance. He believes, however, that the differential count is extremely valuable in estimating the intensity of the intoxication. The normal ratio of the polymorphonuclear neutrophiles to the lymphocytes in infants is 2 to 3 or 4. In gastro-enteric disease this ratio is changed, the polymorphonuclear cells gradually increasing, while the lymphocytes diminish, the ratio becoming 1 to 1, 4 to 3, or even 3 to 1. A predominance of the polymorphonuclear forms is a corroborative sign of the intensity of the morbid process. A great relative increase in the polymorphonuclear leucocytes means that the baby is pretty sick, whatever the other signs may indicate.

(*To be continued.*)

## Reports of Societies.

### AMERICAN PUBLIC HEALTH ASSOCIATION.

PROCEEDINGS OF THE THIRTY-FIRST ANNUAL MEETING, HELD AT WASHINGTON, D. C., OCT. 26, 27, 28, 29, AND 30, 1903.

(Concluded from No. 1, p. 21.)

ON THE VALUE OF TESTS FOR BACTERIA OF SPECIFIC TYPES AS AN INDEX OF POLLUTION.

MR. H. W. CLARK and STEPHEN DEM. GAGE, Boston, Mass., in their joint paper with the above title said that the principal types of bacteria used as indices of pollution are the colon type, sporogenes type, sewage streptococcus type and occasionally the two so-called paracolon types, *i. e.*, the aerogenes or enteriditus Gartner type and the chologenes type. The colon type is the most numerous of these in normal sewage and is accordingly of the most value as a specific indication of pollution. Bacteria of the colon type can be detected in ordinary city sewage in dilutions of 1-10,000 to 1-100,000. The presumptive test as applied to the colon type, reacting as it does with some 58 well described species of bacteria, covers too broad a field unless followed by confirmatory tests. Tests for B. coli at the Experimental Station at Lawrence have agreed well with the results obtained by chemical analysis and by inspection of the sources of the samples.

Surface waters having the greatest relative population on their watershed have shown bacteria of the colon type more frequently than others with less population. Ground waters, on the other hand, unless grossly polluted never show bacteria of colon type. Samples of shellfish from sources polluted and unpolluted have almost invariably shown the presence of B. coli in the polluted samples and their entire absence in the non-polluted samples. Examinations for B. coli in different volumes of water show that tests in both 1 and 100 cubic cm. should be made, the tests in larger volumes being confirmatory of the tests in the smaller volumes; and in cases where a considerable number of samples are taken from the same source tests in the larger volumes usually give more information day by day as to the quality of the water than do the tests in 1 cubic cm.

Epidemics of typhoid fever coincident with the findings of B. coli in normally pure waters, *i. e.*, in waters known to be safe under ordinary conditions, but becoming dangerous by the accidental entrance of polluted water, have occurred within the observations of the writers, where, although the entrance of this pollution was known, the danger was not indicated by chemical tests or by an increase in the numbers of bacteria beyond the usual limits of variation for waters of this class. Comparative tests for the relative viability of B. typhosus and B coli show that there is a very great similarity between the length of life of the two germs under a great variety of conditions.

ISOLATION OF BACILLUS COLI COMMUNIS FROM THE ALIMENTARY TRACT OF FISH AND THE SIGNIFICANCE THEREOF.

MR. GEORGE A. JOHNSON, Poughkeepsie, New York, read a paper on this subject. He stated that it has been shown that the colon bacillus is taken up by fish, and the results of the experiment described indicate that it multiplies rapidly in the intestinal tract of the same. It has been shown that a search of a large number of fish caught in an unpolluted water failed to reveal the presence of this organism in the intestinal tract. It would seem possible, therefore, that fish, having taken up the colon bacillus from a polluted water might migrate to a water of comparative purity where they would naturally discharge the greatly increased number of these organisms. Whether the finding of the colon bacillus deposited in a water in this manner would depreciate the value of the colon test in the examination of a public water supply is a question. It would certainly appear that if the colon bacillus can be thus easily transferred from one water to another the transportation of the typhoid bacillus may be considered quite as likely. At least, the above results may explain the apparent phenomenon frequently noted where B. coli communis is found in comparatively large numbers in waters apparently open to but remote chances for fecal contamination.

THE BACTERIAL EXAMINATION OF ONE HUNDRED AND FOUR SAMPLES OF WATER, TOGETHER WITH A DETAILED STUDY OF THE COLON BACILLUS.

DR. WILLIAM G. BISSELL, Buffalo, New York, read a paper on this subject. In connection therewith he said that after consulting with many

laboratory workers it had been decided to inaugurate an investigation along the following lines:

*First Division.* To ascertain what constitutes a colon bacillus.

Under this division the following points were considered: (*a*) Isolation and culturing in the different media of colon bacilli from fifteen different sources.

(*b*) The comparison of colon bacilli so isolated with certain lactic acid organisms.

(*c*) A comparison of presumptive tests using colon bacilli and two organisms common to most waters., viz., the bacillus fluorescens liquefaciens and the bacillus putridus.

A recapitulation of the results demonstrated that the amount of gas produced, the production of indol and putrefactive odors are not constant factors with even true coli; that many of the lactic acid organisms bear a close resemblance to colon bacilli; and that it is not safe to depend upon presumptive tests alone in determining the presence of colon bacilli in the water.

*Second Division.* The amount of water advisable to test in arriving at an indicator of pollution: 104 samples of water coming from Niagara river were examined at respectively 12 and 22 miles below a place where the sewage of over 400,000 people is received. Different amounts of each sample were examined and the comparative frequency of the presence of colon bacilli determined.

A summary of the results demonstrated that colon bacilli were present in 52% of the samples when 1 cc. was the amount examined at the 12-mile distance and in but 34% when 1 cc. was the amount examined at the 22-mile distance. Both sides of the river are used for farming purposes. Many samples were collected during heavy rainfalls. A recapitulation tends to demonstrate: (*a*) That colon bacilli were not found in all cc. amounts of the sample.

(*b*) That there was a decrease in the number of colon bacilli, the greater the distance down the stream.

(*c*) That the heavy rains did not seem to increase the number of colon bacilli, although the land was used for farming purposes.

*Third Division.* A test was made as to the longevity of colon bacilli in natural water. Excrement from the horse, cow and from human beings were placed respectively in each of three wells. A test was made of each well at different periods. The results tended to demonstrate that colon bacilli can live in well waters at least one hundred and nine days, and that the human variety seems to have a greater resistance than that from other sources.

*Fourth Division.* Tests were made to determine the degree of frequency with which colon bacilli could be found in water known to be pulluted with sewage. The results obtained tended to demonstrate that not all cubic centimeter amounts of such samples demonstrate the presence of the organisms. The writer believed that many organisms have been mistaken for the colon bacilli in water work.

*Fifth Division.* Tests were made to ascertain the degree of frequency with which colon bacilli can be found in water not presumably polluted. This work was necessarily confined to well water. Results tended to demonstrate that there are many wells the waters of which do not contain colon bacilli, even though larger quantities are examined.

### A SIMPLE METHOD FOR THE ROUTINE DETECTION OF COLON BACILLI IN WATER.

A paper on this subject was presented by DR. ROYAL STOKES, Baltimore, Md. This paper proposed the use of neutral red in a fermentation tube containing 1% lactose or milk sugar bouillon, for the routine detection of colon bacilli in drinking water. The work of Theobald Smith has shown that the colon bacillus ferments lactose with the production of from 30 to 50% of gas, that the medium is acidulated, and that the proportion of gas is usually that of one part of carbon dioxide to two of hydrogen. Jordan studied a large number of bacteria which carried out all of the phenomena in the lactose fermentation tube which is characteristic of the colon bacillus. The writer also isolated a moderate number of fermentive bacteria from the Baltimore water supply, and failed to find any fermentive bacteria exactly resembling the colon bacillus in lactose bouillon in the fermentation tube.

In addition to the above characteristics of the colon bacillus in lactose bouillon, this organism causes a characteristic color reaction when neutral red is added to the solution in the proportion of 10 cc. of a .5% solution to 1 liter. This has been partly described by Irons and others, but they use the test in an ordinary test tube.

When used in the fermentation tube, the open bulb remains a p rt wine color and the closed bulb a light canary yellow, often showing fluorescence. The curved stem joining the closed and open bulbs shows an abrupt contrast of the colors usually in the middle of the curve. The members of the proteus and cloacæ group usually turn both bulbs yellow, but not always.

The method recommended is to inoculate a fermentation tube containing 1% lactose neutral red in the routine examination of water. If the percentage and amount of gas, the acidity, and the typical yellow-red contrast reaction all occur, the organism can be considered as bacillus coli communis. This is a much shorter method than the isolation in pure culture which takes from five to seven days, and will also make it easier to carry out quantitative experiments. These four distinct characteristics would seem to be sufficient to identify the colon bacillus in simple routine work.

### REPORT OF THE COMMITTEE ON THE SIGNIFICANCE OF B. COLI IN WATER SUPPLIES.

MR. S. C. PRESCOTT, chairman of this committee, said in substance that to present a statement of the opinion of the committee individually and as a whole as probably representing the generally

accepted views of sanitary bacteriologists as to the significance of B. coli in water, the following questions were sent to each member. The answers appended, except as otherwise stated, were practically as given below.

(1) In view of the fact that numerous investigators have found B. coli in nature where it could not be directly traced to sewage or fecal pollution, do you believe that the colon test of water is as safe an index to pollution as it was formerly regarded to be? *Yes.*

(2) Are you of the opinion that the number of colon bacilli rather than their presence should be used as a criterion of recent sewage pollution? *Yes.*

(3) To pronounce a water sewage-polluted, would you require as evidence that B. coli was present in a majority of one cubic centimeter samples? *Yes, in general.*

(4) Are you in favor of recommending that the examination of large samples for B. coli 100-1000 cc. be discouraged? Four members say in reply, *Yes.* One says, *No.*

(5) In case of a strong presumptive test, what confirmation tests would you require to make certain that the organisms present were B. coli? *Full set of distinctive cultural tests.*

(6) In view of the probable presence of streptococci in polluted waters, do you think it desirable that they be isolated as well as B. coli to confirm suspicious evidence of pollution offered by B. coli? Two could not recommend this; one thought it would be advantageous occasionally, but not practicable because of increase in routine work; one believed it should be done, when possible, for the sake of securing additional data, and for its general confirmation of the colon test; and one was indefinite.

Mr. Earle B. Phelps read a paper on

A CRITICAL STUDY OF THE METHODS IN CURRENT USE FOR THE DETERMINATION OF FREE AND ALBUMINOID AMMONIA IN SEWAGE.

A DANGEROUS FOOD-PRESERVATIVE.

Dr. Charles Harrington, Boston, Mass., in a paper on this subject, stated that sodium sulphite is used very extensively as a food-presevative, and more particularly for its effect on the color of chopped meat (Hamburg steak) and certain canned vegetables (asparagus and corn). The assertion made in 1896 by Kionka that it is a dangerous mixture has been combated by a number of experimenters and reaffirmed by Kionka and Schulz. Dogs fed on meat containing 0.20% of the salt were found by them to present extensive lesions in almost every organ, while others fed in the same way by Lebbin and Kallmann showed nothing abnormal.

In this experiment, five cats were fed for five months on beef containing 0.20 % and a sixth one with untreated beef. All six began at once to gain in weight, but at about the ninth week all but the control began to lose and they continued to do so up to the twentieth week, when all were killed. The organs of the control were normal. The chief lesion observed in the others was a parenchymatous degeneration of the kidneys. Each of the five presented cloudy swelling and marked fatty degeneration of the renal epithelium. Acute interstitial nephritis was present in one case.

THE TERMINATION OF QUARANTINE IN DIPHTHERIA.

Dr. T. W. Salmon read this paper, which had been written, he stated, because of the very great importance, in considering the duration of quarantine in diphtheria, of knowing just how long diphtheria bacilli persist in those who have had the disease, and of detecting what constitutes satisfactory evidence of their final departure.

One hundred consecutive cases of diphtheria which occurred at the Willard State Hospital had been studied with reference to these features. Any special interest or value in the review of these cases, said the writer, lies in the fact that all the individuals remained under close observation for months after their recovery, and that cultures were taken at frequent intervals from both nose and throat long after they had ceased to be infected.

The one hundred cases included those in which no pseudo existed and those of real severity. Several nasal cases were among them.

The cases were analysed in some detail in the paper and an effort made to show:

(1) In what proportion of the cases a single negative culture from the throat would have been satisfactory evidence of the disappearance of diphtheria bacilli.

(2) In what proportion of the cases two negative cultures from the throat would have been sufficient.

(3) In what proportion of the cases three negative cultures from the throat would have been sufficient.

(4) In what proportion of the cases cultures from the throat alone would have failed to reveal the persistence of diphtheria bacilli elsewhere.

The causes for failure to detect the bacilli when subsequent culture showed them to be present were briefly considered.

OFFICERS ELECTED.

President, Dr. Carlos J. Finley, Havana, Cuba; First Vice-President, Dr. J. R. Monjaras, Mexico, Mexico; Second Vice-President, Dr. W. W. Woodward, Washington, D. C.; Secretary, Dr. Charles O. Probst, Columbus, Ohio; Treasurer, Dr. Frank W. Wright, New Haven, Conn.

Havana, Cuba, was selected as the place for holding the next annual meeting.

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The scare occasioned in Lincoln, Neb., by the report that twenty-five cases of leprosy had been discovered in the Russian colony, has been dispelled by the report of the Health Commissioner, who made a thorough investigation. — *American Medicine.*

## Recent Literature.

*A Manual of Surgical Treatment.* By W. WATSON CHEYNE, C.B., M.B., F.R.C.S., F.R.S., Professor of Surgery in King's College, London, Surgeon to King's College Hospital and the Children's Hospital, Paddington Green, etc., and F. F. BURGHARD, M.D. and M.S. (Lond.), F.R.C.S., Teacher of Practical Surgery in King's College, London; Surgeon to King's College Hospital and the Children's Hospital, Paddington Green, etc. In Seven Volumes. Volume VII. The Treatment of the Surgical Affections of the Rectum, the Liver, Pancreas and Spleen, the Genito-Urinary Organs, the Breast and the Thorax. Philadelphia and New York: Lea Brothers & Co. 1903.

This is the final volume in this work on surgical treatment. The series is eminently practical and we have but little doubt that these books supply a distinct need. One very encouraging thing has been that, as the work has progressed, its value has increased. One may differ from the views expressed by the authors, but the manual as a whole is distinctly of value. This volume deals with surgical affections of the rectum and anus, pancreas, liver and spleen, genito-urinary organs, bladder, prostate and urethra, of the penis, testes and scrotum, affections of the breast and affections of the thorax and its contents. It makes a relatively large volume of 550 pages and is fairly well illustrated. On the whole, we can recommend this series of volumes to surgeons. Many of the ideas are English, but, after all, there is perhaps no place in the world where patients are better cared for than in England.

*Uterine and Tubal Gestation.* A Study of the Embedding and Development of the Human Ovum, the Early Growth of the Embryo, and the Development of the Syncytium and Placental Gland. By SAMUEL WYLLIS BANDLER, M.D., Instructor in Gynecology, N. Y. Post-Graduate School. 93 illustrations. 159 pp. New York: William Wood & Company. 1903.

The author divides his book into three parts: Part I, The Essentials of Uterine Gestation; Part II, The Essentials of Tubal Gestation; and Part III, Ovarian and Placental Secretion.

In Part I the changes which take place in the uterus during menstruation are traced, and the statement is made that " Menstruation is not a process by which the mucous lining of the uterus is thrown off, with subsequent regeneration previous to the next menstruation. It is simply the excretion of blood from the decidua menstruatis occurring for the simple and sole reason that there is in the uterus no fecundated ovum." "Ovarian secretion is the direct cause of this periodical swelling of the mucosa, and it continues, if fecundation has taken place, to exert, not alone a local, but likewise a stimulating influence on the general and sexual organs."

The embedding of the human ovum is described in great detail and with the aid of numerous drawings, also the development of the ovum. The origin of the syncytium is discussed in detail and the view is held that it is probable that the placenta is a gland with potentials of great importance from the standpoint of secretion.

In Part II, under the heading of " Processes Antedating Tubal Gestation," it is found that external migration of the ovum occurs frequently in tubal gestation, and that inflammatory changes which are common as causative of ectopic gestation destroy the cilia in whole or in part or diminish their functional activity.

After discussing the various opinions as to the histological processes of tubal gestation the author concludes " that, with the exception of the absence of the decidua and an enveloping zone composed of compacta, the processes of gestation in the tube are the same as those in the uterus, modified only, as we would naturally expect, by the absence of the decidua and the thinness of the tube wall."

Part III takes up the relation of the chorionic epithelium to chorio-epithelioma. A description is given of a uterine growth of exceedingly malignant character occurring after abortion and labor, or even after tubal abortion, the clinical symptom being uterine hemorrhage even after repeated curettings, very early metastases, especially in the lungs and vagina, and early death, through hemorrhage, cachexia or septic infection. In other words, deciduoma malignum is described from a developmental point of view but called by the writer chorio-epithelioma as a more appropriate name.

The book is well got up and is a credit to the publishers.

*Tumors: Innocent and Malignant, Their Clinical Characters and Appropriate Treatment.* By J. BLAND-SUTTON, Surgeon to the Chelsea Hospital for Women, Assistant Surgeon to the Middlesex Hospital, London. Third edition. Chicago: W. T. Keener & Co. 1903.

This is the third edition of this book. We are convinced that it is the best book of its size on the clinical character and treatment of tumors, innocent and malignant. The writer has presented a classification of tumors, but he is sufficiently discreet to recognize that at the present moment no classification will stand destructive criticism. The peculiar value of the book is that one may turn to it, as we have done during the past few months, for information. In using the book in this way we have never been disappointed. The book can in no sense of the word be termed a histological consideration of tumors, but it gives the gross appearance of tumors. It is a book that every surgeon should have for reference. It is free from dogmatism and empiricism. This is in a large degree due to the fact that the writer is familiar with the various tumors that occur in plant life and in the lower animals. The book is well but not profusely illustrated. The publishers are to be congratulated on the make-up of the book.

THE BOSTON

# Medical and Surgical Journal.

THURSDAY, JANUARY 14, 1904.

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## FINAL REPORT OF THE ROYAL COMMISSION UPON ARSENICAL POISONING.

Allusion has already been made in the Journal [1] to the first report of this Commission, which was appointed in February, 1901, after the serious outbreak of arsenical poisoning among beer-drinkers in Manchester, England, in the previous year. The same commission has now made its final report (Nov. 14, 1903), after holding numerous hearings and examining twenty-nine witnesses. This report embraces the following topics:

(1) Further observations regarding the epidemic of arsenical poisoning in 1900, and as to the medical and public health aspects of the evidence received regarding arsenic in beer and food.

(2) The suggested relation between the disease " beri-beri " and arsenical poisoning.

(3) Tests for arsenic in foods and substances used in the preparation or manufacture of food.

(4) Ways in which foods are liable to become contaminated by arsenic.

(5) Precautions which should be taken by manufacturers to exclude arsenic from foods.

(6) Present means of official control over purity of food, in relation to arsenic.

(7) Recommendations as to improvements in official control over the purity of food.

(8) Recommendations as to the proportions of arsenic in food which should now be held to constitute an offence under the Food and Drug Act.

[1] Final Report of the Royal Commission Appointed to Inquire into Arsenical Poisoning from the Consumption of Beer and other Articles of Food or Drink. Part I. Final Report. London, 1903.

In the first place the following points are illustrated by this investigation: That due precautions were taken to prevent further sale of the Bostock sugar which has plainly caused the poisoning; that the whole number of persons who suffered from arsenical poisoning in this epidemic " was certainly 6,000, and probably the number was in fact very considerably greater." A total of 70 fatal cases occurred, and " it is evident, however, that deaths thus certified do not represent the whole number of cases in which death resulted." The medical officer of health, of Manchester, also notes a remarkable decrease in the birth-rate during the period embraced in the epidemic of poisoning.

The symptoms detailed were chiefly " inflammation of mucous surfaces, with coryza, huskiness, lachrymation, gastro-intestinal disturbance and diarrhea; peripheral neuritis affecting sensory and motor nerves, and in some cases associated with herpes or with well-marked erythromelalgia, and recent pigmentation corresponding to that which not infrequently occurs in persons taking arsenic for long periods."

There is evidence to show that such cases had occurred in other parts of England and in earlier years without recognition. Cases of so-called ' alcoholic neuritis " and " alcoholic heart " have notably diminished since precautions have been taken to free the supply of beer from arsenic.

Observations are also presented upon the elimination of arsenic by the various organs, and especially by the hair. Observations upon patients taking arsenic in regular doses, and upon control cases in which none was taken, showed a notable increase in the former. In 38 out of 41 control cases the hair was free from arsenic, and in the remaining 3 it was present only in very minute quantities.

In closing this portion of the report the Commission concludes " that it would be unwise to express an opinion that any quantity of arsenic, however small, is to be regarded as admissible in any articles of food, and we think is should be the aim of the food manufacturer to exclude arsenic altogether from his products."

With reference to the possible causative connection of arsenic with the disease known as " beri-beri " the Commission considers the evidence as inconclusive.

With reference to the subject of tests for arsenic in food, preference appears to be given to the Marsh-Berzelius test, since " Where various substances are taken in quantities which have been found practically convenient, the

presence of arsenic will be detected, when in amounts well below 1-1000th grain per pound, or (in the case of liquids) well below 1-300th grain per gallon."

The electrolytic method has been adopted at the government laboratory. With reference to the Reinsch test, the Commission concludes that for the purposes of food analysis " it must be considered unnecessary and may even be misleading."

Of the ways in which food is liable to become contaminated with arsenic, the Commission enumerates first the substances used in the preparation of food, which are liable to contain arsenic. These are sulphuric acid, largely employed in the manufacture of glucose, invert sugar, glycerine, mineral and coal-tar colors and caramels, phosphoric acid and its compounds (in mineral waters, baking-powders, etc.), boric and a few other chemicals; malt and hops (from the fuel used in drying), beer, syrup and treacle, vinegar, Demerara sugar and a few other articles of minor importance. Experiments were also made with crops grown on arsenical soil, and the amounts found in such crops was inappreciable. As to precautions to be taken by manufacturers to exclude arsenic from food preparations the Commission discusses the question of guarantees of purity, and concludes that the manufacturer can guard against arsenical contamination (1) " by obtaining adequate assurance from the vendor that the ingredients which he purchases are satisfactory in respect to arsenic (having regard to the limits which the evidence before the Commission shows to be already practicable) and by taking care that their intended use for food purposes is known to the vendor. (2) By testing any ingredients which he purchases, or himself prepares."

The means of official control over the purity of food, in relation to arsenic, are carried out under the laws relating to the Sale of Food and Drugs, the Public Health Acts and the Revenue Acts. By means of different officials these laws are available (*a*) to prevent ingredients of food which are contaminated by arsenic from being used by the food manufacturers; (*b*) to prevent finished food products contaminated by arsenic from being sold to the public.

The Commission recommends that the Local Government Board be given greater power to secure the purity of the food supply, and that a specially trained expert be provided who shall exercise constant supervision in this direction. The necessity of official standards of purity is also urged. It is also recommended that in prosecution of retailers, the manufacturer or wholesaler may also be brought into the same case, if shown to be responsible. Medical officers of health should also be authorized to " lay an embargo on the sale of suspected articles " pending their examination or analysis.

Finally, the Commission proposes a limit of arsenic in articles of food as follows: " In our view it would be entirely proper that penalties should be imposed under the Sale of Food and Drug Acts upon any vendor of beer, or any other liquid food, or of any liquid entering into the composition of food, if that liquid is shown by an adequate test to contain 1-100th of a grain or more of arsenic in the gallon; and with regard to solid food — no matter whether it is habitually consumed in large or small quantities, or whether it is taken by itself (like golden syrup) or mixed with water or other substances (like chicory or carnos) — if the substance is shown by an adequate test to contain 1-100th grain of arsenic or more in the pound."

## A MEETING IN BALTIMORE TO DISCUSS THE TUBERCULOSIS CONGRESS SITUATION.

ON Jan. 28, 1904, at 8.15 P.M., there will be held in Baltimore, at McCoy Hall of the Johns Hopkins University, under the auspices of the Maryland Tuberculosis Commission, an informal meeting of American physicians and hygienists interested in the tuberculosis problem of this country. The object of the meeting will be to form a national committee to represent the American medical profession at the International Congress on Tuberculosis, to be held in Paris in 1905. There will also be a free discussion of the announced Congress on Tuberculosis in St. Louis under the leadership of Mr. Clark Bell, and the other tuberculosis congress to be held in Washington in 1905 under the leadership of Dr. Daniel Lewis, or as it is now called," The American Antituberculosis League." It is to be hoped that the deliberations at this meeting will result in an understanding between all parties concerned, and that all individualism and partisanship will be supplanted by true love to humanity, by genuine scientific and practical methods, and by the highest professional motives. If it is the unanimous opinion of the medical profession that there should be an American Congress on Tuberculosis previous to the one which is to meet in Paris next year, it should

be thoroughly representative and an honor to the American medical profession.

Prof. Wm. H. Welch, of Johns Hopkins, has kindly consented to preside. All communications relating to this meeting should be addressed to the Secretary *pro tem.*, Dr. H. Barton Jacobs, 11 Mount Vernon Place, Baltimore, Md.

Those of our readers who are not yet familiar with the present tuberculosis congress situation in America, we beg leave to refer to an open letter by Dr. S. A. Knopf of New York, entitled, " American and International Tuberculosis Congresses and Tuberculosis Exhibits for the years 1904 and 1905," which appeared in the Boston Medical and Surgical Journal of Dec. 5 last, and to our editorial comments on the subject of the same date.

## HEALTH COMMISSIONER OF NEW YORK.

New York appears to be open to congratulations on the appointment of Dr. Thomas Darlinton as Commissioner of Health. Although medical men have always been concerned in dealing with the sanitary affairs of the city, they have never been conspicuous as members of the health department. Recently, as we have previously stated, the medical profession was debarred from holding the highest office in the board of health. This fortunately is no longer true, and now, with the appointment of Dr. Darlington, there seems to be no reason why the work of the board of health may not be controlled, as it should be, by competent members of the medical profession. The *New York Medical Journal* speaks in the following terms of this appointment:

> Dr. Darlington has been long enough in medical life to have imbibed an ample experience in matters touching closely upon the fundamental work of sanitary authorities, and circumstances have given him unusual experience in such matters, notably the management of tuberculous disease and the sanitation of school children. On the other hand, he is not so old as to have become imbued with theories difficult for an old man to discard as exploded or to hold on probation. He is in the prime of life, at the height of his powers. Above all else, Dr. Darlington has been a practising physician in the city for years, one who has met with the reward of material success and the esteem of the community. We feel sure that his professional brethren will support and assist him in his official work to the extent of his just expectations, and we look to his administration to reflect credit upon our profession.

## THE BOSTON ASSOCIATION FOR THE RELIEF AND CONTROL OF TUBERCULOSIS.

This Association met on Wednesday evening, Jan. 6, at the rooms of the Twentieth Century Club, to listen to an address by Dr. S. A. Knopf of New York City, upon " Our Duties in the Combat of Tuberculosis." He first described the character of the disease, contrasting the degree of its communicability with that of smallpox. The methods of prevention were fully treated as well as the modes of treatment. In speaking of the necessity for the destruction of the sputum of consumptives, he detailed his own amusing experiences in the street cars of New York City.

He was especially severe in his denunciation of the many forms of quackery and of consumption cures which exist in every large city, as well as of the numerous patent medicines advertised for the same purpose, which are not only delusive frauds, but impoverish the poor by enticing them to spend their little savings for things which are worse than useless, when the same amount expended in securing better ventilation and more wholesome food might be productive of good results.

The subject was treated in a very clear and comprehensive manner, and was freely discussed by members of the Association. After the meeting a reception was given to Dr. Knopf.

## MEDICAL NOTES.

Prof. Burdon Sanderson will Resign. — Sir John Burdon Sanderson will shortly resign the position of Regius Professor of Medicine at Oxford. He succeeded the late Sir Henry Acland in 1895. It has been his intention to resign at the age of seventy-five years, an age which he will reach in a few weeks.

First International Congress of School Hygiene. — The first International Congress of School Hygiene will be held at Nuremberg, Bavaria, from April 4–9 next. A number of important communications from well-known authorities are already announced. Communications should be addressed to Herr Max Versen, Fränkischer Kurier, Nuremberg.

Typhoid Fever in Montreal. — It is reported that about a thousand cases of typhoid fever have appeared in Montreal and a half dozen smaller towns in the neighborhood. Fresh cases are being reported in spite of all efforts to check the spread of the disease.

Deaths among Physicians. — From statistics compiled by the *Journal of the American Medical Association* it appears that during 1903 the number of deaths of physicians in the United

States and Canada was 1,648, probably within 5% of the total mortality in the medical profession in North America. It is estimated that the number of physicians in this country is about 120,000.

Among those who died the years in practice varied from one to seventy-five. The greatest number of deaths occurred in the twenty-fifth year of practice, in which 51 were recorded. Of the entire number 209 had practiced more than fifty years, and two had been in practice seventy-five years at the time of their deaths.

JOURNAL OF INFECTIOUS DISEASES. — The first number of the previously announced periodical entitled *The Journal of Infectious Diseases* has appeared. This journal is founded by the Chicago Memorial Institution for Infectious Diseases, and, as we have already stated, is under the editorship of Drs. Ludvig Hektoen and Edwin O. Jordan, in conjunction with Dr. Frank Billings, Dr. F. G. Novy, and Prof. W. T. Sedgwick. The aim of this new journal is to occupy the special field of infectious disease, and to include in its publications only such contributions as bear with reasonable directness upon this general topic.

The first number amply fulfils the expectations which have been formed of the journal. It is admirably printed, and in general appearance is not unlike the *Journal of Medical Research*, after which it appears to be in a measure modeled. A number of papers, embodying original investigation, appear in this issue, among others an important one by Novy and McNeal on the "Cultivation of Trypanosoma Brucei."

### BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Jan. 6, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 48, scarlatina 40, typhoid fever 8, measles 172, smallpox 0.

DEMONSTRATION OF PATIENTS TREATED BY LORENZ METHOD. — At a special meeting of the Boston Society for Medical Improvement, held Jan. 7 at the Children's Hospital, patients who were treated by Dr. Lorenz in December, 1902, were demonstrated to the members of the Society. In addition to these the results of various methods of treatment for congenital hip dislocation extending over a period of twenty years, as practised at the Children's Hospital, were given, together with a demonstration of a new apparatus devised by Mr. Bartlett.

CENTENARIANS. — Mrs. Harriet B. Litthale of Tyngsboro, Mass., died Jan. 7, at the reputed age of one hundred and three years. Before her death her family was represented by five generations.

Elijah J. Woodruff died in Toledo, Ohio, recently at the age of one hundred and one years. He was born in Watertown, Conn.

### NEW YORK.

WORK OF BOARD OF REGENTS. — A summary of the work of the Board of Regents of the University of the State of New York reported from Albany shows that during the year 1903 the Regents licensed, as a result of state examinations, 633 physicians, 176 dentists and 17 veterinary surgeons, and that, in addition, they licensed under exemptions in the laws regarding the professions 69 physicians, 36 dentists and 6 veterinary surgeons.

MORTALITY IN DECEMBER. — The weekly reports of the Health Department show that during the month of December the mortality in the city represented an annual death-rate of 18.53, as against 17.27 in November and 17.52 in December, 1902. The corrected death-rate, excluding non-residents and infants under one week old, was 17.69. Among the diseases in which there was an increased fatality are the following: The weekly average of deaths from diphtheria and croup increased from 40 in November to 47.25 in December; from scarlet fever, from 7.75 to 17.75; from influenza, from 5.5 to 8; from pneumonia, from 139 to 186.75; from broncho-pneumonia, from 69 to 88.25; from acute bronchitis, from 35 to 37.5; from pulmonary tuberculosis, from 146.5 to 162; from cancer, from 44.75 to 52.75. Among the few diseases in which there was a diminished mortality were the following: The weekly average of deaths from typhoid fever declined from 17.25 to 13; from diarrheal diseases, from 42.5 to 34.5; from diarrhea in children under two years, from 35.5 to 25.

DEATHS FROM CAISSON DISEASE. — During the past week there have been two deaths from caisson disease among the men employed in the construction of the new Manhattan bridge, the third of the great bridges over the East river connecting the boroughs of Manhattan and Brooklyn. Altogether there have been five victims of the disease in the work on Manhattan bridge. The last one, Martin Dolan, was an inspector of masonry work. His death occurred on the first day of his employment in that capa-

city, and he had spent less than half an hour in the caisson when it took place. The bottom of the caisson is 92 feet under the river, and the pressure there is 45 pounds to the square inch. Like the two compartments above, this lower one is provided with an airlock. Dolan, it is stated, had passed the physical examination of his own physician, as well as of the civil service physician, and had been pronounced fit. As a result of his death the bridge commissioners immediately had a conference with Health Commissioner Darlington for the purpose of seeing what steps could be taken to make the work more safe. The first thing done was to instruct Dr. William E. Weber, of the Board of Health, to make a careful examination of all the engineers and laborers employed in caisson work, noting their present condition and each man's experience, and from his report it is expected that the health department will gain additional information of value in regard to the characteristics of the disease and as to the class of men who can be employed in the work with the least risk.

Radium in Therapeutics. — In a lecture on Radium in Therapeutics, delivered Jan. 5, before the William Pierson Medical Library Association of Orange, N. J., Dr. Robert Abbe of New York expressed the opinion that this agent does not act as quickly and satisfactorily as the Roentgen ray. Experiments made by others and himself indicated, he said, that radium is of especial value in removing birthmarks. Most of the reports in the press in regard to the wonderful cures effected by it were exaggerated. Especially was this true as regards cases of blindness; but, at the same time, it was of great service in demonstrating to the surgeon whether or not the optic nerve is destroyed or whether an opacity of the pupil exists.

Care of Water Supplies. — In his annual message, submitted to the Legislature Jan. 6, Governor Odell makes the following statements in regard to the care of the water supplies: "The report of the State Commissioners of Health shows that nearly 25,000 cases of typhoid fever, with a mortality of 1,635 cases, occurred in the state during 1903. Similar epidemics have occurred in other states. Inasmuch as typhoid fever is very frequently caused by polluted supplies of potable water, it is now classed as a preventable disease. The general acceptance of this view resulted in the passage of Chapter 468 of the Laws of 1903, entitled 'An act to amend the public health law relative to the discharge of sewage and other waste matter into the waters of the state.' The proper enforcement of this law is vested in the State Department of Health, and upon its wise and judicious enforcement will depend the lives and health of the people in a large degree. A complete record of the sources of public water supplies, and the possible conditions which may produce epidemics of typhoid fever or other infectious diseases, should be secured by the Health Commissioner, and I recommend that an appropriation be granted by the Legislature for this purpose."

Bequests. — By the will of the late Hon. James J. Belden of Syracuse, N. Y., the following bequests are left: Syracuse University, $100,000; Syracuse College of Medicine, Syracuse Home, Women's and Children's Hospital, St. Joseph's Hospital, $50,000 each; Hospital of the Good Shepherd, $10,000; three orphan asylums, $5,000 each.

Verdict of $12,500 for Personal Injury. — A verdict for $12,500 damages against the New York Central and Hudson River Railroad Company, which was secured by Alfred N. Newton in the Supreme Court on Jan. 4, is of interest from the fact that the plaintiff did not have a visible injury which could be demonstrated to the jury, the support of his claim resting entirely on expert medical evidence. Mr. Newton was in the collision in the Park Avenue tunnel which occurred Jan. 8, 1902, and well-known physicians testified that as a result of the shock received by him from the accident he had become affected with heart trouble. The evidence of witnesses called by the defence to the effect that the plaintiff had a weakened heart prior to the accident and that the company was not therefore responsible proved unavailing in convincing the jury that such was the fact.

Constitutionality of Tenement House Act. — On Jan. 8 the Appellate Division of the New York Supreme Court handed down a decision in which the constitutionality of the Tenement House Act, which asserts the right of the Tenement House Commissioner to compel the making of alterations required to insure proper sanitary conditions, is upheld. The case was appealed to this court by the Tenement House Departments of New York City to compel Kate Moeschen to install sanitary plumbing in premises owned by her, as specified in the act. The defendant claimed that the law imposed an unreasonable exaction, and was therefore in violation of the State Constitution.

## Obituary.

### JOSIAH LITTLE HALE, M.D.

DR. HALE died in Brookline, of heart disease, Dec. 21, 1903. He was born in Geneva, N. Y., April 1, 1841, and graduated from Hobart College, of which his father was president, in 1860, having been obliged to interrupt his college course for a short time because of illness. For two years he was in the employ of the Atlantic Insurance Company of New York. In 1865 he took up the study of medicine at the Harvard Medical School, from which he graduated in 1868.

In 1867 he was appointed house pupil at the Massachusetts General Hospital; his colleagues were Drs. H. J. Pratt, H. H. Hastings, H. H. A. Beach, Rufus P. Lincoln and Thomas W. Waterman. After leaving the hospital he went to Vienna for two years to pursue his medical studies, returning to Boston in 1870. He was appointed district physician of the Boston Dispensary in 1872, retaining his position for a year. In the same year he was appointed physician at the central building and remained on the staff for ten years.

He practised in Boston until 1882, when he was obliged to retire from active work on account of ill health, and went to Brookline, where he remained up to the time of his death. He published "Reports of Surgical Operations at the Massachusetts General Hospital" in Vol. 78, 1868, of the BOSTON MEDICAL AND SURGICAL JOURNAL. He was a member of the Massachusetts Medical Society up to the time of his death, also of the old Observation Society and of the Natural History Society.

Dr. Hale was an enthusiast in his profession and did not relinquish its practice until forced to do so by persistent ill health. For a long time he made a brave fight in his efforts to continue his work, but it was finally of no use; he had to give up everything that required continuous exertion. For a prolonged period he was subject to severe congestive headaches complicated with insomnia and a few years before his death heart disease developed. He found that at times by going on the water his headaches were relieved; he could sleep better, and hence he was obliged to take frequent short journeys. But the relief was only temporary, the old symptoms always returning with renewed intensity.

He was well fitted for a successful practitioner, not only being full of enthusiasm but of sympathetic and kindly manners and genial disposition. Further, he was a careful and accurate observer, taking great interest in minute experimental investigations.

For many years he was a student of genealogy and had made extensive researches into the history of his ancestors, some of whom fought in the Revolution. He was a member of the Society of Colonial Wars and of the Sons of the American Revolution.

Dr. Hale possessed a fund of information on many subjects which he was always delighted to impart to those interested. If he had been well enough to apply his mind to investigations in one direction, there is little doubt that he might have achieved valuable and important results.

His interest in everything that was going on about him; his geniality and amiability of disposition, and his strong character enabled him for many years to bear exhausting disease with patience and fortitude. Those who met him from day to day, and saw how cheerful and hopeful he was, could form no idea of the burden he was carrying. But when his friends now look back on his life and in the light of a more intimate knowledge realize what he passed through, they are impressed with the fact that his trials and deprivations were greater than those that fall to the lot of ordinary men. Bearing them in the noble and uncomplaining way that he did, he was, in the highest sense of the word a true hero, and his example should not pass unnoticed or be forgotten. W. C.

## Miscellany.

### AMERICAN SOCIETY OF TROPICAL MEDICINE.

THE first public meeting of the American Society of Tropical Medicine was held at Houston Hall, of the University of Pennsylvania, Philadelphia, on January 9, 1904, Dr. James M. Anders, a vice-president of the society, in the chair. A brief statement of the scope and workings of the society was made by the secretary, Dr. Joseph McFarland, after which the speaker of the evening, Dr. James Carroll of the United States Army, and a former member of the commission appointed by the Surgeon-General of the United States to investigate yellow fever at Havana, Cuba, made an address upon "The Etiology of Yellow Fever."

Dr. Carroll reviewed in an interesting manner the early researches upon the etiology of the disease, giving special consideration to the work of Freire, Sanarelli and Finlay, then reviewed the work of the commission whose researches have now become world-wide, and resulted in the proof that we have no reason to believe that yellow fever is propagated by any other means than the bites of the mosquito known as *Stegomyia fasciata*. It is only the female mosquito that bites, therefore only the female mosquito that becomes infected. The mosquito is able to impart the disease only after twelve days have elapsed since its own infection, and may retain the ability to infect after many months, providing it does not meet with destruction in the meantime. A description of the experiments made to show the infectiousness of *fomites* seemed to exclude all possibility of yellow fever being transmitted directly.

It was with pleasure that the speaker reported that the confirmation of all of the work of the United States commission had been given by the more recently appointed French commission.

Information regarding the society, its objects and its workings, can be had by applying to the secretary, Dr. Joseph McFarland, Medico-Chirurgical College, Philadelphia.

## ARGON IN ATMOSPHERIC AIR.

An interesting communication was made recently to the Paris Academy of Science on the above subject. M. Moissan reported that he had followed up the researches of M. Schloesing who had already determined the proportion of argon existing in certain specimens of air. By utilizing the property which calcium possesses of absorbing at one and the same time the oxygen, the nitrogen and all the impurities which are found in atmospheric air, and by the use of a special apparatus of which he had already given a description to the Academy, M. Moissan had been able to estimate the amount of argon found in the air of Paris, of London, of Berlin, of Vienna, of St. Petersburg and of Athens. In all these towns the amount was identical. The same proportion of argon was also found in samples of air taken in the Channel, in the Ionian Sea in the Gulf of Naples, in the valley of Chamounix, at the Grande Mulets and at the top of Mont Blanc. Air collected in the middle of the Atlantic appeared to be slightly richer in argon than that from other places. Calcium will combine with the hydrogen which is produced during reactions, forming a hydrate which is not decomposed at a temperature of 500° C. All this illustrates the remarkable uniformity of the composition of the air. M. Moissan does not appear to refer to the question of small quantities of helion which may possibly occur in the air or as to what its behavior would be when exposed to hot calcium. The results as regards argon are of interest and the observation that the air collected in the middle of the Atlantic appeared to contain a slightly greater proportion of argon than that from other places is probably in some way connected with its solubility in water and the great and frequent variations of atmospheric pressure to which the Atlantic ocean is liable. — *Lancet.*

# Correspondence.

## MEDICAL REGISTER FOR NEW ENGLAND.

Boston, January 8, 1904.

*Mr. Editor:* May I ask you to state that I have not had and do not now have any intention of republishing the *Medical Register for New England*, inasmuch as I find that the members of the profession are not disposed to give it support; that I have not sold nor do I propose to sell my copyright; and that any statements to that effect, by whomsoever made, are entirely without my authority and are evidently fraudulent.

Very truly yours,

Francis H. Brown, M.D.

## RECORD OF MORTALITY

For the Week ending Saturday, Jan. 2, 1904.

| Cities. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseases. | Typhoid fever. |
| New York . . | 3,908,644 | 1,420 | 383 | 23.80 | 23.88 | 4.15 | 2.40 | .70 |
| Chicago . . . | 2,021,086 | 604 | 151 | 17.05 | 23.17 | 1.82 | 2.48 | 1.32 |
| Philadelphia | 1,407,968 | 607 | 153 | 21.23 | 15.64 | 3.79 | .33 | 3.29 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 194 | 37 | 24.74 | 14.95 | 3.09 | 1.03 | 1.55 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 163 | — | 28.22 | 20.24 | 3.07 | 3.07 | 7.97 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 80 | 21 | 13.75 | 27.75 | 6.25 | 1.25 | — |
| Boston . . . | 617,950 | 231 | 53 | 16.88 | 16.02 | 1.73 | 1.73 | .86 |
| Worcester . . | 136,925 | 43 | 12 | 16.27 | 16.27 | — | 2.32 | 4.65 |
| Fall River . . | 119,349 | 44 | 21 | 2.27 | 40.90 | — | 2.27 | — |
| Lowell . . . | 104,402 | 34 | 15 | 2.94 | 8.82 | — | 2.94 | — |
| Cambridge . | 100,998 | 29 | 7 | 20.69 | 21.14 | 3.45 | — | 3.45 |
| Lynn . . . . | 73,875 | 21 | 5 | — | 4.76 | — | — | — |
| Lawrence . . | 72,348 | 23 | 6 | 13.04 | 26.09 | — | — | — |
| Springfield . | 72,020 | 19 | 3 | 21.05 | 10.52 | — | — | — |
| Somerville . | 70,413 | — | — | — | — | — | — | — |
| New Bedford | 68,863 | 23 | 8 | 13.04 | 17.39 | 4.35 | — | — |
| Holyoke . . . | 50,538 | 13 | 5 | 7.70 | — | — | — | — |
| Brockton . . | 46,601 | 8 | 4 | 25.00 | — | — | — | — |
| Newton . . . | 39,310 | 9 | 0 | 22.22 | 11.11 | — | — | 11.11 |
| Haverhill . . | 39,061 | 15 | 3 | — | 6.67 | — | — | — |
| Malden . . . | 37,205 | 7 | 2 | 14.30 | 14.30 | — | — | — |
| Salem . . . . | 37,188 | 15 | 4 | — | — | — | — | — |
| Chelsea . . . | 36,499 | 4 | 1 | — | — | — | — | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 16 | 2 | 6.25 | 18.75 | — | — | — |
| Everett . . . | 30,209 | 9 | 4 | — | — | — | — | — |
| North Adams | 29,201 | 5 | 1 | 40.00 | 20.00 | 20.00 | — | — |
| Quincy . . . | 26,798 | 11 | 3 | 18.18 | 18.18 | — | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 8 | 2 | 12.50 | — | — | — | — |
| Brookline . . | 23,576 | — | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | 6 | — | 33.33 | — | — | — | — |
| Medford . . | 21,956 | 10 | 4 | — | 40.00 | — | — | — |
| Chicopee . . | 21,692 | 11 | 5 | 18.18 | 9.09 | — | — | — |
| Northampton | 20,314 | 6 | 0 | 33.33 | — | — | — | — |
| Beverly . . . | 15,807 | — | — | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 5 | 1 | — | — | — | — | — |
| Adams . . . | 14,745 | 2 | 0 | 50.00 | — | — | — | 50.00 |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 7 | 1 | — | 28.60 | — | — | — |
| Newburyport | 14,478 | 7 | 0 | 14.30 | 14.30 | — | — | — |
| Woburn . . . | 14,315 | 5 | — | 40.00 | 20.00 | — | — | — |
| Melrose . . . | 13,819 | 3 | — | 100.00 | — | — | — | — |
| Westfield . . | 13,809 | 3 | 1 | — | 33.33 | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | — | — | — | — | — | — | — |
| Revere . . . | 13,609 | 3 | 1 | — | — | — | — | — |
| Framingham | 12,974 | 4 | 1 | — | 75.00 | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | — | — | — | — | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 3 | 1 | — | — | — | — | — |
| Weymouth . | 11,350 | — | — | — | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,730; under five years of age, 921; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 770, acute lung diseases 772, consumption 393, scarlet fever 38, whooping cough 12, cerebrospinal meningitis 7, smallpox 16, erysipelas 11, puerperal fever 16, measles 28, typhoid fever 61, diarrheal diseases 66, diphtheria and croup 116.

From whooping cough, New York 2, Chicago, 1, Philadelphia 1, Baltimore 2, Pittsburg 3, Holyoke, Chicopee and Woburn 1 each. From smallpox, New York 1, Philadelphia 11, Pittsburg 4. From cerebrospinal meningitis, New York 3, Baltimore, Boston, New Bedford and Brockton 1 each. From erysipelas, New York 4, Chicago 3, Pittsburg 1, Boston 2, Cambridge 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Dec. 19, the death-rate was 17.8. Deaths reported, 5,159; acute diseases of the respiratory organs (London) 186, whooping cough 113, diphtheria 43, measles 134, smallpox 3, scarlet fever 24.

The death-rate ranged from 8.2 in Kings Norton to 36.0 in Preston; London 16.8, West Ham 15.9, Brighton 17.0, Southampton 18.5, Plymouth 17.7, Bristol 16.9, Birmingham 19.7, Leicester 19.4, Nottingham 18.0, Liverpool 22.0, Bolton 16.8, Manchester 19.3, Salford 20.7, Bradford 20.1, Leeds 19.2, Hull 14.2, Cardiff 17.2, Rhondda 22.7, Grimsby 10.3, Merthyr Tydfil 21.1.

## METEOROLOGICAL RECORD.

For the week ending Jan. 2, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S..27 | 29.78 | 12 | 22 | 2 | 72 | 73 | 72 | S W | S W | 8 | 8 | O. | O. | .03 |
| M..28 | 30.06 | 16 | 23 | 9 | 55 | 47 | 51 | W | W | 16 | 16 | C. | C. | 0 |
| T..29 | 30.19 | 16 | 26 | 6 | 54 | 100 | 77 | W | N | 5 | 14 | C. | N. | .15 |
| W.30 | 29.94 | 22 | 30 | 15 | 80 | 60 | 70 | W | W | 12 | 10 | C. | C. | .01 |
| T..31 | 29.98 | 20 | 26 | 15 | 73 | 58 | 66 | W | S W | 8 | 13 | C. | C. | T. |
| F.. 1 | 29.90 | 25 | 35 | 15 | 61 | 67 | 64 | S W | W | 10 | 10 | C. | F. | 0 |
| S.. 2 | 29.98 | 9 | 15 | 3 | 89 | 100 | 94 | N W | N | 10 | 20 | N. | N. | .59 |
| ☞ | 29.98 | | 25 | 9 | | | 71 | | | | | | | .78 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING JAN. 7, 1904.

IRWIN, FAIRFAX, surgeon. Detailed as member of Revenue Cutter Service Retiring Board to be convened at Philadelphia, Pa. Jan. 5, 1904.

ROSENAU, M. J., passed assistant surgeon. Four days' leave of absence from Jan. 1, 1904, under paragraph 189 of the regulations.

KORN, W. A., assistant surgeon, Detailed as member of Revenue Cutter Service Retiring Board to be convened at Philadelphia, Pa. Jan. 5. 1904.

AMESSE, J. W., assistant surgeon. Granted leave of absence, on account of sickness, for 7 days. Jan. 4, 1904.

ASHFORD, F. A., assistant surgeon. Relieved from duty at Chicago, Ill., and directed to proceed to Milwaukee, Wis., and assume temporary command of the service at that port. Jan. 4, 1904.

BROCK, G. H., pharmacist. Granted leave of absence for one day. Jan. 5, 1904.

MAGUIRE, E. S., pharmacist. Granted leave of absence for seven days from January 1. Jan. 5, 1904.

### BOARDS CONVENED.

Board convened to meet at the marine hospital, Chelsea, Mass., January 11, 1904, for the physical examination of an officer of the Revenue Cutter Service. Detail for the board: Surgeon R. M. Woodward, chairman; assistant-surgeon W. C. Rucker, recorder.

Board convened to meet at Washington, D. C., for the purpose of considering revision of medical books on contract, and preparation of list of professional books, etc. Detail for the Board: Assistant surgeon-general L. L. Williams, chairman; assistant surgeon-general H. D. Geddings; assistant surgeon A. J. McLaughlin, recorder.

## CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING JAN. 9, 1904.

H. G. BEYER, surgeon. Upon completion of board duty in connection with barracks ordered to Boston, Mass., for special temporary duty and thence to the Naval Museum of Hygiene and Medical School, Washington, D. C.

A. E. PECK, assistant surgeon. Ordered to the "Pensacola."

M. K. ELMER, assistant surgeon. Detached from the "Pensacola" and ordered to the "Hancock."

## SOCIETY NOTICE.

THE PHILADELPHIA NEUROLOGICAL SOCIETY. HALL OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA. — A stated meeting of the Philadelphia Neurological Society will be held on Tuesday, January 26th, 1904, at 8.15 p. m. In celebration of the twentieth anniversary of the organization of the Society the following special program has been arranged. Papers will be read as follows: Dr. James Hendrie Lloyd, "The Metaphysical Conception of Insanity;" Dr. S. Weir Mitchell, "The Mental Processes by which the Rest-Treatment was Developed;" Dr. J. Chalmers DaCosta, "The Surgical Operations Applicable in Insanity;" Dr. Francis X. Dercum, "Mystic Medicine." A cordial invitation is extended to all members of the medical profession to attend the meeting.

AUGUSTUS A. ESHNER, Secretary.
224 South Sixteenth Street.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — The annual meeting of the society will be held in Sprague Hall, Medical Library Building, on Monday, January 18th, 1904, at 8.15 p. m. Papers: Dr. Henry Jackson, "Tubercular Meningitis in Adults;" Dr. Francis Williams, "A Comparison between the Medical Uses of the X-rays and the Salts of Radium."

ARTHUR K. STONE, M. D., Secretary.

## RECENT DEATHS.

BENJAMIN HALL HARTWELL, M.D., M.M.S.S., died in Ayer, Jan. 6, 1904, aged fifty-nine years, of pneumonia. Dr. Hartwell had been a pension examiner for twenty-eight years; he was coroner from 1871 to 1877 and for many years had been medical examiner of his district. He was graduated from the Jefferson Medical College, of Philadelphia. He had a large practice in his neighborhood and was much respected and trusted.

CORNELIUS E. BILLINGTON, M.D., of New York, died on Jan. 9, aged sixty years. He was graduated from the medical department of the University of the City of New York, in 1863, and served for a time as an army surgeon during the Civil War. Dr. Billington was for many years a district physician for the Demilt Dispensary, and during this period, which was before the days of antitoxin, attracted considerable attention by his successful treatment of diphtheria by means of tincture of ferric chloride combined with potassium chlorate.

JAMES FRANCIS FERGUSON, M.D., of New York, died at Central Valley, N. Y., on Jan. 6. He was born in New York City, Oct. 10, 1839. He was graduated from the medical department of the University of the City of New York in 1861 and from Bellevue Hospital Medical College in 1862. He served with distinction as a surgeon during the Civil War, and shortly before its close was breveted Lieutenant-Colonel of New York Volunteers. His professional appointments in New York are as follows: attending surgeon Bellevue Hospital, Outdoor Department, 1870–71; visiting surgeon to the Blackwell's Island Hospital, 1872–92; visiting physician to the Hospital for Nervous Diseases, 1886–92; consulting physician to the Charity (now City) Hospital, since 1892.

STUART H. REED, M.D., of Madison, N. J., died on Jan. 6, from pleuro-pneumonia. He was born in South Carolina, Oct. 10, 1854. He was graduated from Williams College in 1878, and from the College of Physicians and Surgeons, New York, in 1881. Dr Reed was a member of the first Board of Councilmen of Madison, and served for a number of years on the Board of Education. He was also for several years physician for the Board of Health and at the time of his death was a member of the Commission of Appeals.

GEORGE WINSLOW FOSTER, M.D., has recently died in Bangor, Maine, at the age of fifty-nine. After practicing for many years in the West, he returned East to the Government Hospital for the Insane in Washington, in 1893, where he remained until he took the position of superintendent of the Eastern Maine Insane Hospital at Bangor, an institution opened under his direction in 1901. Dr. Foster was graduated at Bowdoin College and at the Maine Medical School, and was a member of various medical societies.

## BOOKS AND PAMPHLETS RECEIVED.

Zum Selbstchutz bei der Röntgenuntersuchung. By Carl Beck, M.D., of New York. Reprint. 1903.

Ueber ächte Cysten der langen Röhrenknochen. By Carl Beck, M.D., of New York. Reprint. 1903.

Bulletin No. 96. Dairy, and Food Dept. State of Michigan. 1903.

Naubeim Methods in Chronic Heart Disease with American Adaptations. By Thomas E. Satterthwaite, M.D., of New York. Reprint. 1903.

Obscure Fractures in the Vicinity of Joints. By George W. Gay, A.M., M.D., of Boston. Reprint. 1903.

Case of Splenomedullary Leukaemia Successfully Treated by the use of the Röntgen Ray. By Nicholas Senn, M.D., LL.D., of Chicago, Ill. Reprint. 1903.

The Proper Perineal Prostatectomy Incision. By Nicholas Senn, M.D., LL.D., of Chicago, Ill. Reprint. 1903.

Subcutaneous Drainage in the Surgical Treatment of Hydrocephalus Internus. By Nicholas Senn, M.D., LL.D., of Chicago, Ill. Reprint. 1903.

A Scalp Face — A New Plastic Operation. By Nicholas Senn, M.D., LL.D., of Chicago, Ill. Reprint. 1903.

# Lecture.

## CLINICAL LECTURE ON EPITHELIOMA AT MASSACHUSETTS GENERAL HOSPITAL.

BY J. COLLINS WARREN, M.D., BOSTON,

*Professor of Surgery, Harvard Medical School.*

Gentlemen: It is my desire to say something to you to-day in regard to cancers on the surface of the body, or the so-called epithelioma. I take up the subject with you at this time because I consider it a particularly favorable moment.

As you are aware, a great change has taken place in our attitude toward, and our treatment of, this form of malignant disease, since the introduction of the x-ray, and I think the surgeon is all the more interested as he finds that some of his patients having this disease are disappearing and going to the dermatologists and the x-ray specialists. In this hospital I find that rodent ulcers are now treated largely in the skin clinic, and we see comparatively few of such cases in the surgical wards, and I might say that this is true also in private practice.

Some thirty years ago I wrote an article on this subject and as a result of that investigation I have seen many cases of rodent ulcer, and have become familiar with the treatment used at that time and since. In the early days the treatment was with caustics to a great extent, curetting and burning with nitrate of silver, and burning with the actual cautery; but as time went on and asepsis was perfected, I began to use the knife, with the result that the cures were more rapid and much more complete than they were by the old methods of cauterization. Of course there were cases which were beyond the reach of the knife and very difficult to treat, and others so situated that removal by the knife produced great disfigurement. You will see presently to what extent the x-ray has been helpful in treating these ulcers. Occasionally I have met with cases which have proved fatal in spite of all treatment, and cases which have produced the most disfiguring ulcerations. In my "Surgical Pathology" you will see the picture of a man with one side of his face destroyed by an ulcer, and in the "International Text-Book of Surgery" you will find the portrait of a man the whole side of whose face, half the nose, the eye, cheek and the side of the mouth are gone, as a result of disease of long standing. Manifestly, such cases are beyond all therapeutic aid, and succumb in spite of any kind of treatment. Whether with the advent of the x-ray such cases will become rarer is a point which will be watched with a great deal of interest.

Considering now the pathology of epithelioma, I wish to impress upon your minds that there are two principal varieties. One which is almost a benign growth, and another which approaches more nearly to cancer in a clinical sense. It has long been recognized that carcinoma in this region of the body is very much less malignant than carcinoma of the breast and intestinal canal, for example, and in the early days when little was known about the general characteristics of cancer, these growths of the skin, being found to be composed of large pavement-like cells, were known as epitheliomata; hence, it was believed that epithelioma was a different kind of disease from that which was then recognized as cancer. Of course, until we are able to state more definitely the true nature of cancer, it is useless to try to classify its varieties to any great extent. We are sufficiently familiar with the pathological anatomy of the disease, however, to know that all these cases should be recognized as cancer, although they may be greatly modified in the appearance of their histological structure by different regions of the body in which they grow.

Now in cancers of the skin we must recognize two varieties. First a very superficial type, known as the rodent ulcer, a small-celled epithelial cancer, and second a polymorphous-celled type characterized by larger cells among which the characteristic nests of cells occur. The type of the former of these two varieties is the rodent ulcer of the face, while types of the latter form are cancers of the lip, of the back of the hand, and of the penis.

I shall speak chiefly of the former of these two varieties, cancer of the face, or rodent ulcer, or superficial epithelioma. As you know, the skin is composed of several layers. Superficially we have the epithelial cells and a horny layer, while underneath are the cutis vera and the subcutaneous tissue. Between these, in the rete mucosum, is a layer of small epithelial cells which cover the papillæ and fill the spaces between them. As we approach the surface the cells become distinctly larger, and finally, on the top the cells are dried, have lost their nuclei, and have become scales. The epithelial cell growth found in rodent ulcer corresponds to the small cell type of the rete mucosum. The clinical changes in the rodent ulcer type are very characteristic. An elderly person finds a roughness of the surface on some part of the face with the tendency at some point to the formation of a scab, and there seems to be a weather-beaten condition of the complexion. There is a growth and thickening of the upper layers of skin known as keratosis senilis. Eventually the dry scab is picked off, and an ulcer is found. This dries up and seems almost to disappear, but the scab again appears and the patient picks it off, and finally the patient finds that it is always there. And so it may go on for years, the patient accepting it as a mole, and it slowly increases in size, until some day it seems to grow more rapidly. As with all malignant growths, it has an early stage when the growth is very slow; then suddenly it takes on more rapid growth; the patient becomes alarmed finally, and seeks relief. Microscopic examination of the affected part at this time shows an undergrowth of cells gradually working down into the skin in more or less finger-like processes. Thus we have an infiltration

into the tissues below and this keeps on until the center breaks down and an ulcer is thus formed. If a bit of the ulcer is cut out and examined microscopically, we find the papillæ becoming somewhat enlarged at that point, and the cells between them gradually pushing down into the interior, and little patches of similar cells here and there between them. We find them composed of cells similar to the cells of the rete mucosum as a rule without the cell nests. One of the great clinical features of this type is its tendency to remain localized, to remain in the skin itself. It may continue to grow and involve the whole side of the patient's face, but still it remains local — in the skin. It is, however, slowly progressive, and finally attacks bone, nerve, eye and other complicated parts.

Inquiring into the history of such a case the diseased process is found sometimes to have gone on for forty years or more, during which period the growth had been at times imperceptible, but it was always there. On examination you will find no enlargement of the lymphatic glands, and that is a very characteristic feature of the disease which makes the prognosis encouraging, and I want to impress upon you this clinical trait in reference to the after-treatment.



FIG. 1.

The second variety is the more malignant type, the typical epithelioma, such as cancer of the lip. We find the papillæ near the vermilion border somewhat enlarged and running down in an irregular way into the tissue below. If we look at one of these prolongations we find onion-like clusters of large cells in the center, while around the edge are rows of more or less columnar shaped cells while the mass of cells in the intervening space is of the most varied character. If we examine the neck of a patient who has a well-developed cancer on the lower lip we shall find, in all probability, enlarged glands under the jaw on the side nearest to the growth, and if the cancer is on the penis the glands of the groins are enlarged, and if on the hands the glands of the bend of the elbow or of the axilia are involved, and as a consequence of this we have a fatal termination in a very much larger percentage of cases than in rodent ulcer, where the growth occurs very slowly, and death only follows as a result of long-continued growth, and invasion of important structures. Here is a photograph (Fig. I) of a man who gradually succumbed in that way, the disease beginning in the tip of the ear and slowly destroying everything in its way until the meninges of the brain were involved and he died with symptoms of cerebral complications. The photograph shows the temporary relief afforded by a plastic operation. A large ulcer occupied the site of the right ear. The patient had been subjected to a prolonged application of caustic at a " cancer cure."

Now I have a series of cases of rodent ulcer which I will show you, gentlemen, without any extended critical remarks as to treatment, then after that I will say something about the operative treatment, as contrasted with the X-ray treatment of the disease.

CASE I. Here is a man fifty-eight years of age who has had this ulceration on the nose for seven or eight years. It began on the side of the nose, then it gradually spread until it covered the whole nose. This is a good example of a very diffuse type. In some cases the disease seems to skim along the surface instead of cutting down deep into it. To what extent has it been helped by the x-ray? It has had fifteen months' treatment. He had two treatments a week at first and is now having one, and there has been a gradual improvement, but there is still well-marked ulceration at certain points. You see the neighboring skin is a good deal reddened. That is not usual. It is simply that in some of the more superficial types we see a secondary inflammation of the skin, The redness may be in part due to the action of the x-rays.

CASE II. This woman is fifty years of age. She has had a growth on the temple for fifteen years. She began treatment in February, 1903, with the x-ray. Since then the growth has diminished in size but it involves the bone near the orbit. She is under treatment now in the skin department. A cancerous growth which is small in size but which has begun to attack deep-seated tissues would seem to me to need the most radical surgical treatment without waiting for the results of x-ray therapy.

CASE III. Man of seventy-eight years. He has a large but very superficial ulcer on the right cheek beneath the eye and extending over the right half of the nose. Twenty years ago he noticed a pimple on the face after an attack of erysipelas. For fifteen years it increased in size. Came to the out-patient department for x-ray treatment, and it has relieved the pain, but not the condition. Examination under the jaws shows no involvement of the glands. This is a small-celled epithelial cancer. You see that it would be necessary to excise nearly the whole cheek, and so it seems reasonable to try the x-ray in a case of this kind. In the diffuse forms this treatment seems particularly well indicated.

CASE IV. This patient has an ulcer the size of a half dollar on the back of the neck. Eight years ago he noticed a pimple on the neck. He scratched it and thinks he poisoned it. He was treated with local applications and at one time the ulcer was excised but the wound did not heal. For one year has had x-ray treatment here. It is growing somewhat smaller, and there is less induration than a year ago. You see he is a rugged man. This seems a favorable case for cure by free excision giving the growth a wide margin and closure of the wound by a plastic operation. (This has since been done.)

Case V. Man of seventy-two years. First noticed a scab about eleven years ago over the scar of an old bayonet wound of right cheek received in the Civil War. Several years later an ulcer formed which soon began to involve the eye. There are now several ulcers in the neighborhood of the orbit and the right side of nose. Came in here about two years ago and has been taking x-rays since then. Now here is a case which seems suitable for x-ray treatment. Operation would be very difficult: the ulcers could be excised but the wounds could not be closed and Tiersch grafts would not hold with any certainty.

Case VI. This man is forty-three years old. Here the ulcer is on upper lid of right eye, which began as a pimple in the upper lid five years ago. The ulceration now extends from the inner canthus to the outer and from the upper edge of eyebrow to the conjunctiva. The outer half of the conjunctival lid is gone. No bone is exposed and the cornea and ocular conjunctiva, although inflamed, do not appear to be involved. He has also an ulcer over the malar bone which was formerly connected with that of the lid. There is vision to light in the right eye. No involvement of the glands. He has received the x-ray treatment for a year and a half. During this time there was one period of increase in the growth. There is now improvement which has been very marked during the past months.

Case VII. In this case there is a history of a blasting accident forty years ago. A few years ago he noticed a scab on the site of the scar on his cheek and also on his nose since that time. He has been treated with x-rays. The ulcer has entirely healed up on the cheek, leaving a slight scar, and there is practically no disease remaining on his nose.

Case VIII. A man seventy-one years of age. Began to have trouble twenty-three years ago on right upper cheek near the eye. He began to go to the dispensary and was treated by salves for a long time; arsenical paste, etc. When he came into my hands, four or five years ago, the whole side of the face was alternate scars and ulcers. Not a continuous ulceration, but a series of sores healing and breaking out. Finally the lids of his right eye had become thickened masses of epithelial disease. I saw that unless something very radical was done he would succumb to the disease. The eyelids were transformed into an epithelial growth and the disease was pushing into the orbit, and would soon become a very malignant instead of a superficial type of cancer. The operation performed was an excision of the integuments of the right side of the face, including the eyebrow, eyelids, cheek and the right half of the nose and a portion of the right half of the upper lip. The lower border of the incision was on a line with the angle of the mouth. To cover this wound a flap was taken from the temple reaching to the vertex, the pedicle of the flap being just above the right ear. The wound of the scalp thus laid bare was covered with Tiersch grafts. The wounds healed well and there has been as you see no return of the disease now some five years since the operation. (Figs. II and III.)

Case IX. I show you a portrait of a patient fifty years of age who is unable to come to-day from a distant city. (Fig. IV.) He came to me three years ago with an enormous ulcer involving the right temple having destroyed the upper half of the right ear from which it took its origin. It was of many years' duration at that time. The discharge, which was free, was offensive. There was no glandular involvement. Although not able to promise a cure I advised excision with plastic closure of the wound as a palliative measure. This operation was done, the wound made by the removal of the ulcer being covered in by a flap taken from the scalp having its pedicle over the occiput. As the flap was bent into place a fold formed at its lower border which fitted neatly into the remaining portion of the ear. The pericranium exposed by this operation was covered by Tiersch grafts. There was no recurrence for one year, at which time two nodules were to be felt in the parietal bone at the upper margin of the flap. These disappeared under the x-ray treatment, but there have been some recurrences since which the ray treatment partially controls. This case illustrates well the great relief afforded by a palliative operation in advanced cases of cancer of the face. A plastic operation removes the foul ulcer and the subsequent postoperative x-ray treatment postpones recurrence. It is in my opinion better not to wait for a complete cure before performing the plastic operation, but to close the wound at once and obtain the benefit and comfort of healing by first intention.

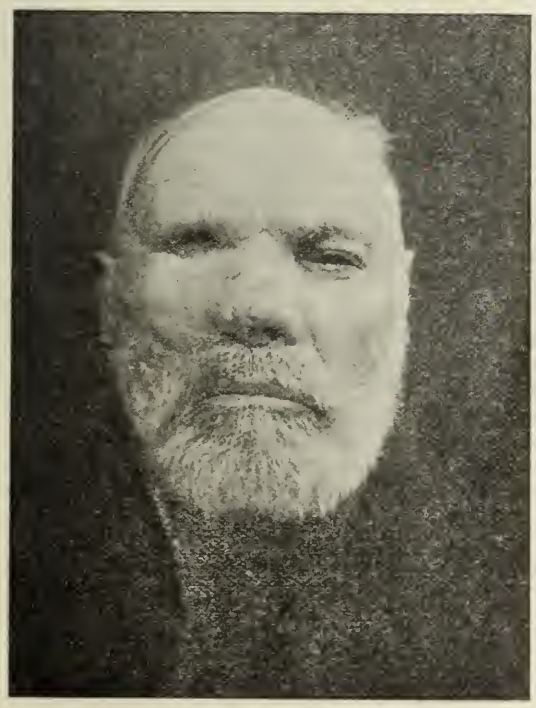


Fig. II.

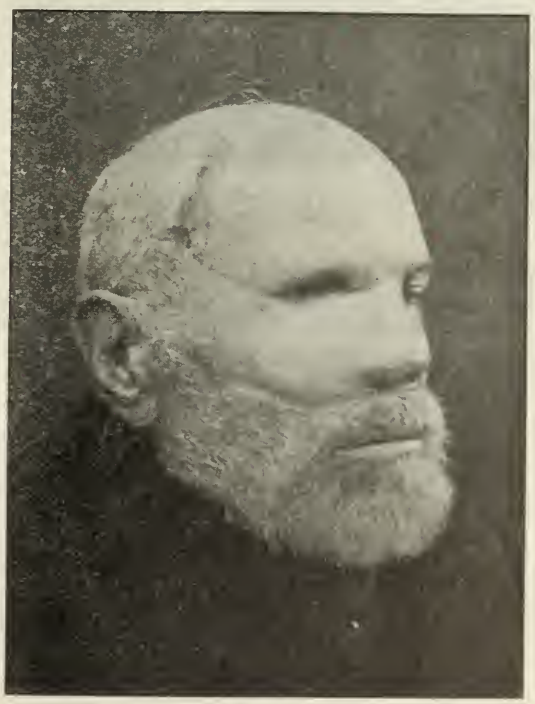


Fig. III.

Excision of right cheek and orbit; wound covered by flap taken from scalp. Tiersch grafting of scalp.

These cases give you examples of the most common aspects of the milder forms of cancer of the skin. They all can be classed in the rodent ulcer group and I have selected them therefore for our study as they are the most favorable types of cancer for the x-ray treatment on account of the superficial character of the growth. An analysis of the cases in the dermatological department of the hospital of which some of these are examples shows favorable results under the x-ray treatment.[1] It is now pretty generally conceded that x-ray therapy has a favorable influence upon very superficial carcinoma but that the more deeply seated growths are not affected by it. We may therefore dismiss at once the more malignant variety of epithelioma so far as this form of treatment is concerned with the statement that it seems hardly justifiable to lose valuable time in treating a cancer of the lip or any of its allied forms elsewhere on the body in their early stages with x-rays. These



FIG. IV. — Large ulcer over right temple and ear covered by flap from scalp. Extensive Tiersch grafting of scalp.

cases should be treated by prompt extirpation with a careful search with the knife for infected lymphatic glands at the points which the disease is most likely to invade. In regard to rodent ulcer then it remains to consider the value of x-ray therapy in its different phases.

In its earliest stages the disease is usually seen as a small pimple or ulcer situated in the nose or near the lower eyelids. These are so easily and painlessly removed by the aid of subcutaneous injections of cocaine, with the knife, that it seems hardly necessary to consider the influence of the rays upon them. Such wounds are healed in a week's time and the cure is, with extremely rare exceptions, permanent. The same may be said of growths ranging in size up to that of a quarter of a dollar, unless they happen to be so situated that their removal with subsequent suture of the wound would cause considerable deformity. This is the case near the inner angle of the eye or near the alæ of the nose or on the nose itself. Experience shows that the cicatrization following the absorption of the growth by the x-ray leaves a soft and pliable scar. If, however, the ulcer is growing rapidly and shows thickened base or edges the stage of increased malignancy is close at hand. When once the inner canthus of the eye has become involved the growth spreads with much greater rapidity into the orbit. We have then a condition which only the most radical operation can hope to control, operations frequently involving extripation of the eye and of considerable portions of bone. At the outer canthus we also see ulcers becoming adherent to the adjacent bone, which is here quite superficial. The x-ray therapeutist should therefore make himself thoroughly familiar with the more advanced and malignant phases of rodent ulcer if he wishes to make an intelligent selection of cases for treatment. There are one or two cases under this treatment shown you this morning which would be better treated by the knife. In such cases the dread of the knife should be overcome and patient be prevented from yielding to his instinct to lean towards the more popular therapy. There are others, however, which show clearly the great advantage which we possess in the ray treatment. There are those cases in which the disease is superficial and spreading over a large surface and those where ulcers are multiple and on prominent portions of the face or closely grouped together so as to necessitate the extirpation of a large piece of skin. In private practice where all such ailments are attended to in their early stages I think that the large majority should be treated by excision and that the x-rays should be reserved for exceptional cases only. The x-ray treatment is tedious and expensive and a severe trial to the strength of nervous and elderly people, who must be prepared to go out in all weathers for a considerable length of time. Some portions of the diseased growth must be allowed to continue in its course from twelve to fifteen months before it yields to the ray. During such a long period of time it might pass from the benign to the malignant stage and then be beyond the pale of surgery. I have seen many such cases dangerously near the border line and feel that a note of warning is necessary to physicians who yield too readily to the popular demand for ray therapy. I have been told recently by a skilled and experienced x-ray therapeutist that he has noticed a recurrence in several cases which he had regarded as cured, the disease returning some months later as a small nodule beneath the skin.

When we realize what frightful deformities may be produced in course of time by what is at first a painless and apparently trifling affection, is it not our duty to urge the most radical treatment in the beginning when a permanent cure is easily obtained?

[1] Dr. F. S. Burns, Boston Med. & Surg. Jour., Oct. 29, 1903.

In closing I would like also to enter a plea for more radical operations for cancer of the lip than are usually performed. Not only should the disease be removed by a most liberal V-shaped incision, but this primary lesion should be dissected away in a continuous mass with the cervical glands and tissue occupying the triangle nearest the seat of growth. The practice of incomplete " ambulatory " operations with the aid of cocaine anesthesia cannot be too strongly condemned.

## Original Articles.

### THE PREVAILING CONCEPTION OF DEGENERACY AND DEGENERATE, WITH A PLEA FOR INTRODUCING THE SUPPLEMENTARY TERMS DEVIATION AND DEVIATE.

BY G. L. WALTON, M.D., BOSTON.

The term " degenerate " is now of interest not only to the anthopologist, but to the medical and general public, and the time has come to question whether it is adequate with no synonym, except for its worst significance, to meet all requirements of scientific classification and discussion, to say nothing of general use. If the word had received a uniform and accurate interpretation, the attempt to present an alternative would be superfluous. Such, however, is far from being the case. Degeneracy has become especially associated with profligacy, perversion, crime, epilepsy, insanity and idiocy. This is not remarkable in view of the nature of the word itself. The term " superior degenerate " has led to confusion, even among special students of the subject. While this term in its academic sense applies only to individuals lacking psychic balance, meaning that the higher qualities are affected, the tendency has crept in to include under it individuals with minor congenital peculiarities, whether physical or mental. But to designate an individual possessing either minor faulty mental tendencies or slight physical defects, a superior degenerate, sounds, except to the special student, something like calling a good egg slightly bad, or a business man moderately dishonest. And if in justification, not to say apology, for this diagnosis, it is stated that every one is more or less degenerate, the natural deduction is that the expression degenerate is of no special significance, or that we are only juggling with words, as one who would say "Every one is insane" or "Genius is a sign of insanity."

The works of Nordau [1] and of Lombroso [2] have so far associated degeneracy with decadence and with crime as seriously to hinder the general appreciation of its milder significance, notwithstanding its use in dealing with genius.

[1] Nordau: Degeneration (Entartung). 6th Ed. Appleton & Co., 1895.

[2] Lombroso: Der Verbrecher (homo delinquens). Hamburg, Actien Gesellschaft., 1892-1896.
Criminal Anthropology. In 20th Century Practice, Vol. xii, 1890.
L'Anthropologie criminelle et ses récents Progrès. Paris, 1890.

Degeneration in its anthopological sense is defined in the Century Dictionary as " reduction to a lower type in the same scale of being; the act of becoming, or the state of having become, inferior, *especially with respect to moral qualities.*"

The superior degenerate who seeks consolation in Roget's Thesaurus will be disappointed to find degeneracy marshaled in company with depravity, demoralization, retrogression, deterioration, perversion, prostitution, vitiation, contamination, corruption, blight, rottenness and pollution.

But degeneracy has come to include, medically speaking, every form of constitutional variation, however innocuous, from the average normal.

Dana [3] defines degeneration as " a condition in which there is a marked deviation from the average normal." Church and Peterson [4] define the stigmata of degeneration as " anatomical or functional deviations from the normal, which in themselves are usually of little importance as regards the existence of an organism, but are characteristic of a marked or latent neuropathic disposition."

The neurological definitions make no mention of moral qualities, and convey no suggestion that the individual necessarily represents a descent, even in the physical or intellectual, to say nothing of the moral, scale. Nor is it a logical conclusion that each and every deviation is degenerative because undoubted degenerates show many such signs. These stigmata range all the way from flecks on the iris, difference in color of the two eyes, unusual development of frontal lobes, left handedness and astigmatism, to perverted instincts, insanity and idiocy. Whatever they may or may not *represent*, the question in recording them is, What *are* they? It seems that they are neither more nor less than deviations from the average normal type. This type is a product of deduction rather than of experience, a composite photograph, so to speak, presenting the intellectual and moral as well as the physical characteristics of the average normal individual, a type not likely to present itself to the material eye, but none the less available for a standard. Goethe calls this standard an " abstract and general image."

Have we not, then, drifted into the unscientific position of recording *facts* in such a way as to involve an *opinion?* If so, is it not reasonable, unless we are dealing with obvious and undoubted degeneracy, to record deviations as deviations? If it is necessary to characterize their possessor, why not call him slightly, moderately or extremely deviate, or, if it seems appropriate, a deviate? And if occasion requires the use of a single word to include all varieties, is not deviation more appropriate than degeneration? Even suppose it can be proved that every deviation means degeneration, will anything have been lost by following a logical plan in establishing that proposition?

We are not limited to the word insanity in

[3] Text-book of Nervous Diseases, 5th edition, 1901, p. 24.

[4] Church and Peterson: Nervous and Mental Diseases. Saunders & Co.

describing borderland dwellers, or the eccentric individuals on the safe side of the border (though it is true that the alternatives have not always been freely used in analyzing genius).

Not every physical peculiarity is truly degenerate; for example, while albinism may be justly regarded as degenerative, in that it implies absence of a useful constituent in the organism, a mere difference in color of the eyes is not necessarily degenerate, though it must be, and so is, classified under the present method, as would, in fact, an absence of appendix if some individual should be born so happily constituted!

If the subject had not become a matter of general interest, the present limitation of our vocabulary would be less objectionable, though even if the discussion were confined to anthropological circles it would seem fair to propose an alternative which should allow a statement of facts in dealing with facts. But since the interest in this subject has broadened, and the public is expected to accommodate itself to the scientific nomenclature, is it too much to make the slight concession of introducing a term which not only does not clash with the facts, but which, if the position is well taken, is really demanded for the accurate presentation and classification of these conditions for scientific purposes?

Degeneration is attributed by Nordau to constitutional disease, alcoholism, poor nutrition and allied conditions in the ancestry; but Vaschide and Vurpas [5] attribute the stigmata to toxic infections affecting the developing embryo. Without pausing to discuss either of these opinions, we may fairly use them as illustrating the different interpretations which have been given the term degeneracy.

Why not, then, incorporate into our vocabulary, for use in its appropriate place, a term which shall give an idea of the accepted facts rather than one which presupposes a definite etiology and tendency? Do not the words deviation and deviate fairly accomplish this end?

Some such nomenclature is especially appropriate in view of the fact that the question is sometimes an open one whether the possessor of moderate stigmata represents a lowering even in the intellectual or physical scale. He may, in fact, represent an improvement, at least on his traceable ancestry.

Nor do the stigmata themselves necessarily indicate deterioration. Extreme dolichocephaly is included in the literature as a stigma of degeneration. Lombroso, for example, cites cephalic indices of 69, 73 and 74. But the fact has been established that dolichocephaly is more common in the city than in the country, an observation to which the name Ammon's law has been applied. Certain authorities have even drawn the conclusions that the long-headed type is the one best fitted to meet the exigencies of city life, and that its prevalence in the centers of population represents a "survival of the fittest." [6]

[5] Ann. di Nevro., Feb. 1, 1903. Abst. in Rev. of Neurology and Psychiatry, June, 1903.
[6] Macpherson: Review of Neurology and Psychiatry, February, 1903.

To cite a more striking instance — Lombroso includes under the physical stigmata of degeneration, in men of genius, the usual development and complexity of the third frontal convolution, especially on one side. He quotes the work of Herve [7] on Broca's convolution, in substantiating this observation, and further cites the morphological complexity of Broca's convolution in distinguished men, as described by R. Wagner,[8] and especially remarks the enormous size and numerous superficial folds in this region in the case of a jurist distinguished for oratorical aptitude.

The downward is not, then, the only direction, as the word degeneracy would imply, in which deviation may be found. Even Lombroso [9] does not claim that every genius is, as a whole, necessarily deteriorate. In fact, he warns against the exaggeration of deducing degeneration from single facts, though he has no other name for the most trivial of those facts than signs of degeneration.

If the ideal average normal individual, to whom reference has been made, could be galvanized into existence, his average normal modesty would surely make him hesitate to rank himself above all the geniuses to whom the term degenerate has been applied.

We sometimes meet acuteness of a special sense so remarkable that it suggests reversion even to a sylvan ancestry, rather than family decadence in the sense in which Nordau uses the term. The abnormal responsiveness to stimuli, sometimes seen in the so-called superior degenerate, reminds us of a similar tendency on the part of lower animals, a tendency representing in their case a survival of the fittest in eluding danger, rather than a sign of decadence. Even here, though it is true that the human being possessing these traits is apt to be so ill-balanced as to rank below the average normal, the term deviate would amply fill the requirements.

It would surely answer every purpose to substitute the word *deviation* in such statistics as those of Lombroso,[10] which state 4% of normal individuals have five or more signs of *degeneration*, as compared with 27.4% of delinquents

The words crime and criminal are supplemented by offense and offender, deliquent and delinquency, and nothing is now proposed more radical than similar alternatives for degeneration and degenerate. No one, I fancy, has ever objected to the word delinquent in the statistics just quoted, though this word is there intended to include the most hardened criminal, while degeneration is obliged in the same table to include the most insignificant signs of deviation.

Among the different factors entering into the question of heredity Mercier [11] calls attention to the wide difference between the children born of similar and those born of dissimilar parents. As

[7] La Circonvolution de Broca. Paris, 1888.
[8] Vorstudien, etc., 1st., Memoir, 1860.
[9] The Man of Genius. London, 1891, p. 9.
[10] Lombroso, in Twentieth Century Practice of Medicine, New York, 1897, p. 381.
[11] Mercier: Sanity and Insanity. Walter Scott, London, 1889, p. 156 *et seq.*

we approach the greatest possible similarity (namely that of marriage among members of the same immediate family), the tendency becomes greater to produce the lowest type of degeneracy. On the other hand, the greater the dissimilarity between the parents up to a certain point, the greater the tendency to produce an organism more vigorous than, and superior to, either of its parents. In the latter case there is also marked tendency to atavism. As the dissimilarity increases we may apparently look for precocity, rapid and exceptional intellectual development, together with the instability characteristic of the so-called superior degenerate. Great dissimilarity leads to wildness in the offspring, and extreme dissimilarity results in sterility. Mercier illustrates the tendency to atavism in fowls of dissimilar parentage, by Darwin's experiment of crossing the black Spanish with the silk-white fowl, and producing in the progeny a red plumage not appearing in either branch, excepting in the wild ancestor common to both. Here we have a stigma of far different type and bearing from the mental and physical results of inbreeding on the one hand, and the atavistic criminal tendencies of Lombroso on the other, neither, meantime, being of parallel significance, with the evolutional spurt seen in the remarkable development of Broca's convolution in the individual with unusual command of language. And a still further type is found in the results of infection in the embryo. If one term must be chosen to include all types with their modifications and gradations, it seems unfortunate that a name should be chosen which has, of necessity, a sinister significance, by no means uniformly appropriate. In the light of such considerations the use of the term deviation may even contribute toward a better understanding of the complex conditions with which we are concerned. And even if the word fails of adoption, the discussion will at least tend to clear the atmosphere and to lessen the resentment inevitably aroused by the word degeneration.

Even certain illustrious sufferers from convulsions, and allied serious signs of constitutional taint, have possessed intellectual qualities so far superior, not only to the average, but to the best, that their careers have made epochs in history. And, to cite one from many possessors of less serious signs, what shall we say of Carlyle, who as a boy was shy, proud and pugnacious, with strong affections and violent antipathies, whose indigestion and whose eyestrain have been in turn deemed the cause of his unfortunate disposition, all, whatever their interaction, being probably only signs of a constitutional make-up which included a psychopathic endowment? In later life he became so highly sensitized as to declare war upon his neighbor's poultry, and to have constructed a sound-proof room for his labors, labors which were themselves upon the highest intellectual plane. Must we call him a superior degenerate?

The very expression superior degenerate is anomalous, for if we still deem the individual inferior to the normal, superior is an inappropriate qualification to apply, and if we deem him equal or superior to the normal, the term degenerate is unfortunate. Indeed the expression almosts suggests the query, if a superior degenerate is less degenerate than an inferior degenerate, what degree would the supreme degenerate represent?

The term deviation may cover all variations from the average normal, whether above or below, or at the same level, in the intellectual, physical, moral or other scale. Nor need it necessarily be limited to the lighter grades of variation, but we may have, if you like, the minor and major deviate, whereas, the more appropriate the term degeneration when applied to stigmata, to individuals, to families, or to races showing unquestioned downward tendency, the more reason there is for keeping the word within its proper limitations, and especially of replacing, as far as practicable, that self-contradictory and unnecessarily opprobrious designation, superior degenerate.

## CANCER OF THE RECTUM: COMBINED ABDOMINAL AND PERINEAL OPERATION.[1]

BY CHARLES A. POWERS, M.D., DENVER, COL.,

*Professor of Surgery in the University of Denver; Surgeon to St. Luke's Hospital.*

That the attempt at thoroughness which characterizes present operative procedure for cancer of the breast, lip, uterus and other organs, is extending to operations for cancer of the rectum seems to be manifest from the recent writings of Abbe, C. H. Mayo, Weir, Kocher, Kraske, Graudier, Quenu, Trendelenberg, and others. No better exposition can be made of the dissatisfaction which surgeons have felt with perineal and sacral methods in high-seated rectal cancer than that of Mayo in the *Journal of The American Medical Association* for April 25, 1903, nor can a better plea be offered for the combined abdominal and perineal operation (which Mayo attributes to Gaudier of Lille) than that set forth by him. This latter procedure has the advantage of permitting the operation to suit the case: either a palliative colostomy or the radical removal of the growth *en masse* with incisions wide of the growth itself and embracing all glands, fat and connective tissue; together with this the retention of the sigmoid as a fecal container and the placing of a permanent anus in the iliac region where it is most easily borne and managed by the patient.

Errors of technique in the single case reported herewith may be of service to others who undertake the procedure. At the risk of being tedious the case itself is given at some length. It is presented at this early day purely as an operative illustration. I believe it to represent a type of operation which will gain in favor.

Case. Mrs. W. Native of England. Forty-five years of age.

*Previous history.* — The patient has borne four chil-

[1] Read before the Colorado State Medical Society, October, 1903

dren, having no special trouble with any of them. She has had no symptoms referable to the genital tract. She was a well and strong woman up to six months ago, at which time she began to suffer from increasing constipation which was difficult to overcome by medicines. She found that her stools were getting smaller and painful, that a mucous rectal discharge began to appear. She went to a physician, who prescribed ordinary remedies. The difficulties increased, it became more and more troublesome to move the bowels and she began to lose in weight and strength. A little while ago she consulted Dr. M. Baker, who discovered a tumor of the rectum and kindly recommended her to me.

*Present condition.* — April 4, 1903. The patient is a rather spare woman five feet one inch in height. Her color is fairly good, she looks to be about forty-five years of age. Careful examination of the heart, lungs, kidneys and liver fails to disclose evidence of disease. Her appetite is fairly good, she eats moderately and digests well but has much difficulty in overcoming a chronic constipation. She says that the stools are small, ribbon-like, painful; that they are occasionally tinged with blood; that during the past few weeks there has been a thin rectal discharge. The bladder has given no trouble.

*Local Examination.* — A little above the anus there is an irregular, hard, nodular mass involving the circumference of the bowel and admitting with difficulty the end of the index finger. The finger crowded well up engages in the tumor. The tumor is movable and not particularly painful. The lower portion of it can be felt through the vagina, but the finger behind the neck of the uterus fails to define the upper limit of the mass. The uterus is in a posterior position, the tubes and ovaries are apparently healthy. Abdominal examination is negative.

*Diagnosis.* — Cancer of the rectum extending high. In view of the high seat and the good general condition of the patient combined abdominal and perineal excision was decided upon and the patient was carefully prepared with this in view.

*Operation.* — St. Luke's Hospital, 8:30 A.M., April 11, 1903. Chloroform was skillfully administered by Dr. F. W. Kenney. A short gridiron incision at the outer border of the left rectus permitted the introduction of an exploring finger. The rectal mass was felt low down. It was movable. No enlarged glands could be felt. Gauze packing was introduced into this incision. A median incision was rapidly made from the umbilicus to the pubes, the patient put in a high Trendelenberg position and the intestines carefully packed off. The uterus was drawn forward beneath the pubes. With wide lateral retraction the rectum was in easy view. It was again examined, confirming the exploratory palpation. A point in the sigmoid flexure was selected a little above the brim of the pelvis and the gut milked free of contents. Two heavy purse-string sutures of silk (according to Abbe) were rapidly applied; these were about two inches apart and involved the muscular coats of the gut. Midway between these purse-string sutures the gut was cut square across, the mesentery split down a little and the mesenteric vessels tied. Each end of the gut was then inverted and the purse-string stitches tightened. This completely shut off the lumen of each end of the gut from the operative field. Local packing was rapidly removed, the field sponged out, fresh packing applied and the instruments used in dividing the gut discarded. A comparatively clean operative area containing the two blunt rectal ends was now present. The lower end of the upper fragment was ready at any time to be brought out through the exploratory wound as an artificial anus. The mesentery of the upper end of the lower fragment was then divided downward until a point was reached at which the peritoneum began to shade off on the rectal sides. Here the peritoneum was split down a little on each side of the gut and then divided anteriorly. Below this point it was peeled up with a blunt scissors and the finger, thus rapidly separating the rectum. Posteriorly the superior hemorrhoidal artery was felt. This was doubly ligated; first with heavy catgut, after which the open mouth was picked up and tied with fine silk. Up to this point there had been but very little bleeding and from this time on the abdominal operative field was practically bloodless. The rectum with its posterior fat, fascia and lymphatics was cleanly dissected from the hollow of the sacrum and worked free to the lowest possible point. This was about on a level with Douglas' cul-de-sac. An assistant now passed a long dressing forceps through the vagina up behind the neck of the uterus. The point of this was cut upon from the abdominal side, the vaginal wound enlarged, the upper end of the segment of the rectum and the entire mass which had been dissected free being caught and dislocated into the vagina.[2] The abdominal wound was washed and the pelvic peritoneum stitched up. This peritoneal suture was difficult. It was deep in the pelvis and I had neglected to preserve quite enough peritoneum to allow the edges to come together without tension. For this reason the peritoneal suture took longer than it should have done. When it was completed, however, the pelvic floor presented something the appearance which it does after an abdominal hysterectomy, plus the presence of the uterus.

The lower end of the abdominal gut was brought out through the original lateral opening. The peritoneum on either side of the mesentery had to be cut a little to allow it to come up without tension. The abdominal packing was removed, the abdomen thoroughly flushed and the median incision sewn up. The gut was then rapidly stitched into the lateral opening, first by catgut stitches joining the edges of the parietal peritoneum to the visceral peritoneum. The purse-string stitch originally put in was removed and the mouth of the gut stitched to the skin. An occlusive dressing was applied to the median wound and a separate dressing to the artificial anus.

The patient was now placed in the lithotomy position, the buttocks well elevated, and the remainder of the operation completed from below. The upper portion of the lower fragment of gut was found in the vagina. The vaginal mucous membrane was split in the median line posteriorly and dissected from the rectum on either side. The anus having been sewn up, an incision was made encircling it and perineal excision of the rectum proceeded with from below, cutting widely on either side and posteriorly to the tip of the coccyx, working up in front of the coccyx and hugging it closely. In this way, keeping close to the coccyx and sacrum and dividing the posterior ligaments of the rectum, one was able to work up and meet the upper wound posteriorly. The rectum was then dissected up on either side, moderate downward traction being made on it. This was the most difficult part of the perineal operation; while working rapidly and with considerable traction the peritoneal stitches which had closed over the floor of the pelvis tore out and a loop of small intestine came down. This was pushed back with gauze and the rectum entirely removed. There was a fair degree of hemorrhage at the lower part of the perineal incision but practically none at the upper part. The only vessels which required ligation were the inferior hemorrhoidal arteries on either side. The wound was well flushed and the upper portion explored. An attempt was made to resuture the pelvic peritoneum from below but it was unsatisfactory. The wound was so deep that it was very difficult to get the peritoneal edges. As has been said, they did not come together easily from the abdominal side and as the patient had already been under chloroform over three hours it was judged wise to carefully pack off the pelvis. The vaginal mucous membrane was sewn up and a few perineal stitches put in. The cavity left in front of the sacrum and coccyx was a pretty big one. Laterally it was bounded by the obturator fascia. Its edges could not be approximated. It was lightly packed, in part with sterile gauze and in part with iodoform gauze and an ordinary perineal dressing applied.

The operation had been a long one, practically three hours and a half. The pulse was 72 at the beginning of the operation, it was the same throughout and at its close. But little blood was lost. But 15 drachms of chloroform were used. The patient was a thin and favorable subject and was in good condition. She was at all times under full surgical anesthesia and gave no trouble whatever. She was small of stature and the abdomen and rectum

[2] This mass in the male would be carried downward and backward toward the coccyx.

were particularly accessible. Perhaps fifteen minutes were lost in attempting to replace the peritoneal stitches which had been torn out.

The segment of gut measured 11½ inches in length in the fresh state. Four and three-quarters inches of this was above the upper margin of the tumor. The specimen was given to Dr. J. A. Wilder, pathologist to the hospital, who reports as follows.

"The specimen consists of 11½ inches of rectum with surrounding tissue and lymph nodes. The lumen of the rectum is partially occluded by an irregular nodular mass that begins 2¾ inches above the anus and extends upward 4½ inches, involving the greater part of the circumference of the gut but being at all points well within the lines of incision. There are numerous lymph nodes in the connective tissue behind the segment of gut above the mass but no enlarged lymphatics are found near the upper end of the intestinal fragment. Microscopic examination shows the mass to be an adenocarcinoma. The lymph nodes show cancerous invasion."

The patient vomited pretty constantly for thirty-six hours after going back to bed. Her pulse at the end of thirty hours was 108, it then dropped to 98. Forty-eight hours after operation her stomach was quiet, she was beginning to take nourishment. During the first thirty hours five pints of salt solution were infused.

The subsequent course was smooth. The median abdominal stitches were taken out on the seventh day and at the same time the silk stitches fixing the gut at the site of the artificial anus were removed. The median wound had been kept clean and both wounds healed primarily. The bowels were freely moved on the fifth day. At no time was there abdominal distention. A part of the perineal packing was taken out on the fourth day, a little more each day thereafter and on the eighth day cloroform was given when the vaginal and perineal stitches were removed and the high gauze packing, that which had held the gut in place, carefully taken out. The sacro-perineal wound closed down gradually and completely. The patient began to be up and about in the usual length of time. It is now six months since the operation. She has gained in weight and strength. The artificial anus behaves well; indeed, the fact that the woman satisfactorily pursues the occupation of cook in a private family would seem good evidence of this. The gridiron incision allows a fair " pinch " to the gut.

## Clinical Department.

### CESAREAN SECTION FOR PLACENTA PREVIA IN A PRIMIPARA.

BY WILLIAM N. SWIFT, M.D., NEW BEDFORD, MASS.

Mrs. G. Thirty-four years. Married four years. Good family history. She had previous to her marriage been a school teacher and had been well. Menstruation regular. For six or seven years, rather profuse and with a great deal of pain. During pregnancy she had been well but had considerable abdominal soreness. Had no hemorrhages.

On May 11, 1903, had some abdominal pain and felt generally ill. Slept well that night, but the next morning had more cramps. Some of them quite severe. While sitting in a chair about one o'clock had a severe hemorrhage. It came on without warning and without pain. She said it felt as if something gave way. The hemorrhages continued and patient became faint. Dr. John D. Hilton of South Swansea had charge of the case and called Dr. A. S. MacKnight of Fall River in consultation. Dr. MacKnight made a diagnosis of placenta previa and advised Cesarean section.

I saw the case about ten o'clock. The patient showed the effects of a loss of a large quantity of blood. Her pulse was rapid but regular and of fair quality. The vagina was full of blood-clots with constant flow of fresh blood. The cervix was not entirely taken up and only admitted one finger. A soft mass could be felt through the cervix. The child was a vertix presentation with the back to the right. Immediate section was advised as the only hope of saving the mother and the only possible chance of a living child.

I operated at eleven o'clock, assisted by Dr. A. Martin Pierce of New Bedford and Dr. John D. Hilton. Dr. MacKnight gave the ether.

An incision was made in the median line and the uterus delivered. The uterus was opened on its anterior surface and the child delivered.

The placenta was found to cover the whole of the os, possibly a little more of it being on the right side. The membranes and placenta were at once separated and delivered. The placental site was wiped off with gauze. A gauze pad was packed over the placental site with the end brought down into the vagina. The uterus contracted well. There was almost no loss of blood either from the incision of the uterine wall or the placental site. A continuous catgut suture was put through the uterine mucous membrane and including a little of the uterine muscle. The rest of the incision in the uterus was closed by interrupted catgut sutures through the peritoneal coat down to the continuous suture. The abdominal wall was closed with interrupted silk sutures through all the layers in order to gain time, as the patient's condition was not good. The gauze was taken out without hemorrhage following.

Patient was put to bed in fair condition, having had a hypodermic of strych. sulph. gr. 1-30.

After stimulation and artificial respiration the baby (a girl weighing seven pounds) did well. The mother had very little lochial discharge. Her bowels were moved on the third day. She had very little rise in temperature and did well in every respect. Stitches taken out on the tenth day — one small stitch-hole abscess. Uterus freely movable, not adherent to abdominal wall.

On May 28 the patient had quite a severe hemorrhage. The nurse thought about a quart of blood. Patient was faint and nauseated. The hemorrhage did not recur. Patient is in good condition at present. Has menstruated regularly. The first few times rather profuse with some pain; now, less flow and very little pain. The mother had very little milk and the baby was fed. The baby has done well and is a strong, healthy girl.

My reason for reporting this case is its rarity. The conditions existing in this case, in my opinion, always demand Cesarean section if the patient's condition will permit, that is a primipara, with undilated cervix and central placenta previa. The operation was performed at the patient's house in the country by lamp light.

The oil painting of Dr. Thomas G. Morton presented to the Pennsylvania Hospital by a number of contributors was unveiled on Jan. 11. The portrait was presented to the hospital by Dr. J. C. Wilson, on behalf of the Board of Trustees, and was accepted for the hospital by Dr. Arthur V. Meigs. Dr. Morton was connected with the institution for a period of forty years, many improvements and new buildings being added during this time as a result of his untiring efforts in its behalf. — *Medical News.*

# Medical Progress.

## REPORT ON PEDIATRICS.

BY THOMAS MORGAN ROTCH, M.D., AND JOHN LOVETT MORSE, M.D., BOSTON.

(Concluded from No. 2, p. 45.)

### REPORT UPON THE RESULTS WITH DIFFERENT KINDS OF PURE AND IMPURE MILK IN INFANT FEEDING IN TENEMENT HOUSES AND INSTITUTIONS OF NEW YORK CITY. A CLINICAL AND BACTERIOLOGICAL STUDY.[5]

THIS very important work was done in New York during the summers of 1901 and 1902 and the winter of 1901. It is impossible to take up in detail the methods employed and the results obtained. The reader is strongly advised to consult the original article which is well worth careful study. A few abstracts from the summary are appended.

"I. During cool weather neither the mortality nor the health of the infants observed in the investigation was appreciably affected by the kind of milk or by the number of bacteria which it contained," the different grades of milk varying much less in the amount of bacterial contamination in winter than in summer.

"II. During hot weather when the resistance of the children was lowered the kind of milk taken influenced both the amount of illness and the mortality. . . . The effect of bacterial contamination was very marked when the milk was taken without previous heating; but unless the contamination was very excessive, only slight when heating was employed shortly before feeding."

"III. The number of bacteria which may accumulate before milk becomes noticeably harmful to the average infant in summer differs with the nature of the bacteria present, the age of the milk, and the temperature at which it has been kept. When milk is taken raw, the fewer the bacteria present the better are the results. . . . Heat above 170° F. not only destroys most of the bacteria present but apparently some of their poisonous products. . . ."

"IV. When milk of average quality was fed sterilized and raw, those infants who received milk previously heated did, on the average, much better in warm weather than those who received it raw. . . ."

"V. No special varieties of bacteria were found in unheated milk which seemed to have any special importance in relation to the summer diarrheas of children. . . ."

"VII. Since a large part of the tenement population must purchase their milk from small dealers at a low price, everything possible should be done by Boards of Health to improve the character of the general milk supply of cities by enforcing proper legal restrictions regarding its transportation, delivery and sale. Sufficient improvements in this respect are entirely feasible in every large city to secure to all a milk which will be wholesome after heating. The general practice of heating milk which is now becoming a custom among the tenement population of New York is, undoubtedly, a large factor in the lessened infant mortality during the hot months."

"VIII. Of the methods of feeding now in vogue, by milk from central distributing stations unquestionably possesses the most advantages, in that it secures constant oversight of the child, and since it furnishes the food in such a form that it leaves the mother least to do and gives her the smallest opportunity of going wrong. . . ."

"IX. . . . Only the purest milk should be taken raw, especially in the summer."

"X. Since what is most needed is intelligent care, all possible means should be employed to educate mothers and those caring for infants in the proper methods of doing this. . . ."

"XI. Bad surroundings, though contributing to bad results in feeding, are not the chief features. . . ."

"XII. The observations indicate that close percentage modification of milk, although desirable in difficult cases, is not necessary to obtain excellent results with the great majority of infants, and that a certain adjustment of a healthy infant to its food is usually soon secured."

[5] Wm. H. Park, M.D., and L. Emmett Holt, M.D.: Archiv of Pediat., 1903, v. xx, p. 881.

### THE RELATION OF THE SURFACE AREA OF INFANTS TO THEIR NUTRITIVE NEEDS.

Lissauer[6] carefully measured twelve infants, studied the relation between the nourishment taken and the surface area in others, and thoroughly reviewed the literature. He comes to the following conclusions:

(1) The estimation of the nutritive need according to the weight gives reliable average figures only in infants developed in accordance with their age.

(2) The surface area of infants of the same weight is the same, independent of their age.

(3) The nutritive need of infants of the same age but of different weights is different. It is not proportional to the weight, but to the surface area.

(4) The nutritive need of infants of different ages but of the same weight is different even if the surface area is the same. The older infants who are backward in their nutrition have a much greater need. This need corresponds to that of the normal infants of the same age.

(5) The greater need of the backward older infants in comparison to the younger infants of the same weight is due to the relatively greater number of active cells, the fat tissue not having been formed on account of the backwardness of the nutrition.

(6) The differences in the nutritive need observed in infants of the same age and weight may perhaps be explained in the same way.

### THE SERUM TREATMENT OF TYPHOID FEVER IN CHILDHOOD.

Josias[7] states that the antityphoid serum of Chantemesse shows in animals anti-infectious and

[6] Jahrb. f. Kinderh., 1902, v. lviii, p. 392.
[7] Rev. d'Hyg. et de Med. infant., 1903, v. ii, p. 209.

antitoxic properties. It acts especially by increasing the activity of the phagocytes and leucopoietic organs. It therefore shows its whole power only when the lymphoid and the myeloid organs are intact. For this reason the serum is most useful at the beginning of infection. For the same reason small doses only can be given when the intoxication is severe. He then quotes Chantemesse's results with his serum in adults.

He used Chamtemesse's serum in 50 cases of typhoid fever in children at the Bretonneau Hospital in Paris. He gave 1 cc. of the serum per each 30 kilos of body weight when the cases were seen at the beginning. Half of this dose was given when the cases were seen late or the symptoms of intoxication were very marked. In most cases only one injection of the serum was given. The children were also given cold baths. In all cases the diagnosis of typhoid was confirmed either by a positive Widal reaction or by rose-spots.

The serum had a definite action on the course of the fever. Ordinarily a more or less marked decline showed itself the same day. The fall of the temperature often continued regularly and rapidly to complete recovery. In most cases the serum hastened the termination of the disease. In certain severe cases which were treated late the serum apparently had no rapid action either on the temperature or on the duration of the disease. In most cases the general condition of the patients was very satisfactory. In a number of cases in which the injection of the serum was quickly followed by the fall of the temperature to normal there was without any apparent cause a sort of recrudescence of the disease of moderate severity and stopping spontaneously in from five to ten days. In four cases there was a definite relapse. Complications were exceptional. One case had peritonitis with perforation. Twenty-four of 169 children treated in other hospitals in Paris during the same time died, giving a mortality of 14.2%. Two of the 50 cases treated by the serum died, giving a mortality of 4%.

### BACTERIURIA IN CHILDREN.

Mellin [8] was able to find in a search through the literature only 11 cases of this condition. Ten of these were in girls. He, himself, when he looked carefully for this condition, found 10 cases in a year. He thinks that the reason it has been found so seldom is that the physician rarely has the opportunity to get the fresh urine. Five of his cases were in boys, and 5 in girls. Nine of the children were between five months and four years of age; the other was ten years old. Bacteriuria seldom causes in children general symptoms such as fever, discomfort, vomiting and so on. It is accompanied somewhat oftener by slight and usually fleeting fever. Still more frequent are the mild cases in which the disease shows itself only by frequent micturition or by the odor and cloudiness of the urine. In these latter cases subjective symptoms are often entirely wanting. Intestinal disturbances are often associated with bacteriuria in children, and probably stand in a causal relation. In one of his cases the disease was secondary to an abscess about the anus and was cured when the latter was incised. All the earlier cases were due to the colon bacillus. He found this organism in eight of his cases, and the staphylococcus pyogenes albus in the other two. As a rule he found that the virulence of the bacteria to animals was slight.

The treatment of bacteriuria is simple. In the lightest cases regulation of the diet and the relief of the intestinal disturbance is sufficient. In the more severe cases he advises salol and irrigation of the bladder.

[8] Jahrb. f. Kinderh., 1903, v. lviii, p. 40.

### RESEARCHES ON SOME FORMS OF SENSIBILITY AND ON THE STEREOGNOSTIC SENSE IN CHILDHOOD.

The authors [9] studied the interesting problem of the state of the tactile, thermal and pain sensations in infancy, as compared to adult life, as well as the development in infants of the so-called sense of location and position. As yet but few studies of similar character have appeared, and the present article offers the results of continued observations in a number of children. They found that the tactile sense was highly developed in children from two to eight years of age, with a very precise localization and limitation of the tactile circles. The sensation of pressure and that of heat were fully developed. The so-called muscular sense or the sense of attitude and the power of stereognostic perception were exact and precise. The sense of pain, however, as tested with the electric current, was deficient as compared to its development in the adult, and the authors conclude that this sense is a differentiation which occurs later in life through a probable summation of the general sensibility.

### GONORRHEA IN INFANTS, WITH A REPORT OF EIGHT CASES OF PYEMIA.

Kimball [10] reports eight cases of pyemia in infants. Microscopic examination of the pus obtained from various joints showed in all cases diplococci with all the characteristics of gonococci and no other organisms. In six cases cultures of the gonococcus were obtained. In two others negative results were obtained on ordinary media. Autopsies were made in three cases. None of the usual local lesions could be found to explain the mode of entrance of the organism to the general circulation. There was a stomatitis in three cases. Kimball thinks that this stomatitis may have been gonorrheal in character and the source of infection. In another case a respiratory source of entry was strongly suggested by the post-mortem findings.

### APOPHYSEAL OSTEITIDES OF ADOLESCENCE.

Comby [11] draws the following conclusion from the study of several cases:

[9] Cattaneo, Cesare and Marimo, Francesco: Pediatria. December, 1902, p. 593. Abstr. in Archiv of Pediat., July, 1903, p. 552.
[10] Med. Rec., 1903, v. lxiv, p. 761.
[11] Arch. de Méd. des Enfants, v. vi, p. 533.

In late infancy and adolescence there occurs in children who grow quickly a mild ostitis which especially affects the anterior superior tuberosity of the tibiæ. This ostitis is perhaps more common in girls than in boys. It usually is symmetrical but sometimes is unilateral or more marked on one side. It shows itself by a swelling appreciable both by sight and palpation but without heat or fluctuation. The chief symptom is pain. This pain occurs even during repose but is increased by motion, walking and pressure. There is no fever; the appetite is preserved; the general condition not affected. The duration may be long, but the disease always ends in resolution. The disease is easily recognized. The most efficacious treatment is rest in bed during a week, or more if that is necessary, and the application of iodine. When the patient gets up fatigue should be avoided. The food should be nourishing. Cod-liver oil and the glycerophosphate of soda are recommended.

### IODOPHILIA IN DIPHTHERIA.

Weiss [12] examined the blood for the iodin reaction in 52 cases of diphtheria. He arrived at the following conclusions: The iodin reaction is not pathognomonic for diphtheria. It is absent in all mild cases and occurs only in the severe cases of diphtheria of the throat and larynx. When present it is due to the considerable infiltration of the tissues of the throat or neck or to disturbance of the respiration. These causes are demonstrable and amply sufficient to account for the phenomenon, and thus stand in marked contrast to the action of toxines, which can hardly be proved.

### THE LEUCOCYTOSIS OF MEASLES AND GERMAN MEASLES.

Plantenga [13] examined the white corpscles in a considerable number of cases of measles and German measles. He found in measles a considerable hyper-leucocytosis of the polynuclear neutrophiles during the period of incubation. This hyper-leucocytosis was followed by an equally large hypo-leucocytosis of the polynuclear neutrophiles during the last days of the enanthem and during the exanthem. Occuring at the same time with this hypo-leucocytosis there was sometimes during the periods of the enanthem and exanthem a marked lymphocytosis. This was always accompanied by violent and persistent diarrhea as well as by a general enlargement of the lymph nodes. After the exanthem the number of leucocytes returned to the normal. If they did not there was some complication present. The same modifications of the blood were found in German measles as in measles.

He concludes that because of the identical blood conditions examination of the blood is of no use in the differential diagnosis between measles and German measles. The results obtained by the examination of the blood in measles and German measles are entirely in favor of the old idea that the two diseases are one and the same.

### ACUTE AMAUROSIS FOLLOWING INFANTILE CONVULSIONS.

The authors [14] describe a series of cases of amaurosis, which they believe to be directly due to severe convulsions. Thus, the infants develop a series of convulsions with coma (resembling the status epilepticus of adults) and upon recovery are found to be blind and sometimes to be hemiplegic or aphasic. There was no evidence of meningitis. Ophthalmoscopic examination yielded negative results. They distinguish this form of blindness from the amaurosis, also without ophthalmoscopic signs, which may accompany or follow posterior basal meningitis in infants. They conclude (1) that there is a form of post-eclampsic amaurosis due to anesthesia of the visual centers, occurring in infants; (2) that the convulsions, which may be due to various causes, are apt to be severe and accompanied by coma; (3) that the amaurosis may be associated with aphasia of hemiplegic distribution; and (4) that the amaurosis is for the most part transient.

## Reports of Societies.

### THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

PROCEEDINGS OF THE SIXTEENTH ANNUAL MEETING, HELD AT THE PIEDMONT HOTEL, ATLANTA, GA., DEC. 15, 16 AND 17, 1903.

THE President, J. WESLEY BOVEE, M.D., Washington, D. C., in the chair.

### A STUDY OF THE PROSTATE AND TREATMENT OF PROSTATIC HYPERTROPHY.

DR. G. WILEY BROOME, St. Louis, Mo., showed a number of hypertrophied prostates that he had removed. Approximately, he had made two hundred post-mortem examinations to investigate the condition of the bladder and prostate in each subject. He said it was generally maintained by routine prostatectomists that all prostates had a capsule, but this was not true.

He drew the following conclusions: (1) The position of the urethra in the normal state was always in the floor of the bladder; but in cases of urinary obstruction it was always elevated from an inch to an inch and a half or two inches above the floor of the bladder. (2) Normally there was no third lobe, but that segmentation took place behind the prostatic fissure in consequence of a hyperplastic process, this process occurring in the direction of least resistance — into the cavity of the bladder. (3) Only a small percentage of cases of hypertrophied prostate was responsible for urinary obstruction. (4) No matter how large the prostate became, it would retain

[12] Jahrb. f. Kinderh., 1903, v. lviii, p. 55.
[13] Archiv. de Méd. des Enfants, 1903, v. vi, p. 129.
[14] Dr. Henry Ashby and Mr. Sydney Stephenson: Pediat., June, 1903, v. xv, No. 6, p. 348.

its functionating capacity. It was not the prostate which caused suffering to the patient. (5) By prostatectomy this functionating organ was mutilated or destroyed, and the bladder, which really caused the patient trouble, was left *in situ* without any operation having been performed on it. (6) In only a small percentage of cases could the prostate be enucleated. (7) It was unfortunate that the profession had reached the point of resorting to routine prostatectomy in all cases of urinary obstruction. (8) The commissure and capsule were obliterated in the fibromyomatous variety of prostate. In the adenomatous variety if complete and permanent drainage was established, the prostate would shrink.

Dr. C. H. Mayo, Rochester, Minn., had operated by the median perineal method in over thirty cases after the manner of Goodfellow, and had been much pleased with the method and results.

Dr. W. P. Carr, Washington, D. C., had seen only one prostate where there was any difficulty in peeling it out of its capsule. Cases of hypertrophied prostate should be operated upon earlier, before the bladder became infected. Prostatectomy in healthy men had a very small mortality, but in those who had infected bladders, who had Bright's disease, or atheromatous arteries, it was a serious operation.

Dr. Broome, in closing, deplored the tendency to do routine prostatectomy regardless of the actual pathological conditions of the parts.

### EDEMATOUS ENCEPHALITIS.

Dr. W. P. Carr, Washington, D. C., called attention to a condition of the brain that he had encountered quite frequently when operating for cerebral epilepsy and for suspected cerebral abscess following mastoid disease due to influenza. This condition he called edematous encephalitis. It was apparently so much benefited by opening the skull and draining the excessive serum from the brain, that it deserved careful consideration. He reported four cases. In cases of severe cerebral symptoms following influenza or blows upon the head, where the symptoms persisted or became worse after weeks of medical treatment, he thought that exploration was justifiable in the hope of finding edematous encephalitis or some other condition that would be benefited by operation. In operating for edematous encephalitis he recommended that a large osteoplastic flap be cut with the De Vilbiss craniotome over the site of any injury that might be suspected as a cause, or over some location indicated by the symptoms. If the symptoms furnished no local indication, and there was no local injury, then the flap had best be turned down in a convenient place, say the upper parietal region. The exposed membranes and brain substance should be examined carefully, and if they presented an edematous appearance a grooved director should be introduced into the brain substance carefully in several places, and the serum drained off until the brain assumed a normal appearance. A small soft drainage tube should be inserted just through the dura into the arachnoid space and left in place as long as there was a copious discharge of serum. This tube might be brought out through one of the small trephine holes made for the introduction of the De Vilbiss instrument, and stitched to the skin after an osteoplastic flap had been replaced. If the head was carefully shaved and scrubbed, and all proper antiseptic precautions taken, this operation was almost free from danger; and if only a small percentage of the serious cases could be cured in this way, the operation would be justifiable. He had been encouraged by his limited experience to believe that surgeons might hope for recovery or great improvement from this operation in many otherwise hopeless cases of epilepsy and of progressive brain disease due to trauma and influenza.

### A NEW DEVICE AND METHOD FOR INTESTINAL ANASTOMOSIS.

Dr. Carr said he had devised a method of intestinal or gastro-intestinal union by small silver clamps, which he thought were more easily and quickly applied than the Murphy button. These clamps were exhibited. He had used them in one case of resection of five inches of gangrenous ileum caused by strangulated hernia. The man recovered and the clamps were recovered between the sixteenth and twenty-first days.

Dr. C. H. Mayo said he and his brother had operated on many cases of epilepsy and traumatic insanity, and he could corroborate what the essayist had said regarding edematous encephalitis. Treatment by drainage came the nearest to the solution of affording this class of cases relief.

Dr. I. S. Stone mentioned a case, in referring to Dr. Carr's clamps, in which gastro-enterostomy was performed about a year ago, with the aid of the Murphy button, but the button had not yet been passed.

In another case of diverticulum with obstruction, the button was used, but the woman was still carrying it with some anxiety. Thus far, however, there were no symptoms of intestinal obstruction from the retention of the button.

Dr. Guy L. Hunner objected to the use of all mechanical devices and favored suturing the intestine, although he thought the simple device exhibited by Dr. Carr would enable surgeons to do intestinal anastomosis rapidly.

Dr. J. Garland Sherrill advocated suturing the bowel in preference to the use of mechanical aids. In his intestinal work he preferred silk.

### THE SURGICAL PHYSIOLOGY OF THE LYMPHATIC SYSTEM.

Dr. C. H. Mayo, Rochester, Minn., said that a study of the lymphatic system readily explained many normal physiological as well as pathological processes. All tissues were provided with lymph vessels and glands in direct proportion to their exposure, activity and necessity for repair.

The tissues of the body were constantly bathed in lymph, which fluid, similar to and derived from the blood plasma, must all pass through the lymph vessels and glands. In the glands the lymph was exposed to the direct action of the leucocytes which were there found in great abundance. It was in the glands that infection was checked, and destroyed, or it might possibly overpower the glands and develop local growth. An enlarged gland was an evidence of a local struggle and a defeat. The lymph system undoubtedly performed a great function in draining the ductless glands.

Considering the lymph supply of certain organs, it was found that the brain was deficient in lymphatics in its structure, the arachnoid serving this purpose upon its surface. Hemorrhages into its structure became cysts from lack of absorption and infections of its substance caused but little temperature or general disturbance except from pressure. Liver and kidney showed the same condition in a less marked degree.

The lungs, rich in lymphatics, gave constant temperature from infectious diseases. Chills usually signified the direct delivery of accumulations of infection into a vein. In certain diseases resulting from a loss of equilibrium between the production and absorption of fluids, one set of lymphatics was substituted for another by operation, as in glaucoma and hydrocephalus.

When lymphatic conditions were considered in connection with surgical work, it was found that there was a real principle involved in drainage, whether it be internal or external.

Dr. Mayo then discussed the varieties of drains and drainage adjuncts.

### EARLY DIAGNOSIS OF CANCER OF THE UTERUS.

DR. F. F. SIMPSON, Pittsburg, Pa., said that early in 1900 a note was addressed to the health departments of American cities with an aggregate population of ten millions, requesting a tabulated statement of deaths from cancer and from all causes during each year of the preceding decade. Statistics showed that of every fourteen people who reached the age of thirty, cancer would claim one as its victim. Bearing more directly upon the subject of cancer of the uterus, however, was the distressing fact that of every twenty-eight women who passed the age of thirty, one would be the victim of this disease.

The paper was largely statistical, and the author closed by saying that the day was fast approaching when well-informed women of the cancer age would seek protection by regular quarterly examinations. Early diagnosis would then be the rule in cancer of the uterus as it was in appendicitis to-day.

### FRACTURE-DISLOCATION OF THE SPINE.

DR. J. SHELTON HORSLEY, Richmond, Va., reviewed the opinions of several authorities on the treatment of this lesion. He advocated the plan of McCosh to operate in all cases of complete paralysis below the injury unless there was improvement within twenty-four hours after the injury. When the trauma was especially marked, he operated sooner. He pointed out that the danger of delay lay in degenerative changes in the spinal cord which set in soon after the injury. Early operation might arrest this degeneration.

He reported six cases, in two of which the injury was received several years before he saw the patient. In one there was a forward dislocation of the axis and atlas from the third cervical vertebra. This was demonstrated by a skiagraph. The patient had paralysis of the muscles of the arm, body and thighs. There were disturbances of sensation of various degrees over the body and limbs. He reported two other cases in which fatal results rapidly followed the injury. One was from a gunshot wound and the other was the result of a fall on the shoulder in which there was a fracture-dislocation in the lower dorsal region. In one of the last two cases he operated upon there was an injury at the lower dorsal region where the whole of the dorsal spinal column was dislocated forward upon the lumbar spinal column. The spinous process of the last dorsal vertebra was fractured. The cord was caught between the last dorsal and the first lumbar as between the blades of a pair of scissors. It was not completely crushed, as the dislocation was not extensive enough. It was impossible at the operation to reduce the dislocation, so the spinous processes and the laminæ of the last three dorsal vertebræ were removed. This relieved the pressure on the cord. The patient died, however, from pneumonia a week later without any improvement in the spinal symptoms. A post-mortem examination showed the wound in an excellent condition, with the cord softer than at the time of operation, and solidification of the whole lower lobe of the right lung, and a part of the middle lobe. In the other case operation was undertaken about a month after fracture of the eleventh and twelfth dorsal vertebræ in a laborer, nineteen years of age. The cord was almost completely gone, there being a few fibers remaining from its anterior portion. The laminæ had been fractured and driven into the canal. One of the articular processes had also been driven into the canal. These were removed, and the wound closed, leaving a small catgut drain. There was no decided improvement in his condition for six weeks after the operation. At this time he urinated voluntarily.

Two weeks later there was noticeable improvement in both sensation and motion in the thighs. This improvement continued until the present, about three years after operation. His thighs were practically normal as to motion and sensation. Bladder and rectum acted naturally, and his general health was excellent. He could stand with support and walk by having a strong support on each side. His legs and feet were still paralyzed both as to motion and sensation. At present the patient weighed nearly two hundred pounds and was quite comfortable, except for occasional pains in his legs.

NEOPLASMS, WHEREVER SITUATED, SHOULD, IF POSSIBLE, BE REMOVED, WHATEVER THEIR APPARENT NATURE.

Dr. Maurice H. Richardson, Boston, Mass., considered chiefly neoplasms of the breast and of the female pelvis in a paper on this subject. The reasons which justified the adoption of the title rule in these regions would apply with certain exceptions to all parts of the body. These reasons, all of which were illustrated by specific cases, in the author's own experience, were as follows:

(1) The uncertainty of the diagnosis, even on the part of the most experienced and the most skillful, made palliative treatment hazardous, especially in the doubtful cases. Several instances were given in which the patient was not operated upon because the tumor was supposed to be benign when, in reality, it was malignant. The error cost the patient the favorable moment for operation. The impossibility of accurate diagnosis in even the most accessible regions of the body was emphasized. Breast tumors apparently benign had proved malignant. Breast tumors benign throughout their principal area showed minute foci of malignancy. Breast tumors clearly benign had after many years developed a fatal malignancy. So in abdominal tumors, especially the pelvic tumors in women, the difficulties of diagnosis made the apparently benign cases dangerous. Many instances were given illustrating the difficulties of diagnosis and the necessity for exploration in even the most favorable cases of presumably benign growths.

(2) The dangers of benign tumors becoming in time malignant was emphasized and illustrated by not a few cases in which after years of slow and harmless growth a tumor had suddenly developed evidences of malignancy. Tumors of the breast, of the gall-bladder, the stomach, the uterus, the ovary, and of other regions had by an acquired malignancy convinced the speaker that the only safe rule of treatment was in all cases thorough extirpation of the tumor as early as possible.

(3) The wisdom of exploration in certain apparently hopeless tumors was illustrated by cases in which a benign and easily remediable condition was found, and in which impending death was averted by a safe operation. In this class were infiltrating tumors of the abdominal wall supposed to be hopelessly malignant, but which proved to be tuberculosis of the muscle aponeurosis; epigastric tumors, apparently cancerous, found to be pancreatic cysts, actinomycosis, chronic pancreatis and the like; pelvic tumors supposed to be malignant and inoperable were proved to be old tubal inflammations, fibroids, ovarian cysts, and the like.

(4) The essential malignancy of certain areas in the malignancy-inviting nature of certain regions, especially the breast and the ovaries, was especially emphasized. In these regions the tendency of tumors to become malignant made the application of this rule practically imperative. Ovarian tumors, even when apparently benign, were shown to have especially dangerous tendencies to malignant degeneration.

(5) In pelvic tumors especially, the benign often masked the malignant. Cases were reported to illustrate the obscuration of a uterine sarcoma by an overlying fibroid. In two recent cases cancer of the ovary was found concealed by an enormous fibroid, and in a third there was found an annular stricture of the sigmoid flexure.

The rule of universal extirpation had numerous exceptions. It should not apply to superficial tumors, clearly benign, which could not be removed without great disfigurement; keloids that could not be removed without leaving a broad scar, unless they showed a tendency to ulceration and malignancy; all other benign tumors, which caused needless suffering, disability and disfigurement, whenever their removal was dangerous, or whenever the patient's general condition was unfavorable; and tumors of all kinds in which the dangers and sufferings of removal outweighed the dangers and sufferings of the tumors themselves.

INTESTINAL CANCER.

Dr. J. Garland Sherrill, Louisville, Ky., stated that cancer of the intestine, while rare, was more frequent than physicians were led to believe; that sarcoma was much less frequent than carcinoma, and selected especially the small intestine, while carcinoma most often attacked the large bowel. The appendix was the seat of both carcinoma and sarcoma, although occurring quite infrequently. The literature showed that men suffered from both forms oftener than women. Adeno-carcinoma was the type most frequently seen, while the round-celled sarcoma or the lymphosarcoma occurred oftenest.

The author reported two cases of cancer of the intestine. The treatment was to be largely determined by the extent of the involvement. Resection of the intestine and extirpation of the growth offered the patient the only hope of a permanent cure, and this chance, though slight, should be given the patient whenever practicable, as early in the course of the disease as possible. Any of the classic methods might be employed.

AMPUTATION OF THE HIP JOINT FOR SARCOMA, WITH A REPORT OF SEVEN CASES.

In a paper on this subject, Dr. Wm. B. Coley, New York, said that the tumor originated in the bone or periosteum of the femur in five cases, and in the soft parts in two. The age of the patients ranged between six and fifty-six years. In six cases Wyeth's pins were used, but in the seventh case the growth extended above Poupart's ligament; pins could not be used, and the external iliac artery was first tied. All of the patients made a good recovery from the operation; yet only one patient survived operation long enough to be called a cure. This was a

sarcoma of the thigh in which the mixed toxins of erysipelas and Bacillus prodigiosus were used for two months before amputation. In one recent case the patient was still alive without recurrence; in all the other cases death occurred from local or general recurrence in from four months to two years after amputation. Of four other cases of sarcoma of the femur and thigh, treated by high amputation just below the trochanter, two patients died at the end of four months; one died at the end of two and a quarter years, and a third had recurrence in the gluteal region, which disappeared under the mixed toxin treatment, and the patient was alive at present without recurrence, six years afterwards.

The extraordinary malignancy of sarcoma of the femur was shown by the very small number of patients known to have survived for more than three years after the amputation. Butlin was able to find but one case in sixty-eight treated by high amputation or hip joint amputation. Wyeth, in 1901, collected 131 cases treated by hip joint amputation with ten alive more than three years. Dr. Coley stated that he had personally known of but six cases. In one of these cases (Dr. Bull's), operated upon sixteen years ago, a severe infection occurred in the wound, probably streptococcus, and the patient was well six years later. In another case (Dr. Gerster's), the disease was so extensive and so high up that amputation was considered impossible, and the patient was treated with the mixed toxins of erysipelas and Bacillus prodigiosus for several months. The tumor disappeared and the patient was shown to the New York Surgical Society a year ago in perfect health, more than four years after treatment.

The better results following amputation in the pre-antiseptic days the writer attributed to the infection that frequently occurred in the earlier period. This fact, together with the results referred to, in which the erysipelas toxins were used, he believed sufficient reasons for advocating the systematic use of the toxins after primary amputation as a prophylactic against recurrence. He would not advise such treatment prior to amputation in sarcoma of the femur, on account of the great liability to early metastases, although in a case of sarcoma of the tibia he had been able to save the leg, and the patient was now well seven years afterwards.

The method of treatment advocated by Mikulicz, namely, resection of the femur, Coley did not think should be adopted as a substitute for amputation. While it was true a fairly useful limb might be obtained by resection, there were no cases treated by this method that had been observed for longer than a year, hence nothing could be said as to permanent cure.

The x-ray, Coley believed, should never be used unless the patient absolutely refused amputation. One such case he had treated two years ago (round-celled sarcoma of femur); the tumor apparently entirely disappeared from the femur, but ten months later a large metastatic tumor appeared by operation. A little later another very large tumor appeared in the lumbar and iliac regions. Under long-continued treatment with the mixed toxins plus the x-ray, the tumors disappeared, and the patient was alive and well to-day, although by no means regarded as cured.

### DIAGNOSIS AND TREATMENT OF GALL STONES.

DR. MACK ROGERS, Birmingham, Ala., read a paper on this sbuject. After referring to the differential diagnosis, he spoke of the operation for the removal of stones from the gall bladder, saying that where there were no adhesions it was comparatively easy, but when the stone was located in the common duct, or extensive adhesions existed, or both, the surgeon had a very difficult condition to deal with. The mortality in all cases from the operation averaged only about 3%.

### SURGERY OF URINARY TUBERCULOSIS IN WOMEN.

DR. GUY L. HUNNER, Baltimore, Md., reported thirty-five cases occurring in the services of Dr. Howard A. Kelly and his associates in Baltimore. These patients were all women with an average age at the onset of symptoms of twenty-eight years. The disease was unilateral in thirty-one of the cases, and it was probably primary in the kidney, as regards the urinary system, in thirty or more of the cases. Thirty-one cases had bladder symptoms at some time in the course of the disease, although only eighteen cases had bladder lesions at the time of operation. Eleven of these eighteen cases still had some bladder symptoms, and five were known to have bladder lesions, although nine of the eleven had had systematic bladder treatment. Tuberculosis of the bladder did not heal with the ordinary methods of treatment, and if the disease persisted a year and did not occupy more than half of the bladder, it should be excised. Of twenty-two ureters examined microscopically, seventeen showed tuberculosis, while five were chronically inflamed. If a tuberculous ureter remained either in part or *in toto*, the wound usually remained open at least two years, while the removal of a ureter with the kidney resulted in rapid closure of the wounds. Five cases died — three after six and eleven weeks and two years respectively, from involvement of the other kidney, and two, in fifteen and six days, because of the operation. Sixty-six per cent of the patients were enjoying fairly good or excellent health.

*(To be continued.)*

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RADIUM IN AN ITALIAN RIVER. — Dr. Francolini of Rome, Italy, has published a statement to the effect that the source of the Clitumnus, a small Umbrian river sacred to the Romans, may contain radium, basing his opinion on a description by Pliny and on passages in the works of many writers and poets from Virgil to Byron. — *N. Y. Medical Journal.*

## Recent Literature.

*Rational Home Gymnastics.* For the "Well" and the "Sick," with Health-points on Walking and Bicycling, and the use of Water and Massage. By Hartvig Nissen. With illustrations of Exercises for Women contributed by Baroness Rose Posse. Revised and enlarged edition. Boston: E. H. Bacon & Co. 1903.

This small volume of 132 pages is devoted to a discussion of rational home gymnastics. The illustrations are so numerous that the various movements suggested are graphically represented in practically every instance. Baroness Rose Posse gives in addition a series of illustrations of exercises for women which should be of service in indicating proper methods. The book is suggestive and should be useful as a guide for those undertaking gymnastic exercises of this type without an instructor.

*A Treatise on Diseases of the Rectum, Anus, and Sigmoid Flexure.* By Joseph M. Mathews, M.D., L.L.D., President of the American Medical Association, 1898; Professor of Surgery and Clinical Lecturer on Rectal Diseases at the Hospital College of Medicine, etc. Third edition, revised. New York: D. Appleton & Co. 1903.

The author has devoted many years to the study and teaching of rectal diseases. The amount of original work which has been done in this subject as well as the fact that the second edition was exhausted has induced Dr. Mathews to produce a third one. This new volume of 589 pages presents the subject generally and specifically. The introductory chapters describe the methods of examination of patients, the anatomy of the rectum, special instruments of diagnosis, constipation, anesthesia and rectal antiseptics. The remainder of the book treats of hemorrhoids, fistulæ, ulceration, non-malignant stricture, carcinoma (under which both the operative and the palliative treatment is discussed), diseases of the "Sigmoid," prolapse, malformations, polypi, etc. The book is illustrated with six chromo-lithographs, rather lurid in character, and numerous cuts.

Much has been added to the earlier editions which is new and of importance to those interested for any reason in rectal diseases. The chapter on "Cancer" has been rewritten to bring the subject up to date and introduce the more recent ideas relating to etiology. The author calls attention to several operations of which he claims to be the originator, *viz.:* A method of colopexy for extreme cases of rectal prolapse; a new operation for hemorrhoids which might be termed an excision; a plastic operation for pruritus ani. Also an operation for rectal prolapse of moderate degree.

The book is a "readable" one, with clear type and pages agreeably free from the luster of a highly finished calendar paper. It is forcibly and positively written. The subject matter, both etiology, diagnosis and treatment, is often emphasized by illustrative clinical histories of actual cases which have come under the author's personal observation. He also often quotes in support of his statements, or to present the prevailing ideas on the subject under discussion, the opinions of other specialists, notably Allingham, Cripps, Tuttle, Kelly, Agnew and Kelsey; so that one feels after reading that a fairly comprehensive view of the subject has been obtained. The book contains many practical suggestions and details of treatment which are of value. It impresses one that its author is thoroughly convinced that his statements are supported by facts which will bear the test of actual trial by others.

*Surgery, Its Theory and Practice.* By William Johnson Walsham, F.R.C.S. Eng.; M.B. and C.M., Aberd.; Surgeon, formerly Lecturer on Surgery and Anatomy, St. Bartholomew's Hospital; Member of the Court of Examiners, Royal College of Surgeons of England; Consulting Surgeon to the Metropolitan Hospital, to the Hospital for Hip Disease, Sevenoaks, and to the Cottage Hospital, Bromley; Late Surgeon in Charge of the Orthopedic Department, St. Bartholomew's Hospital; Examiner in Anatomy to the Conjoint Board of the Royal College of Physicians and Royal College of Surgeons, and University of Aberdeen; and Examiner in Surgery to the Society of Apothecaries. Eighth edition. With 622 illustrations, including 20 skiagram plates by Walter George Spencer, M.S., M.B. (Lond.); F.R.C.S. Eng.; Surgeon to the Westminster Hospital. Philadelphia: P. Blakiston's Son & Co. 1903.

Thirty-eight thousand copies of this book have been published and in this eighth edition Mr. Walsham was aided by Mr. Walter G. Spencer. The book is so well known that an extended review is hardly necessary. Some of the illustrations are rather antiquated. The book shows evidence of a great deal of care having been taken to bring it thoroughly abreast with the times. The book may well be accepted as a representative text-book of English surgery.

*Modern Bullet Wounds and Modern Treatment, with Special Regard to Long Bones and Joints, Field Appliances and First Aid.* By Maj. F. Smith, D.S.O., Royal Army Medical Corps. London: J. and A. Churchill. Philadelphia: P. Blakiston's Son & Co. 1903.

This little volume of 99 pages is a reprint of part of the essay to which was awarded the Alexander prize for 1903; a prize awarded triennally from a fund instituted to perpetuate the memory of Thomas Alexander, C.B., the Director-General of the British Army Medical Corps from 1858–1860.

The brochure treats of the injuries of the large bones of the upper and lower extremities, and the

joints with which these bones are associated. The opinions of the author are based on his experience, derived from the Boer war and other campaigns. Wounds by older firearms are compared with those resulting from projectiles from modern weapons. The injuries are grouped into: (1) Contusions with injury to the periosteum without fracture. (2) Partial fracture without much impairment of function. (3) Complete fracture. (4) Comminuted fracture. (5) Any of the above involving a joint. (6) Injury to joints without injury to bones. These different lesions are described and discussed. The results of previous campaigns, where different weapons and methods of treatment were used, are compared with present methods and results. Major Smith enumerates his reasons for these improved statistics by modern methods of treatment. This discussion occupies a greater part of the book. The points are interestingly presented and the author's opinions are frequently emphasized by quotations of personal observations. Many practical points of diagnosis and treatment the value of which has been actually and personally tested are incidentally introduced.

The concluding pages are devoted to the consideration of splints for actual field service (a subject very briefly presented) and a short discussion of the management of " First Aid " on the " firing line."

The book impresses one as the work of a man who has formulated his ideas from personal observation, and it makes interesting reading when compared with the more theoretical and elaborate treatises on military surgery.

*Essentials of Pelvic Diagnosis, with Illustrative Cases.* By E. STANMORE BISHOP, F.R.C.S. Eng.; Hon. Surg. Ancoats Hospital, Manchester; Vice-President British Gynecological Society, London; Ex-President Clinical Society, Manchester, etc.; and an Appendix on Examination of Blood, etc., by CHARLES H. MELLAND, M.D. (Lond.), M.R.C.P., Hon. Physician, Ancoats Hospital, Manchester, etc. New York: William Wood & Co. 1903.

This is a volume of 297 pages, attractively published by William Wood & Co. The author adopts the deductive method of teaching diagnosis. As he puts it, " Procedure on the inductive principle is the very reverse to that upon which all men in practice are called upon to act. In practice, the symptoms are known, the disease is not. It has to be deduced; and this work is an attempt to make this mental process with regard to pelvic diseases more easy."

The treatment of the subject is best outlined by the Table of Contents. Part I is headed " Methods of Diagnosis," and contains chapters on The Use of the Hand; The Position of Patients for Purposes of Diagnosis; The Use of Instruments for Diagnosis; and Pain as a Factor in the Diagnosis of Abdomino-Pelvic Disease.

Part II is called " Lines of Diagnosis," and the chapters are as follows: Class I: Swellings of the Abdominal Wall Itself. Class II: Conditions affecting Perineum, External Genitals, and Inguinal Region. Class III: Diseases affecting the Vagina, Rectum, Bladder and Prostate, diagnosable by Touch, Specula, Cysto- and Proctoscopes. Class IV: Swellings in the Pelvis, felt bimanually. Class V: Swellings of Pelvic Origin, which have developed into the Abdomen.

Part III is devoted to Diagnostic Tables; Part IV to Illustrative Cases, and Part V is the Appendix containing the Examination of the Blood and Examination for Tubercle Bacilli and Gonococci, and also, the Index, which is of especial value to the practitioner who happens to have been trained by the inductive method, or to the student who has a suspicion as to the identity of the disease he is seeking.

It would seem as if the author had distorted the symptomatology of some of the diseases of the pelvis in order to make them fit into his tables, unimportant symptoms being given undue prominence and important ones placed in the background or omitted. Nevertheless, the book has a distinct value for the elementary student, founded as it is on an ample clinical experience and written in a clear, forcible style. For the advanced student and the practitioner, to our mind, the inductive method of teaching is to be preferred as affording a much clearer and more accurate picture of each disease.

*Adenomyome des Uterus.* VON THOMAS S. CULLEN, Hülfsprofessor der Gynäkologie an der Johns Hopkins Universität, Gynäkologischer Assistent am Johns Hopkins Hospital in Baltimore, U. S. A. Mit 45 Abbildungen im text. Berlin: Verlag von August Hirschwald. 1903.

This book of 91 pages is an article written by Dr. Cullen for the festschrift in honor of Prof. Johannes Orth to celebrate the twenty-fifth year of his professorship.

Adenomyoma is treated in detail. It is a distinct pathological condition which may be diagnosed both by gross appearances and by the microscope. It is non-malignant and does not return when removed. Adenocarcinoma may be engrafted on adenomyoma or may exist independently in the same uterus.

Dr. Cullen distinguishes three types:

(1) Adenomyoma with little change in the normal shape of the uterus.

(2) Subperitoneal or intraligamentary adenomyoma.

(3) Submucous adenomyoma.

The etiology, diagnosis, prognosis and treatment of adenomyoma and its relation to adenocarcinoma are carefully discussed. Cases of adenomyoma of the bones, of the uterus and of the round ligaments are reported.

The article is well illustrated by numerous cuts and is a valuable addition to our knowledge of the diseases of the uterus.

THE BOSTON

# Medical and Surgical Journal.

THURSDAY, JANUARY 21, 1904.

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## THE FINANCIAL PROBLEM OF THE NEW YORK HOSPITALS.

Attention is called, in the current number of *Charities*, to the financial problem connected with the adequate maintenance of the hospitals in New York. One hardly realizes the extraordinary change which has taken place in such institutions during the past fifty years, unless attention be called to the matter. The growth and development of hospitals has been particularly active in the immediate past, and further inlargements and improvements, which are projected, will entail an added expenditure of between six and seven million dollars. More than half a million dollars has recently been expended for the further equipment of hospitals under the jurisdiction of the department of public charities.

With the increasing knowledge of methods of caring for the sick, together with the elaborateness of new hospital buildings, it has happened that the cost of maintenance has been very materially increased. The prejudice against hospitals has practically disappeared, and this fact, together with the very great difficulty of treating patients by modern methods at their homes, has necessitated this remarkable growth of hospital facilities. This has meant an increasing financial strain, so that the situation has now reached a critical point. A table, showing the financial burden which is being carried by twenty hospitals, is appended, giving an annual deficit of $432,268. Of this amount one hospital, the Lying-in, alone carries upwards of $88,000, and the Presbyterian is very near that figure. This deficit of nearly $450,000 has accumulated in the short space of one year, and that a year of great financial prosperity.

Various methods must be adopted to meet this deficit, one of the most important of which undoubtedly is by taking such portions of accumulated endowment funds as are not restricted, but which heretofore have been kept for income-producing purposes alone. Legacies to hospitals are too uncertain to permit of dependence. The natural question arises as to how the receipts of the hospital may be increased.

At present the income of hospitals comes from paying patients, from endowments, legacies, donations, and an allotment from the Hospital Saturday and Sunday Association, with a certain allowance from the city in some cases. It is undoubtedly true that in certain institutions there are increased receipts from pay patients, but this does not necessarily help those who can afford to pay little or nothing. Income from endowments is, in many cases, decreasing, and legacies are too uncertain to count upon. Donations again are not a hopeful source of increase in income. The conclusion, therefore, is reached that the deficit must be met by other means than these. With the very great added expense which the city is undertaking for the betterment of its own hospitals, it is not likely that it will view with approbation a suggestion to increase the amount it is now paying to private institutions.

It may be seen from the foregoing that the situation is not encouraging. There is a marked tendency toward the building and equipment of hospitals, which, under present conditions, must be maintained at a constant loss. *Charities*, in the paper by Frank Tucker to which we are referring, takes the bull by the horns and suggests that an endowment fund of ten million dollars be raised for the hospitals of New York. The income of this amount is required to provide for the present annual deficit. The method of raising such a fund must be through the work of an independent body of representative citizens, and when raised it should be held only for purposes of income. This suggestion strikes one at first as somewhat bold, but the cause is a good one, and if persons of wealth are made to realize this fact, experience amply shows that they are quite willing to give. However this may be, it is apparent that some remedy must be sought if hospitals are to go on developing in proportion to the need and growth of the population. There are those who believe that a limit should be set to the foundation of hospitals on an essentially

charitable basis, among whom may be mentioned Bishop Potter, of New York, who regards the growth of institutionalism as a possible menace. The weight of opinion will, however, no doubt be in favor of a conservative but continually increasing development of hospitals and hospital facilities, recognizing the possibility and the danger of overproduction in this as in other matters. In the meantime existing hospitals should be adequately supported, and we can see no objection to the proposition which is set forth in *Charities* of securing, if possible, an endowment fund for this purpose.

## ADULTERATION AND SUBSTITUTION.

IN an official report to the State Board of Pharmacy, made by Dr. George C. Dickman of the New York College of Pharmacy, who is chairman of the board's Committee on Adulteration and Substitution, it is stated that examinations during the past year show that one out of every three druggists in New York City and its vicinity is guilty of dispensing medicines below the official standard. Inspectors, under Dr. Dickman's orders, went from shop to shop buying samples of such staple preparations as tincture of iodine, spirit of camphor and soap liniment. The results tabulated are as follows: Samples tested, 871; up to standard, 561; below standard, 310; per cent, 35.5. No attempt was made to pick out suspected druggists, the samples being purchased at random. Tincture of iodine was found in which not one-quarter of the prescribed quantity of iodine was dissolved. The use of wood alcohol was found to prevail to a large extent in the preparation of certain tinctures. Of 489 samples of tincture of iodine, spirit of camphor and soap liniment, wood alcohol was substituted in 94. During the first half of the year this adulteration was found in 23% of the samples tested, but in the last six months, during which it is stated the drug-trade journals reported from time to time that samples were being collected, the percentage fell to 16%. The State Board divides the state into three districts, of which the Greater New York district includes Westchester County and Long Island. In the two other districts the board's inspectors visited only druggists under suspicion, and in the middle district, which includes the cities of Albany, Syracuse and Rochester, all but ten out of ninety-eight samples collected were bad. In the western district, in which Buffalo is the only large city, but seven samples were tested, but they were all bad. In the New York district more than $20,000 in fines was collected without resort to the courts, the method being to inform the dishonest druggist that he had been detected and that his fine is so much; whereupon he promptly sends in a cheque for the required amount.

The United States Supreme Court has also rendered a decision sustaining the New York statute relating to the adulteration of food products. The case was that of a firm of New York importers *vs.* a merchant who made a contract to purchase coffee of a prescribed grade at a specified price. When the coffee arrived in New York it was discovered to have been colored. The merchant raised the point that the coloring process was equivalent to adulteration, and the New York courts sustained the contention, and relieved him from the requirements of the contract. The attack on the state law was made on the ground that it was an assumption of powers belonging to the United States as governing inter-state commerce. The Supreme Court held that the adulteration of the coffee was an act which came clearly within the police powers of the state as a matter of public welfare within the state. No matter where the adulteration was made, when the resulting product was brought into the state, it was subject to the laws of the state, precisely as if the adulteration had been an act committed within the borders of the state. To hold any other position in a matter relating to the health of the people of the state would be to hold that the state had no power to protect itself against all manner of assaults on public health and welfare.

## MEDICAL NOTES.

PENNSYLVANIA SOCIETY FOR THE PREVENTION OF TUBERCULOSIS. — The annual report of the Pennsylvania Society for the Prevention of Tuberculosis shows the same sort of activity in combating the disease there as in other states. Six tracts are published in this pamphlet on the general subjects of how to avoid contracting tuberculosis; on how the transmission of the disease may be avoided; how hotel keepers may aid in preventing the spread of the disease; how storekeepers and manufacturers can assist to prevent the spread of the disease; and finally the registration of tuberculosis. These tracts are published by the society for gratuitous distribution.

Insanity among Indians. — It is reported from the National Hospital for Insane Indians in South Dakota that the institution now has thirty-four patients, and that it will soon be filled at the present rate of increase. Mental disorder is increasing among reservation Indians, supposedly due to the semi-civilized life which is being forced upon them.

### boston and new england.

Acute Infectious Diseases in Boston. — For the week ending at noon, Jan. 20, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 81, scarlatina 44, typhoid fever 8, measles 146, smallpox 0.

Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Jan. 16, was 236, against 202 the corresponding week last year, showing an increase of 34 and making the death rate for the week 20.39. Of this number 114 were males and 122 were females, 228 were white and 8 colored, 146 were born in the United States, 87 in foreign countries and 3 unknown, 55 were of American parentage, 147 of foreign parentage and 34 unknown.

The number of children who died under one year was 44, against 31 in 1903; the number under five years 76, against 50 in 1903. The number of persons who died over sixty years of age was 44. The deaths in public institutions were 63. There were 13 deaths from Bright's disease, as against 8 during the corresponding week of 1903. There were 11 deaths from cancer. In the same week of 1903 there were but 5.

Meeting of Massachusetts Nurses. — At a recent meeting of the newly organized Massachusetts State Nurses Association, held in Boston, a large number of nurses were in attendance. The membership in the Association is now about 300, and it is confidently expected that it will fulfill the function for which it was organized.

The Boston Dispensary. — At the quarterly meeting of the Boston Dispensary certain statistics of interest were presented. The work of the Dispensary during the quarter is represented by the treatment of 6,936 patients at the Dispensary and 2,282 visits to new and old patients. Upwards of 6,000 visits were made in the various districts, and the total number of patients treated by the institution numbered over 10,000. Attention was again drawn to the necessity for more room in order properly to carry on the work of the Dispensary. Since the last report a new district has been established in Charlestown.

Massachusetts Hospital for Dipsomaniacs and Inebriates. — The twelfth annual report of the trustees of this institution shows that the policy introduced the previous year of selecting cases more carefully for treatment has led to a certain diminution in numbers. The appearance of smallpox, which, however, gained no headway, also conduced to this result. Certain improvements have been made during the year, and further means have been taken for preventing escape. The largest number of patients under treatment during the year was 182, the smallest 105, a very considerable decrease over the preceding year. The superintendent in his report is strongly convinced of the benefit which has resulted in a very large percentage of the cases treated. Of all who have received the full course of treatment, 42% during the ten years of the existence of the hospital have been either cured or improved.

Medical Uses of Radium. — In the course of an address on Jan. 13, before the Technology Club, Boston, on the medical uses of radium, Dr. William J. Morton made the suggestion that the efficacy of certain natural mineral waters may possibly be due to the presence in them of minute quantities of radium or its emanations. It seemed probable, he said, that these spring waters contain something that till now has escaped the tests of the analyst, and the known fact that some of the potent waters have radio-activity of one kind or another would seem to point to the presence of radium or the related substances.

### new york.

Pneumonia and the Death Rate. — During the week ending Jan. 9 there were 364 deaths reported from pneumonia (including cases of broncho-pneumonia), an increase of 143 as compared with the corresponding week of last year, and the mortality in the city from all causes represented an annual death rate of 22.23, as against 18.45 in the corresponding week of 1903.

A Centenarian. — Mrs. Susan Jane Weeks died recently in the Williamsburgh district of Brooklyn at the age of one hundred and two years. She was born in Babylon, Suffolk County, N. Y., and was a descendant of an old Dutch family which settled on the east end of Long Island in the early part of the seventeenth century.

HERTER LECTURESHIP. — In the lectureship established at the University and Bellevue Hospital Medical College by Dr. Christian A. Herter, the first series of twelve lectures has just been delivered by Dr. W. D. Halliburton, Professor of Physiology at King's College, London, and Croonian Lecturer before the Royal College of Physicians in 1902. The lectures, which were given daily at the Carnegie Laboratory, were devoted to the bio-chemistry of muscle and nerve.

CONSULTING SANITARIAN TO BOARD OF HEALTH. — Ex-Commissioner Ernest J. Lederle has been appointed consulting sanitarian to the Board of Health, and in this capacity will also sit as a member of the Advisory Board of the Department, which has hitherto been composed entirely of physicians. Prof. Charles F. Chandler, another ex-president of the department, has likewise been appointed a member of the Advisory Board.

## Miscellany.

### THE DEVIATE.

THE following verses, which have a bearing on the general subject of "Degeneracy and Deviation," were read by Mr. William A. Hovey at a meeting of the Boston Society of Psychiatry and Neurology, in connection with the paper by Dr. George L. Walton on this subject, published in this issue of the JOURNAL:

THIS deviation is a thing
Heredity alone can bring,
It sort of means you went astray
Before you saw the light of day.
It doesn't come because you've sought to
Do things that you hadn't ought to.
It don't arise from frequent "wets,"
Nor even smoking cigarettes.
It comes because you're built that way
And when it comes, it comes to stay.

It isn't nice, at any rate
To call your friend "degenerate"
Because his hands are large or small,
Because in height he's short or tall,
Because his eyes, one brown, one blue,
To normal standards are not true.
And if he be much bigger, stronger,
With every chance of living longer,
Than any man you've seen or known,
A man with powers all his own,
You may call him a "deviate"
But surely not "degenerate."

I know a man of strenuous mold
Of stalwart build, of aspect bold,
Of reddish hair, of mild blue eye
And with a very potent thigh—
A man who's built for boxing, rowing,
Who's ever to the river going
To find a vent for his great store
Of vital force. He has galore
Of brawn and muscle, blood and bone,
I think he weighs some fourteen stone.
His blood goes racing through his veins
Like mile-a-minute railroad trains,
And keeps on building brain and muscles,
Because its full of red corpuscles.
Now if you'd keep away from harm
Fight very shy of that right arm
And never, never seek to know
The fearsome twist of that elbow.
This man, to speak in parlance formal,
Is most distinctly supernormal
But, to his face, I think you'd hate
To call him a "degenerate."
You'd safely say an "aberrate,"
An "abnorm" or a "variate,"
But Walton's word is "deviate."

Another man I have in mind,
He's of a very different kind,
He's neither very short nor tall,
But he is one who "knows it all."
His brain is of the average size,
He doesn't differ as to eyes,
From other men who chin and chatter,
The kind whose talk is mainly clatter.
He went through college, that of course;
And yet, if you should own a horse
E'en half as stupid as is he
You'd shoot him, sure as sure can be,
For none of us can really need
A critter that can't earn his feed.
He'll tell you all his blood is blue
And I'm inclined to think it's true,
For of good blood it's often said
"Damn the color, so it's red."
He never smokes, he rarely drinks,
He's one of those who thinks he thinks;
In fact he's just a deviate.
'Twas written in the book of fate
There was a twist in his creation
And he's a case of deviation.
And so you see it's come to pass,
That he's a solemn, pompous ass.
He's very proud, he's fat and sleek
And thinks God kissed him on the cheek
He can't get out this spell from under,
If you can cure him, you're a wonder.

Another man I have in mind
A doctor of the country kind.
He practices among the lowly
And criminals, and men unholy,
Quite frequently his talk reverts
To curious cranks and queer perverts.
And, nothing strange, he holds the view,
And some of you may hold it too,
That too much smoking, too much drinking
And toxic drugs of which I'm thinking
Will make men take to dreadful things
Whose very names would make you cringe.
No doubt he's right. But these he'll rate
As men who are degenerate.
In other words, he'll say to you,
And this is quite a common view,
That when you say "degeneration"
You mean a moral degradation.
Now that's not what you mean to say
And yet, there is the deuce to pay

If you call one "degenerate"
Who really is a "deviate."

So now I think you'd better plan
To just construct an average man.
And if one differ, foot to crown
From these fast lines that you lay down,
Whether for better or for worse,
The small details I can't rehearse,
Just give a try to Walton's plan
And say that he's a devious man,
Who may not be "degenerate"
But all the same, a "deviate."

## TREATMENT OF EPILEPSY BY ROENTGEN RAYS.

At the annual meeting of the Medical Association of the Greater City of New York, Dr. J. H. Branth read a paper in which he reported encouraging results in the treatment of epilepsy by means of the Roentgen rays. He stated that in many instances the occurrence of the seizures was believed to depend upon the instability of the cellular brain elements, or an abnormal metabolism, and as it was accepted by many authorities that the x-ray stimulates the vital activity of protoplasm, it was upon this theory that the treatment was adopted. Naturally, he said, all cases of epilepsy are not amenable to it, as, for instance, those in which decided degenerative processes in the brain have set in. By radiographs taken by himself Dr. Branth demonstrated that part of the x-rays unquestionably pass through the skull, and he regarded it as fair to assume that more than twice the quantity pass through the middle of the brain, as in light the power diminishes by the square of the distance. In his cases three treatments per week are given, beginning with five minutes' exposure at fifteen inches' distance, and gradually extending this to ten minutes' exposure and ten inches' distance. A hard, or high vacuum tube is employed, and a different part of the skull is exposed at each sitting. In both *grand* and *petite mal* it has been observed that the seizures became lighter and of shorter duration, that the intervals became longer, and that if an attack occurred, it was followed by less prostration. In patients with six to eight seizures a day, after the treatment had been taken for a few weeks, intervals of two and three weeks were noted. The hair may drop out in areas, but it is certain to return in a stronger growth than before. In a few instances, where the patients appeared to have acquired a bromide drug habit, the best results were obtained by continuing small doses of bromides, in addition to the x-ray treatment. With few exceptions the patients gain in weight at an impressing rate. A remarkably successful case was presented, that of a lad fourteen years of age who had not had a single seizure since the treatment was commenced, on Nov. 8, and who had astonished his family and teachers by the extraordinary improvement he had made both mentally and physically.

## RECORD OF MORTALITY

For the Week ending Saturday, Jan. 9, 1904.

| Cities. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseases. | Typhoid fever. |
| New York . . | 3,908,644 | 1,635 | 481 | 20.06 | 25.75 | 3.48 | 2.02 | .61 |
| Chicago . . . | 2,021,086 | 516 | 145 | 17.63 | 22.09 | 1.94 | 3.29 | 1.35 |
| Philadelphia | 1,407,968 | — | — | — | — | — | — | — |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 235 | 56 | 22.21 | 20.08 | 2.99 | 1.28 | 1.28 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 186 | — | 21.50 | 19.89 | 2.69 | .53 | 5.37 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 80 | 19 | 17.50 | 32.50 | — | — | 1.25 |
| Boston . . . | 617,950 | 229 | 75 | 16.59 | 22.71 | 3.49 | .87 | .87 |
| Worcester . . | 136,925 | 38 | 13 | 7.89 | 23.68 | — | 2.63 | — |
| Fall River . . | 119,349 | 37 | 9 | 32.42 | 27.02 | 2.70 | 5.40 | 5.40 |
| Lowell . . . | 104,402 | 34 | 9 | 11.76 | 11.76 | 5.58 | — | — |
| Cambridge . | 100,998 | 34 | 9 | 23.65 | 11.76 | 8.82 | — | — |
| Lynn . . . . | 73,875 | 23 | 3 | 8.70 | — | 8.70 | — | — |
| Lawrence . . | 72,348 | 39 | 17 | 10.25 | 25.64 | 2.56 | 2.56 | — |
| Springfield . | 72,020 | 22 | 5 | 18.18 | 4.54 | 4.54 | — | — |
| Somerville . | 70,413 | 24 | 5 | 29.16 | 25.00 | 4.16 | — | — |
| New Bedford | 68,863 | 44 | 13 | 4.54 | 11.36 | — | — | — |
| Holyoke . . . | 50,538 | 18 | 7 | 22.22 | 33.33 | — | — | — |
| Brockton . . | 46,601 | 9 | 3 | 22.22 | — | — | — | — |
| Newton . . . | 39,310 | 11 | 2 | 36.36 | 36.36 | — | — | 18.18 |
| Haverhill . . | 39,061 | 14 | 1 | 21.42 | 14.28 | — | — | — |
| Malden . . . | 37,205 | 6 | — | 16.67 | — | — | — | — |
| Salem . . . . | 37,188 | 17 | 5 | 5.88 | — | 5.88 | — | — |
| Chelsea . . . | 36,499 | 12 | 2 | 16.67 | — | — | — | — |
| Fitchburg . . | 36,335 | 14 | 6 | 7.14 | 14.28 | — | — | — |
| Taunton . . . | 34,577 | 13 | 2 | 23.10 | 7.70 | — | — | — |
| Everett . . . | 30,209 | 9 | 2 | 22.22 | — | — | — | — |
| North Adams | 29,201 | 5 | — | 80.00 | 20.00 | 20.00 | — | 20.00 |
| Quincy . . . | 26,798 | 5 | 2 | — | 20.00 | — | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 3 | 3 | — | — | — | — | — |
| Brookline . . | 23,576 | 6 | 0 | 16.67 | 16.67 | — | — | 16.67 |
| Pittsfield . . | 22,870 | 6 | 3 | 33.33 | — | 16.67 | — | — |
| Medford . . | 21,956 | 3 | 1 | — | 33.33 | — | — | — |
| Chicopee . . | 21,692 | 3 | 2 | — | 33.33 | — | — | — |
| Northampton | 20,314 | 7 | 2 | — | 28.60 | — | — | — |
| Beverly . . | 15,807 | 3 | — | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 3 | 2 | — | — | — | — | — |
| Adams . . . | 14,745 | 1 | 0 | 100.00 | — | — | — | 100.00 |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 3 | — | 66.67 | 33.33 | — | — | — |
| Newburyport | 14,478 | 6 | 1 | — | — | — | — | — |
| Woburn . . . | 14,315 | 2 | 0 | — | — | — | — | — |
| Melrose . . . | 13,819 | 5 | 1 | — | 40.00 | — | — | — |
| Westfield . . | 13,809 | 4 | — | — | 50.00 | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 8 | 3 | 25.00 | 12.50 | 12.50 | — | — |
| Revere . . . | 13,609 | — | — | — | — | — | — | — |
| Framingham | 12,974 | 3 | 1 | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 5 | — | 20.00 | 20.00 | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 3 | — | — | — | — | — | — |
| Weymouth . | 11,350 | 4 | 1 | 25.00 | 25.00 | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,387; under five years of age, 911; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 644, acute lung diseases 776, consumption 320, scarlet fever 49, whooping cough 4, cerebrospinal meningitis 12, smallpox 4, erysipelas 13, puerperal fever 17, measles 20, typhoid fever 40, diarrheal diseases 60, diphtheria and croup 102.

From whooping cough, New York, Baltimore, Pittsburg and Boston, 1 each. From smallpox, Pittsburg 4. From cerebrospinal meningitis, New York 5, Baltimore, Boston, Cambridge, Somerville, Brockton, Marlborough and Gardner, 1 each. From erysipelas, New York 6, Chicago 4, Pittsburg, Boston and Worcester, 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Dec. 26, the death-rate was 15.4. Deaths reported, 4,464; acute diseases of the respiratory organs (London) 139, whooping cough 111, diphtheria 38, measles 130, smallpox 5, scarlet fever 25.

The death-rate ranged from 7.1 in Barrow-in-Furnace to 29.4 in Wigan; London 13.6, West Ham 11.7, Brighton 12.1, Southampton 10.9, Plymouth 18.2, Bristol 16.2, Birmingham 16.9, Leicester 12.8, Nottingham 12.5, Liverpool 20.7, Bolton 15.9, Manchester 19.6, Salford 15.2, Bradford 21.5, Leeds 20.3, Hull 14.6, Cardiff 12.4, Rhondda 16.6, Kings Norton 10.6, Preston 24.6.

## METEOROLOGICAL RECORD.

For the week ending Jan. 9, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S.. 3 | 29.96 | 3 | 7 | -1 | 94 | 64 | 79 | N | W | 24 | 8 | N. | C. | .30 |
| M.. 4 | 30.36 | 0 | 3 | -3 | 63 | 73 | 68 | N W | W | 20 | 13 | C. | C. | 0 |
| T.. 5 | 30.52 | 6 | 16 | -3 | 79 | 58 | 68 | W | N W | 9 | 6 | C. | C. | 0 |
| W.. 6 | 30.34 | 16 | 28 | 3 | 62 | 54 | 58 | S W | S W | 12 | 12 | C. | O. | 0 |
| T.. 7 | 29.98 | 26 | 32 | 21 | 78 | 65 | 72 | S W | N E | 8 | 4 | O. | C. | T. |
| F.. 8 | 29.73 | 25 | 33 | 17 | 85 | 100 | 92 | N | N | 4 | 9 | O. | N. | .13 |
| S.. 9 | 29.34 | 30 | 33 | 27 | 100 | 84 | 92 | N | N W | 10 | 15 | N. | O. | .68 |
| ☞ | 30.03 | | 22 | 9 | | | 76 | | | | | | | 1.11 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING JAN. 16, 1904.

CRANDALL, R. P., surgeon. Detached from the Naval Station, Guam, L. I., and ordered to the Wisconsin.

MURPHY, J. A., P. A. surgeon. Commissioned a P. A. surgeon from March 3, 1903.

HEINER, R. G., and STOOPS, R. E., doctors. Appointed assistant surgeons with the rank of lieutenant (junior grade), from December 26, 1903.

## SOCIETY NOTICES.

ANNUAL MEETING EASTERN SECTION AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY. — The Eastern Section of the American Laryngological, Rhinological and Otological Society will hold its annual meeting at the Young Men's Christian Association Building, Corner North Main and Pine Streets, Fall River, Mass., Saturday, Jan. 30, 1904, at 2.30 P.M. The medical profession is cordially invited to attend the meeting.

WENDELL C. PHILLIPS, M.D., Secretary.

MEDICAL SOCIETY OF THE STATE OF NEW YORK. — The 98th Annual Meeting of the Society will be held January 26, 27 and 28, 1904, in the City Hall, Albany, commencing at 9.30 A. M. on the 26th, and ending at 1 P. M. on the 28th.

SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR SURGERY. — A meeting of this section will be held at the Medical Library, on Wednesday evening, Feb. 3, at 8.15 o'clock. The subject for discussion will be: "The Technique of Gastroenterostomy." The first half of the meeting will be taken up by the presentation of eight five-minute papers or demonstrations of special details of this operation. Members who cannot attend the meeting are requested to send to the Secretary brief reports of any cases (particularly the unsuccessful ones), illustrating special points of interest in relation to this subject.

E. A. CODMAN,
Secretary.

104 Mt. Vernon Street.

## BOOKS AND PAMPHLETS RECEIVED.

Portfolio of Dermochromes. By Professor Jacobi. English Adaptation of Text by J. J. Pringle, M.B., F.R.C.P. New York: Rebman Co. 1903.

The Blues (Splanchnic Neurasthenia), Causes and Cure. By Albert Abrams, A.M., M.D. (Heidelberg), F.R.M.S. Illustrated. New York: E. B. Treat & Co. 1904.

The Self-Cure of Consumption without Medicine, with a Chapter on the Prevention of Consumption and Other Diseases. By Chas. H. Stanley Davis, M.D., Ph.D. New York: E. B. Treat & Co. 1904.

A Text-Book of Legal Medicine and Toxicology. Edited by Frederick Peterson, M.D., and Walter S. Haines, M.D. In two volumes. Vol. II. Illustrated. Philadelphia, New York and London: W. B. Saunders & Co. 1904.

Nineteenth Report of the State Board of Health of Wisconsin for the year ending September 30, 1902.

The Demonstration of Nucleated Red Blood Corpuscles in Animal Spleens. By Edward T. Williams, M.D., of Boston. Reprint. 1903.

Clinical Notes on Dysemia. By Louis J. Gravel, M.D., of Montreal. Reprint. 1903.

The Symptomatology and Diagnosis of the Pancreas. By Reginald H. Fitz, M.D., of Boston. Reprint. 1903.

The Dispensary Problems in Philadelphia. By F. B. Kirkbridge. Philadelphia. 1903.

Chronic Cyanotic Polycythemia, with Notes upon Two Cases. By J. N. Hall, M.D., of Denver, Col. Reprint. 1903.

Some Problems in the Major Surgery of the Kidneys; with a Report of Cases. By Joseph A. Blake, M.D., of New York. Reprint. 1903.

Sleeping Sickness in the Light of Recent Knowledge. By Louis W. Sambon, M.D. (Naples), of London. Reprint. 1903.

Second Progress Report of the Campaign against Mosquitoes in Sierra Leone. By M. Logan Taylor, M.B., of Liverpool, Eng. 1902.

Report on the Sanitary Conditions of Cape Coast Town. By M. Logan Taylor, M.B., of Liverpool, Eng. 1902.

The Fermentation Theory of Infection and Immunity. By J. W. McLaughlin, M.D., of Galveston, Texas. Reprint. 1903.

An Atlas of Human Anatomy for Students and Physicians. By Carl Toldt, M.D., assisted by Professor Alois Dalla Rosa, M.D. Translated from the Third German Edition and adapted to English and American and International Terminology, by M. Eden Paul, M.D. Brux., M.R.C.S., L.R.C.P. Second Section. Illustrated. New York: Rebman Company, 1903.

Transactions of the American Gynecological Society. Volume 28. For the year 1903. Philadelphia: Wm. J. Dornan.

Anatomy Applied to Medicine and Surgery. By D. E. Mundell, B.A., M.D. Kingston, Ont., 1903.

Transactions of the National Association of the United States Pension Examining Surgeons. Second Annual Meeting, Washington, D. C., May 13 and 14, 1903. Including an Account of First Meeting, at Saratoga Springs, June 9, 1902. Vol. I. Rochester, N. Y., 1903.

Bacteria, Yeasts, and Molds in the Home. By H. W. Conn, Ph.D. Illustrated. Boston and London: Ginn & Co., 1903.

Observations on the Iodine Reaction in Children. By Charles Hunter Dunn, M.D., of Boston. Reprint. 1903.

Dispensaries for Tuberculosis, with a Description of the Tuberculosis Department of the Boston Dispensary. By Edward O. Otis, M.D., of Boston. Reprint. 1903.

Thirty-third Annual Report of the Central State Hospital of Virginia. Richmond, 1903.

A Table of Ocular Extrinsic Paralysis. By Horace M. Starkey, M.D., of Chicago. Reprint. 1903.

The Use of a Mydriatic after the Age of Forty-five. By Horace M. Starkey, M.D., of Chicago. Reprint. 1903.

Rules Governing the Transportation of the Dead. Conference of State and Provincial Boards of Health.

The Significance of Bacteriological Methods in Sanitary Water Analysis. By C. E. A. Winslow and C. P. Nibecker of Boston. Reprint. 1903.

The Case for Vaccination. By C. E. A. Winslow of Boston. Reprint. 1903.

Mittheilungen aus der Medicinischen Facultät der Kaiserlich-Japanischen Universität zu Tokio. Band VI, No. 1. Tokio, 1903.

Adeno-Carcinoma of the Liver in Childhood. By Stephen Smith Burt, A.M., M.D., of New York. Reprint 1903.

Medical and Surgical Reports of the Boston City Hospital. Fourteenth Series. Edited by Herbert L. Burrell, M.D., W. T. Councilman, M.D., and Charles F. Withington, M.D. 1903.

Mt. Sinai Hospital Reports. Vol. III. For 1901 and 1902. Edited for the Medical Board by N. E. Brill, A.M., M.D.

Transactions of the American Surgical Association. Vol. XXI. Edited by Richard H. Harte, M.D. 1903.

The Principles of "Open-Air" Treatment of Phthisis and of Sanatorium Construction. By Arthur Ransome, M.D., M.A. (Cantab.), F.R.C.P., F.R.S. Illustrated. London: Smith, Elder & Co. 1903.

Essentials of Pelvic Diagnosis with Illustrative Cases. By E. Stanmore Bishop, F.R.C.S. (Eng.). And an Appendix on Examination of Blood, etc. By Chas. H. Melland, M.D. (Lond.), M.R.C.P. Illustrated. New York: William Wood. & Co. 1903.

"Today's Boy is To-morrow's Man." The Boy: How to Help Him Succeed. A Symposium of Successful Experience. By Nathaniel C. Fowler, Jr., assisted by Three Hundred and Nineteen American Men of Marked Accomplishment. Oakwood Publishing Co., Boston.

# Original Articles.

## EXPERIMENTS WITH THE McGRAW ELASTIC LIGATURE.*

BY FRED T. MURPHY, M.D., BOSTON.

*From the Surgical Laboratory of the Harvard Medical School.*

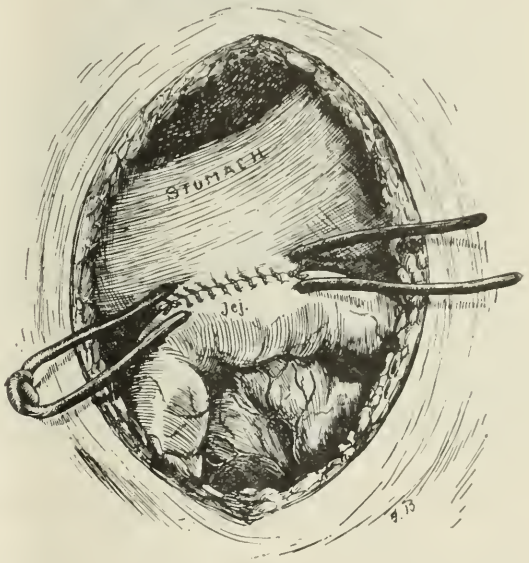
Gastro-enterostomy and lateral anastomosis have come to occupy so conspicuous a position in the field of abdominal surgery that any procedure which will decrease the operative risk is of the greatest importance. Mechanical devices almost without number have been introduced to assist in perfecting the technic of the operation, but one by one they have been discarded. Operators generally have gone back to the simple suture. The suture possesses the advantage of universal adaptation to all conditions and in the hand of the expert the difficulties attendant upon its use — time necessary for application, failure to obtain solid joints and the danger of soiling the peritoneum at the opening of the bowel — are becoming less with the improved technic. The general statistics, however, of the operation of gastro-enterostomy and lateral anastomosis are not satisfactory. Any departure from the routine methods must, in order to gain advocates, be supported either by a large clinical success or by strong experimental evidence. Reports of clinical cases will exert their influence for or against any procedure.

This series of twenty operations on animals, in which the elastic ligature was used, is reported and the literature of experimental work along the same line is reviewed in the hope of adding to the data from that standpoint.

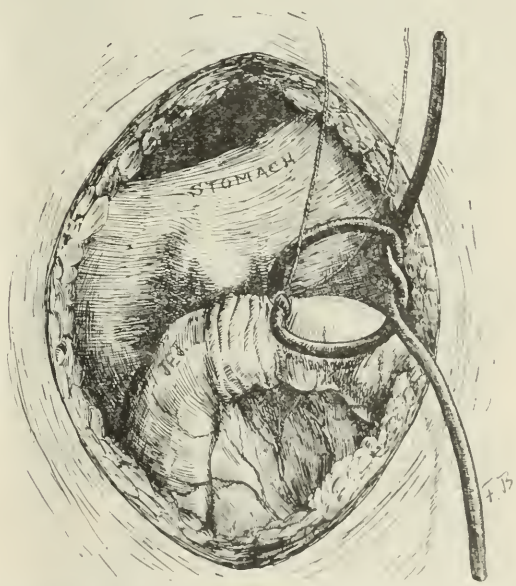
Gaston [1] as early as 1884 used the elastic ligature in forming an anastomosis between the gall bladder and the duodenum. He included within a single stitch of elastic cord or silk various lengths of the wall of the gall bladder and gut, and supported this stitch with a circular row of Lembert sutures. His experiments were employed solely with the question of an anastomosis between the gall bladder and gut. He demonstrated the possibility of effecting an opening between hollow viscera by means of pressure necrosis, but in connection with this gastro-intestinal work the experiments are interesting only on account of the question of priority of ideas and to emphasize the fact that in a thin-walled viscus, such as the distended gall bladder, the method is of questionable utility, because under pressure there may be an escape of the contents at the application of the ligature or the ligature may cut through too soon.

In 1888 Bardenheuer [2] published an inaugural dissertation in which he reported successful results in gastro-enterostomy on animals by the use of an elastic ligature. As quoted by Terrier and Baudouin [3] the elastic ligature used was 1 to 1.5 mm. in diameter and the bowel was taken up in small separate loops until the required amount, about 1 cm. for a gastro-enterostomy, had been included. The opening was complete at the end of two days. His work apparently at that time did not excite sufficient interest to be either confirmed or refuted.

McGraw [4] presented before the American Medical Association in 1891 the results of experiments on twenty-four dogs in which a gastro-enterostomy had been done by means of an elastic ligature. A second series was for relief of fecal fistulæ by lateral intestinal anastomosis, and a third was to make an opening of the gall



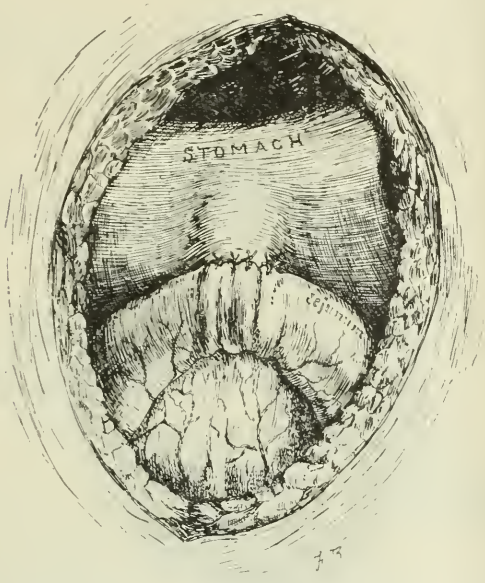

The stomach and jejunum have been approximated with a continuous suture. The elastic ligature has been passed through the gut walls. The "knot" introduced in the second series of experiments is seen at the middle of the ligature.




The elastic ligature has been drawn tight and the first part of the square knot is held by means of a silk ligature. The wall of the stomach included within the loop of the ligature is thickened rather than wrinkled, while the jejunum is markedly wrinkled. The "knot" in the middle of the ligature has been buried by the folding over of the serous surfaces.

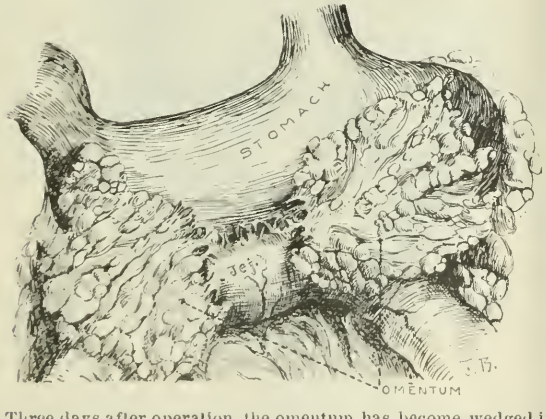
*I wish to express my thanks to Messrs. J. B. Hartwell, L. C. Kingman and W. G. Lee, members of the graduating class of the Harvard Medical School, for their assistance in this work.

bladder into the duodenum. He selected a round rubber cord 2 mm. in diameter, after experimenting with a flat band and a larger cord. The salient points of the technic are that the ligature must be on the stretch when drawn




Interrupted stitches have been placed anteriorly, and at the ends of the loop, completely burying the elastic ligature.

through the gut, the whole extent of gut to be cut away is to be included within a single loop; the ligature is to be prevented from slipping when tied by tying a silk stitch across the two halves of the square knot; the serous coats are to be approximated by a supporting circular row of Lembert stitches. Detailed data are not given, but the results showed to McGraw's satisfaction that the changes which followed the application of the elastic ligature were as follows:




Three days after operation, the omentum has become wedged in at either end of the line of suture, and adhesions have formed between the stomach and jejunum.

At the end of twenty-four hours the corrugations caused by the wrinkling of the gut wall began to disappear, but there was no evidence of a cutting through of the ligature. The folds due to the wrinkling of the gut wall were entirely gone at the end of forty-eight hours and there was a slight cutting through of the tissues by the ligature. A small patent space on either side of the ligature existed at the end of the third day. At the end of the fourth day there was a complete cut-out of the ligature, the opening being equal to the extent of the gut included by the loop. Exceptionally the cut-out was found complete at the end of three days, or the ligature was found at the end of five days still surrounding a bridge of tissue. With his experimental animals no difficulty was experienced from the formation of adhesions across the anastomosis. He assumed that the mucous membrane crowded together as the ligature cut through, thus making a smooth surface with a complete covering of mucous membrane. While not the first to employ the elastic ligature as the means of anastomosis between the stomach and intestine McGraw without doubt overcame the technical errors of Bardenheuer and made the method practical.

Cordier [5] in the same year reported experiments on fifteen dogs which confirmed completely the results of McGraw. No detailed data are given of the work.

Just as McGraw had done his work independently of that of Gaston and Bardenheuer, so Podrez,[6] in 1898, published a so-called new method of intestinal anastomosis. He used two silk ligatures applied in the form of a Greek cross and from experiments on nine animals concluded that the method was satisfactory and that the cut-out occurred in two to four days. Generally the experiments incited by this paper failed to confirm Podrez's results.

Modlinski [7] in the following year modified the method of Podrez by substituting an elastic ligature for the silk and obtained satisfactory results in a series of nine dogs. He estimated the time necessary for a cut-out to be two days.

Cutts, [8] in 1901, published results of animal experiments with the elastic ligature. He used no supporting sutures, yet had no peritoneal infection and obtained free openings. The time of the cut-out and other details of the procedure are not given.

The two recent publications of experiments are by Kakels and Maury. Kakels [9] operated upon ten dogs with the following results. One died within the first twenty-four hours. The peritoneal cavity was clean. One killed the third day, one the fourth day, one the fifth day and one the seventh showed a partial cut-out of the ligature. Two killed on the fifth day and one on the eighth showed a complete cut-out. Two dogs were living at the time his report was made. There was no case of peritonitis, and no newly made adhesions across the lumen were noted. The opening showed no tendency to contraction. He used ligatures of 2, 3 and 4 mm. in diameter and would prefer a larger rather than a smaller cord.

The article by Maury [10] is devoted rather to suggesting a modification of technic than to testing the results of the elastic ligature as



FIG. 1. — Section across the mass of tissue enclosed within the loop of the elastic ligature, 5 days' duration, showing pressure necrosis due to the elastic ligature.



FIG. 2. — Section at right angles to the line of union of the stomach and jejunum, 12 days' duration, showing an area of granulation tissue between the two viscera, with the mucous membrane growing over it from either margin.



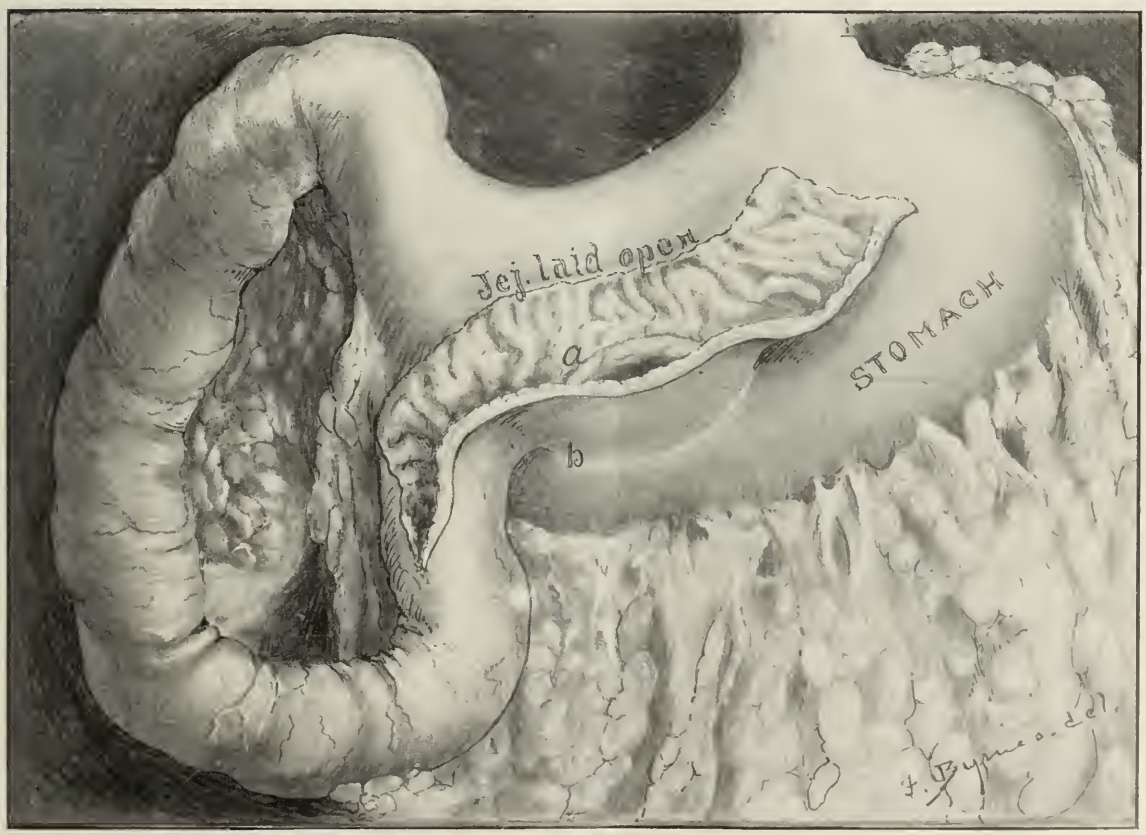

FIG. 3. — Section at right angles to the line of union of the stomach and jejunum, 30 days' duration, showing fairly dense scar tissue completely covered by new formed mucous membrane. A, point at which submucosa of jejunum has been cut through; B, point at which submucosa of stomach has been cut.



FIG. 4. — Section across an adhesion, 7 days' duration, which had formed between the edges of the jejunum after the elastic ligature had cut out



Photograph to show the actual opening made by means of the elastic ligature between the stomach and jejunum.




Thirty days after operation, the adhesions of the omentum have practically disappeared and the external line of union between the stomach and jejunum shows as a fine line. A, internal line of union; B, external line of union.

applied by McGraw. Maury states that in a series of preliminary experiments two bands of tissue were always found across the opening and this led him to change McGraw's method so that an actual hole would be punched out of the gut wall. Instead of including the tissues within a single loop the ligature was passed back and forth so that a triangular or square area was included. With this modification the 2 mm. elastic cord was used on twenty dogs and one pig. Six of the dogs died — one from intestinal obstruction, two where no stitches had been used from perforation at the site of the ligature, one from a small perforation away from the ligature, and one from a septic stitch-hole three and one-half months after operation. Three dogs and a pig were living and well at the time of his report. No adhesions across the anastomosis were noted in the remaining cases. Maury concludes that with his modification the operation is much improved and it is a satisfactory procedure. No data as to the time of the cut-out are given. Emphasis is placed on the necessity of supporting Lembert stitches with this modification since by the repeated passing of the ligature there may be some contamination of the peritoneum.

On the whole the published experimental work confirms the claims made by McGraw in 1891. To summarize it may be said that it is agreed that the elastic ligature will cut its way out; a firm and smooth union of the opposed serous surfaces is formed; and the operation is performed with the miminum risk. The time of the cut-out and liability to the formation of adhesions across the opening must be determined by further evidence.

Variations in the time of the cut-out may in a measure be attributed to the degree of elasticity possessed by the ligature which depends not only on the original quality but also on the amount of degeneration from age. The personal equation of the operator must also be considered. The individual resistance of the tissue in different cases is not to be overlooked. My own experiments are as follows:

The elastic ligature was used on nineteen cats and one dog, the operations including nineteen gastro-enterostomies and one entero-enterostomy. The general principles of McGraw's technic were observed; that is, the ligature was on the stretch when pulled through the gut, the ligature included in a single loop the entire amount of the gut to be cut away, the ligature was secured by tying a strong silk thread around the two parts of the square knot. Supporting circular rows of Lembert stitches were used in all but one case, a continuous or interrupted one posteriorly and an interrupted one anteriorly and at the ends. The ligature used in all but two cases was a rubber cord 3 mm. in diameter. A smaller size, 2 mm., did not seem to constrict the large amount of tissue satisfactorily and a 4 mm. in addition to being too bulky did not cut through any more rapidly than the 3 mm. cord. A common darning-needle with a long but narrow eye served as a carrier for the ligature. Unless otherwise stated in the tabulation the operation done was a gastro-enterostomy and the length of the gut wall included in the loop was 5 cm. The experiments may be divided into two main groups: first, one in which the elastic loop contains but one knot; and second, one in which an extra knot was tied in the cord so that there was a knot of rubber at either end of the loop.

The following table includes the operations in which the loop contained a single knot:

| Time Elapsed After Applying Ligature. | Operation. | Postmortem Findings. |
|---|---|---|
| 1 day | Pylorectomy with lateral anastomosis between closed stomach and jejunum. 5 cm. | No cutting through of ligature. Fine adhesions formed between the opposing serous coats. |
| 4 days | Gastro-enterostomy. 5 cm. | 4 mm. cord. Mucous membrane of jejunum cut through. No opening into stomach. |
| 4 days | Gastro-enterostomy. 5 cm. | Knot had cut through into jejunum. Opening into stomach admitted probe. |
| 5 days | Gastro-enterostomy. 5 cm. | Knot had cut through into jejunum. Artery forceps can be passed into the stomach. |
| 5 days | Lateral anastomosis between two loops of jejunum. 5 cm. | Ligature still around a bridge of tissue, but an opening 2 cm. in length was formed. |
| 6 days | Gastro-enterostomy. 5 cm. | Jejunum entirely cut through. Stomach wall completely cut through for only 5 mm. at the knotted end of the ligature. |
| 9 days | Gastro-enterostomy. 2.5 cm. | Ligature still around the bridge of tissue. Complete cut-out in the stomach cavity of 1 cm. |
| 9 days | Gastro-enterostomy. 4 cm. in loop | Ligature still around the bridge of tissue. Complete cut-out in the stomach of 2.5 cm. Mucous membrane of both jejunum and stomach cut for 3.5 cm. |
| 12 days | Gastro-enterostomy. 5 cm. | Full cut-out of 5 cm. |
| 13 days | Gastro-enterostomy. 5 cm. | Ligature all but cut out and hanging by small pedicle. Bridge of tissue partially obstructed opening so that free passage was only 1.5 cm. in length. |
| 30 days | Gastro-enterostomy. 5 cm. | Full cut-out of ligature. Opening 4 cm. in length. |
| 30 days | Gastro-enterostomy. 5 cm. | 4 mm. cord. Cut-out 3.5 cm. in length. |
| 30 days | Gastro-enterostomy. 5 cm. | (No supporting stitches) Ligature had cut-out. Opening contracted to 2 cm. in length. |
| In the following two cases an attempt was made to cut away a part of the serous and muscular layers of the wall of the stomach and jejunum before applying the ligature, in order to reduce the amount of tissue to be cut through. | | |
| 3 days | Gastro-enterostomy. 5 cm. | No apparent cutting through of the ligature. |
| 9 days | Gastro-enterostomy. 5 cm. | Bridge of tissue surrounded by the ligature. Free opening 2.5 cm. in length. |

This series demonstrated that the stomach of the cat was very resistant. The jejunum was cut away by the fifth day, but not until about the twelfth had the ligature completely cut out the stomach wall. The stomach and intestinal walls of the cat at once attract attention by their bulk and firmness and to this resistance the delayed cut-out was attributed rather than to any alteration in the prescribed technic. The rubber cord, 4 mm. in diameter, was no more effective than the 3 mm., although both were new and of the best quality of rubber. Removing the outer coats of the bowel did not seem to aid materially in the rapidity of the cut-out and complicated the operation.

In all cases it was noticed that the greatest cut-out was at the end of the loop where the ligature was knotted. Acting on this hint the technic was modified. A square knot was tied in the middle of the ligature and a needle threaded on either end. In this way a knot of rubber was formed at either end of the anastomosis.

The tabulation of the results with this change is given below. All these operations were gastroenterostomies and 5 cm. of the gut wall was included within the elastic loop, which contained two knots.

| Time Elapsed After Applying Ligature. | Operation. | Postmortem Findings. |
|---|---|---|
| 3 days | Gastro-enterostomy. 5 cm. | Ligature still around a bridge of tissue. Two openings between stomach and jejunum, the largest of which was 2 cm. in length. |
| 4 days | Gastro-enterostomy. 5 cm. | Jejunum completely cut through, but stomach holding by a thin film of tissue. Free opening of about 1 cm. |
| 5 days | Gastro-enterostomy. 5 cm. | Complete cut-out of 5 cm. |
| 5 days | Gastro-enterostomy. 5 cm. | (Dog) Complete cut-out 5 cm. in length. Ligature hanging by shred. |
| 7 days | Gastro-enterostomy. 5 cm. | Ligature is completely cut through. Small bridge of tissue across the opening. |

With the knotted ligature even with the resistant tissues of the cat the anastomosis was completed by the fifth day and at the third or possibly before an opening of considerable size existed.

Eighteen of the cats were killed with chloroform and two died as the result of the operation, the case of pylorectomy never rallying from the shock and a gastro-enterostomy dying on the ninth day from a septic wound of the belly wall. In every case, except the one with the sloughing abdominal wall, the general peritoneal cavity was clean. Two cases showed bands of tissue extending across the opening after the ligature had completely cut out. The first was evidently caused by an error in technic in not including all of the mucous membrane within the loop; that is, in passing the needle into the bowel a fold of the membrane was transfixed. This is so interpreted because there was no evidence that the mucous membrane had been cut through. In the second case the bridge showed under the microscope unmistakable granulation tissue on its center and must be considered as an adhesion between the cut surface of the gut after the ligature had cut its way out. The serous surfaces uniformly after the first two days had practically lost all of the wrinkles produced by tying the ligature which were noted at the end of the operation. The stomach wall included by the ligature thickens by contraction rather than wrinkles, hence there is no reason why it should not be smooth when the anastomosis is completed. The duodenum on the other hand is markedly wrinkled and I cannot explain the reason of the early disappearance of the folds. Adhesions of the omentum about the site of the suture were present in the cases which were killed in the first few days, but grew less and less as time went on, until at the end of a month they were not marked.

The time of the cut-out varied between rather wide limits — five to twelve days. The delay may be attributed to the marked resistance of the tissues of the cat. With a knotted ligature, however, the time was reduced to within the limits of other observers, four to five days.

Figure No. 1 illustrates the process of the cut-out by pressure necrosis. The steps as seen microscopically are, first, necrosis and rupture of the muscle fibres; second, an invasion of leucocytes, and, finally, solution of the tissue.

The union is effected between the serous surfaces by the slight inflammatory process incident to the injury and pressure necrosis.

Other writers have assumed that no raw surface was left after the cutting through of the ligature, but Figure 2 shows an area of granulation tissue between the serous surface over which the mucous membrane is extending from either side. Figure 3 illustrates the end result with the granulation changed to scar tissue and the entire margin of the hole completely covered by mucous membrane.

That adhesions may form between the raw surfaces is shown by Figure 4 which is a section through such a bridge. In the center new formed tissue is plainly evident which can be accounted for in no other way. The danger of this, it seems to me, has been rather overstated by certain observers. While the possibility exists, it has not been found generally to be a probability. There is no reason why in the use of the ordinary intestinal suture the same complication under exceptional conditions might not arise.

In the application of the ligature the simple technic as described by McGraw is, in my opinion, adequate and satisfactory. Any elaboration of technic must reduce the effectiveness, because it reduces the speed, thus adding to the shock, and increases the liability of infection. As to the supporting sutures, a posterior continuous possesses the advantage of quicker application, but anteriorly and at the ends an interrupted stitch would seem to be preferable. For while

on animals it was not demonstrated that a continuous anterior stitch tended to contract the opening, since it is applied after the jejunum has become wrinkled, such is the case on the cadaver. In trying the ligature care should be taken not to include the posterior suture within the loop. Since it was possible to include 5 cm. of the wall of the small intestine of a cat the larger human bowel will permit of the formation of an opening up to any size which may be required to side track the stomach contents.

*Conclusions.* — These experiments show that a successful anastomosis between the stomach and intestines, or two loops of intestine, is possible by means of the elastic ligature. The method is not applicable when an immediate opening is required.

The time of the cut-out varies, depending upon the character of the ligature, the method of application, and the resistance of the tissues in any case, but the ligature will ultimately cut out.

A knot at either end of the elastic loop increases the rapidity of the cut-out.

The pinching of the gut by the ligature seems to cause no bad symptoms.

The serous surface of the outside of the joint when completed is smooth.

The anastomosis by gross or misroscopical examination shows no evidence why there should be any greater tendency to contraction of the opening than with the ordinary methods of intestinal suture.

The procedure causes a minimum operative risk, both as regards shock and infection.

Adhesions across the opening are a possible, but not a probable, complication.

Extending these conclusions to practical operative work, it is my opinion that in cases in which an immediate opening of the bowel is not imperative, and in which the avoidance of operative shock is an important factor, the elastic ligature may prove to be the operation of choice in gastro-enterostomy and lateral anastomosis.

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## DIFFERENTIAL DIAGNOSIS OF RHEUMATISM AND THE ARTHRITES.[1]

BY THOMAS F. HARRINGTON, M.D., LOWELL, MASS.

There is, perhaps, no class of affections more commonly met in practice than those included in the title of this paper. Notwithstanding this marked prevalence, the ancient history of its recognition, and the great progress in scientific medicine, the undisputed fact remains that there is no one term in medicine accountable for more ignorance and neglect than "rheumatism." Undefined itself, it has spread its mantle over conditions dissimilar and obscure until it has become well-nigh impossible to separate the true from the spurious. It is the hope of pointing out some of the errors and evil consequences of this classification that prompts me to present the subject at this meeting.

In the first place rheumatism and arthritis are not synonymous terms. The characteristic symptom of rheumatism is an arthritis, yet we have many arthrites which cannot be associated with rheumatism as clinically accepted. Every arthritis should be traced to its probable true cause, and no case should be considered rheumatic unless an undisputed attack of acute rheumatism can be given. Rarely is rheumatism diagnosed other than it is; the danger lies wholly in the opposite direction. As will be shown later, there is probably but one form of rheumatism, namely, acute rheumatism. Any other use of the term leads to confusion, and often to wrong treatment, with disasterous consequences.

It is with the object of avoiding such errors, as well as an endeavor to offer a classification founded upon clinical appearances, re-enforced by etiological and pathological findings, as far as known, that I would suggest the following:

*A.* Infective arthritis: (1) acute rheumatism; (2) gonorrheal arthritis; (3) purpuric arthritis; (4) pneumococcic arthritis; (5) scarlet fever arthritis; (6) tubercular arthritis; (7) syphilitic arthritis; (8) typhoidal arthritis; (9) influenza arthritis; (10) erysipelas arthritis; (11) spinal meningitis arthritis; (12) smallpox arthritis; (13) dysenteric arthritis; (14) glanders arthritis; (15) pyemic arthritis. *B.* Arthritis deformans. *C.* Osteo arthritis. *D.* Traumatic arthritis. *E.* Gouty arthritis. *F.* Hemophilic arthritis. *G.* Senile arthritis.

On account of the confusion and disputation existing on the question of classification I would offer the following reasons for the above grouping.

Idiopathic arthritis probably never occurs. In infective arthritis there is usually more than one agent, and the effect of the agent is modified by various conditions,[1] *e. g.*, the resisting power of the individual, the dose of the toxin received, and by the presence of other organisms or their toxins. The synovial membrane of joints has a marked tendency to become involved in many of the acute infectious diseases.

This shows itself in four different forms [2]:

*First.* — By a transient synovitis with limited effusion, *e. g.*, typhoid, scarlet fever, influenza.

*Second.* — Those with marked swelling and effusion of fluid into the joint which later becomes turbid and purulent.

*Third.* — Those having involvement of the peri-articular structures, *e. g.*, gonorrheal.

*Fourth.* — Those cases in which the arthritis is acute and destructive from the start, suppura-

[1] Read before The Massachusetts Medical Society, North Middlesex District, Oct. 28, 1903.

tion is early and violent, *e. g.*, pneumococcic infection.

It is very probable that all organisms which cause arthrites produce other pathological conditions as well.[3] While there are some exceptions yet unexplainable, it can be stated as a general rule that all acute arthrites are secondary manifestations. In doubtful cases the probability of mixed infection must be borne in mind. The role played by the nerves in the course and development of joint affections is very great. The close relation existing between acute rheumatism and chorea, as well as the positive factors, sex, age, mental and nervous fatigue, shock, etc., are, especially in arthritis deformans, open up a wide field for investigation.

In the above classification rheumatism is placed under infective arthritis because it is now generally understood that this symptom complex is due to some form of micro-organism. Walker[4] has isolated a micro-organism which he calls "micrococcus rheumaticus." Other factors tending to establish this relationship are[5]: its endemic and often epidemic nature depending upon climatic conditions; its many manifestations, variety of lesions, fever and sweating resembling tuberculosis and pyemia; its tendency to recur, especially upon exposure, resembling pneumonia and erysipelas; its liability to relapse like enteric fever, and to end spontaneously as do the exanthemata. Then, too, the close relationship between affections associated with follicular tonsillitis and those associated with rheumatism, namely endocarditis, pericarditis, pleurisy, chorea, erythema nodosum, as well as other cutaneous and subcutaneous effusions such as purpura, pneumonia, peritonitis and profound anemia. The occurrence of arthritis, pleurisy, etc., with puerperal sepsis also points strongly to the septic association of rheumatism.

There seems to be as little foundation for the term rheumatic diathesis, or uric acid diathesis, under such a classification as there would be to speak of a pneumonic or septicemic diathesis. The uric acid condition has been demonstrated in athletes in whom no suspicion of rheumatism or gout existed.[6]

In the classes arthritis deformans and osteo-arthritis a distinction is made between those cases in which there is a true bony enlargement of the joint and those in which the deformity is due to an atrophy of the surrounding tissues, causing an apparent rather than a real enlargement. The former class is a true osteo-arthritis and is so-called. The latter is a deformity due in all probability to some trophic change depending upon disturbances of the nervous system.

The clinical signs and pathological findings of each are different and characteristic. As the treatment of the two affections is very different it is essential that this distinction be recognized. It is the failure to do this that has resulted in so many permanent cripplings, also salicylic acid poisoning.

Whether arthritis deformans, like some other conditions, results later in osteo-arthritis does not alter this classification. The point is that all joint affections which have true overgrowths should be called osteo-arthritis, the suffix deformans being understood; the term arthritis deformans being limited to the conditions characterized by appearances quite typical and constant to be described later. Much confusion in reading textbooks and medical literature will be avoided if some such distinction is maintained, and if the term rheumatism is limited as signifying a clinical picture unlike any other joint affection, rather than an arthritis occurring in the course of many diseases. This would eliminate all such terms as muscular rheumatism, tuberculosis rheumatism; scarlatinal, gonorrheal, gouty, typhoidal, etc., with the suffix rheumatism.

### DIAGNOSIS.

*Infective arthritis.* — There is usually a history of a primary infection to which the arthritis is secondary.

In the case of acute rheumatism, the following signs are characteristic: (1) *History.* —Often follows tonsillitis, especially the suppurative form. In the majority of cases the previous health is good and there is entire absence of any constitutional disturbance. In 270 cases occurring at Johns Hopkins Hospital, 60% occurred between ages of eleven to thirty years; 30% occurred between the ages thirty to fifty years. There was a family history of rheumatism in 25% of the cases; 45% had had previous attacks.[7] The onset is sudden and without a chill in 94% of the cases in the Johns Hopkins series. Cold, damp weather and exposure are factors but do not cause rheumatism.

(2) *The character of the inflammation.* —Rapid development of pain, swelling and heat in one or more joints. In twenty-four hours after onset the temperature ranges from 102° to 104°, with a pulse which is more apt to be under than over 100. The temperature is not remittent, thus differing from most of the other arthrites, and it has very slight depressing action on the central nervous system.

(3) *Pain.* — As it attacks a new joint it always leaves the old one, and it is this flitting from joint to joint which often serves to distinguish it from other diseases.

(4) *Results.* — It runs an acute course, averaging three to six weeks, with a marked tendency to get well. It does not deform the joints, *i. e.*, the joint is left as uninjured as it was before the attack. The endocardium is involved in fully 60% of the cases. It tends to recur. It never suppurates. It rarely becomes chronic.

In 100 cases of alleged chronic rheumatism lately examined by the writer, only 19 gave a history of a previous acute rheumatism. In 14 of these, closer questioning or the result of the examination threw considerable doubt upon the nature of the primary attack.

The term "chronic" relates entirely to time, therefore chronic rheumatism, so-called, implies

a long continued or slowly progressing rheumatism. This we know is not the nature of infective rheumatism.

The term *recurrent* is more truly descriptive of the majority of these cases. Such cases may eventually result in deformity, but they then become osteo-arthritis, and should be so called and treated. Any case of acute arthritis which leaves the joint impaired, or which fails to yield to salicylates should excite suspicion as being something other than pure rheumatism. Such cases will usually be found to be due to some other toxin or to some blood or nerve dyscrasia.

Among the conditions most commonly called chronic rheumatism are [8]: (1) relaxed ligaments (flat foot). (2) Occupation neuroses, which are usually worse in damp weather, and which are not peculiar to any special occupation, but occur when faulty positions throw unusual amount of work upon any one set of muscles. (3) Neuritis, due to circumflex nerves sending trophic fibers into the joint. (4) Gout which is more common in this country than supposed, *i. e.*, it is three-fourths as frequent at Johns Hopkins as at St. Bartholomew Hospital, England; most common among lead workers and beer drinkers. The differential diagnosis of acute rheumatism and acute gout is very difficult. The gouty nodules in the ears, or tophi on the fingers are characteristic of gout. (5) Multiple neuritis is often mistaken for rheumatism, but the absence of knee-jerk and the alcoholic history, as well as the future course of the disease serve to differentiate them.

Chorea and acute rheumatism are closely allied. The concensus of opinion to-day seems to point to chorea being a manifestation of cerebral rheumatism in which the infective agent has acted upon the serous membrane of the joints and brain, and has also reached the cortex itself, thus producing convulsive movements.[9] This is in contra distinction to the theory that some infective agent acted directly upon the nerves themselves. The increased reflexes noted in rheumatism are probably due to the same cause.

In gonorrheal arthritis the history is important. It is often limited to one joint, especially the left knee, and is not as painful, has less fever, and does not go from joint to joint. The inflammation is in the peri-articular surface and extends along the tendons. The effusion is rarely purulent, although suppuration of the sheaths may be found. This is important in a bacteriological examination of the joint as colonies of gonococci can be obtained in cultures taken from the outgrowths on the synovial membrane while the fluid fails to show their presence.

In opthalmia neonatorum arthritis has occurred which yielded promptly and completely on curing the conjunctival discharge. In the multiple gonorrheal arthritis it is often hard to differentiate. It is usually confined to the lower extremities, and often attacks the sterno-clavicular, the intervertibral, the temporo-maxillary and the sacro-iliac articulations, joints rarely involved in acute rheumatism. The possibility of this form of arthritis in newly married women infected by an old gleet of the husband should be borne in mind. Gonorrheal arthritis is most intractable and this often serves to distinguish it from rheumatism. It is far safer to regard atypical or doubtful arthritis as being of gonorrheal origin than due to rheumatism.

There is nothing characteristic in the blood in rheumatism, notwithstanding the marked anemia so often associated with it.

In arthritis occurring with purpura, the existence of urticarial wheals in addition to other signs of purpura is usually sufficient to distinguish it from rheumatism. Sore throat and even pericarditis may occur in this form of arthritis.

Arthritic manifestations in pneumonia indicate a general pneumococcic infection and have a mortality of 60%.[10]

The arthritis occurring in scarlet fever is not rheumatic. Recent investigators [11] ascribe the joint trouble to streptococcus pyogenes, and consider it one of the manifestations of scarlet fever, rather than a rheumatism complicating the disease. It usually attacks the wrists and fingers, or other small joints. In the monarticular form there is a greater tendency to suppuration.[12] The arthritis occurs most often at the end of the second week before desquamation sets in.

Lately French writers [13] have described arthritis occurring in connection with lupus, as tuberculous rheumatism but which had better be called tubercular arthritis. This is painful and always slow in developing, although there is usually a history of traumatism from which the family date the trouble. The family history of tuberculosis or the presence of tuberculosis in other parts of the body is important. There is usually very little fever. The joint enlargement is soft and symmetrical. Monarticular rheumatism is more often regarded as tuberculosis than the contrary. A mixed infection of these two conditions is not uncommon. Joints in defective positions, with abscess or fistula, accompanied with muscular atrophy, justify the diagnosis tubercular arthritis. This form of arthritis closely resembles the syphilitic arthritis. The latter is usually limited to one joint and is painless, or painful only at night. A characteristic point about this class of syphilitic affections is that the amount of movement preserved by the joint is far greater than in any other joint affected by the same amount of disease. In doubtful cases the history and therapeutic tests are important aids.

Syphilis attacks the joints symmetrically and it rarely relapses, thus differing from rheumatism.

As to arthritis of the spine associated with typhoid, the conditions most likely to resemble it are myelitis, sciatica, hip-joint disease, tumors of pelvic bones, bone disease, malingering or muscular pains, and pachymeningitis.

Arthritis occurs in connection with influenza

erysipelas, smallpox, appendicitis, spinal meningitis, dysentery and glanders, but in none is there much resemblance to acute rheumatism with its sudden onset, its joint to joint evanescence, never suppurating, and always leaving perfect joints. There is, however, one form of infective arthritis which closely resembles acute rheumatism, and upon the differential diagnosis of which serious consequences depend. I refer to *acute osteo-myelitis.*

There is, perhaps, no more serious condition in which rheumatism should be positively excluded than in acute-osteo myelitis. We must be able to recognize this disease in the first forty-eight hours if we expect the best aid from the surgeon. There is a pocket of pus in the bone and if it is not immediately drained, absorption, high temperature, delirium and septicemia follow, resulting often in death, or at the very best in destruction of the bone.

The symptoms that distinguish acute osteomyelitis from acute rheumatism are classical. Chill, acute pain followed by high temperature, sepsis with its symptoms of absorption, delirium and death. The pain is usually in the extremities of long bones. Usually, especially in children, there is not an effusion into the joint near the focus in the first forty-eight hours. This is different from rheumatism in which effusion occurs in first few hours. The greater intensity of local symptoms, the involvement of the epiphysis rather than the joint, and the more constitutional disturbances are all characteristic.

In the first forty-eight hours pain and sepsis increase but there is no local sensitiveness. Deep and continued pressure for two minutes elicits excruciating pain and frequently indicates the seat of the infection.[14] There is a board-like infiltration of skin and muscles with subsequent involvement of joint and suppuration. Most of the cases occur between puberty and twenty-five years. The favorite seats are head of humerus, lower end of femur, and upper end of tibia. Monarticular pain in children should suggest osteo-myelitis. If there are scars of former operation over the bone the pain is probably a second attack of osteo-myelitis. In many cases there is an existing furuncle, traumatism without external lesions, skin wounds, or one of the infective diseases.[15]

In doubtful cases aspiration is justifiable. The disease may simulate typhoid fever. Blood examination may be helpful in the diagnosis. There is a decided leucocytosis in the early stages of osteo-myelitis, thus differing from typhoid and rheumatism.

No acute arthritis occuring in connection with a possible pyogenic infection should be looked upon as rheumatism or gouty until osteo-myelitis has been positively excluded.

The chronic form of osteo-myelitis is often diagnosed chronic rheumatism, but the localization of the pain in the bone rather than in the joint, and the evidence of necrosis will often serve to differentiate them.

*Arthritis Deformans.*

This is a good descriptive term and has the advantage in eliminating all reference to rheumatism and gout. It is probably due to some nerve disturbance, and is an apparent enlargement of the joints due to the atrophy of the muscles and inter-articular cartilages. It closely resembles rheumatism is its acute stage, and may occur in combination with acute rheumatism, but it is not caused by rheumatism. It is non-inflammatory and may occur without pain. There is seldom redness or tenderness. It is rarely monarticular, and it never suppurates. There are no true bony enlargements. The characteristics of arthritis deformans are: the spindle-shaped appearance of the joints, its soft boggy feeling, its symmetrical development, beginning in the small joints and spreading without leaving the first joint, its stationary character, never flitting from joint to joint, and always leaving the joint deformed. It is less painful than rheumatism and has a tendency to attack young and middle aged women, especially when there has been any wear and tear of the nervous system. It often comes on insidiously, lasts months, and does not involve the heart. The process stops grating and ankylosis, with resulting deformity, is left. The deformity is usually one of extension or flexion, seldom lateral. In the polyarticular form of any arthritis which does not leave the joint uninjured, especially if the pain and disturbance are more annoying when the patient is worried, or under a nervous strain, we should suspect this form of arthritis. Gout is excluded by the absence of deposits of urates. The so-called Charcot joint is in all probability one of this class. It is readily recognized by the history of tabes as well as the increased lateral movement of the joint without pain. Intermittent hydrops,[16] characterized by painless swelling of sudden onset, without heat and redness, is probably due to some vasomotor neurosis.

The form of arthritis described by English observers,[17] as acute rheumatoid arthritis, confounds acute rheumatism and arthritis deformans more often than any other affection. In this disease occurring in young women a distinction is made in the swelling beginning in the proximal phalangeal joints, extending beyond the affected joints, and becoming fusiform in shape. Other joints become affected until the patient is helpless. There is much muscular wasting or atrophy. It runs a definite course, lasting about three weeks. It attacks the fingers first and spreads to other joints, involving the temporo maxilliary and spinal joints, and it leaves the joints immobile and enlarged, points which clearly eliminate acute rheumatism. Its association with influenza, parotitis, and the like, would suggest a microbic origin, acting no doubt through the nervous system, producing trophic changes in the joints, resulting in arthritis deformans. It is neither rheumatic nor osteo-arthritic.

There are seldom any adhesions in arthritis

deformans. Contractions and stiffening from faulty posture, and extensive degenerative erosions of the cartilages may result. These must not be mistaken for true bony growths which are the characteristics of osteo-arthritis.

*Osteo-Arthritis* may result from many causes. It may start without any known cause. The disease is essentially a chronic disease, the so-called acute painful period being due in all probability to a double infection. At first there is very slight deformity, and often the person is unaware of any enlargement on account of the gradual development of the disease. The pain is more often at night and is considered rheumatic. It usually affects the large joints (knee), and is often unilateral. It is a true bony growth, "ring bone," and locks the joint mechanically by the formation of osteophytes at the ends of the bones. Change of position often aggravates the pain, especially in the spinal form, and the person walks with a characteristic gait. This serves to distinguish this form from lumbago. The disease is more common in men, especially old men, but it does occur in young people. The true nature of the disease is obscure. Cold and damp may be factors in the etiology, but they do not cause the disease. There is less atrophy of muscles and less synovial swelling than in arthritis deformans. The enlargements are bony and not cartilaginous. The joint capsule is relaxed. The deformity is due to the hypertrophied tissue, as well as to enlarged bone. These hypertrophies have a tendency to form on the dorsal side of the joint, causing a lateral deformity or flexion, thus differing from the deformity of arthritis deformans which is usually one of hyperextension.[18]

In osteo-arthritis due to the presence of Heberden's nodes a very slight injury will often set up an active process resulting in increased deformity and a permanent disability far in excess of that expected from a light blow. The presence of Heberden's nodes in other joints will often confirm this fact. Such nodes suggest strongly the presence of osteo-arthritis, rather than arthritis deformans, and are valuable in deciding the diagnosis, prognosis and treatment in a given deformity.

In arthritis deformans there is practically a false ankylosis which is amendable to proper manipulations, while in osteo-arthritis any manipulations of the joint would most likely break off some of the osteophytes with increased irritation in the joint.

A form of osteo-arthritis occurring in the spine, *spondylitis*, is far more common than supposed.

There may be little or no subjective symptoms referable to the back, and there may be much overgrowth of bone without any marked deformity. The deformity is greater in the slowly developing cases than in the more active process, and its nature depends upon the surface of the bone affected. These cases are usually diagnosed lumbago or rheumatism. The different motions of vertebral articulations should be tested in every case of backache, especially when such is aggravated by change of position, and associated with neuralgic pain, or sensory disturbances in the legs. Even in the early stages there is a "spot" in the spine at which the pain is localized. It can be differentiated from Pott's disease by the pain being local, rather than referred or abdominal, as in Pott's. In doubtful cases the use of tuberculin and the Rontgen rays are helpful. If paralysis has supervened it is peripheral in spondylitis while that due to Pott's disease is paraplegic.[19]

In spondylitis the paralysis is seldom equal on both sides. There is often an associated ankylosis and fixation of the thorax. As the disease advances the tissues shrink and pressure on the cord and nerve roots is released. This results in the abatement of the nerve symptoms, and is often mistaken for an improvement in the osteo-arthritis with an unfortunate relaxation in following the prescribed treatment.

*Traumatic Arthritis.* — The history of the case is important, care being taken that the trauma is not the exciting cause of an osteo-myelitis or other infectious arthritis, rather than the cause of a simple arthritis. There is usually water in the joint in traumatic cases. Joint mouse or floating cartilage belongs to this class.

*Gouty Arthritis.* — Many arguments can be offered in support of the theory that gout is due to the destruction of leucocytes in their battle with toxins rather than to uric acid.[20] This brings it nearer to the infective group of arthrites. The characteristics of gouty arthritis are sudden onset, especially at night, often disappearing in day time, also the presence of deposits in the ear (tophi). It attacks usually single small joints. A distinction should be made between a scanty urine with high specific gravity which is permanently so, and one with the same characteristic dependent upon exercise, diet, etc. In chronic gout ulcerations often occur about the finger joints, from which urate of sodium crystals can be collected.

*Hemophilic Arthritis.* — This should be kept in mind especially in arthritis suggesting surgical interference. A recent writer reports 252 cases.[21] Traumatism does not seem to be an artiological factor. The joint becomes distended with blood. There is a feeling of tension and pain, but no tenderness or symptoms of inflammation. Echymosis in a few days followed with apparently full recovery. This condition soon recurs and results in thickened and roughened synovial membrane, structural changes in the joint, muscular atrophy and resulting deformity resembling osteo-arthritis. The disease occurs usually between the fourth and sixth years and most often in males. The joints affected are knee 50%, elbow 25%. The mortality in hemophilics is less among those having arthritis than among the others. It is 60% in the latter class.

In *Senile Arthritis* there is a thickening of the capsule, but not of the bones. It has no relation to rheumatism and is more stiffness than

soreness. It does not involve the heart and grows better as the day progresses.

*Rheumatism in children* differs somewhat from that of adults. The tonsils are the most common source of suspected infection. The arthritic symptoms are not as well marked as in adults, and are more apt to come on insidiously. Recurrent tonsillitis, chorea, erythema, or nose bleed, are often associated with arthritis. Continued fever with slight remissions suggests endocarditis.[22] There is not the same successive involvement of joints seen in adults. The family history, or a history of "growing pains," especially if accompanied with even slight swelling (fibrous nodules) suggests rheumatism.

The distinction between rheumatism in adults and that of children is best told by Cheadle, in a single sentence:

"The various manifestations of rheumatism massed together in the case of adults tend to become isolated in the case of children, so that the whole phenomena are distributed over years, instead of weeks or months, and the history of a rheumatism may be the history of a whole childhood."[23]

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## Clinical Department.

## REPORT OF CASES OF DECAPSULATION OF THE KIDNEY.[1]

BY F. G. BALCH, M.D., BOSTON.

THE following cases are reported in the endeavor to add a little to our knowledge of the results obtained by various surgeons in their efforts to cure a disease, which until recently has been considered purely medical, by surgical interference.

### CHRONIC DIFFUSE NEPHRITIS. DECAPSULATION.

CASE I. Ellen W., thirty-three, married. Laundress. Entered Massachusetts General Hospital, Nov. 5, 1901.

*Personal history.* — Unimportant, excepting she has for several years drunk one-half gallon of beer daily. Subject to headaches and vomiting spells.

[1] Read at the annual meeting of the Suffolk District Medical Society, October 31, 1903.

*Present illness.* — For past two or three weeks severe headache, vomiting and swelling of feet and abdomen. Urine scanty. Diarrhea persistent.

*Examination.* — Well developed but obese. Heart and lungs negative, except for few râles in back. Much edema of feet, legs, thighs, back and face, with marked ascites. Pulse 70, small volume, low tension. *Urine.* — Acid, 1,009, albumin 2½%. Sediment, blood, chiefly abnormal, many fatty renal cells, and hyaline, granular and brown granular casts. Quantity in first three days, less than 10 oz.

With daily hot air baths, pilocarpin and purgative treatment she improved slowly during first two months. Amount of urine rising to from 25 to 40 oz. per day. Albumin falling to ½% on average. Casts and blood corpuscles fewer in number.

During winter very slight improvement. Ascites required tapping.

March 24, 1902. Less edema and ascites.

Occasional headache and vomiting. *Urine* 1,012, smoky. Albumen ½%. Sediment as before, with occasional waxy cast. In spite of this apparent improvement patient's general condition became so much worse that operation seemed advisable.

*Operation*, March 28 on both kidneys. Tissues edematous, kidneys small, dark, granular in appearance; patient stood operation well. During first three days after operation twenty-four-hour amount of urine rose from 20 to 40 oz. Improvement after operation slow, but less headache and vomiting.

May 1. Less edema, and in legs and feet only, but ascites continues; tapped and 8 qts. of fluid drawn. *Urine* shows fewer casts, hyaline and granular, with fat; fewer renal cells and blood corpuscles; albumen ¼%.

June 1. Patient stronger, appetite improved; still occasional headache and vomiting. *Urine* pale, about 1,010, average 30 oz. in twenty-four hours. Albumen, large trace. Casts same as before, with renal and fatty renal cells, few blood corpuscles. Returned to medical ward June 6. Hot air baths renewed and diuretics, which raised amount of urine to an average of 40 oz. Abdomen requires tapping about once in three weeks. Discharged July 20, 1902, when she felt well, but vomited every few days; had no edema and very little ascites. *Urine* pale, 1,011; albumin $\frac{3}{10}$%. Occasional hyaline casts; renal cells, with fat; occasional blood corpuscles.

Patient returned to hospital in October, 1902. Had felt well since operation and had been doing housework daily, and said that she was better than she had been for a long time.

*Urine* then showed ⅛% of albumen, with a sediment of a few waxy, many granular casts, with fat adherent; few red corpuscles, and compound granule cells. Patient lost sight of and subsequent history unknown excepting that she died in May, 1903, after considerable excess in alcohol.

CASE II. Mary B. L. Twelve years old.

*Etiology.* — She had measles, mumps and scarlet fever as a child. She has always been well and strong. Last February caught cold and was at home a week. Two days later her feet swelled and she was edematous below her eyes. She had no headache or disturbance of vision. She had been under treatment since April 16.

*Examination.* — The tension of the pulse was somewhat increased. There was slight dullness in the flanks shifting on change of position. There was edema of the feet and legs and under the eyes. *Urine.* In the medical wards before transfer she had been secreting from 8 to 10 oz. of urine a day. On the

23d it was 9¼ oz.; on the 24th and 25th it fell to a little over 3, and on the 26th, 2 oz. An examination on the 23rd showed the urine to be smoky in color, acid, 1,031, ½ to 1% of albumen. The sediment was typical of parenchymatous nephritis. Urea 3.59%.

*Operation.* — Dr. Scudder decapsulated both kidneys June 22, 1903, and a fragment removed was reported typical of sub-acute glomerulo-nephritis.

*Subsequent history.* — Next day Cheyne-Stokes respiration developed but the patient was bright when spoken to and had no headache. On the 24th there was much less edema but great dyspnea. Next day the dyspnea was better, but there was more edema, and on the 27th she died.

Case III. A. S. R., twenty-seven years old. Seen by Dr. A. T. Cabot in consultation with Dr. A. W. Dudley of North Cambridge, on June 10, 1903.

Three years before patient first learned that his urine contained albumen. From that time meat was omitted from diet. One year ago, he consulted Dr. Dudley for swelling of feet.

*Examination of Urine.* — 1,018, albumen ¼%. Casts hyaline, granular, and fatty; renal cells. Ten months ago stopped work, and has kept very quiet. Has slowly lost strength, and has had slowly increasing edema of dependent parts.

Examination of urine at this time was as follows:— 1,015, much sediment, albumen ¼%; considerable pus since one catheterization; casts about as before, numerous hyaline, sometimes with epithelium adherents; large and small granular. Had a convulsion ten months ago, which was succeeded by nine or ten others, followed by a coma for forty-eight hours. Later, about Thanksgiving, had several more convulsive attacks, followed by a week of coma, thought possibly to be due to a blow on the head. On April 15, two seizures, with coma for twelve or fifteen hours. On May 15, three seizures in six or eight hours; coma for forty-eight hours. Urine always runs up in amount before seizures, and once reached 178 oz. in a day before attack; it decreases immediately after attack. Average amount of urine has shown steady decrease.

Operation not advised, but demanded by patient and friends, who understood the desperate nature of the case and wished to take desperate chances.

*Operation* June 18, 1902. Much edema in tissues. Large white, mottled kidneys.

Patient made good recovery, but effect of operation on kidneys was practically nil. Gradually lost strength through summer and died early in September. No autopsy allowed.

The average amount of urine after the operation was from 50 to 60 ounces, with considerable variation, at times above 100 oz.

Case IV. Mr. A. G. H., forty years old. Seen by Dr. A. T. Cabot, in March, 1903,.

Albumen had been discovered in his urine first in the year 1900, when he was being examined for life-insurance.

In January, 1902, he was seen by Dr. J. H. Grimes, who found indications of interstitial nephritis, and shortly after that time retinal hemorrhages appeared. Mr. H. rapidly became worse, and during that winter had several slight convulsions, followed each time by a period of somewhat more than a week during which he knew that he was in the hospital, and recognized his friends, but had forgotten much of the immediate past, and did not know how he came to be in the hospital, nor what he was there for. During each of these periods he talked intelligently, but when they had passed, the time was a blank to him. In the latter part of February, and early in March, he had several severe convulsions, which left his mind very much impaired, and it was at this time that Dr. Cabot saw him.

*Examination* showed right kidney somewhat movable, coming down width of hand below ribs. *Urine.* March 26, 1902, pale, alk. 1,010, albumen, ¼ to ½%. Sediment considerable; pus, small and large round, compound glanular cells. Some abnormal blood. No casts seen.

*Operation.* — March 27, 1902. Capsule of kidneys more adherent than normal. Kidneys are dark and congested, with a roughly granular surface. Blood pressure immediately after operation, 210.

April 1, 1902. In past two days twenty-four-hour amount of urine has been 88 and 55 oz. respectively. No convulsions except one just after operation. Sediment has become less in quantity.

April 4, 1902. Albumen had fallen to less than ⅛%. Blood pressure had fallen to 180.

April 17, 1902. *Urine* normal in color; alkaline; 1,010. Total, 50 oz. Albumen, large trace. Sediment slight, chiefly pus. Some round cells, and few normal blood corpuscles. Some hyaline casts, with renal cells, and little fat adherent. Few highly refractile casts.

May 5, 1902. *Urine* twenty-four-hour amount 53 oz. Albumen, ⅛%; 1,004; no casts seen.

No convulsions, mind perfectly clear, up in chair; died suddenly May 12, 1902.

*Autopsy.* — Heart hypertrophied, adherent to pericardium. Valves free from deformity. Coronary arteries show some sclerosis. Kidneys, weight of both, 280 gms. Each is invested in fairly abundant perinephritic fat, which, upon dissection, shows nothing abnormal. Each is invested also in a capsule rather lightly adherent to a surface marked by coarse granular elevations interspersed with deeper, more extensive depressions. The elevations themselves, smooth and of the normal kidney color. No vascular attachments of the capsule to the kidney are apparent. Upon section, markings fairly distinct, cortex $\frac{6}{10}$ cm. in thickness. Glomeruli faintly visible. Pyramids dark, bluish and red.

Cortex marked by radial red lines. Consistence tough.

Microscopically there were no blood vessels between the kidney and the capsule. The arterioles show arterio-sclerosis. The veins and capillaries are injected. There was an organized pneumonia and edema and congestion of the lungs.

Case V. Margaret L. C., twenty-three years old.

*Etiology.* — In doubt. With the exception of pneumonia at six, well until present illness began.

*Present illness* began two and a half months ago, with swelling of ankles at night. Seven months later the swelling became general and she was very uncomfortable and short of breath. There was no headache, dyspepsia, pain or impairment of vision. The edema never entirely went, but at times was confined to the legs. Ten months ago she had pneumonia and has been very susceptible to "colds" since. Thinks she has been very much better in the last few months. She lies about the house, and occasionally goes to the theatre or for a short walk.

*Examination.* — Patient was fairly well developed and nourished. She was pale and had some edema about the eyelids. There was considerable edema of the lower part of the back. Heart apex in fifth interspace in the nipple line. Aortic second accentuated. No murmur. Pulse regular, good volume, rather high tension. Lungs normal. Slight dullness in flanks. *Urine.* Typical of chronic diffuse nephritis. Twenty-four-hour amount at entrance 50 oz. and slightly less

at discharge. Average amount normal. Urea varied from 10 to 40 gm.; average amount normal.

Dec. 6, pale, acid, 1,012, 1-10 % albumen. Many hyaline and finely granular casts, with many fat drops and some fatty renal cells adherent. Rare fatty cast. Urea 16.77 gm.

*Operation.*—By Dr. S. J. Mixter; Dec. 7, 1902, the left kidney was decapsulated. The capsule stripped easily. The kidney was enlarged and covered with yellow granules. A piece of the kidney was removed for examination and reported by Dr. J. H. Wright to be typical of subacute glomerulo-nephritis. As the patient's condition was not good the second kidney was not operated upon until Dec. 20, when the same operation was performed. The kidney was smaller than the right one and had a depressed scar on one side. The capsule stripped easily. The yellow granules were again present.

*Subsequent history.* — She did well as far as the operation was concerned and was discharged not relieved Jan. 3, 1903. The amount of urine and urea were both less than at entrance. Oct. 19, 1903, her sister reported that she had been much better since her operation. Edema was less, she had a better color, and was stronger. She went about daily. The urine a month ago showed 1-10% albumen. No blood or pus, but still some casts.

CASE VI. George R. R.

*Etiology.* — Has had asthma most of his life; has had bronchitis, varioloid and children's diseases.

Three years ago had "kidney trouble" and was laid up nine weeks; recovered and had another attack June, 1901.

*Examination* showed a pale fat man, but fairly well nourished. Lungs showed the physical signs of asthma. Abdomen distended, with dullness over the dependent portions.

*Operation.* — In November, 1902, Dr. E. A. Pease decapsulated both kidneys. Has been tapped repeatedly and from four to five quarts of fluid removed at times.

Oct. 30, 1903. Dr. Sawyer reports that the patient is in fairly good condition. An examination of the urine shows twenty-four-hour amount 55 oz., color light, slightly acid, 1,014, albumen ¼%; sediment considerable, light, flocculent, many casts, hyalin, fine and coarse granular, some with fatty renal cells and minute fat drops adherent, fatty degenerated cells, a little free fat, an occasional blood globule. The patient has carefully measured the twenty-four-hour amount, which averages over 50 oz. The edema has disappeared.

CASE VII. Carl H., thirty-three years old.

*Etiology.* — Apart from the fact that he is a painter, nothing obtained. Has had attacks of weakness, with swelling of the feet, face and legs since last April.

*Examination.* — The heart is enlarged, with a systolic murmur at the apex. Pulse regular, good, high tension. *Urine.* Sept. 17, twenty-four-hour amount, 45 oz., acid, 1,014, 1-5% albumen, urea, 88%. Few hyalin casts, with an occasional fatty cell and blood globule adherent, an occasional fatty cast, considerable free fat, few normal and abnormal blood globules.

*Operation.* — Dr. Mixter decapsulated both kidneys Sept. 19.

*Subsequent history.* — Recovery was uneventful and he went to the Convalescent Home Oct. 14. The amount of albumin had fallen to a trace on Oct. 3. The sediment had also improved, but on Oct. 14 there were still a few casts, with fat adherent. The amount of urine just after operation fell to 10 oz. but went up again immediately and at discharge was 70 oz. It has not been possible to see the patient as he has gone to Maine. Letters sent to him have not been answered, but a friend who has heard from him says he is very much better and works steadily, but is afraid to come back to Boston for fear of catching cold. January, 1904. Patient reports that he again has edema of legs, etc. Has had to give up work.

CASE VIII. W. H. K., male; thirty-three years old.

*Etiology.* — With the exception of "grippe" ten years ago, the patient had always been well up to several months before, when he caught cold. Has drunk five to eight glasses of beer a day until within last two months.

*Present illness.* — His feet, legs, body and face became moderately swollen. He felt dull and weak and his head ached slightly. He vomited occasionally. One month ago gave up work. Just before operation he had no gastric symptoms, but the edema persisted and he had dyspnea and palpatation on exertion. His eyes were normal.

*Operation.* — Dr. J. W. Elliott decapsulated both kidneys, removing a small piece from one for microscopical examination. This was reported by Dr. Wright to be typical of a sub-acute glomerulo-nephritis. The substance of the kidneys was soft, grayish and friable. The one the piece was removed from was a little larger than normal.

*Urine.* — Typical of chronic diffuse nephritis. The amount had been about 80 oz. until just before operation, when it fell to 25 oz., rising to 95 the fifth day after operaton. The average was about 80 oz. The urine report April 8 was: Color normal, acid, 1,017, albumen ½%, no sugar. There were many hyalin and finely granular casts, with renal cells and blood adherent. There were a few casts, with fat adherent. There was considerable normal and abnormal blood. The amount for twenty-four hours was 45 oz.

*Subsequent history.* — His condition was improved temporarily, but had occasional attacks of headache and vomiting. He grew worse and died early in June.

*Autopsy.* — The kidneys were found slightly more tightly bound in their position than in normal perinephritic tissue. Each organ was apparently provided with a capsule which appeared to be readily removable but which was very intimately connected with the perinephritic tissue.

CASE IX. Francis H. J., thirteen years old.

*Etiology.* — Scarlet fever at four years, with edema of face and legs during convalescence. Urine dark and scanty. Symptoms of nephritis were gone in two weeks.

*Present illness.* — Not strong since scarlet fever. After, had frontal headache and was easily tired. Rare gastric upset. Summer before entrance had an exacerbation of nephritis for a week. Had grown gradually worse since then.

*Examination.* — His face was puffy and hands slightly cyanotic. There was a systolic murmur. The odor of the breath was slightly urinous; there was some edema of the extremities, and his feet were cold and clammy.

*Urine.* — April 11, 1,017, ½% albumen. Fine and coarse granular casts, with fat and renal cells adherent. Amount 60 oz.

*Operation.* — On April 12 Dr. W. A. Brooks, Jr., decapsulated both kidneys. He found the tissues very edematous at operation.

*Subsequent history.* — Ten days after operation the edema was still marked. From May 3 on, the patient had daily hot air baths for some days. The baths were then given at two-day intervals and then every third day. On May 29, his edema had practically

gone and his general appearance was excellent. He was transferred back to the medical service on June 9. An examination of the urine May 28 showed 1-10% of albumen, a rare hyaline and finely granular cast, blood globules and a few compound granule cells. The amount of urine varied greatly. It was 60 oz. when he came to the surgical service, 30 on the day of operation, 60 on the fourth day, and 120 oz. on the twenty-fifth day. Dr. Torbert saw the boy Oct. 15. He has been well since July 15, 1902. Two months ago, his mother says, he had a headache and was slightly edematous about the face and hands. This all went in twenty-four hours. He goes to both day and night school, eats well, and is very active. The scars are firm and there is no pain or tenderness in the kidney region. His tongue was clear and breath sweet.

The urine was examined and was free from albumen and casts. It was pale, acid, 1,013. The urea was 88% in the specimen examined. He gets up two or three times at night to pass water and passes a good amount during the day.

To summarize these cases briefly:

Five have died at periods ranging from five days to two years and two months after operation. One case is probably cured. As the urine has only recently been found free from albumen and casts it is too early to classify it as cured. One case has improved and is still gaining, eleven months after operation. Two cases, a year after operation, show very little if any improvement.

In the nine cases the disease was of the chronic diffuse type. In each case ether was the anesthetic used. In two cases in which there was an autopsy some time after operation it was found that a new capsule had formed not essentially different from the old one. The amount of urine and urea varied within wide limits. It was invariably smaller than usual the day after operation but regained or exceeded the previous amount within a few days.

## DECAPSULATION OF THE KIDNEYS.[1]

BY JOSHUA C. HUBBARD, M.D., BOSTON,

*Third Assistant Visiting Surgeon, Boston City Hospital; Assistant in Surgery, Harvard University.*

Case I. P. M. Male, forty-two years. Entered the hospital June 3, 1902. He had had measles but no mention was made of scarlet fever. He used alcohol to excess. He had had increased nocturnal micturition for five months. Later edema, anorexia, insomnia, epigastric pain, headache and diarrhea appeared. On entrance there was evidence of fluid in the chest and abdomen. There was edema of the legs, genitals, back, abdominal walls and face. The radial arteries were sclerotic. The urine was smoky neutral, 1,019, albumen ¼%. The sediment contained some normal blood, fine granular and hyaline casts with fat drops and fatty renal cells adherent, some fatty renal cells and compound granule cells and triple phosphate crystals. The urea was 1.82% and the twenty-four-hour amount of urine about 36 oz. He did not improve under medical treatment and was operated upon by Drs. Burrell and Blake on June 14. Ether was the anesthetic. Improvement began immediately after the operation. The edema began to decrease in ten days and was entirely gone in six weeks. The amount of urine increased to 150 oz. He was discharged on Aug. 2. At that time the urine was smoky, 1,012, acid and contained 1-10% albumen. The sediment contained an occasional cast with fat, a few renal cells, leucocytes and blood. He was seen last on Oct. 27, 1903, a year and four months after the operation. He is now free from all symptoms, does not have to rise at night to urinate, has no trouble about doing his work — that of a general man on a summer place. He looks well and has no edema of the ankles. He is still drinking as he chooses. The urine passed shortly after a meal was pale, slightly acid, 1,002, urea ¼%, albumen slight trace. Nothing found in the sediment.

Case II. J. S., female, thirty-nine years old. Patient had been in the City Hospital several times since 1894 for fistula in ano and a tubercular proctitis. In 1894 the urine was normal except for pus in the sediment. She entered the medical wards in July, 1902, with a history of chilly sensations, fever, dyspnea, increased frequency of micturition and edema covering a period of four months. The previous history was negative except for the surgical affections mentioned above and measles. There was no mention of having had scarlet fever. The urine examination was as follows: specific gravity 1,006; twenty-four-hour amount 74 oz., albumen ¼%. The sediment contained pus, a few hyaline and fine granular casts, a little free fat, a few small round cells, fatty renal cells and red corpuscles. Examination for tubercle bacilli was negative. The symptoms increased in spite of medical treatment and she was transferred for operation.

She was operated upon by Drs. Munro and Blake on Sept. 12, 1902, under ether anesthesia. Each kidney was stripped of its capsule. The pathological diagnosis of specimens taken at the operation was "marked acute degenerative nephritis, slight amyloid degeneration of glomeruli, slight chronic nephritis."

After the operation the urea increased from 1.13% to 1.64%, but the actual amount diminished from 13.90 gm. to 12.60 gm. The edema disappeared. Two and one half months after operation the urine contained ¼ to ½% albumen, considerable pus, hyaline and granular casts, many renal cells and some blood corpuscles. She developed a cough, her strength gradually failed, and there was occasional edema of the face. She died without unconsciousness or uremic symptoms on March 18, 1903, six months after operation. The clinical diagnosis at the time of death was tuberculosis of the apex of the right lung, tubercular ulceration of the rectum, tuberculosis of the kidneys. The latter was justified in spite of the negative findings in relation to the bacillus of tuberculosis in the urine.

Case III. T. E. D., male, thirty-one years old, entered the hospital July 1, 1902 having had headache, edema and dark colored urine for several days. He remained in the medical wards till September and was then discharged. His history furnished no cause for the nephritis except a moderate use of alcohol. He was admitted to the surgical wards on Sept. 17, the edema having returned after discharge accompanied with pain in the back and increased frequency of micturition. The urine at that time was acid, 1,013, albumen ¼%, the sediment contained numerous hyaline and fine granular casts of small diameter with renal cells adherent, considerable blood free and on casts, some fat and many renal cells, occasionally fatty. The twenty-four-hour amount varied from 40 to 60 oz. Urea 14.52 gm.

The operation was done, under ether, Sept. 26, 1902,

[1] Read at the annual meeting of the Suffolk District Medical Society, October 31, 1903.

by Drs. Munro and Blake. The pathological diagnosis from bits of the kidney taken at the operation was "chronic glomerulo-nephritis, so-called parenchymatous." Two weeks after the operation the edema was gone and the patient was discharged one week later. April 24, 1903, the patient reported that he had done heavy work every night till three weeks ago and felt stronger than ever. At that time he began to drink hard and continued this for two weeks when edema of his face reappeared. While he had been drinking, his urine, which had been clear, became the color of bock beer. When seen April 24 he looked well, had slight edema of the ankles, had gained twenty pounds. The urine was smoky, acid, 1,005, albumen ¼% urea .88%. The sediment contained normal blood, a few leucocytes, some renal cells with fat adherent, an occasional compound granule cell and a very few hyaline and fine granular casts. I have made unsuccessful attempts to find this patient this fall and therefore am unable to give his present condition.

CASE IV. Male, twenty-six years old, entered the hospital Jan. 13, 1903. As a child he had had measles, scarlet fever and whooping cough. Eight years before entrance he had had pneumonia. For six months he had had malaise and indigestion and for four days backache, edema of ankles and dark colored urine. There was general edema and râles over the entire chest, the heart being negative. The urine was high, acid, 1,029, albumen ¼%. The sediment contained many casts, hyaline and fine granular, with small round cells, blood corpuscles, leucocytes and renal cells adherent, a little fat and a few abnormal red cells. He had albuminuric retinitis. The twenty-four hour amount was usually in the neighborhood of 30 oz. His symptoms grew worse and the edema increased under treatment.

Operation under ether Jan. 30, 1903, by Drs. Burrell and Munro. He was in poor condition during and after the operation. Pathological diagnosis from bits of the tissue taken at the time of the operation, "subacute glomerular (amyloid) nephritis." The urine after operation did not change except for the appearance of some red blood corpuscles. On the second day he passed 14 and on the third 20 oz. He was conscious. He vomited for twelve hours on the third day. The vomiting was finally stopped by some spirits of chloroform. He then retained milk and lime water. He lost strength and finally died, without signs of uremia, on Feb. 4, five days after operation.

CASE V. Male, twenty-nine years old, entered the hospital Nov. 19, 1902. He used alcohol to excess. For two weeks he had had chilly sensations, fever, slight cough, headache, nausea and vomiting, edema, a scanty and high colored urine, and diarrhea. The urine was smoky, acid, 1,026, albumen ⅛%. The sediment contained very many casts, hyaline and granular, with renal cells, fat drops and blood globules adherent; few squamous epithelium cells, neck of bladder, small round cells leucocytes and red corpuscle. Urea varied from 2% to 7-10% and the twenty-four-hour amount of urine from 20 to 50 oz. He did not improve after more than two months of medical treatment. At that time the urine was practically unchanged and there were evidences of fluid in both pleural cavities and the abdomen. He had albuminuric retinitis. Operation under ether Jan. 27, 1903, by Drs. Burrell and Munro. The pathological diagnosis from specimens removed at the time of the operation was "subacute glomerular nephritis." After the operation the amount of urine dimished at first and then increased and the edema decreased somewhat. Five weeks after the operation he developed a bronchopneumonia from which he nearly died. On April 14, almost three months after operation, he still had considable edema. The urine at that time was pale; acid, 1,020, albumen ½%; urea 1.70% with a total of 18.87 gm. The sediment contained many fatty granular renal cells, normal and abnormal blood, fine granular casts of large diameter, with epithelial cells, fat drops and blood adherent; a few hyaline, epithelial and fatty casts. He was discharged to Tewksbury, where he died June 30, 1903, five months after operation. During his stay there he had general edema, a urine loaded with albumen and casts, and cardiac murmurs.

CASE VI. N. D., female, twenty-six years old, had a history of nephritis of six years' standing. An attack of influenza preceded her first symptoms. She entered the hospital first in 1897. The diagnosis of chronic diffuse nephritis was made. She came in again on Jan. 31, 1903. She had had numerous attacks of malaise, muscular weakness, frequent headache, backache, dyspena, epigastric pain, nausea and vomiting. frequent micturition. The urine was pale, slightly acid, 1,012, albumen ⅛%, few hyaline and fine granular casts with some fat and renal cells adherent, numerous squamous cells and leucocyte, single and in clumps, many small round cells, rarely a normal blood globule. The twenty-four-hour amount varied considerably up to 54 oz. and the albumen up to ¼ %. The physical examination was, in brief, an enlarged heart with accentuation of the second sounds, edema of the eyelids and extremities and a foul breath. The urine collected by segregation from each kidney gave similar results.

As there had been no material gain she was operated upon on March 7, 1903, by Drs. Thorndike and Faulkner. The kidneys were four inches long, contracted anteroposteriorly. Decapsulation left a granular surface which bled but little. The pathological diagnosis from a specimen removed was "chronic glomerulo-nephritis." After operation she steadily failed, had headache and vomiting and a decrease in the total amount of urine secreted and died two days later.

CASE VII. Boy nine and a half years old. He had had measles, diphtheria and typhoid, but not scarlet fever. He entered the Children's Hospital Sept. 11, 1902. His symptoms were nausea, vomiting, dyspnea and edema. The urine was smoky, acid, 1,010, albumen ⅛ to ¼%. The sediment contained many hyaline and granular casts, with blood and renal cells adherent, few fatty and epithelial casts, many round cells, often fatty, leucocytes free and in clumps, a few decolorized red corpuscles and a few squamous epithelial cells, considerable free fat. The twenty-four-hour amount of urine was ordinarily between 400 and 800 cc. and the urea between 5 and 10 gm. He developed considerable edema and ascites which required tapping three times. On Dec. 2 he was transferred to the surgical service with edema of face, back, external genitals and lower extremities. The heart was enlarged and its action irregular. There was evidences of fluid in the pleural cavities and abdomen. The total twenty-four-hour amount of urine was decreasing and the general condition was growing worse.

Jan. 1, 1903, he was operated upon by Dr. Cushing. Anesthesia was produced by nitrous oxide and ether. The kidneys were enlarged, the capsules not adherent. The denuded surface was matted with yellowish white areas, alternating with injected ones. The cortex was quite friable. No cicatricial depressions of the surface were noted. After the operation the headache and nausea disappeared and the edema began to diminish, and by the eighth or ninth day had disappeared entirely except in the legs. The twenty-four-hour amount of

urine increased to 1,170 cc. and the urea on the seventh day was 11.20 gm. The albumen and sediment were less. After the eighth or ninth day the boy began to grow worse, the temperature was elevated, the wounds were opened by the returning edema, the amount of urine and of urea both diminished and the nausea and vomiting recurred. The boy died Jan. 19, nineteen days after operation, with the symptoms of acute pulmonary edema and cardiac exhaustion.

This makes a series of seven cases.[1] None of them can be said to have been cured, as not one of them has a urine free from albumen. One is, however, without subjective symptoms or a urinary sediment a year and four months after operation, and another seven months after operation, though lost sight of since. Of the remaining five, one, somewhat improved, died six months after operation, of tuberculosis. The remaining four died, unimproved, two and nineteen days and one and three months after operation. Looking over these cases one cannot find any apparent reason, either in etiology, duration of the disease, or findings at the operation, why one patient should survive and be greatly benefited, another survive but the progress of the disease be not arrested, and a third die within a few days.

Such cases as the first one reported are certainly brilliant, and possibly such a one differs in some respect at present undiscovered from those that die.

In regard to the case who has still albumen but no casts in the urine, Edebohls says that the albumen may presist for some time after the casts have entirely disappeard in the cases that are eventually to be cured.

## Medical Progress.

### RECENT PROGRESS IN GENITO-URINARY SURGERY.

BY F. S. WATSON, M.D., AND PAUL THORNDIKE, M.D.

#### GENITO-URINARY TUBERCULOSIS.

Baumgarten[1] says that he is unable to start a tuberculous process in a testicle by injecting tuberculous material into the urethra, although he could infect the deep urethra, prostate, and bladder in this way. He claims that tubercle bacilli never travel against the current of either secretory or excretory fluids. and explains his results in this way.

Kraemer[2] agrees with Baumgarten and so asserts that tuberculous infection of the testicle is impossible from coitus.

Delli Santi,[3] on the other hand, was able to start tuberculous epididymitis in dogs by introducing bacilli into the urethra. He thinks this investigation establishes the possibility of contagion from tuberculous lesions in the female genital organs.

Hausen[4] found it impossible to induce hematogenic tuberculosis of the genito-urinary organs in his experiments on rabbits, even when he made subcutaneous injections of tubercle bacilli coincident with the introduction of bacilli into the blood.

Bürgner[5] reports success with his method of high castration for tuberculosis. He frees the vas as high up as possible and then pulls on it until it breaks. In this way about 4-5 cm. can usually be removed. When he thinks that seminal vesicle and prostate are also involved, he injects a 10% glycerine solution of iodoform upward through the vas as a preliminary step to castration.

#### INOSCOPY.

E. J. Masselin[6] agrees with Jousset that inoscopy reveals tubercle bacilli in organic fluids in which they are difficult or impossible to demonstrate by other means. The bacteria become entangled in the fibrin of organic fluids, and by disolving of the fibrin with a pepsin digestive mixture the organisms can be set free and then are readily centrifuged for examination.

#### OPERATIVE TREATMENT OF CHRONIC BRIGHT'S DISEASE.

R. Guiteras[7] gives a carefully prepared and extensive tabulation of reported cases and concludes as follows:

(1) Chronic nephritis should not be operated on until medical treatment has proved of no avail.

(2) The time for operation is when it is noticed that the process is advancing rapidly and we fear that the heart will soon become overtaxed.

(3) The operation for chronic Bright's disease which has proved least dangerous and which has shown the best results, is nephropexy performed on a single movable kidney.

(4) The most unfavorable cases for operation are those of diffuse nephritis.

(5) Cases of general anasarca with bad heart action should not be operated on; if the heart action is good an operation performed as a *dernier ressort* may give the patients a few extra months of life, provided they survive it.

(6) Where there has been a marked destructive process in the kidneys, as a result of a nephritis, the operation may relieve them for a number of weeks or months, but they generally fail again and die when the new capsule begins to contract.

#### HYPERNEPHROMA.

P. Thorndike and J. H. Cunningham, Jr.[8] report three cases of these tumors of adrenal origin with pathological reports. The tumors cannot be classified as carcomata, carcinomata,

[1] Cases I, II, III, IV, V, were also reported in Boston Med. and Surg. Journ., Aug. 13, 1903; Case VII was also reported in Archiv. of Pediat., August, 1903.

[1] Archiv. f. Klin. Chir., 1901, Band. lxiii.
[2] Deut. Zeit. f. Chir., Leipsic, lxix., No. 2-4.
[3] Riforma Medica, Palermo, xix, No. 28.
[4] Annales d. Mal. d. Org. Genito-Urinaires, Paris, 1904, p. 408.
[5] Beitrage z. Klin. Chir., Tübingen, 1903, p. 342.
[6] Presse Medicale, Paris, 1903, No. 75.
[7] N. Y. Medical Journal, Nov. 14, 1903.
[8] Boston Medical and Surgical Journal, Dec. 3, 1903.

etc., as they are of adrenal origin and do not conform to any one class of growth. They grow rapidly, are usually malignant (though occasionally benign) and metastases form through the blood current, most frequently in the lungs, liver and bones. Plates accompany the article, illustrating characteristic points in gross and microscopic pathology. The affected kidney is generally large, with a nodular surface, but retains the general outline of the organ. On section the tumor tissue is yellowish, with a firm and distinct stroma. Some nodules show areas of hemorrhage and degeneration.

E. Bohler [9] collected 39 cases of hypernephroma. Of the 36 cases in which the age was determined only 4 were under forty years, 5 were forty to fifty years, 24 were fifty to seventy years, 3 were over seventy years. The disease occurred 19 times in men and 18 in women. Right kidney was affected in 16 cases and left in 20 cases.

### PERIRENAL FAT.

W. W. Keen [10] says there are two distinct layers of fat surrounding the kidney. One he calls the transversalis layer and the other the proper perinepheric fat. These layers are separated by connective tissue and there is a very distinct interval between them. Walkow and Deletzin in 1899, Gerota in 1895, and Zuckerkandl in 1883, describe a similar condition.

### THE PATHOGENESIS AND PATHOLOGICAL ANATOMY OF ENLARGED PROSTATE.

L. R. G. Crandon [11] gives the results of a study of 37 prostates, 12 of which were enlarged, 24 normal in size and 1 small. He discusses his findings with great care and draws conclusions as follows:

(1) The underlying cause of the usual form of prostatic enlargement and of certain forms of prostatic atrophy is a slow formation of new connective tissue due to infection, or to infection aggravating a senile degenerative process.

(2) The gonococcus is probably most often the specific infection.

(3) Neoplasms, fibronyomata and adenomata occur, but may be called rare.

### THE PROSTATIC SECRETION.

Stern [12] analyses this secretion and mentions a special enzyme which it contains, and says: It is as yet impossible to demonstrate the importance of this fluid. He assumes that it is important in overcoming the quiescence of spermatozoa and also in promoting a state of osmosis essential to fecundation.

### GONORRHEAL EPIDIDYMITIS.

Baermann [13] asserts that epididymitis occuring during a gonorrheal urethritis is due to local invasion of gonococci which can be demonstrated in fluid drawn off by puncture and that sometimes it is possible to find gonococci persisting for years in the relics of an old epididymitis.

### NEW OPERATIONS.

A. D. Bevan [14] describes an operation for undescended testicle, and illustrates the steps of the procedure with a series of cuts. He believes that all testes which can be palpated should be transplanted into the scrotum. He operates through an incision made over the inguinal canal, but not carried down over the cord and into the scrotum. He opens the peritoneum, ties it off as in hernia operations, making a tunica for the testis out of the vaginal portion of peritoneum, and then frees the cord from all its adhesions so carefully that it can be dropped into the scrotal pocket and lie there with no tension upon it.

E. Reynolds [15] describes an operation of nephroureterectomy which he performs. He operates through a four-inch incision, and is able by posture to obtain gravity dilatation of the wound so that the wound cavity, if the posture has been well taken, " opens widely and can be inspected throughout as easily as if it were a surface wound."

*(To be continued.)*

[9] Wien. Klin. Woch., 1903, 19 and 20.
[10] American Medicine, Philadelphia, Jan. 31, and Feb. 7, 1903.
[11] Annals of Surgery, December, 1902.
[12] American Journal of the Medical Sciences, Philadelphia, August, 1903.
[13] Deutsche Med. Woch. Berlin, xxix, No. 40.
[14] Journal American Medical Association, Sept. 13, 1903.
[15] Bulletin Free Hospital for Women. Boston. Vol. i, No. 2, June, 1903.

## Reports of Societies.

### THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

PROCEEDINGS OF THE SIXTEENTH ANNUAL MEETING, HELD AT THE PIEDMONT HOTEL, ATLANTA, GA., DEC. 15, 16 AND 17, 1903.

(Continued from No. 3, p. 72.)

### SPURIOUS DYSMENORRHEA.

DR. HENRY T. BYFORD, Chicago, made a plea for a more rational treatment of dysmenorrhea. After naming twenty-five varieties that had been mentioned in textbooks, the author called attention to their disappearance therefrom. Many supposed cases were spurious in character. These had been perpetuated by the physician and cured by the quack.

The absurdity of the nasal cure was emphasized and the cures referred to as spurious. Instances of menstruation in the male were quoted.

The trend of the paper was to condemn writers for bringing the symptom into the foreground when it should be kept in the background, and for wasting their own time and that of their readers in ridiculous refinements and speculation.

### MEMORIAL ADDRESS ON DR. W. E. B. DAVIS.

DR. RICHARD DOUGLAS, Nashville, Tenn., spoke impressively of the work that had been done by Dr. Davis, and pointed out in a masterly way the distinguishing characteristics of the deceased.

DIAGNOSIS AND TREATMENT OF CONGENITAL MISPLACEMENT OF THE HIP IN INFANCY.

Dr. Albert H. Freiberg, Cincinnati, Ohio, had been able to ascertain that in several cases children with congenital misplacement of the hip had been late in walking. It was a common experience in mild grades of rachitis that children were late in walking. The usual age of sixteen months was passed by, and the rachitic child not only failed to walk, but was usually also unwilling to stand. The author had been able to ascertain in several cases, and to observe in one, that children with congenital luxation stood readily at the usual age for walking, and especially if allowed to support themselves by holding on to some object. It was only when independent effort at locomotion was urged that the child showed its timidty and refused to make the attempt as a normal child would. This period was gone through by every normal child, but in some cases its long continuance might be attributed to congenital luxation. The length of this period in luxation cases varied greatly, but in every case was finally determined by the child's learning to walk with more or less limping, at which time the diagnosis was usually made and was of no further interest in this connection. In some few instances mothers observed these things and possibly also that the apparent breadth of pelvis and perineum was unusually great. It was therefore urged that in the presence of any of these signs which had been referred to, attention be paid to the possibility of congenital luxation, and that in the event of any doubt the x-ray be resorted to as a final means of precision.

Experience had abundantly shown the feasibility of operative procedure after the age of one year, and that the results amply justified the great additional care which was necessary to prevent the dressings from becoming soiled in so young a patient.

THE PROGRESS OF URETERAL SURGERY.

Dr. J. Wesley Bovee, Washington, D. C., President of the Association, selected this title for his presidential address. After referring to the deaths of Drs. W. E. B. Davis, George J. Engelmann and J. McFadden Gaston, he confined his remarks to the surgery of the ureter, giving its history and present status.

The treatment of ureteral calculi first claimed attention since the diagnosis and treatment of this condition were very much studied at the present time. The use of the x-ray was the simplest procedure known for purposes of diagnosis, and were it accessible at all times, and completely reliable, no other method would be comparatively valuable. Unfortunately, such conditions as calculous anuria might render a patient in a secluded place so ill that this method of investigation was necessarily precluded. Moreover, calculi might be of sufficient size to block the ureter and give no shadow in the radiograph. For this reason especially other plans of examination should be employed, although the necessity of constant manipulation of the ureter was a *sine qua non* to dexterity in treating other conditions of this structure. Palpation would ever have its important position. Exploration was an important method in such investigations. Tubular calculi might escape discovery by this plan. The wax-tipped bougie, suggested and used by Kelly, was especially sensitive, and no doubt if it touched a calculus it would receive a telltale impression.

In the treatment of ureteral calculi the proper plan was extraperitoneal uretero-lithotomy, as infective urine was usually associated with this condition, and easily produced peritonitis if permitted to come in contact with the peritoneum. If pus was not present, the establishment of uretero-cutaneous fistula would seldom be necessary, though careful drainage of the wound would be advisable. This rule applied to every part of the duct. He was firmly convinced the ureteral wound should be made longitudinally whenever possible, and sutured after lithotomy. If much necrosis of the ureter was manifest, as had often resulted from the impaction of a calculus, each case should be treated according to the judgment of the surgeon, and such modifications as resection or exsection, with uretero-ureteral anastomosis or uretero-cystostomy might rarely be required. Frequently pyonephrosis accompanied calculous ureteritis. Incision and drainage, and probably nephrolithotomy would be needed in addition. The routes employed depended upon the location of the calculus, the bladder, the vagina, or loin being selected. He could only endorse the rectal route, as employed by Ceci, when examination revealed a calculus ulcerating into the rectum or threatening to do so.

For ureteral fistula nothing need be done unless obstruction of the duct below the fistulous opening existed. In such a case the caliber of the canal must be restored. Usually the fistula would then close spontaneously, although so much cicatricial tissue might be deposited about the opening as to prevent closure. Suture, or perhaps resection, might be required in that case.

Dr. Bovee referred to subcutaneous injury of the ureter, saying that no treatment was advisable unless evidence of extravasation of urine or of ureteral obstruction existed. For partial division of the ureter suturing should be applicable. Abnormal ureteral terminations of congenital origin might be corrected by ureterocystostomy, usually by the vaginal route. Fortunately, in these cases the ureter was abnormally long, and therefore the difficulty was much less than was the same operation for other indications. The ureter might be removed in whole or in part for tumors, tuberculosis, and malignant disease. In 1899 he was able to collect from literature about twenty-four cases of partial or complete ureterectomy. Now the number had increased to nearly one hundred. In complete ureterectomy or nephro-ureterectomy in women probably the loin and vaginal incisions

constituted the best plan. In his last case he separated the lower two inches through a vaginal incision, and then separated and withdrew the kidney and ureter by the loin route. This he believed to be the best of all.

For ureteritis the treatment had been largely of irrigation and topical applications. He had been disappointed in this work, and had grave doubts of its being the best. Probably the violence done to the lower part of the ureter by this instrumentation counterbalanced the benefits. He had had a few cases of trigonitis that had come to him after ureteral irrigations were said to have been made. He had, in consequence, been led to speculate as to whether a non-alcoholic, non-nitrogenous diet, with diuretics and rest in bed, might not be superior treatment for simple ureteritis.

PUS COLLECTIONS IN THE PELVIS.

DR. C. N. CHAVIGNY, New Orleans, La., discussed this subject, in which he reported three cases.

THE TECHNIQUE OF THE VAGINAL METHOD.

DR. J. RIDDLE GOFFE, New York, said in his own hands the scope of the operation, namely, the conditions to which the vaginal method was applicable, was steadily widening. It was no longer confined, on the one hand, to simple puncture and drainage, nor limited, on the other, to the radical operation of hysterectomy. All the intermediate procedures that were called for by the multifarious pathological conditions found in a woman's pelvis found their most direct route through the vagina.

There were two vaginal incisions through which the pelvic cavity could be reached; one, posterior to the cervix into Douglas' pouch, and the other anterior to the cervix, separating the bladder from the uterus and opening up to view and touch the entire contents of the pelvis. The latter was the one which afforded the greater facilities for operative procedures, and the one which he depended upon almost exclusively. The posterior incision was frequently used in connection with it, to afford additional opportunity for the purpose simply of securing drainage and in some cases for manipulation. The procedure was described.

The simplest application of the vaginal method, and the one that probably commended itself most universally to the profession, was incision and drainage of pelvic abscesses.

The author's cases had embraced every variety of disease from simple retroversion, with or without adhesions, to prolapsed and cystic ovaries, unilateral and bilateral salpingitis, ectopic gestation, fibroid tumors of the uterus, and dermoid cysts. The method lent itself to every form of conservative work upon the uterus and its appendages that had been suggested in the trend of recent modern gynecology. The successful application of it required patience, experience and skill, but when once the profession had been convinced of its superiority, he believed it would steadily and rapidly grow in favor and become the accepted method for the man who practiced the specialty of gynecology.

TUBERCULAR OSTITIS OF THE KNEE.

DR. A. R. SHANDS, Washington, D. C., said that the management of a case of white swelling could be embraced in the terms immobilization and protection in any and all stages of disease. The indication was to preserve the function of the joint as far as possible, to arrest the progress of the disease, to prevent and correct deformities. Immobilization and protection with the best hygienic surroundings and the best tonic treatment appropriate to the individual case would best accomplish the indication just mentioned. If the diagnosis was made early and this line of treatment faithfully carried out, a large percentage of cases would yield very favorable results, many recovering with little or no disability. When it became necessary to incise and drain a joint, it should be done thoroughly and good drainage should be kept up just as long as there was any discharge. When the infection of the joint was due to an ostitis that was near the surface of the ends of the bone, often the diseased bone sloughed away, and when it could be easily located and curetted, most excellent results were obtained. A case was cited in point.

Excision of the knee should never be done in children except in extreme cases, and even then the author believed that amputation would be best, for an artificial leg was more useful than such a leg as a child would have after excision.

BILATERAL DIFFUSE VIRGINAL HYPERTROPHY OF THE BREASTS.

DR. GEO. BEN JOHNSON, Richmond, Va., reported the case of a white girl, aged sixteen, four feet, ten inches high, weighing one hundred and twelve pounds, who had this disease. The breasts hung from the chest wall at about the fourth rib and reached to a point just above the symphysis pubis. The nipple was flattened and stretched. The substance was soft and of similar consistence to that of a well-nourished multipara's breast; the glandular masses scattered throughout were distinctly palpable. The breasts were almost symmetrical, with the exception of a lobular division at the base of the left breast of the same general structure as the main tumor. Two small scars near the right nipple indicated the site of former abscesses. The anteroposterior circumference of the left breast was 19¼ inches; the anteroposterior circumference of the right breast was 21¼ inches; the superior inferior circumference of the left breast was 32 inches; and of the right, 31 inches. Operation was performed under ether anesthesia, and occupied thirty-five minutes, the left breast being removed first, followed immediately by the removal of the right. The breast was held above the field of operation, and the amputation carried on as rapidly as the vessels could be caught by assistants. Healing was by primary intention, and the patient was up and about in six days.

Dr. George H. Noble, Atlanta, Ga., reported a case of excision of the psoas magnus muscle for sarcoma.

THE DIFFERENTIAL DIAGNOSIS OF SYPHILIS AND CANCER OF THE VULVA.

Dr. Barton Cooke Hirst, Philadelphia, read a paper on this subject. After referring to the differential diagnosis of these two affections, he reported the case of a woman, twenty-eight years of age, single, who had never been pregnant. She denied ever having led an immoral life, and the possibility of venereal infection. Ten years ago she was operated on for hemorrhage and fissure *in ano*. The wound of the operation did not heal properly. More than a year ago the patient noticed an ulcerated condition of the vulva, and a short time afterward incontinence of feces, followed soon by incontinence of urine. For two years past there had been amenorrhea. On making a specular and digital examination a fistula between the fossa navicularis and the rectum was discovered. The whole urethra was gone; there were three little tubercles at the neck of the bladder, these being all that was left of it. The vagina above the neck of the bladder was perfectly healthy. The cervix was normal except that it was atrophic, as was the whole uterus. The case, at first sight, looked like an inoperable epithelioma of the vulva. It was so pronounced by one of the most experienced dermatologists in Philadelphia. But there was none of that extensive infiltration and elevation of the skin surface around the edges of the ulceration, such as was seen in an example of extensive epithelioma of the vulva, considerably advanced, but not yet inoperable. Moreover, numerous pieces of tissue from different places in the ulcerated area showed nothing characteristic of cancer. There was everywhere the most extensive round-cell infiltration and necrosis of tissue. The microscopic study, as well as the macroscopic appearance suggested syphilis in the ulcerated gummatous form as the most likely possibility, epithelioma being excluded.

Accordingly, the patient was put on specific treatment in spite of her negative history, and the entire absence anywhere upon her body of signs indicating an old syphilitic infection. The treatment was given up within a week, as the patient was severely ptyalized and could not endure large doses of potassium iodide. Lupus next suggested itself. On two separate occasions, under anesthesia, twelve or fifteen pieces of diseased tissue were removed for microscopical examination. No tubercles nor bacilli could be discovered anywhere. Inoculations in animals were negative. The urine contained no tubercle bacilli. The bladder itself was healthy. There was a response to the tuberculin test, but the woman had a patch of consolidation in the apex of one lung. Meanwhile the patient was given x-ray treatments every other day for eight to ten minutes. Within three weeks the external ulceration was healed. The local appearance at that time showed great improvement. Two weeks later the rectovaginal fistula spontaneously closed under the continuance of the x-ray applications. Nothing remained of the original disease except the absence of the urethra and an elephantiasic condition of the labia majora. The former had been corrected by urethroplasty. The speaker had not yet joined the new urethra to the opening in the bladder, so that the establishment of continence of urine was still doubtful but he was quite hopeful of making the patient eventually entirely comfortable.

*(To be continued.)*

## Recent Literature.

*Atlas of External Diseases of the Eye.* By Prof. O. Haab. Second edition, revised. Edited by G. E. De Schweinitz, A.M., M.D. W. B. Saunders & Co. Philadelphia, New York, London. 1903.

This companion book to Haab's "Atlas of Ophthalmoscopy" which is now passing through its second edition has been thoroughly revised by the author and re-edited with certain additions by Dr. De Schweinitz. Although it has not been attempted in the translation to follow the original text with undue accuracy it has been nevertheless the desire of the editor to convey with faithfulness the real meaning of the author. With few exceptions the excellent series of plates which illustrates the text has been painted from nature and in the chromo-lithographic reproduction difficulties in color have been surmounted with cleverness and ingenuity. The brief treatise on ocular pathology and treatment taken in connection with the series of plates and the clinical history which accompanies each of them, form a manual which will be appreciated alike by the practicing physician and student.

*Wathen's Epitome of Histology.* A Manual for Students and Physicians. By John R. Wathen, A.M., M.D., Professor of Surgery, etc., formerly Professor of Histology and Pathology, Kentucky School of Medicine, Louisville, Ky. 12mo., 220 pages, 114 illustrations. Cloth. Lea Brothers & Co., Publishers. Philadelphia and New York. 1903.

This little book is intended to assist a student to pass an examination in histology without really knowing the subject. In case of an examination in which the test is the recitation by the student of a certain number of words learned more or less by rote the book might help — but it is to be hoped that there are no such examinasions still extant. The volume contains a large number of erroneous statements, but is clearly and succinctly written. The illustrations, which are almost entirely borrowed from various textbooks by well-known histologists are, though badly printed, essentially good. We have noted nothing else in the book deserving praise.

*Clinical Talks on Surgery.* By JAMES G. MUMFORD, M.D., Assistant Visiting Surgeon to the Massachusetts General Hospital and Instructor in Surgery, Harvard University Medical School. The Old Corner Book Store. Boston. 1903.

Under the above title is presented in book form the methods of clinical instruction of the writer. It represents the results of ten years' experience as a teacher of minor surgery, and the subjects discussed are the "common-place" ones usually briefly treated in the ordinary textbook.

The book is arranged as ten lectures. I. Examination and Study of Cases. II. Incised Wounds. III. Simple Fractures. IV. Lacerated Wounds. V. Compound Fractures. VI. Granulating Wounds and Varicose Ulcers. VII. Felon, Whitlow, Paronychia, Palmar Abcess. VIII. Boils, Carbuncles. IX. Bunions, Ingrowing Nails, Corns and Warts. X. Massage.

It is a very interesting, well-written little book of 115 pages, not illustrated except by its graphic phraseology, full of practical suggestions and is a forcible exposition of the best principles not only of teaching, but also of the theory and practice of surgery. The emphasis is not all placed on operative technique, and the student is not impressed with the idea that the only knowledge necessary for a surgeon is the knowledge of how to operate. It embodies the principles of the best methods of clinical instruction.

We recommend it to the student, for it is full of well-told valuable information. We recommend it to the graduate in medicine for he will read it with interest and, unless he is a "master" in his profession, also with profit.

*A Textbook of Diseases of Women.* By BARTON COOKE HIRST, M.D., Professor of Obstetrics in the University of Pennsylvania; Gynecologist to the Howard, the Orthopedic, and the Philadelphia Hospitals. 683 pages. 655 illustrations. W. B. Saunders & Co. 1903.

This book is a companion volume to the author's "Textbook of Obstetrics" and embodies an experience of twenty years.

The author adopts the anatomical rather than the pathological classification of the diseases of women. Instead of placing all of the normal anatomy at the beginning of the volume, each chapter is prefaced by a short description of the anatomy of the part treated. This arrangement adds much to the reader's convenience and also to clearness. A chapter on "The Detailed Technic of Gynecic Surgery" is found properly at the end of the book instead of, as commonly, at the beginning. A good feature is an admirable article on coccygodynia, containing a plate showing the injuries and diseases of the coccygeal joints.

The chapter on "Diseases of the Urinary Tract" is hardly up to the high standard of the rest of the work. Here the clearness and conciseness so noticeable elsewhere are lacking. It is doubtful whether a majority of gynecologists would endorse the following statement, page 527: —"No cystoscope is satisfactory that does not carry a light at its distal or intra-vesical end. Hence the cylindrical specula of Pawlik and Kelly, through which the light must be reflected from the exterior, are awkward and inconvenient." Two different electric cystoscopes and an electric urethroscope, also two urinary segregators are advised for the purpose of making diagnosis and treatment.

The illustrations are very numerous, are for the most part original, and are particularly well executed.

It is to be noted that the figures of the injuries and erosions of the cervix in black and white are close after nature and convey a far better idea of these conditions than do the faultily colored plates which are commonly employed. The illustrations of the different forms of mucous polyps of the cervix are remarkably true to life.

The author has given especial attention to diagnosis and treatment throughout the book and has produced a practical treatise which should be of the greatest value to the student, general practitioner and specialist.

*A Textbook of Diseases of the Eye.* By G. E. De SCHWEINITZ, A.M., M.D. Octavo, pp. 773, 230 text-illustrations and 6 chromo-lithographic plates. Fourth edition. W. B. Saunders & Co. Philadelphia and London. 1903.

That Dr. De Schweinitz's Handbook of Ophthalmic Practice has reached its fourth edition is sufficient evidence of a deserved popularity, and although former editions have been favorably commented upon by this JOURNAL it seems proper at this time to call attention to the fact that the new edition has been "revised, enlarged and entirely reset" and that it will be found to contain many new chapters upon subjects of current interest. A large number of the comparatively newer therapeutic agents are mentioned in connection with descriptions of the diseases in which they are indicated and many of the new text-illustrations and several very finely executed examples of the chromo-lithographic art will be found to be both attractive and interesting.

*A Handbook of the Diseases of the Eye.* By HENRY R. SWANZY, A.M., M.B., F.R.C.S.I. Eighth edition. P. Blakiston's Son & Co. Philadelphia. 1903.

This Textbook on Diseases of the Eye is passing through its eighth edition and outwardly, at all events, very closely resembles its predecessor, the seventh. While it has gained in illustrations to the number of three it has suffered abridgement in pages to the number of twenty-seven and therefore remains the same compact little volume. Fresh matter has been introduced into some of its chapters and much that is obsolete has been omitted and in this respect the book is improved, but on the other hand an ill-advised conservatism which prevents a too ready acceptance of some of the newer therapeutic agents has doubtless caused the omission of protargol and the more recent argyrol from the very excellent index which accompanies this work.

*Textbook of Histology.* By Dr. Philip Stöhr. Fifth American from the tenth German edition. Edited with additions by Dr. Alfred Schaper, with 353 illustrations, 850 pp., xvi, 485. Philadelphia: P. Blakiston's Son & Co. 1903.

This admirable book appears in its fifth edition with many minor improvements, bringing the subject-matter up to date. There are also fifty new illustrations and some of the older figures have been withdrawn. The work deserves the great favor it has enjoyed, and certainly occupies the first place among treatises on histology in the English language. It may be recommended not only for students, but as a reference book for practitioners, for whose use it is adapted by the brevity and remarkable clearness of the author's statements. The work is authoritative and singularly free from errors. We hope that in the next edition the author will revise the accounts of spermatogenesis and of the leucocytes, which are at present somewhat inadequate and that he will add descriptions of the parathyroids and of the sinusoids, a class of blood vessels only recently recognized, though of great anatomical importance. The volume is well made, and the publishers have taken much care with the printing of the illustrations, which are beautiful.

*An American Textbook of Surgery for Practitioners and Students.* By Phineas S. Conner, M.D., Frederic S. Dennis, M.D., William W. Keen, M.D., Charles B. Nancrede, M. D., Roswell Park, M.D., Lewis S. Pilcher, M.D., Nicholas Senn, M.D., Francis J. Shepherd, M.D., Lewis A. Stimson, M.D., J. Collins Warren, M.D., and J. William White, M.D. Edited by William W. Keen, M.D., LL.D., F.R.C.S., (Hon.) and J. William White, M.D., Ph.D., Fourth edition, thoroughly revised and enlarged. Philadelphia, New York and London; W. B. Saunders & Co. 1903.

We are very glad indeed to see the *American Textbook of Surgery* appear in its fourth edition. It was in danger of being superseded by other books. A great deal of progress has been made in surgery since the first edition of this book, but so far as we can see, the editors have incorporated into this edition all the accepted knowledge. Several new chapters have been added. They are, Military Surgery, Naval Surgery, Tropical Surgery, Examination of the Blood, Immunity and Pancreas. The subject of Acute Osteomyelitis has received special attention in this edition. The treatment of joint disease is not so well considered as it should be. The chapter does not give a clear perspective as to the value of protection and fixation in joint disease. Many of the chapters have been rewritten, notably the chapters on tumors, nerves, joints, etc. In this edition the publishers have used a thinner and a better paper, they have used a smaller type for the new chapters, and yet the book has increased in bulk to 1333 pages. The *American Textbook of Surgery* may be accepted as one of the best textbooks on the subject.

*Surgical Diseases of the Abdomen; with special reference to Diagnosis.* By Richard Douglas, M.D., formerly Professor of Gynecology and Abdominal Surgery, Medical Department, Vanderbilt University, Nashville; Ex-President of the Southern Surgical and Gynecological Association; Fellow of American Association of Obstetricians and Gynecologists; Member of the British Gynecological Association, etc. Illustrated by 20 full-page plates. Philadelphia: P. Blakiston's Son & Co., 1612 Walnut Street. 1903.

This is a large book. Dr. Douglas has been a worker in the special field of abdominal surgery for the past eighteen years and this book is the result of much systematic study on his part and he has relied on his clinical experience to aid him in the choice of subjects. The description of operative technic is not elaborated in this book. The writer has considered it sufficient to indicate the proper surgical procedure and discusses the operative treatment and the after management of abdominal cases. The book is very complete and appended to each subject is an extensive although discriminating bibliography, so that the reader may turn for further information to the original source. The book is very well illustrated, but the paper and printing are not entirely satisfactory. We can recommend the book to any surgeon who is doing abdominal surgery, for it is a capital reference book. Its practical value lies in the fact that the author has had a very large experience and has also a very complete knowledge of the literature of the subject. It is clear, concise and well written. The subject of differential diagnosis is very fully considered.

*Nurses' Guide to Surgical Bandaging and Dressings.* By Wm. Johnson Smith, F. R. C. S., Principal Medical Officer, Seaman's Hospital, Greenwich. Philadelphia: J. B. Lippincott Co. London: The Scientific Press, Limited.

This "vest-pocket" volume ($3\frac{3}{4}$ x $4\frac{3}{4}$ x $\frac{1}{2}$ inches) of 161 pages, bound in brilliant cardinal-red cloth and illustrated by 70 cuts, treats of the details of the aseptic and antiseptic treatment of wounds and other common surgical lesions resulting from traumatism or infection, and of bandaging, splints and apparatus. The data contained as indicated by its title is arranged for the use of nurses. The book is interesting as a review of the subjects treated, or for comparison of the detail of instruction for nurses at Greenwich with that of other hospitals; but as a textbook for the instruction of nurses it deals with the subjects discussed much too cursorily and concisely to be of much value.

THE BOSTON

# Medical and Surgical Journal.

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## TRYPANOSOMA AND TRYPANOSOMIASIS.

JUDGING from recent investigations, one of the new and comparatively unexplored fields into which medicine is destined to penetrate in the immediate future is that of the protozoa. Evidence is very rapidly accumulating to show that these organisms may produce or be closely associated with certain of the common infectious diseases. In fact, it has long been known that certain types of protozoa are capable of producing disease of great malignancy in animals. In this latter class is to be included an important genus known as Trypanosoma, which in its many varieties produces a considerable number of violent animal infections. In general the disease produced by this organism occurs in epidemic forms in tropical countries, usually with greater severity during the rainy season. There is a period of incubation, followed by fever of varying type. Trypanosoma are found in the circulating blood. The disease progresses with anemia, emaciation, catarrhal conditions, at times falling of hair, and subcutaneous edema, often with ultimate paralysis. The mortality among animals of economic importance is about one hundred per cent. The pathological anatomy of the condition shows the effects of anemia, alterations in the spleen, lymphatic hyperplasia, various infiltrations, enlarged spleen, and fluid in serous cavities. With the clinical course and pathological anatomy the disease presents a perfectly distinct and characteristic type.

The recently published report of the *Biological Laboratory of the Department of the Interior* discusses in great detail this general subject, with special reference to surra as observed in the Philippine Islands. The publication is monographic in its scope, and should prove a valuable addition from an eminently practical, as well as scientific, standpoint of our knowledge of this prominent tropical disease. As in most subjects in which sporadic work has been done for a number of years by various investigators, a somewhat extreme degree of confusion exists in the nomenclature and classification; for example, upwards of eighty names have from time to time been used in different parts of the world to designate the condition of trypanosomiasis.

The first description of the disease appears to date from 1842, from observations made in South America. In 1860 an epidemic which killed thousands of horses occurred in Brazil and Paraguay. In 1858 Livingstone wrote of the tsétsé fly disease, in Africa, which had long been recognized by the natives. In 1880 Evans brought surra into prominence as studied among the natives of India. The loss of animals in India, Africa and South America amounts to many millions of dollars annually. Java and the Philippines have become infected, as well as the Island of Mauritius, the latter since the South African war. In 1902 Manson and others reported cases of the disease in human beings. Smith and Kinyoun published the first report of the infection in the Philippines in 1901, and the conclusion has been reached that the disease undoubtedly was introduced at that time. Curry accurately described the parasite in 1902. Since then the spread of the disease has been phenomenal, and at the present time areas throughout the entire group of islands are infected.

The life cycle of the organism has not yet been worked out with entire satisfaction, but numerous observations have been made which undoubtedly will lead to definite conclusions in the near future. In general the species of Trypanosoma are similar. The body has one chief flagellum and is wound more or less in the form of a spiral, one angle being provided with an undulating membrane. The details of form, however, vary greatly in the same and different species. Limitation of space does not permit us to enter into details regarding the characteristics, the multiplication, the agglutination and the habits in general of these organisms as observed under natural or experimental conditions. For such details we refer our readers to the original report.

Some of the conclusions which the authors of this piece of work, Dr. W. E. Musgrave and Mr. M.

T. Clegg, reached are as follows: The term trypanosomiasis should be used to designate all varieties of the infection as found in different animals; vernacular names, with the exception of surra, should be discarded in most cases. The complete life cycle of the organism is as yet unknown, but it is supposed to occur entirely within the animal economy. Modes of transmission and infection are probably through wounded surfaces in which biting insects, flies and fleas, are the principal agents. The animals serving as hosts for the perpetuation of the disease during the dry season vary in different countries. It is altogether to be doubted whether infection of pastures and water, and the transmission of Trypanosoma through sound mucous membrane is possible. A clinical study of various diseases, among which surra, nagana, dourine and mal de caderas may be mentioned, formerly supposed to be distinct, shows that there is nothing sufficient to differentiate them. The morphological differences of the parasites producing them is not sufficient for classification. Hitherto prophylactic or curative serum has failed to give results, but some hope is entertained from this method of treatment in the future.

Following close upon this exhaustive research is a paper by Novy and McNeal, in the recently published *Journal of Infectious Diseases*, on the cultivation of Trypanosoma brucei. These investigators were able to separate culturally this variety from another and to make various observations of scientific importance. They hope, and the hope is certainly justified, that diseases due to these organisms may soon be subjected to experimental studies, and so indirectly lead to a clear insight into the course of protozoal diseases in general. They are furthermore of the opinion that in spite of present difficulties most of the pathogenic protozoa will soon be cultivated and studied with the same facility as the bacteria.

## THE MENSTRUAL FUNCTIONS OF THE MORPHINE HABITUÉ.

Amenorrhea is certainly one of the most constant symptoms of morphinomania in the female and many are the cases which prove conclusively that the menses, which are generally suppressed during the height of the intoxication, make their appearance shortly after a cure of the habit. *A priori*, it would seem difficult that the cachexia of these patients could permit the menstrual function to continue. The nervous system, profoundly depressed, becomes incapable of directing the menstrual function, while the circulatory disturbances, a dilated and weak heart and vascular hypotension, only contribute still more to the general functional wreck of the subject. It would appear that in the first place a dynamic disturbance of a purely vital order is in play, while the anatomical changes arising in the genital organs are simply secondary to a more or less prolonged arrest of the function and to a more advanced intoxication of the system.

Amenorrhea does not necessarily mean that there is an absence of secretion of the ovum, and children have been born of females afflicted by the morphine habit and presenting amenorrhea. On the other hand Levinstein has seen an absolute atrophy of the entire female genital system in a case of morphinomania.

The practitioner should never lose sight of the fact that very often the habit starts from the use of morphine administered during the progress of certain painful affections of the uterus or adnexa. The importance of opium and its derivatives in the treatment of gynecological diseases is well known to all, and it is also proven that as long as the subject is submitted to the constant use of morphine uterine life is momentarily done away with, but it will usually return after the use of the drug has been discontinued.

We know the important part played by the general condition and we also know that all the cachexiæ, such as carcinoma or tuberculosis, are accompanied by a suppression of the menses. It must be admitted, however, that morphine has an elective action upon the glandular structures, on the ovary as on others, such as the breast, salivary glands, the glands of the stomach and intestine. There results, so to say, a sort of inhibitory action, preventing the Graafian follicles from maturing and by reflex action producing a congestion of uterus and ovaries, from which a suppression of ovulation and menstrual flux results.

After a time permanent lesions take place. When an organ atrophies, it loses all its functions and this, as has been said, has been observed in the genital organs of females addicted to the use of morphine.

The reappearance of the menses is considered as a favorable prognostic element as far as the cure of the habit is concerned and apropos of this we would point out an interesting case recorded by Leet, in which a patient after her

cure from the habit had been obtained presented serious nervous symptoms and excitement at each of the menstrual periods. Other such instances have been reported and it consequently is of the greatest importance to note the regularity and progress of the return of the menses, since they indicate that a cure is being effected and also that the patient is not using any deceit.

## DIPHTHERIA ANTITOXIN.

WE have received several communications from manufacturers of antitoxin in regard to the statements in the daily press as to the alleged rise in price of anti-diphtheritic serum and the formation of an "antitoxin trust." Chicago seems to be the storm center in regard to this matter.

Accusations against so-called "trusts" are bandied about with extraordinary freedom nowadays. If one desires to give a dog a bad name one immediately calls him a "trust," and enough is said for the satisfaction of the appelant; it is not even necessary to add the adjective wicked, for that seems to be understood in the word "trust."

As to the facts in this matter, they are not easily clear to the disinterested outsider. It seems to be evident that formerly the city of Chicago got its diphtheria antitoxin for much less than the present prices. On the other hand, the manufacturers claim that the serum at present offered on the market is better and stronger, and that the varying scale of discounts and the provision of a device for administration cause that difference to be more apparent than real. The same position is assumed by Eastern manufacturers. We imagine that in this, as in other matters subject to commercial laws, the consumer prefers that open competition between rivals which reduces the price of a product to its lowest terms without regard to the survival of the producer, and the producer prefers some form of combination or agreement which secures a living profit, and if something more handsome so much the better from his point of view. Between the two extremes a happier mean ought to be reached without too much delay, too much friction, and too many hard names — the most opprobious of all of which seems to be the handy term "Trust."

Under existing circumstances it would seem as if Massachusetts had no immediate reason to regret her arrangements for making her own serum.

## MEDICAL NOTES.

TYPHOID FEVER AT LEADVILLE, COL. — A very serious epidemic of typhoid is reported from Leadville, Col. About 500 cases of the disease have appeared, and it is believed that the conditions are such that the epidemic will spread. There is also danger that the Arkansas River may become contaminated, which would seriously menace many towns along its banks.

A CENTENARIAN. — It is reported that recently in France a Madame Viguier died at the age of one hundred and seven years. She is said to have lived on milk and dried vegetables, with an occasional small amount of salt pork as a special luxury. French vegetarians are using her as an example of the correctness of their position.

DR. GUY HINSDALE. — At the annual meeting of the Philadelphia Medical Club, held Jan. 16, a loving cup was presented to its retiring secretary, Dr. Guy Hinsdale. Dr. Hinsdale leaves Philadelphia Feb. 1, to take up practice at Hot Springs, Virginia.

DEATH OF AN EXPERIMENTER FROM PLAGUE. — It is reported that the chief of the Bacteriological Laboratory of the Imperial Institute of Experimental Medicine in St. Petersburg has recently died of plague while experimenting with this disease.

### BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Jan. 27, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 46, scarlatina 40, typhoid fever 7, measles 121, smallpox 0.

ANTIVIVISECTION LEGISLATION. — The usual annual petition for the restriction of vivisection is before the Massachusetts Legislature. The bill is said to be essentially the same as that submitted last year and no doubt essentially the same fundamental objections will be brought against its passage.

MEDICAL INSPECTION OF SCHOOLS. — According to the Monthly Bulletin of the Connecticut State Board of Health a recent address by Dr. Lederle brought out the importance of medical inspection of schools. He gave the following incident as the origin of the practice in New York:

A child in a public school was found picking pieces of skin from hands and arm and passing small fragments around to classmates. Some time later all of

these children took scarlet fever, and on investigation it was found that the child had that disease and had been permitted to return to school in the peeling stage, the most dangerous time for the playmates. The incident resulted in the employment of 150 physicians, to visit each public school daily and examine the children. The importance of this step was at once demonstrated. The first year's work showed 108,628 inspections, and 6,839 children excluded for all diseases of an infectious or contagious nature. Later, in 35 schools containing 55,470 pupils, there were found 6,670 cases of contagious diseases of the eyes. During the school year ending June 26, 1903, 71,229 cases of contagious diseases were temporarily suspended from school attendance.

The Decrease of Tuberculosis. — Dr. S. W. Abbott, of the Massachusetts State Board of Health, at a recent address before the American Statistical Association, brought out the important fact that the death rate in New England at the present time is somewhat less than 20 per 10,000 inhabitants, the mortality diminishing from the east coast toward the western portion of the state, and in general the death rate has been less in all New England states. In some a decrease of as much as 50% in the half century. At present fewer deaths occur from this disease among women than among men, which is a reversal of the former rule. Dr. Abbott expresses the hope from these statistics that tuberculosis should be practically eradicated in a comparatively short time.

Overcrowding of Insane Hospitals. — The State Board of Insanity in a portion of its annual report urges again the necessity of providing for the overcrowding of hospitals under its charge. Over 1,700 beds are in use in corridors and day rooms on account of the inadequate facilities of the wards. An added burden has been put upon state institutions also by the law providing for the accommodation at these institutions of the insane inmates of almshouses. It is urged that no time be lost in completing the removal of these patients to the insane hospitals.

Report of the Perkins Institution. — The seventy-second annual report of the trustees of the Perkins Institution for the Blind has been issued as a public document. The somewhat remarkable statement is made that only 18% of all the blind in this state are dependent upon public or private charity. It is maintained that nowhere else in the world, excepting in Saxony, have such results been reached, and that in England, for example, nearly three-fourths of the blind are dependent. In general the financial situation of the institution is satisfactory, but if certain essential improvements in teaching and equipment are to be made, more funds are needed.

NEW YORK.

Criticism of Centralization Bill. — A feature of the eleventh annual report on the Insane of the State Charities Aid Association is the severe criticism of what has become known as the Centralization Bill, which provided for the appointment by the State Commission in Lunacy of a treasurer for all the state hospitals for the insane and of a purchasing agent to contract for the supplies for all these institutions. The measure passed both houses of the legislature, but yielding to the universal public sentiment in condemnation of it, the Governor vetoed it. " It was felt," the report says, " that this would completely centralize the financial and business management of the state hospitals, and that, although the vast financial powers already vested in the State Commission of Lunacy were not sufficiently safeguarded, the changes provided for in the bill would remove several of the few remaining restraints upon the exercise of these powers." Regret is expressed at the failure of the legislature to take favorable action on the bill providing for the establishment of a reception hospital for the insane in New York City, by joint action of the state and the city. The establishment of such a psychopathic institution has been urged for years by the Association. It is estimated that accommodations will be needed for 3,300 additional patients in the state hospitals during the coming fiscal year, and the Association recommends that the legislature make provision for at least half that number without delay. A matter of favorable comment in the report is the outings for patients which have been provided by some of the state hospitals. At the Manhattan Hospital on Blackwell's Island, New York, a number of tents were supplied for the patients last summer, and the Rochester Hospital carried out a long-cherished plan by securing a farmhouse on the shore of Lake Ontario, where nearly two hundred patients enjoyed outings.

Pneumonia and its Causes. — At a meeting of the Advisory Board of the Health Department, held Jan. 21, at which among those present were Drs. Janeway, Loomis, Biggs, Derby and Jacobi, an address to the public on " Pneumonia and the Causes Leading up to It," was prepared and given out for publication. The reason for this action is stated as follows: ' The

present increase in pneumonia of various types in New York city is justly a source of solicitude to those having the interest of the public health in charge, for it has now been fully established that a certain proportion of cases of pneumonia are communicable and that by proper care their spread may be prevented." Rerefence having been made to predisposing causes, the manner in which the germs, the immediate excitants of the disease are usually conveyed is spoken of. After urging the importance of a rigorous enforcement of the Department's regulations for the suppression of spitting in unsuitable places, the address goes on to say: " It is furthermore most important that in the cleaning of private houses and all public conveyances and places of assembly the methods adopted should be such as will remove, and not simply stir up, the dust, which when contaminated may incite in susceptible persons some form of acute pneumonia, as well as tuberculosis and the more common colds and catarrhs. Feather dusters should be abandoned, and moist cloths used for dusting. When practicable, sweeping should be done in the evening, so that floating dust may completely settle before its removal by moist cloths in the morning. It should be remembered that dust settles on floors, as well as on furniture, so moist mops should be passed over floors, when these are uncarpeted, as part of the morning dusting. . . . The Advisory Board cordially commends the purpose of the Department to secure proper methods of cleaning and dust disposers in the public schools. . . , and would urge the desirability of instructing in the proper methods of dust disposal all those who have in charge the duty of cleaning public institutions . . . as well as those responsible for factories, stores, offices and the like, and commends the matter to the attention of all householders, to whom, not less than to inmates of public institutions and places of assembly, the risks of dust infections are at this time of especial significance."

A CENTENARIAN. — Felix Carty, a native of Ireland, died in a hospital at Syracuse, N. Y., on Jan. 18, at the reputed age of 104 years.

RAISING THE TUITION FEES AT COLUMBIA UNIVERSITY. — It has been voted by the trustees of Columbia Universityto fix the annual fee for tuition in the Schools of Applied Science and in the College of Physicians and Surgeons at $250 from and after July 1, 1904. The present annual fee in these schools is $200.

OFFICERS OF MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK. — At the annual meeting of the Medical Association of the Greater City of New York, held Jan. 11, the following officers were elected: President, Dr. Thomas E. Satterthwaite; Corresponding and Statistical Secretary, Chairman for the Burough of Queens, Dr. Neil Orrin Fitch; Member of the Executive Council, Dr. Stephen G. Cook. Dr. Augustus D. Ruggles had been renominated for Treasurer, but as his death occurred before the annual meeting, the Executive Council appointed Dr. J. Lee Morrill to serve as Treasurer for the ensuing year.

## Obituary.

### IN MEMORIAM — WILLIAM INGALLS, M.D.

THE Obstetrical Society of Boston offers the following memorial: " Dr. William Ingalls was an active member of this society for many years, and an honorary member at the time of his death. He attended the meetings regularly and contributed freely to the discussions relating to obstetrics, in which during life he had a very large experience. He had been in attendance at two thousand births, with a mortality of only three mothers on his record.

He served with ability during the Civil War, rising to high rank. He felt with other medical comrades, that the nearer he was to the firing line, the more faithfully he was performing his duty.

To the younger men Dr. Ingalls stood for a type of the old school family physician, who was guide, counsellor, doctor, and life-long friend. Such examples have seemed to be dying out for a time, but they are sure to return again.

Dr. Ingalls had a most attractive personality. We can all recall with love and pleasure the kind refined face, the soft voice, the gentle manner, and the carriage of the well-bred gentleman. He never ceased to win affection; and many of those most devoted to him were among the younger and more brilliant men in the profession. A noble, useful and unostentatious life, ending quietly and peacefully."

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A CALM adviser, a gentle friend, precise, punctilious, careful, he gave a long and conscientious service to the hospital. Professional spirit was with him a religion. The Staff of the Boston City Hospital records its appreciation of his just and manly qualities.

D. W. CHEEVER.
J. G. BLAKE.
F. S. WATSON.

Jan. 14, 1904.

## Miscellany.

### ARTIFICIAL CAMPHOR.

Prior to 1828 chemists made a sharp distinction between organic and inorganic compounds, it being supposed that the latter are capable of preparation in the laboratory, while the former are formed only in the living organism, animal or vegetable, under the influence of a particular force — the life force. This view was rendered untenable by Wohler's discovery that urea, a typical secretion of the animal organism, can be prepared synthetically from cyanic acid and ammonia, two inorganic compounds. Many other "organic" compounds, such as acetic acid, lactic acid, glycerin and sugar have since been made synthetically, and as our knowledge of chemistry increased the old idea about a vital force has lost greatly in significance. We know now that the same chemical forces act both in the organic and inorganic worlds. It is well known that most of the vanilla extract now found on the market is not derived from the vanilla bean, but from coal tar. This coal tar furnishes a large number of other substances which are used in medicine and in the arts. Among these may be mentioned the various analgesics, aniline dyes and perfumes. Indigo and alcohol have also been made from their inorganic constituents, and recently chemists have discovered a method of making camphor synthetically, which makes the manufacture of this substance a profitable industry. Camphor has the formula $C_{16}H_{16}O$, and is an organic compound which was formerly derived only from the camphor-tree *Cinnamomum camphora*, by distilling the chips with water and purifying the product by sublimation. The camphor trees have, however, been growing scarce, and as a result the price of camphor has of late been very high. Japan has a monopoly on the natural product, but this monopoly has now been broken by the manufacture in this country of artificial camphor from turpentine. Turpentine has the formula of $C_{10}H_{16}$ and can be oxidized to $C_{10}H_{16}O$ by heating it with oxalic acid. A ton of turpentine is heated at one time with a quantity of oxalic acid, and out of this mixture is distilled the purest variety of camphor. It takes fifteen hours to complete a lot, and the yield of camphor is 25 to 30% of the weight of turpentine. Various other valuable oils are obtained at the same time as by-products. — *Journal American Medical Association.*

## Correspondence.

### THE BICYCLE AS A THERAPEUTIC AGENT.

Cleveland, Ohio, Jan. 20, 1904.

Mr. Editor: I was very much interested in the valuable article entitled, "The Bicycle as a Therapeutic Agent," contributed by Dr. L. H. Gulick, and which appeared in the Journal of Jan. 14, 1904.

While reading the article it occurred to me that it might be of interest to relate the use that I have made of the tricycle for the treatment and cure of congenital flat foot or weakened arch in children. When this condition is early observed I recommend the parents to secure for the child a small tricycle, allowing the child to run it about in the house, and also on the sidewalk and street. The results are more certain and satisfactory if the child is kept in bare feet during the warm months. If the vehicle is furnished the child at the beginning of the summer it is not only surprising how much time the tot will spend in the saddle, but better yet, the season often serves to effect a complete cure before the novelty has worn away. This simple measure has been so uniformally successful in relieving the condition that I now never prescribe anything else. It serves the double purpose of taking the weight of the child off the weakened arch, but also is a very potent means of exercising and developing the muscles of the foot and thus gradually but certainly building up a natural resistance to the weakness.

Very truly yours,

Charles J. Aldrich, M.D.

### THE EMBRYOLOGICAL COLLECTION OF THE HARVARD MEDICAL SCHOOL.

Harvard Embryological Laboratory,
688 Boylston St., Boston, Jan. 23, 1904.

Mr. Editor: May I have the privilege of appealing through your columns for assistance from practitioners in building up the Embryological Collection of the Harvard Medical School? We are very desirous of obtaining as large a number as possible of human embryos of the first, second and third month, that is, up to about three inches in length, measured from the crown to the breech. For our purposes it is important that the specimens be placed as promptly as possible in a preserving fluid. We recommend as a preservative 10% formalin, that is, ten parts formalin with ninety parts water. This mixture is readily obtainable at any apothecary's and gives good results.

The laboratory will pay all expenses incurred in preserving and forwarding specimens.

The collection comprises at present sixteen series of sections from human embryos. Each series is carefully catalogued, and all the sections in the series are counted, so that any section can be immediately found by its number. The collection also includes to this date 180 series of other mammals, and over 600 series of the lower vertebrates, all representative types. As we have now good sets of series of sections of pig, rabbit and cat embryos, it has become more important than ever to secure a good set of the human series, so that it will afford a complete demonstration of the early development of man. Such a collection is possible, as is shown by the success of Prof. William Reis at Leipzig. Its scientific value can hardly be overestimated. With the generous assistance of practicing physicians the requisite specimens can be secured, and I think that the Laboratory can pledge itself to make the best use of all material received, especially as it has now the great advantage of the services of a workman who has become skilful and reliable in the cutting of serial sections.

The Harvard Embryological Collection is intended primarily as an aid to original research. Its use is by no means restricted to the officers and students of the Laboratory, but on the contrary it is opened freely to all competent investigators, who wish to profit by its advantages. I have the honor to remain.

Yours respectfully,

Charles Sedgwick Minot.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JAN. 16, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseases. | Typhoid fever. |
| New York . . | 3,908,644 | 1,610 | 473 | 22.42 | 26.08 | 3.66 | 2.54 | .50 |
| Chicago . . . | 2,021,086 | 566 | 129 | 21.03 | 20.67 | 1.59 | 3.36 | 1.59 |
| Philadelphia | 1,407,968 | — | — | — | — | — | — | — |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 228 | 55 | 18.86 | 20 61 | .88 | .44 | 1.75 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 157 | — | 30.57 | 16 56 | .63 | 1.91 | 14.65 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 85 | 28 | 17.64 | 30.57 | 1.17 | 3.53 | — |
| Boston . . . | 617,950 | 236 | 76 | 21.61 | 22.45 | 3.81 | — | .42 |
| Worcester . . | 136,925 | 30 | 8 | 13.33 | 13.33 | — | 3.33 | — |
| Fall River . . | 119,349 | 39 | 16 | 15.38 | 35.89 | — | 10.25 | — |
| Lowell . . . | 104,402 | 32 | 8 | 15.62 | 21.97 | — | 3.12 | 3.12 |
| Cambridge . | 100,998 | 28 | 13 | 14.28 | 21.42 | 3.57 | 3.57 | 3.57 |
| Lynn . . . . | 73,875 | 25 | 7 | 12.00 | 8.00 | — | — | 4.00 |
| Lawrence . . | 72,348 | 18 | 10 | 22.22 | 22.22 | 5.55 | — | — |
| Springfield . | 72,020 | 35 | 6 | 11.43 | 14.48 | 8.57 | — | — |
| Somerville . | 70,413 | 21 | 5 | 23.81 | 14.28 | — | — | — |
| New Bedford | 68,863 | 22 | 13 | 22.72 | 31 81 | 4.54 | 4.54 | — |
| Holyoke . . . | 50,538 | 14 | 8 | 28.56 | 35.70 | — | — | 7.14 |
| Brockton . . | 46,601 | 8 | 2 | — | — | — | — | — |
| Newton . . . | 39,310 | 9 | 3 | 22 22 | 11.11 | — | 11.11 | — |
| Haverhill . . | 39,061 | 13 | 4 | 23.10 | — | — | — | — |
| Malden . . . | 37,205 | 5 | 1 | — | 20.00 | — | — | — |
| Salem . . . . | 37,188 | 13 | 2 | 7.70 | — | — | — | — |
| Chelsea . . . | 36,499 | 13 | 3 | 15.40 | 23.10 | — | — | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 14 | 4 | 7.14 | 28.56 | — | — | — |
| Everett . . . | 30,209 | 6 | — | 33.33 | — | — | — | — |
| North Adams | 29,201 | 6 | 4 | 16.67 | 33.33 | — | — | — |
| Quincy . . . | 26,798 | 10 | 3 | 10.00 | 20.00 | 10.00 | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 10 | 3 | 20.00 | 20.00 | — | — | — |
| Brookline . . | 23,576 | 7 | 1 | 14.30 | 14.30 | — | — | — |
| Pittsfield . . | 22,870 | 13 | 5 | 15 40 | 7.70 | — | — | 7.70 |
| Medford . . | 21,956 | 3 | 1 | 66.67 | — | — | — | — |
| Chicopee . . | 21,692 | 10 | 5 | 20.00 | 20.00 | — | 10.00 | — |
| Northampton | 20,314 | 8 | 0 | — | — | — | — | — |
| Beverly . . . | 15,807 | 8 | 1 | 25.00 | 12.50 | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 6 | 1 | — | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 5 | 2 | 40.00 | — | — | 20.00 | — |
| Newburyport | 14,478 | 10 | 2 | 20.00 | 10.90 | — | — | — |
| Woburn . . . | 14,315 | 3 | 1 | — | — | — | — | — |
| Melrose . . . | 13,819 | — | — | — | — | — | — | — |
| Westfield . . | 13,809 | 3 | — | 33.33 | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 4 | 1 | 25.00 | 25.00 | 25.00 | — | — |
| Revere . . . | 13,609 | 2 | 2 | — | — | — | — | — |
| Framingham | 12,974 | 2 | 1 | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 5 | 4 | 40.00 | 40.00 | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 2 | 1 | — | — | — | — | — |
| Weymouth . | 11,350 | 2 | 0 | — | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,346; under five years of age, 912; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 713, acute lung diseases 770, consumption 370, scarlet fever 34, whooping cough 8, cerebrospinal meningitis 10, smallpox 3, erysipelas 15, puerperal fever 22, measles 31, typhoid fever 50, diarrheal diseases 78, diphtheria and croup 89.

From whooping cough, New York 2, Chicago 1, Pittsburg 2, Lawrence 1, Newburyport 1, Gardner 1. From smallpox, Pittsburg 3. From cerebrospinal meningitis, New York 7, Holyoke, Newton and Medford 1 each. From erysipelas, New York 3, Chicago 6, Baltimore 2, Pittsburg 1, Boston 3.

In the seventy-six great towns of England and Wales, with an estimated population of 15,075,011, for the week ending Jan. 2, the death-rate was 20.6. Deaths reported, 5,944; acute diseases of the respiratory organs (London) 228, whooping cough 135, diphtheria 68, measles 152, smallpox 3, scarlet fever 35.

The death-rate ranged from 11.5 in Kings Norton to 35.1 in York; London 21.1, West Ham 22.0, Brighton 24.9, Southampton 18.0, Plymouth 18.6, Bristol 20.3, Birmingham 23.3, Leicester 18.5, Nottingham 18.9, Liverpool 26.8, Bolton 21.4, Manchester 23 2, Salford 21.0, Bradford 19.3, Leeds 21.3, Hull 18.8, Cardiff 19.6, Rhondda 14.8, Barrow-in-Furnace 16 8, Preston 32.4.

## METEOROLOGICAL RECORD.

For the week ending Jan. 16, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. . 10 | 29.70 | 28 | 33 | 22 | 82 | 81 | 82 | W | W | 10 | 12 | C. | C. | 0 |
| M . 11 | 30.64 | 25 | 32 | 18 | 77 | 85 | 81 | N W | N E | 8 | 12 | C. | G. | 0 |
| T. . 12 | 30.19 | 28 | 32 | 24 | 87 | 94 | 90 | N | N | 20 | 6 | O. | N. | .02 |
| W . 13 | 29.82 | 36 | 46 | 27 | 89 | 100 | 94 | N E | S E | 6 | 14 | O. | R. | .99 |
| T. . 14 | 29.49 | 37 | 42 | 32 | 86 | 65 | 76 | S W | S W | 12 | 16 | O. | O. | .17 |
| F. . 15 | 29.86 | 26 | 32 | 20 | 70 | 56 | 63 | W | W | 15 | 10 | C. | C. | 0 |
| S. . 16 | 29.35 | 27 | 38 | 16 | 77 | 87 | 82 | S | S W | 5 | 12 | F. | O. | .10 |
| ☞ | 29.78 | | 36 | 23 | | | 81 | | | | | | | 1.28 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING JAN. 23, 1904.

A. M. MOORE, surgeon. Retired, detached from the naval recruiting station, Chicago, and ordered home.

G. B. WILSON, surgeon. Detached from the "Wabash" and ordered to the naval torpedo station, Newport, and to additional duty in attendance upon naval and marine officers.

J. E. GARDNER, surgeon. Ordered to the "Wabash."

G. P. LUMSDEN, surgeon. Detached from the naval torpedo station and ordered to the naval recruiting and marine recruiting stations, Chicago, Ill.

A. R. WENTWORTH, surgeon. Detached from the "Albany" and ordered to the "Solace."

R. P. CRANDALL, surgeon. Detached from the "Wisconsin" and ordered to the "Oregon."

M. S. GUEST, passed assistant surgeon. Detached from the "Oregon" and ordered to the "Albany."

U. R. WEBB, assistant surgeon. Detached from the "Annapolis" and ordered to the naval station, Cavite, P. I.

L. W. BISHOP, assistant surgeon. Detached from the naval hospital, Yokohama, Japan, and ordered to the "Annapolis."

R. K. MCCLANAHAN, assistant surgeon. Ordered to the Asiatic station via steamer sailing from San Francisco, Feb. 1.

## RECENT DEATHS.

EDMUND S. HANNA, M.D., a retired physician, died recently at East Orange, N. J., from apoplexy. He was seventy-five years old and a native of Steubenville, Ohio. He was graduated from Jefferson Medical College, Philadelphia, in 1850, and practiced for many years in Pittsburg, where he held the position of surgeon to several institutions and railroad companies. He had resided in East Orange for the last eight years.

J. VARNUM MOTT, M.D., a well-known New York physician and a grandson of Dr. Valentine Mott, died suddenly in Boston on Jan. 23, of cardiac disease. He was a graduate of the College of Physicians and Surgeons, New York, and fifty-three years of age. Dr. Mott had not been in active practice for some time.

EDWARD BARBILLAC DANA, JR., M.D., of Metuchen, N. J., died from pneumonia on Jan. 23, at the age of forty-three years.

## BOOKS AND PAMPHLETS RECEIVED.

The Treatment of Fractures, with notes upon a few Common Dislocations. By Charles Locke Scudder, M. D. Fourth edition. Thoroughly revised. Illustrated. Philadelphia, New York and London: W. B. Saunders & Co., 1903.

Treatment of Neurasthenia. By A. Proust and Gilbert Ballet. Translated by Peter Campbell Smith, L. R. C. P., L. R. C. S. Edin., L. F. P. S. Glasg. New York: Edward R. Pelton, 1903.

# Original Articles.

## REPORT OF CASES OF TREPHINING FOR EPILEPSY.[1]

BY JOHN C. MUNRO, M.D., BOSTON, MASS.

In reporting the following eleven cases of trephining for epilepsy I wish especially to put on record the clinical histories and the lesions found at operation. By the accumulation of such data from different surgeons some one in the future may be able to make such use of these observations as will determine with greater accuracy which patients are likely to benefit by surgical interference.

I know of no more discouraging field for the surgeon than trephining for epilepsy, and yet I cannot but feel instinctively that there is a small class of unfortunates suffering from this disease which can be helped, probably in a way at present unexplainable. I do not refer, of course, to those with recent palpable depressions of the skull nor to those with new growths, but to those in whom there may be some unsuspected lesion of the cortex, or pia, or dura, a lesion which cannot be diagnosticated except at operation or autopsy. In practically every case reported here there was some pathological lesion or abnormality found at operation but vaguely suspected beforehand. It is far too early to surmise what bearing these findings have on the causation of the epileptic attacks; that element must be left for determination after the accumulation of hundreds of such observations. Whether relief will follow operation in any group or groups of lesions such as have been found here it is impossible to predict.

In the first place, the one important element of the time of operation after the lesion has started to form is of great significance. Until we can collect the cases of late operation to compare with cases of early operation, before the epileptic habit has been formed, we are not in a position to condemn, nor indeed to advocate, early interference. Other things being equal, and judging from analogous conditions elsewhere in the nervous system, any benefit to be derived from mechanical means is more likely to come early in the course of the disease than late.

Unfortunately, the data in the cases reported here are from the naked eye and not from microscopical observation. This is a serious defect, and fully appreciated. To a certain extent it can be corrected in future undertakings.

Owing to the enormous strides in institutional treatment that have been made within the last few years by the splendid enthusiasm of the members of this Association, the surgeon has a still more difficult task ahead of him, to compete with the results now attained by conservatism. It goes without saying that a large, a very large, majority of epileptics are unfitted for operation, no matter how harmless the operation may be, but there is still a small class that stands on the border-line where surgery must be considered, and it is in this class that surgeons must interest themselves and their medical consultants. With the class of patients in whom the epilepsies are due to reflex excitation from lesions elsewhere in the body, — that is, from organized disturbances in the abdomen, pelvis, chest, etc., — this paper does not deal. I feel very sure, judging from the relief to the insane following operations for correction of lesions in the viscera and other organs, that it is important for those in charge of epileptics to search carefully for diseases of the stomach, bile passages, appendix, pelvic organs, etc. When such lesions are present, and of possible significance in producing epileptic attacks, patients should not be denied surgical relief any more than sane or otherwise healthy individuals.

To flatly tabulate my cases on the score of benefit or cure is impossible. In the first place, they have not been under observation long enough, or else they have been lost sight of and the end results cannot be obtained. In the second place, the various lesions come under so many divisions that they cannot properly be compared one with another. Some patients were doubtless temporarily benefited, but whether *post hoc propter hoc* is extremely doubtful.

Several were either not helped, or were worse after operation. Altogether, as was first stated, the outlook is far from encouraging. But if we can see enough cases of living pathology, and eventually can group these cases in numbers sufficiently large, according to the results, the duration of pre-operative attacks, etc., and compare them with the results in similar cases under institutional treatment, we shall be better able to advocate surgical interference or medical treatment, as the case may be.

For the first two cases I am indebted to Dr. F. B. Lund, who has kindly placed them at my disposal. The last three cases are from the Surgical Clinic of the Carney Hospital, one operation being done by my colleague, Dr. J. T. Bottomley, and two by myself.

Dr. F. B. Lund's first case:

C. M., male, twenty-six. Iron moulder. When five years old fell a distance of about eighteen feet, landing on top of his head. Unconscious for three days. At eighteen years of age he began to have attacks of nightmare, crying out. At twenty years of age his right shoulder, caught between two cars, was dislocated. Married at twenty-one, when nightmare became worse, in that, after crying out he would have a general convulsion. Soon he began to throw out his right shoulder during the convulsions.

In March, 1900, Dr. Lund shortened the anterior portion of the capsule of the shoulder, the result being perfect, no dislocation having taken place since. Later he began to throw out the left shoulder, and its capsule was shortened in the same way by Dr. Lund, but relapse occurred after three months during a very severe convulsion. The convulsions always come on in the night, and his wife can sometimes prevent them

[1] Read at the meeting of the National Association for the Study of Epilepsy and the Care and Treatment of Epileptics. Philadelphia, Nov. 5, 1903.

by turning him over in bed. He has bitten his tongue for years and has attacked his wife and children. At times he feels a sensation of dizziness and choking, when, if he gets up in time, he can stop the threatened convulsion. As the convulsions were growing more severe, and he was at times dangerous to his family, it was thought best to attempt operative relief.

Examination in January, 1903, showed a well-developed, very muscular man. On the vertex just to the right of the sagittal suture, at the intersection of a line erected just in front of the ear, perpendicular to Reid's base line, was a stellate scar.

Operation. The scar was turned down in a semicircular flap and a ¾-inch trephine opening made just below it. On opening the dura the pia was found adherent both to the dura and to the brain beneath. On turning back the dura several white spots of dense fibrous tissue were found on the pia, while the brain beneath was lighter and denser than normal, that is, it had the appearance of scar tissue. This scar faded off gradually into normal brain, and its exact limits could not be determined. As the location was close to the motor area it was thought inadvisable to excise the scar. The dura was replaced and sutured. The patient made an excellent convalescence, and eight days later the capsule of the left shoulder was again shortened.

The patient had one or two convulsions while in the hospital and after his return home. In September, 1903, he reported that his attacks were much less frequent and less severe, and that his shoulder had not been dislocated since leaving the hospital.

Dr. Lund's second case:

J. P., male. Fireman, twenty-seven years old. When twenty-two months old was struck in the forehead by the step of a passing engine. The skull was fractured and he was unconscious for a while, but up to five years ago no trouble referable to this injury had arisen and in other ways he had always been well. Five years ago he began to have night attacks, apparently *petit mal*, when he would suddenly stiffen and cry out. Four years ago attacks of momentary unconsciousness during the day began, generally preceded by an aura, described by the patient as a "trembling sensation." When at their worst these attacks came seven or eight times a day, but they have been controlled to some extent by bromides. Has been unable to work much for the past four years.

Examination showed an old ragged scar on the right frontal eminence, just below the hair line. A slight irregularity, but no distinct depression over the bony parts, can be made out.

Operation, Nov. 14, 1902. Dr. Lund. Under ether a semicircular flap was turned down, exposing the injured area, which was roughened but not depressed. A trephine button was removed and the bone found thin at one point. The dura bulged markedly and pulsated forcibly. Beneath the dura, in the right frontal lobe, a cavity the size of an English walnut was found, filled with a translucent semi-gelatinous substance, evidently serum and coagulated fibrin. This was evacuated and the brain beneath could be seen pulsating normally. The membrane lining the cyst cavity was not detached, the cavity being drained with gauze tape.

Nov. 17th. No recurrence of the epileptiform seizures. On the day following the operation the temperature rose to 103° and the pulse became rapid. On removing the wick a large quantity of serous fluid escaped and rubber drainage was substituted for the wick. Since then the dressing has been saturated each day with serum. Pulse and temperature again normal.

Nov. 29th. No recurrence of the seizures. The serous discharge has practically ceased, though there is a small sinus still kept open. Mental condition excellent. Discharged from hospital relieved.

About six weeks after operation the attacks recurred, following closure of the sinus. He was then operated upon by Dr. M. J. Morrisey of Unionville, Conn., who removed a larger area of bone in order to convert the cyst into a cavity which could granulate in from the edges. Relief for a long time followed this procedure, but the attacks have relapsed.

J. S., male, thirty-two. In 1890 patient was wrecked at sea, receiving a compound fracture of the skull. He was picked up by a mail-boat and landed in Philadelphia three days after the wreck, being unconscious all the time. He was then operated upon three times in one of the hospitals, and stated that epileptic convulsions followed these operations. Five years later he was operated upon twice in a Chicago hospital, and at one of these operations, according to his statement, a bit of an instrument as large as the finger-nail was found. Since then he has had but one convulsion, but is troubled with twitching of the hands and arms, and thinks this twitching is more marked on the right side. Does not use alcohol nor tobacco. His family history is excellent. The account given of his various operations varies at times, and it is difficult to unravel all of his statements. After his last operation in Chicago he gained weight, and is said to have had only one severe convulsion, and now complains more of the twitching than anything. At times, during this twitching, he drops anything that he holds in his hand, and occasionally falls. Urine negative.

Shortly before admission, patient stated that he received a blow on the head over the area of trephining, followed by a convulsion on the following day, with vomiting and nose-bleed. No paralysis. In the parietal and occipital regions there are numerous scars showing incisions of the former operations.

Operation by the writer June 11, 1890, at Boston City Hospital. Ether. Left occipito-parietal region covered with scars from earlier operations. Inverted U incision outside the edge of former trephine opening. Posterior and median portion of opening thickened on the edge. The outer portion, where the patient complained of tenderness, was also thickened. The former trephine opening was covered with a thick, tough layer of cicatricial tissue, in which a fragment of gold leaf, said to have been embedded in a previous operation, was seen. The thickened edge was gnawed away until healthy bone was reached, in all, a segment about one inch by a half inch being removed. The pia beneath this portion was dark, thickened and rough. Exploration of the under surface of the bone showed no further abnormalities. Patient in excellent condition after operation.

June 15th. Patient in excellent condition, free from pain, no convulsions or twitching.

June 19th. Wound dressed. Primary union. Has been around the ward for three days. No symptoms except his mental symptoms. He tells many stories of shipwrecks in which he has been—says that he has been an officer on board yachts of the Prince of Wales and of the Rothschilds. Discharged to the neurological department.

Seven months later the patient reported that he had never been so well since the original injury and that he had had only two slight convulsive attacks, each one affecting his right fingers for a moment while writing. He had been in charge of the neurological

department for general nervousness, evidently of a marked character, but it was learned later through an acquaintance that the patient had had at least two or three epileptic attacks of a severe type, he not being conscious of their onset.

L. C., female, fifteen. Italian. Referred to the writer by Dr. H. C. Valentine. Admitted to the City Hospital Aug. 22, 1898.

Father died of Bright's disease. Three sisters and three brothers died in infancy from unknown cause.

When fourteen months old she fell, striking her head. Convulsions followed for a while and then disappeared for several years. She has frequently bitten her tongue, and from her friends she knows that her face twitches considerably during an attack. The attacks come irregularly, sometimes once a week, or every day for a week, and then at intervals of a month or more.

Examination of the head, negative.

Referred in consultation to Dr. W. N. Bullard, who advised exploratory trephining.

Operation. Ether. U-shaped flap opening over arm center, on right side. Protusion and very faint pulsation. Dura not thickened. Skull thick and tough, but apparently not pathological. Opening enlarged considerably and the dura slit. No excess of subdural fluid. Ventricle tapped, but no excess of fluid found. At one spot on a convolution, apparently at or near the arm center, the cortex looked darker and more opaque than normal over an area about three-eighths of an inch in diameter. This area was excised for diagnosis. Elsewhere the brain looked and felt normal. Pulsation had returned after the various tappings, but without any evidence of an excess of fluid having been withdrawn. Dura sutured loosely and the skin closed, allowing for a rubber tissue drain.

Aug. 26th. She rested poorly during the night after operation, and had several spasms early this morning, complaining of headache.

Aug. 27th. Much better, slept well, no symptoms.

Aug. 29th. Wound dressed. Clean. Wick removed.

Sept. 2d. Wound practically healed, one spasm early this morning.

Sept. 15th. Patient has been up and about the ward for a week, always in company with another patient. No subjective symptoms. Discharged to neurological department.

She improved for several months, then returned to Italy and has been lost sight of.

The specimen returned for examination was lost.

J. E. E., male, aged twenty-six, carpenter.

Was seen with Dr. L. F. Hatch in December, 1897. Family history excellent, general health good. Knows of no causative injury to his head, except a blow while coasting when a boy of twelve. Was not unconscious at that time and did not regard the injury as of any moment.

When about twenty years of age his first and most severe epileptic attack came on, without any warning. The attack lasted throughout the night, one convulsion succeeding another. Two days later the convulsions returned, lasting for three weeks, the separate fits following one another at intervals of a few minutes to an hour. Since then they have come on more or less frequently at intervals varying from a week to three months. One year ago had a severe attack, and was more or less upset for a week with exhaustion and mental disturbance. Lately the attacks have been less severe, but he has complained more of dizziness than heretofore. The attacks come by night or day, with warning, lasting for about five minutes. The attacks themselves last about two minutes. He does not lose consciousness, though he may do things of which he has no recollection. Rarely bites his tongue. The attack starts with spasmodic flexion of the left leg and thigh, spasm of the left trunk muscles and spasmodic abduction of the left upper extremity, which can be controlled, in the lighter attacks, with his right hand. The head is drawn to the left. There is no frothing at the mouth.

He has been on mild bromide treatment, as heavy doses affect him mentally, and he refuses to take the drug except to temporarily control his dizziness.

General physical examination, negative.

Was seen in consultation by Dr. W. N. Bullard, who advised trephining.

First operation at Boston City Hospital July, 1898. Ether. Trephine opening made over the fissure of Rolando near or over the leg center. Dura pulsated very slightly and was more tense than normal. Upon being opened, serum escaped in moderate quantity. Electric current used to stimulate the centers, but the result was unsatisfactory. In the sulcus, apparently at its superior genu, there was a depression filled with edematous pia, the latter having opaque white spots about an eighth of an inch in diameter, in its substance. These spots extended anteriorly and laterally for a short distance beyond the limit of the bone opening. On both sides of the depression, in the sulcus, the convolutions felt normal. Exploration with a director failed to show anything abnormal within the brain. Towards the end of the operation, though the brain bulged slightly, there was much better pulsation. The dura was stitched lightly and the skin sutured, leaving an opening for a temporary drain of rubber tissue.

Convalescence was satisfactory, and he was discharged in two weeks for observation and medical treatment. There was no definite gain for about six months, when he began to improve, but in the spring of 1899 he had a series of severe convulsions lasting two weeks. After this he had no attack until November, 1899, after which date he had two slight convulsions, and he considered himself a good deal improved. He found that he could work most of the time, the attacks being limited to slight dizziness without loss of consciousness. He feared, however, a severe outbreak in the coming spring and was anxious for another operation.

After further consultation with Dr. Bullard, a second operation was performed in May, 1900, again at the Boston City Hospital.

Second operation. Ether. Horseshoe incision, carried about three-quarters of an inch beyond the old scar. In dissecting the dura from the brain in the old opening, the brain was intimately adherent in the posterior half. Anteriorly it was not adherent, pia being cloudy, bluish and with opaque spots, as at first operation. From the edges of the bone there were growing several flat projections, not pressing inwards against the brain, but apparently being new bone shooting out from the edge of the first trephine hole over a distance of an eighth to a sixteenth of an inch. The opening was enlarged forwards for an inch and the dura reflected, showing a cloudy, bluish pia with opaque spots, more or less enclosed in a triangle of large veins an eighth of an inch or more in diameter. These veins were ligated with catgut at the periphery, and the enclosed pia, with its small piece of convolution, was removed. Beyond this area the pia appeared to be healthy for the most part. Several pial and dural vessels gave troublesome hemorrhage. The dural flap was sutured and the skin closed, allowing for an iodoform gauze wick drain.

The patient stood the operation, which was a long

one, fairly well. Within twelve hours he had a general clonic convulsion and a left hemiplegia was noticed by the attendant for the first time. Face and tongue not involved. The paralysis of the lower extremity disappeared by the fifth day, and by the time of his discharge, sixteen days after operation, the paralysis of the upper extremity was disappearing, although all motions were weak. After two months of electrical treatment all paralysis disappeared.

Five months after operation there had been no definite improvement. He had had occasional convulsions, the attacks starting in the left upper extremity and not in the leg, as heretofore. He has bitten his tongue occasionally. The dizzy spells which had troubled him before operation, however, had disappeared.

I then lost sight of him until October, 1903, when he reported that up to November, 1902, he had had attacks every few weeks but without interference with his work. Since November he had gone ten months without any attack, but in the last month he had had two or three very slight attacks.

In his old attacks he always had a forewarning, often feeling a strong desire to run away to some place and lie down, but latterly the attacks come on easily, without any feeling of fear or weakness, and he keeps at work and goes about without fear of a general convulsion. Has had only one night attack since operation.

His left hand is as strong as before, but the fingers are a little clumsy in handling small nails, that is, he is slow to pick up and adjust a nail. He feels that his fingers are not so responsive to his will as before operation.

His general health is good, and mentally he seems to be the same as when he first consulted me. He takes from 1 to 3 dr. of bromide after his work is over, and has done so for months, but the amount is less than that which he was taking when the attacks were severe.

He himself feels that there has been a marked and satisfactory gain, but, like myself, he is skeptical as to the *role* played by the operation in the improvement.

Examination of the firm depression at site of operation shows no tenderness.

T. M., male, nineteen. Student. Referred to the writer for operation by Dr. P. C. Knapp, who has kindly given me the following history, which I quote in his own words:

"T. M. Consulted me first April 24, 1899. Family history: Father excessively hysterical, mother extremely nervous, mother's brother had hemiplegia with ephasia. This young man had always been in good health until the autumn of 1897, when he was shut up in a closet at school by some of his schoolfellows and endeavored to get out over the transom. The transom fell upon his neck, and he was said to have been nearly strangled. Not long after, while playing football, he was kicked in the back of the head, but was not rendered unconscious. Some time in the following spring he began to have attacks in which he suddenly lost consciousness, moaned slightly and fell forward without any convulsive movement. When I first saw him he was having a number of these attacks each day, and they would come on in his sleep, throwing him out of bed. He had several of these attacks under my observation, in which he suddenly fell forward from the chair to the floor and gave a slight moan. There was a slight quiver of the limbs. After forty or fifty seconds he regained consciousness, seemed somewhat dazed for two or three minutes, and then picked himself up without further trouble. One of these attacks came on while examining his head and pressing upon the place where he said he had been kicked.

"Physical examination was negative, except that the right arm was somewhat weaker than the left and there was a very slight blunting of sensibility there. He was a very powerful, muscular fellow, of good habits, and with no history of previous disease. Examination of eyes negative.

"He continued during the term as a student, doing well in his studies and being apparently normal in the intervals between his attacks. Under bromide the attacks diminished very markedly in number, so that by June he was having them at the rate of one in two or three weeks. He was given a mixture of bromide, codeia and adonis vernalis. In July he went with his family to the seashore, and while there continued the above treatment, having attacks at longer intervals, once in three or four weeks. He seemed to his family rather nervous in regard to these attacks and to be considerably disturbed because he had one or two of them in company. In August, while at the seashore, he states that he saw some rum in the house and took a large drink, nearly a cupful. His brother regards this statement as exaggerated — he probably took very little. Soon after that, in the evening, he was attacked in a different form from his previous attacks, having the idea that he saw snakes, which were coming toward him, and became violently maniacal for a period of from half an hour to an hour, struggling violently with every one who came near him. The attack ceased instantly as soon as the physician who was called inserted the needle under the skin to inject morphine. The following day he had one or two more attacks and was taken to Winchendon. While there he had several similar attacks, in which he was extremely violent — split open the straightjacket by muscular contractions, simply throwing his shoulders forward, and was more than four strong attendants could handle. In the intervals between the attacks he was perfectly rational, bright, cheerful and normal. At the request of the family he was brought to the Boston City Hospital for operation."

Aug. 9, 1899. Operation. Dr. P. C. Knapp and Dr. Taylor of Sag Harbor present. Ether. U incision in the right occiput over tender area. Trephine button adherent to dura. Nothing about the skull in the neighborhood felt abnormal. Dura quite firmly adherent along the right lambdoidal suture. The dura bulged into the opening and scarcely pulsated, its tension being abnormally increased. It was then opened, and the brain bulged out to beyond the outer surface of the skull and scarcely pulsated. The opening enlarged to an inch and a half in diameter. Nothing definite was felt on palpating the brain except the abnormal tension. A director carried around outside and inside the dura showed nothing. Without more definite localization, and on the chance that more extensive exploration would be needed later, it seemed best to stop and complete the operation at another sitting. Dura not closed, skin sutured, allowing for rubber tissue drain. No shock followed operation.

Sept. 20. Patient has been up and about the ward and out of doors for some time past. No convulsion for seven or eight days. Discharged relieved.

A better result followed the operation than was anticipated. Considerable fluid oozed from the wound for a while. The protrusion of the brain disappeared, leaving a normal pulsating scalp, and the convulsions became much less severe and frequent, and by the end of six weeks he was so much improved that it was deemed best to discharge him in the care of a physician and await developments.

To return to Dr. Knapp's report:

"During the convalescence from the operation he had a few attacks in which he saw snakes and became violent. He had only one in my presence, and that was very brief. I learned afterwards that he stood in considerable awe of me. Other attacks were suppressed by throwing cold water upon him. He was taken to Bloomingdale, where he remained for a number of months. While there he had comparatively few attacks, and after a time he felt himself that his condition had cleared up and that the operation had been an excellent thing for him. While at Bloomingdale he made an attempt at suicide, which was apparently merely a dramatic display, without any real intention to commit suicide.

"In May, 1900, he returned to Boston, expressing himself as feeling well, but weak. The following autumn he resumed his studies, and had no more attacks of either the convulsions or maniacal outbursts, but he frequently spoke of having attacks of weakness in which his heart gave out. During the following year he complained a good deal of his heart, as having attacks of palpitation and cardiac weakness, but there was never any objective evidence of any disturbance of the heart. At one time he went to his physician in Cambridge, dropped upon the lounge and stated that he had taken an overdose of digitalis and was suffering greatly in consequence. On investigation, the amount of digitalis taken was small, and he showed no indications of digitalis poisoning.

"He was for the next year or two, while under observation, decidedly hypochondriacal, had more or less digestive disturbance; but was free from any convulsive attacks. He continued to do his work as a student, graduated with high honors, and finally married, since which time I have heard nothing of him."

G. A. L., male, twenty-one years old. Referred to the writer by Dr. H. O. Benner. One of sixteen children. Always well until June, 1896, when he was hit high up on the right side of the head with a bottle. A month later he fell from a swing and was unconscious for four or five days. In falling he is said to have struck the left side of his face. Hemiplegia followed, disappearing in two or three months, after treatment at the Framingham Hospital. Following his discharge in September, a clear history cannot be obtained, but no account of convulsions can be secured from the family, while he was at home, until February, 1898, since which date they have been growing more and more severe and his mental condition has been steadily deteriorating. The convulsions come at intervals varying from five days to three months, and lately he has been very irritable and cross. There is no family history of epilepsy on either side, but the family is unintelligent. No definite history of alcoholism in his parents can be obtained.

Operation Sept. 26, 1900, at the Framingham Hospital. Ether. Just before operation he had six convulsions, the spasms, according to the observation of the nurses, beginning in the right foot and remaining most marked in the right lower extremity. Horseshoe flap over the upper end of fissure of Rolando, on right side, where lay a well-marked scar. The bone itself showed no evidence of injury; the dura, without thickening or opacity, was moderately tense and pulsated slightly. The opening was then enlarged medianwards nearly to the edge of the sinus and downwards along the line of the fissure. On turning back the dura, the fissure of Rolando, an anterior and a connecting fissure, showed opaque white pia stretched across, with enlarged veins beneath. The pia was cut in line with the fissures and some of it removed. The enlarged vessels were ligated with catgut. Palpation showed no evidence of tumor. There was moderate bulging of the brain, which could be pressed back without difficulty. The dura was sutured lightly and the wound closed, allowing for a rubber tissue drain.

After operation the mental condition improved quite a little. The wound healed aseptically, and he had no convulsions until Oct. 12, when he had seven.

Oct. 26th he had four slight convulsions; Nov. 13th, six bad convulsions; Nov. 22d, one slight convulsion, while in the street.

For two or three months he seemed to improve somewhat, the attacks not coming so often nor being so severe in character. After this, however, he became worse, and about two years after operation he was committed to an insane asylum.

E. O'B., female, seven years of age. Admitted to the Boston City Hospital Jan. 16, 1900.

Family history negative. Talked well at eighteen months and was a bright child until the accident.

Four years ago fell from a hammock, getting up and running about as usual. A lump the size of an egg appeared in the occipital region shortly afterwards. She was well for a week, when, early one morning she had a universal spasm, — the tongue not being bitten, — and she became unconscious. She was kept under ether all day, the spasms returning as soon as the ether was removed. For three weeks after this she could not talk plainly, and the left side was paralyzed. A month later she is said to have been well, then had a slight convulsion and fell, but without loss of consciousness. The convulsions since then have come on three or four times in the day, with occasional intervals lasting several months. Dec. 26, 1899, she fell down a flight of stairs. No convulsion at the time, no loss of consciousness. But since then has had five slight convulsions. Does not bite the tongue and knows when the attacks are coming on. The convulsions are first tonic, becoming clonic. Appetite at times ravenous, at other times poor. The child is feeble-minded, feeds herself with a spoon, and does not talk as plainly as formerly. Unable to go to school on account of restlessness; at times is cross and violent. Seen in consultation with Dr. W. N. Bullard.

Examination shows her to be a mouth-breather, with protruding tongue, drooling constantly, and with a vacant stare. Skull shows a symmetry in the right occipital region, with a rounded protrusion 3 cm. in diameter. Pupils react normally. Is right-handed.

Jan. 16. Slight convulsion to-day; did not bite tongue nor lose consciousness.

Jan. 19th. Operation by writer. Ether. U-shaped flap. Button removed a little in front of the motor center and low down. Enlarged upwards, forwards and backwards. No pulsation of dura, no enlargement of the meningeal vessels that lay across the opening. Dura about twice the ordinary thickness and slightly adherent to the bone in front of the coronary suture. The dura was opened anterior to the meningeal vessels, and a cloudy edematous pia bulged out beyond the level of the dura. On puncturing the pia considerable pial fluid escaped; no subpial fluid. With the escape of the fluid pulsation appeared. A director passed into the brain met with moderate resistance about half an inch from the surface. With the loss of fluid and retreat of the brain from the skull, the finger passed over the surface, felt that below the trephine opening — that is, nearer the temporosphenoidal area — the brain was more indurated than

elsewhere, but no definite growth could be determined. With the escape of the fluid the pulse rose considerably, but not alarmingly. The brain itself looked normal, the pia being cloudy and the dura thickened. Dura lightly sutured and the skin sutured, allowing for capillary drainage.

Jan. 21st. Wick removed. Slight serous discharge. Wound clean. No symptoms.

Jan. 30th. General convulsion to-day; first one since operation.

Feb. 7th. General convulsion. Pupils were dilated and did not react to light. No deviation to the eyes. Mouth open. Did not bite the tongue. Apparently unconscious. Incontinence of urine during the convulsion. Left hand open; the right fingers clinched over flexed thumb. Convulsions more marked on right side, the whole attack lasting about ten minutes. Afterwards she was drowsy and slept for a while.

Feb. 7th. Second operation. Ether. U-shaped flap in occipito-parietal region, the anterior leg crossing the scar of the posterior leg of the first wound. Under the first wound the space between the dura and the skin was filled with tough granulation tissue, the dura itself not being thickened nor appearing abnormal in any way. Starting from the posterior edge of the old trephine opening, a large space was gnawed out posterior to the lambdoidal suture and inferiorly nearly to the level of the tentorium. Throughout the whole of this area, after opening the dura, which pulsated slightly, the pia was cloudly, as at the first operation, and bulging from serum which leaked out steadily. The pia in the posterior — that is, occipital portion — was seen to stretch over a large cyst cavity, with several tortuous vessels of the size of a normal superior profunda artery running in its meshes, intermingled with a bunch of congested veins and a lot of yellowish strands that resembled scar tissue. On opening the pial membrane between the vessels a spherical cyst, two inches in diameter by measure, was found occupying the region of the occipital lobes or else pushing the latter forward, producing in this way the indurated condition found at the first operation. The posterior wall of this cyst was formed by the skull, the inner wall was formed, apparently, by the central ganglia, and the wall of the lateral ventricle, as a bluish translucent area, could be seen in the region of the ventricle. The floor was formed by the tentorium and the anterior wall by compressed brain, the latter projecting backwards slightly at the surface, forming a distinct, sharp edge. The cyst contained yellowish serum. The dura was sutured with catgut, leaving an opening posteriorly for drainage. The scalp was sutured, allowing for a cigarette drain.

The patient stood the operation fairly well, the pulse rising with the evacuation of serum.

Feb. 9th. Drain removed. About 3 dr. of clear fluid escaped. Wound clean.

Feb. 12th. Very irritable. Temperature 101.

Feb. 17th. Wound healed except at the lower angle, where rubber dam allows serous discharge. Sinus two inches deep, half an inch in diameter. Rubber dam drainage.

Feb. 25th. General convulsion. The first one since the second operation.

March 1st. General convulsion.

March 4th. Sinus healed. Drainage removed. No discharge.

March 20th. Wound healed. Apparently no mental improvement.

March 21st. Patient apparently improved for a while after second operation, and then elapsed back into original condition.

March 21st. Third operation. Ether. Short incision. Half an inch in front of the posterior edge of the skull an opening was made. Beneath this opening lay the expanded brain tissue, somewhat edematous, with a clear pia. Posterior to this was a small cystlike depression not over half an inch in diameter, from which clear serum escaped. So far as could be told, the brain had expanded to within one half an inch of its normal limit. Rubber tissue drain. Wound sutured. Gauze dressing.

March 25th. No improvement. Good appetite. General condition excellent.

March 31st. There has been, possibly, slight improvement in general condition, more marked some days than others. Is more careful about wetting the bed and drools less. Mentally she seems to be a little improved, but still has epileptic attacks. Over the area of trephine opening there is normal pulsation.

Discharged relieved.

The three following cases are from the Surgical Clinic of the Carney Hospital:

CASE XXXI. S. V., male, thirty-three years old. Harness maker. Referred to writer by Dr. H. C. Valentine.

Family history negative. When eight years of age a wagon-wheel ran over his head, leaving a scar on the right side near the inner orbital angle. In October, 1899, he was struck on the head by a block of wood, the skull being exposed. He was unconscious for a time. One year later he began to have a tingling sensation in the ends of his fingers in the right hand, but not in the thumb. In October, 1902, these tingling sensations, instead of passing away, were followed by flexion of the fingers and of the wrist, with tremor of the arm, followed by stiffness. He describes a feeling as of "something tightening" inside his head before he becomes unconscious. Since October he has had three attacks, in February, May and June of this year. The attacks come about 4 A.M. and last half an hour. Otherwise he is perfectly well. Seen by Dr. W. N. Bullard, in consultation, who advised operation.

June 13th, 1903. Operation by writer at Carney Hospital. Ether. Trephine opening made over the arm center on the left side. Dura tense, bulging, with very slight pulsation. Pia and brain beneath the opening normal. Forwards and upwards, beneath the scar in the scalp, was a slight, smooth, rounded bulging on the inner table. This was removed with the rougeur. On opening the dura at this place the pia seemed normal. The cortex in this convolution of the anterior arm center looked a little more opaque than the posterior convolution; otherwise negative. The ventricle was tapped and several drachms of clear fluid escaped under moderate pressure. Pulsation and tension returned to normal. Dura loosely sutured and skin closed, allowing for a rubber tissue drain. The patient had a little headache following the operation, but otherwise convalescence was satisfactory. On June 25th he was discharged with the wound healed, normal pulsation of scar, and with no subjective symptoms, except slight pain in the right forearm in the afternoon and occasional tingling in the tips of the fingers of the right hand.

Oct. 31st. Patient reports that he has had no epileptic seizures and has gained twenty pounds. About once a week he has a fleeting tingling in the right fingers or anterior surface of the wrist, but without any twitching, and the headaches have disappeared. He has returned to his regular work. There is normal pulsation of the scar and he appears to be in good general health.

No. 223. M. L., school boy, fourteen and a half years of age. Father died with meningitis and several members of the family have died of pulmonary tuberculosis. Patient always strong and healthy. In August, 1903, while stooping down to examine a leak in a hose pipe, he remained stooping for some time, until discovered by his brother, when he seemed dazed, and at first did not answer when spoken to. He remained in this condition for four hours, when he recovered consciousness, spoke and recognized his friends, but complained of steady severe headache on the right side of his head, and vomited. During the night he slept well, but awoke with headache, from which he recovered almost completely. Twelve days later he was sent to a store on an errand, and as he did not return his mother went in search of him, and found him in another store in a dazed condition similar to that in his preceding attack. Two days afterwards the left side of his face began to twitch, he frothed at the mouth, bit his tongue and became unconscious. Chloroform was given to relieve the attack. He entered the hospital Sept. 1st, still suffering from similar attacks, except that the left arm was involved in addition. He had two attacks on the cars going to the hospital.

Physical examination. Negative. Patient complains of headache.

Sept. 2d. Four spasms to-day. Conscious but unable to speak. Knows when the attack is coming on and gets into bed. Has severe headaches afterwards. Is promptly relieved by choloroform.

Sept. 3d. No frothing at the mouth in the attacks to-day. Left arm and leg involved.

From Sept. 4th to the 8th he had two or three convulsions a day and at times seemed very stupid. No Babinski; knee jerks normal; eyes normal.

Sept. 10th. Delirious at times and stupid between the attacks of delirium. Is apparently worse.

Sept. 11th. Operation by Dr. J. T. Bottomley at Carney Hospital. Ether. Trephine opening over the face center of the right side. On opening the dura the brain protruded, but nothing particularly abnormal was found, except that possibly the brain appeared somewhat softer than usual. Several attempts to tap the ventricle brought no fluid. The opening was enlarged backwards and upwards and a small portion of the brain tissue approximately over the face center excised. Dura sutured and skin closed. He recovered well from ether and complained only of slight headache. No paralysis nor convulsions followed the operation, and twelve days later, when he was discharged, he had had no return of his symptoms, the pulsation over the wound being normal.

When heard from Nov. 1st there had been no return of his trouble.

F. L. K. No. 352. Carriage painter, referred to the writer by Dr. Hamblen of Bedford and Dr. W. N. Bullard. Thirty-nine years old, without history of insanity, alcohol or tuberculosis in his family.

Struck the right fronto-parietal region of his head, three to four years ago, against a protruding knob in the limb of a tree. The blow was not a severe one, but was followed by a lump which persisted for several months. From the time of the accident he has had more or less pain at the seat of injury and immediately preceding his epileptic seizures the pain is increased.

The first epileptic attack came in June, 1903, and headaches which he had been complaining of before that time became severe, at times "almost driving him crazy." These headaches lasted from a few minutes to twelve hours. His first attack came while he was working in a garden on a hot day. He was unconscious for one and one-half hours.

A week later he had a second attack, falling off of a couch. Under bromides he went without an attack for five weeks, when, after overeating some bananas, the fits returned, coming at first every week and lately every day or two.

He is said to have had pulmonary tuberculosis some years ago, with subsequent healing of the cavities. He also had excision of the left elbow for tuberculosis, at the Waltham Hospital, six years ago, with excellent result. Otherwise he is a healthy, strong man.

His attacks begin with choking or gurgling, clinching of both hands, spasms of legs, relaxation and cyanosis. In some attacks he has bitten his tongue badly.

In right frontal bone, just over coronal suture and two inches from median line, is a slight depression of skull which is always and distinctly tender to pressure.

Operation by writer, Oct. 31st, 1903, at Carney Hospital. Ether. U-flap within the hair line. Trephine opening a little posterior and to outside the depression, which lay in the coronal suture. No depression of inner table. Normal tension and pulsation of dura. Opening enlarged forwards to include sensitive area. On turning back the dura the pia-arachnoid in this region appeared markedly opaque, edematous and at least $\frac{1}{16}$-inch thick. In the meshes were numerous grayish, opaque miliary nodules, tubercular in appearance. The largest of these were dissected off with the including membrane. Subdural exploration in the neighborhood failed to show any bony depressions. So far as could be told the lesion was confined to the region of operation. Pressure on the pia-arachnoid forced out the edema. The brain itself looked normal. Dura sutured loosely and the skin closed allowing for a rubber tissue drain. No shock.

## SOME CONCLUSIONS BASED ON A STUDY OF ONE HUNDRED AND THIRTY-FOUR CASES OF CALCULUS IN THE URETER. WITH A REPORT OF THREE NEW CASES.

BY BENJAMIN TENNEY, M.D., BOSTON.

Case I. Reported through the courtesy of Dr. J. W. Elliott. Female, thirty years of age, previously operated on for gallstones and later for adhesions about the pylorus.

Sixteen days before entering the Massachusetts General Hospital she had a severe attack of pain in the region of the right kidney, extending down the right leg, not entirely relieved by a grain of morphine. The next day she passed bright red blood in her urine. Subacute pain was present all the time, and she was under the influence of morphine most of the time.

On examination some resistence and tenderness was found in the right flank. Urine was brownish-red in color and showed a slight trace of albumen, and the sediment contained considerable pus and red blood corpuscles.

The x-ray plate showed a shadow in what would be apparently the course of the right ureter, one and a half inches above the crest of ilium.

Operation, Feb. 5th, 1901. Patient on left side. Long incision across loin, dissection carried down to kidney. The kidney and ureter were exposed, and the ureter was found dilated about two inches below the pelvis. A calculus was felt at the lower end of the dilatation. Ureter cut and calculus removed. Ureter sutured with interrupted silk intestinal sutures. Wick of gauze left in for drainage.

Feb. 12, patient complained of blindness and had four convulsions. Passed 15 oz. of urine on the day previous with 6 grm. of urea. No vomiting — able to swallow. The patient became comatose and died during the day.

At autopsy — a hemorrhage was found under the capsule into a small cyst in the right kidney. Cavity in kidney showed no definite lining. Capsule adherent. Cortex 5 mm. thick, and pale. Renal calices and pelvis slightly dilated. Complete healing apparently taken place at point of incision in the ureter. No stones found anywhere. Left kidney showed a number of small cysts filled with a gelatinous straw-colored material. Renal substance presented no other lesion worthy of note.

CASE II. For the privilege of reporting this case, I am indebted to Dr. J. F. Thompson of Portland, Me.

Female, aged twenty-seven. Came to the Maine General Hospital in June, 1901. She gave a history of pain in the left side, paroxysmal in character, which began in the region of left kidney and extended down along the line of ureter into her pelvis. Pain had been present several months. Urine showed red blood corpuscles and an occasional white cell. There was also tenderness on pressure. Provisional diagnosis, stone in kidney.

At operation the kidney and pelvis were thoroughly explored and no stone found. The ureter was not examined. Capsule was slit and the kidney replaced without drainage. Pain was entirely relieved for several months, but returned.

She came to the hospital again in May, 1902, with severe pain in the region of the left ovary and very little pain in back. Hysterectomy was advised and performed by another surgeon, but no relief followed the hysterectomy.

Her attacks of pain continued till February, 1903, when the pain suddenly ceased, and within a few days she passed a calculus the shape of a beechnut, about one-quarter inch in longest diameter. Since then she has had no pain.

CASE III. Personal.

Female, thirty-six. Nurse. In 1893 a double ovariotomy was performed in Washington, D. C., after seven years of invalidism. The details of this I have not been able to get from the surgeon. Her recovery from the operation was slow, but she steadily improved until December, 1901.

In 1899 she had an attack of colic in the right side, which was supposed to be due to "congestion of the liver." December, 1901, she had an attack of renal colic in the left side, lasting from 8 A.M. till the next day, during a part of which she was delirious.

She had an attack in March, 1902, and again in August and November. Previous to the attacks of colic she noticed that she passed less urine than usual, and after the attacks there was always an increased quantity for twenty-four hours.

During the attacks the pain extended downwards into the bladder, but was never referred to any other location than the urinary tract. Nausea always followed the attacks. She usually had a time of "not feeling just right" for an hour or so before the colic began.

Following the attack of December, 1901, she had some hematuria. At time of examination, January, 1903, her urine was 1002, clear, and showed almost no sediment with the centrifuge, but there were a few epithelial cells and some red and white blood corpuscles. There was decided tenderness along the line of the left ureter, from the left of the umbilicus down. Vaginal and rectal examinations showed nothing abnormal except marked tenderness at entrance of left ureter into the bladder. An attempt was made to catheterize the ureters without anesthesia, but the posterior wall of the bladder was held back so that the orifices of the ureters could not be made out, even with knee-chest position. An x-ray examination was suggested, but refused by the patient. Provisional diagnosis — intermittent obstruction of the ureter probably due to stone. Operation Jan. 14, 1903. Dr. H. M. Chase assisting.

Incision posterior to border of external oblique. Kidney exposed — normal color and about double normal size. Walls of pelvis and of ureter decidedly thickened. No stone or other obstruction found within reach of hand.

The skin incision was continued downwards along the line of ureter and a second opening through the muscles made by separating their fibers over the point where the ureter crosses the iliac artery. The ureter was lifted up with the peritoneum, but quickly isolated by means of intermittent traction on the kidney through the upper opening.

Following the ureter from the upper to the lower incision the fingers met without discovering anything abnormal. Following the ureter into the pelvis, a nodule was felt an inch below the point of crossing the iliac artery.

After considerable manipulation the nodule was pushed up and followed along the ureter into the pelvis of the kidney, from which it was removed through a small incision. It was intended to pass a catheter through the pyelotomy wound into the bladder, but the ureteral catheters had been boiled, and it did not seem advisable to pass such ragged instruments, so the ureter was followed down with the fingers to its insertion in the bladder wall and no further obstruction was found. The pyelotomy wound was closed with a catgut suture. The lower abdominal incision was closed up solidly, and a wick of gauze was left in through the upper incision for drainage. The stone measures 1 cm. long, 8 mm. wide and 5 mm. thick. It is very rough and shows a groove on one flattened surface.

Seven hours after operation she was catheterized and four and a half ounces of smoky urine, with a large trace of albumen, was withdrawn.

Her convalescence was uneventful, except that on the 21st day she had a sharp attack of colic which lasted for about two hours and following this there was again a passage of smoky urine. No crystal was seen at this or any subsequent time. Her urine has been examined at least once a month up to July, 1903, and has shown neither blood or albumen since Feb. 22d.

In spite of the rarity of these conditions there is already a considerable literature on the subject. An article by Dr. Benjamin R. Schenck, in Vol. X of the Johns Hopkins Hospital Reports, closes with a very accurate table of 101 cases, nearly all of which have been verified from the original reports. To this list I have been able to add thirty-three cases, which appear in a table at the end of this article.

One very striking thing in connection with the detailed history of these cases is that a large proportion of patients had been previously operated upon for some other condition. In at least four cases gallstones were removed, in two cases operation was performed for extra-uterine pregnancy, in one case a varicocele was operated on, in several cases appendices were removed, but the most frequent previous operation was ovariotomy. Probably very few of these were operations for mistaken diagnosis, as abnormalities undoubtedly existed in the organs previously approached, and yet this suggests the difficulty of diag-

nosis between the symptoms produced by an impacted ureteral calculus and certain other pelvic and abdominal conditions.

Seventy-four of these cases were females and fifty-eight males, the sex not being stated in two cases.

### SYMPTOMS.

The suffering and shock from an attack of colic may be sufficient to produce vomiting, fainting, delirium, temporary paralysis of the intestines, and be followed by very great physical prostration, or it may be described as a discomfort or heavy sensation in the side. The pain is felt in the loin, in the pelvis, in the urethra, in the testicles, and, in one case, was referred to the inner side of the thigh.

Between the attacks there is usually a period of freedom from pain, which may last for a few hours or for months. The pain seems to come on when the urine is dammed up behind the stone, or when the calculus is moving from one location to another. Preceding the attack there is sometimes a period of discomfort, with a diminished excretion of urine, which the patient learns to recognize as a warning. Following the attack a polyuria amounting to some pints within a few hours may appear. These symptoms of an intermittent hydronephrosis are reported in many of the cases. There is nothing about the pain which in a single attack will surely differentiate it from some other abdominal conditions, but the history of repeated attacks of the same or similar character makes the pain and its location valuable aids to diagnosis.

Another symptom is the presence of blood in the urine. Tuffier [1] considers that red blood corpuscles in the urine after physical exertion, and a history of recurrent attacks of colic, make sufficient evidence on which to base a diagnosis of stone above the bladder. This condition of recurring pain with slight hematuria may persist for years without causing further symptoms. In one case the attacks of pain extended over a period of thirty years, but it is unlikely that a stone of sufficient size to produce real obstruction can remain so long without causing damage to the urinary tract above its location.

Most of the writers on this subject agree that the symptoms of stone in the ureter are not often to be distinguished from those of stone in the kidney. This seems to be especially true where the stone is located above the brim of the pelvis. With the stone located below this point, the pain is more apt to be referred to the bladder — sometimes to the testicle in the male and sometimes to the urethra in either sex.

### LOCATION.

The location of these stones in the ureter has been in a general way in one of three places which correspond to the points of narrowing described by recent writers on the anatomy of the ureter. The first point of narrowing is about 7 cm. down, the second just above or below the brim of the pelvis and the third as the ureter enters the bladder wall.

Henry Morris [2] and Byron Robinson [3] practically agree in giving the diameters of these three points of narrowing; the first being about 3.2 mm., the second 4 mm. and the third about 2½ mm.

The number of stones in this series of 134 cases caught in the different locations corresponds very nicely to these diameters — 35 being caught in the first isthmus, 18 in the second and 73 in the third. In the other cases the location is not definitely given.

### DIAGNOSIS.

Guyon,[4] in a recent article, insists on the great importance of the recurring pain located on one side of the genito-urinary apparatus, coming on with a sort of aura for some hours before the real pain begins, and the hematuria, which is greater after exercise and less after rest. He is certain that neither the kidney nor the ureter is sensitive to the presence of smooth concretions which do not obstruct the flow of urine, and that some such concretions do reach the bladder without causing pain enough to be noticed.

Abdominal palpation seldom gives information beyond localizing the tenderenss on one side along the course of the ureter. In one case only has the stone been felt through the abdominal wall, and this in a very thin subject.

The presence of a tense or fluctuating tumor from hydro- or pyelo-nephrosis or hydro-ureter indicates an obstruction of some sort below such tumor which may or may not be stone.

Morris states that a calculus within two and a half inches of the bladder may be felt through the vagina, and through the rectum if within one and a half inches. Sometimes if a stone cannot be felt through the vagina or rectum, the presence of tenderness in the lower part of the ureter is of value, as indicating some trouble in the ureter higher up.

A stone may be felt in any part of the ureter after opening the abdominal cavity, and the diagnosis has been made in this way in fourteen cases.

The cystoscope gives information of value where the stone is impacted in the bladder wall or projecting into the bladder. When it is higher up, the ureteral orifice may be seen to be reddened and itself projecting into the bladder. In two cases the absence of the urinary jet from one ureter has led to the diagnosis of complete calculous obstruction.

The waxed bougie described and used by Kelley [5] of Baltimore may be of value, but has been little used in these cases. Guyon thinks the results of its use are dependent on too many conditions, and considers the sensation conveyed

[1] Tuffier: Appareil Urinaire. Duplay et Reclus; Traite de Chirurgie. 1899.

[2] Morris: Calculus in the Ureter. Lancet, Dec. 16, 1899; Surgical Diseases of the Kidney and Ureter.

[3] Robinson: Annals of Surgery. December, 1902.

[4] Guyon: Am. des Maladies des Org. Gen. Urinaire. July 15, 1903.

[5] Kelley: Journ. of the Am. Med. Assn. May 11, 1901.

to the fingers through a gum elastic catheter to be more trustworthy.

Without doubt the x-ray is a most valuable aid to diagnosis. It gave a shadow in fifteen of these cases, and no shadow in one. Noble [6] reports a case in which two negatives, taken by an expert at an interval of some days, showed a distinct shadow in the pelvis and in which no stone was felt at operation.

Kreissl [7] reports a case with the symptoms of calculus in the ureter and a shadow on the x-ray negative, in which the ureteral catheter from the bladder and a bougie passed downwards from the kidney, failed to discover any obstruction.

Examination of the urines from the two kidneys separately should give useful information in many cases, but the mechanical damage produced by the instrument or some other lesion in the supposedly healthy kidney may confuse the observer.

With all these aids to diagnosis, the fact remains that recurring attacks of colic referred always to the same side and with pain radiating downwards along the genito-urinary tract accompanied by hematuria, with usually a diminished quantity of urine before and during the attack and an increased quantity after the attack, are the most reliable indications of a stone impacted somewhere between the kidney and the bladder.

The exact location of a stone can often be determined by some of the methods given before operation, and if the stones were invariably single they would be very satisfactory, but it does not seem from the history of these cases, nearly 12% of which had more than one calculus, that we are justified in closing a wound made for the purpose of extracting a stone, without complete exploration of the pelvis of the kidney and the ureter by passing a full-sized ureteral bougie, or by external palpation of the ureter, or both.

### NATURAL HISTORY.

Before considering the treatment of this condition it is worth while to consider what may happen without treatment. A calculus may pass into the bladder after some time, and may pass out through the urethra, or remain in the bladder to serve as a nucleus for a larger vesical stone. It is impossible to tell in what proportion of cases this occurs.

If the calculus remain in the ureter it may produce a hydronephrosis. Morris says that in 32 cases of hydronephrosis collected by Sir William Roberts a calculus was found in the ureter in 11, and in three more he considered the condition due to a calculus, although none was found. In five cases it was due to a stricture in the region of the vesical end.

The theory, advanced some time ago, that many cases of stricture of the ureter are due to the irritation produced by a previously impacted calculus, is interesting in this connection.

[6] Noble: Am. Med. Sept. 27, 1902.
[7] Kreissl: Medical Brief, St. Louis. July, 1903.

In another series of 18 cases of hydronephrosis, referred to by Morris, a calculus was found in the ureter in 11. Israel,[8] after detailing some experiments and some operative accidents, says that "clinically and experimentally a complete closure of the ureter will not produce a hydronephrosis, but a partial obstruction lasting for a long time will produce this condition."

Another result of the presence of a calculus in the ureter may be an acute pyelitis or pyelonephrosis. I have found no statistics bearing on this point, but at least 15 of these cases were operated upon for one or the other of these conditions.

The third and perhaps most serious result of letting nature take its course is complete cessation of the functions of both kidneys. Morris, in a collection of 47 cases of anuria with stone in the ureter, reports their location as follows:

| | |
|---|---|
| Upper end of ureter | 30 |
| About middle | 7 |
| Lower end | 10 |

He reports 9 others in which the stone was in the pelvis of the kidney.

He quotes Legueu's collection of 23 cases of anuria due to calculous obstruction of the ureter. The location of the calculus as found at autopsy was as follows:

| | |
|---|---|
| Calculus at upper extremity of ureter | 13 |
| Calculus at some intermediate point | 4 |
| Calculus at the vesical end | 6 |

He found 7 more with calculus in the pelvis of the kidney.

In the 21 cases of anuria which appear in the combined list of Schenck and myself, the stone was found

| | |
|---|---|
| High up in | 11 cases |
| About the pelvic brim in | 3 cases |
| Low down in | 4 cases |
| Not stated in | 3 cases |

These figures would indicate that the danger of anuria decreases after the calculus passes the first constriction and increases again slightly after the calculus reaches the vesical end.

Another possible result is the breaking through of the calculus into the abdominal cavity, or the retroperitoneal space, resulting, in the first case, in a general peritonitis, and, in the second case, in a retroperitoneal abscess. Two cases of the latter condition are reported.

These serious results which have occurred without surgical interference indicate that a calculus in the ureter can produce more disastrous consequences than even the frightful attacks of pain and periodic disability.

### MORTALITY AFTER OPERATION.

Of these 134 cases of calculus in the ureter, 12 were relieved by proceedings which did not involve a cutting operation. The calculus was discharged through the urethra naturally or was extracted with forceps, or broken up with a lithotrite, after being pushed out of the orifice of the ureter.

[8] Israel: Chirurgische Klinik der Nierenkrankheiten.
[9] Freyer: Lancet. Aug. 29, 1903.

Of the 122 cases upon which a cutting operation was performed, 98 recovered and 23 died,— in one the result is not given,— and it has seemed interesting to ascertain the conditions preceding death in the fatal cases.

Eight were operated upon while suffering from total anuria and 3 from partial anuria, making a mortality of 11 deaths in 21 cases, or 52% operated upon for anuria.

Seven out of the 15 cases which were distinctly stated to be suffering from fever and pus in the urine at the time of operation died, making an apparent mortality of 47% in cases operated upon for pyelitis or pyelonephrosis. Probably there were more than 15 cases, but I have included only the cases in which these facts were distinctly stated.

In the 19th case the bladder was opened above the pubes and the ureteral orifice slit, opening into the general peritoneal cavity. "The patient became maniacal, passed no urine on the 12th day, died on the 13th; never had any fever, but extremely rapid pulse."

The 20th case died of uremia, and an autopsy showed a cystic degeneration of both kidneys.

The 21st case was under chloroform anesthesia nearly two hours, and showed fatty degenerated heart muscle at autopsy.

The 22d case had two hours' chloroform and ether anesthesia, and also showed fatty degenerated heart muscle at autopsy.

In the 23d case the cause and time of death are not stated. Of these 23 deaths a large proportion was unavoidable, whether the patient were operated upon or not. If we subtract the 21 cases of anuria and the 15 cases of pyelonephrosis or pyelitis, we have left 85 cases operated upon for stone in the ureter, apparently without grave complications, and in which the results are stated. In these 85 cases there were 5 deaths, giving a mortality of a little less than 6%. Even this mortality rate is higher than it will be in the future, as diagnosis will be made and operation performed before secondary changes have taken place in the kidneys and in the general system.

### OPERATION.

As to the choice of operation, there are several things to consider. The transperitoneal route gives access to all parts of the ureter; it does not give opportunity for complete examination of the kidney or renal pelvis, and it does open the abdominal cavity to an extra source of infection. It has been but little used, and is partially responsible for one death. Only one writer argues in favor of this route, but neither his argument nor his figures are convincing.

On the other hand, the kidney and the whole extent of the ureter, including that portion which is in contact with the bladder, are quite as accessible extra-peritoneally as through the abdominal route.

According to the figures of these 134 cases, we may expect to find the stone within an inch of one of three definite points, but we ought not only to make sure of the removal of one stone, but to demonstrate the absence of others which might cause trouble later.

If a patient is sick enough to call for operation, and especially if operation is decided upon during the earlier attacks of colic, it seems to me that the kidney and its pelvis should be thoroughly explored, and the same incision which exposes them makes the first point of narrowing in the ureter accessible. If nothing abnormal be found through this incision, a full-sized ureteral bougie should be passed into the bladder. If obstruction be found, or if it seems desirable to follow the ureter down with the fingers, the incision may be extended as advocated by Israel, Morris and others, forward and downward to the outer border of the rectus muscle two inches above the pubes, and this incision may be carried straight through all the muscular layers down to the peritoneal fat in which the ureter lies. This cut is from twelve to twenty inches long, and crosses the upper half of the external oblique and upper two-thirds of the internal oblique and transversalis at right angles to their fibers. It must weaken the wall, and in one case at least has resulted in a hernia.

The other method is to make a new incision entirely separate from the one which exposes the kidney. This incision should correspond to the lower end of the long cut before described, and the center of the incision should come over the point where the ureter crosses the iliac artery.

After going through the skin the muscular layers can be separated by dissection between their fibers, and the ureter can be identified by gently twitching it from above. Once found, it is easily separated from the peritoneum, and the fingers passed through the upper incision can meet the fingers passed in through the lower. The ureter can now be traced along the wall of the pelvis and down to the point where it enters the bladder wall.

Some writers advise pushing the stone down into the bladder, but the small size of this constriction as compared with the upper isthmuses makes this suggestion difficult if not dangerous to carry out unless the orifice be already dilated. There is so little danger in taking the calculus through the ureteral wall that it seems wiser to remove it directly, with as little manipulation as possible, provided it cannot be easily pushed up to the most accessible point.

Extra-peritoneal ureterotomy has been done 34 times, with five deaths. Three of the five were suffering from anuria when operated; one showed cystic kidneys at autopsy; and the fifth had a dilated and fatty heart.

### CONCLUSIONS.

Intermittent pain on one side, with varying amounts of red blood in the urine, are constant symptoms of stone in the ureter.

Though the best means of locating stones, the x-ray cannot yet give evidence *sufficient in itself*

to warrant us in operating or refusing to operate on certain cases.

If a calculus starts from kidney to bladder, it is likely to catch within an inch of one of three places, all of which are accessible to the surgeon through extra-peritoneal openings.

A single calculus is the rule, but the exception occurs, according to these cases, about once in eight times.

The opening in the ureter or kidney pelvis for removal of the calculus should be sutured if possible. Both sorts of suture materials have been used with equally good results, and wounds in both locations apparently heal equally well. The recovery is only delayed if sutures are not used.

A calculus in the ureter is a menace not only to health but to life, and its removal is an operation of low mortality, provided it is undertaken before secondary changes appear in the kidneys.

[10] Young: Am. Med., Aug. 9, 1902; Annals of Surgery, May, 1903.
[11] Cabot: Annals of Surgery, October, 1903.

| | Sex and Age. | CHIEF SYMPTOMS. | Situation—How Recognized. | Character of Stone. | OPERATION. | RESULT. |
|---|---|---|---|---|---|---|
| Loumeau. Ann. des Maladies Genito-Urinaire, p. 1165. Aug. 1, 1903. | Male 64 | Previous attack colic, ending in passing stones. Hard tumor in left flank appeared after left-sided colic. | Cavity filled with 5 liters yellow colorless fluid, was found communicating with a tear in renal pelvis. Ureter catheter showed a calculus low down. | | Lumbar incision. Nephrectomy, ureterectomy. | Recovery |
| Brewer. Annals of Surgery, 1902, vol. xxxvi, p. 780. | Male 12 | Pain in right side every two or three months, often with fever—seldom vomiting. | Tumor in right flank. No disease found by urinary examination. | 5 months later stone was removed from prostatic urethra. | Nephrectomy with ureterectomy to brim. | Recovery |
| Deaver. Annals of Surgery, 1902, vol. xxxvi, p. 94. | Male 65 | Severe abdominal cramp one week before. Severe pain in right flank, testicles and pelvis, with two days of anuria. | Tenderness in region of right kidney. | Stone near bladder found at autopsy. | Lumbar nephrotomy. Drain left in kidney. | Death in 3 days from uremia. |
| Ferguson. J. Am. Med. Ass'n, July 5, 1903. | Male 8 | Anuria, renal pain on left side 35 days after right nephrectomy. | X ray shadow 2 inches down. | Stone later removed from bladder and urethra. | Nephrotomy, stone pushed up. | Recovery |
| Boldt. Am. Jour. Obstet. and Dis. of Women, Dec., 1903. | Female | 20 years of ill-health with intermittent pain. Tumor in left flank. | Cystoscope did not show urine coming from left ureter. Calculus in upper portion. | Stone impacted, causing complete obstruction. | Nephrotomy, stone pushed up. | Not stated. |
| Suarez de Mendoza. Reported by Bazy, Ann. des Maladies des Org. Gen. Urin., May, 1903, No. ix, p. 673. | Female 58 | Nephritic colic every 3 or 4 months for 7 years, right side. Four attacks of colic on left side, with diminished urine. Complete anuria 11 days. | Upper end; multiple; slight tenderness over normal-sized left kidney; right enlarged and tender. | 23 mm. long, and size of last phalanx of little finger. | Nephrotomy. Right kidney sutured without drain. | Recovery |
| Tuffier. Semaine Med., Aug. 9, 1899, p. 265. | Female 36 | Renal colic, right side; loss of flesh; red and white corpuscles in urine. | Low down. | | Nephrotomy. Calculus pushed into bladder by catheter. | Recovery |
| Jacobs. Ann. de Gyn. et d'Obstetrique, Feb., 1903. | Female 44 | Crisis of pain in left pelvis sharply localized. Each attack followed by 3 or 4 months purulent urine. After attack urine became clear. Pain had existed in left pelvis over 30 years. | Hard tumor felt high up in left pelvis. | Calculus of urates and phosphates, situated 3.9 cm. below pelvic brim, 7½ cm. long, 4 cm. thick and 3½ cm. wide. Weight 44 gm. | Transperitoneal ureterotomy. Suture. | Recovery |
| Mannierre. Chicago Med. Recorder, March, 1899. | Female 50 | Pain in right side 8–10 years. Pus and blood in urine. Mass felt in region of kidney. | Two previous operations for renal calculus and persistent fistula. Below brim. | | Extra peritoneal ureterectomy, low. | Recovery |
| Hawkes. Annals of Surgery, 1902, vol. xxxv, p. 519. | Female 33 | Pain and hematuria 3 years before, followed by passage of small calculus. Six months later symptoms were supposed to be due to a chronic nephritis. Pus and alb. in urine. | Tenderness in lower abdomen. Mass felt per vaginam posterior and to right of uterus. | Stone found near bladder by laparotomy. Weight 158 gr., 2½ in. long. | Extra peritoneal ureterotomy. Drained from loin. | Recovery |
| Freyer. Lancet, Aug. 29, 1903, p. 585. | Male 28 | Hematuria, with recurring renal colic for 14 months, left side. | 2 inches below kidney. | Size of date-stone. | Ureterotomy. No suture. | Recovery |
| Elliot. | Female 30 | Renal colic, followed by hematuria next day. | Resistance—tenderness in right flank. X-ray shadow. | Stone 9x7x4 mm. | Lumbar ureterotomy. Stone felt 2 in. down. Ureter dilated above. | Death 8th day from uremia. Both kidneys cystic. |
| Noble. American Medicine, Sept. 27, 1902. | Male 35 | Colic 2 years; blood in urine; pain in left kidney, testicle, bladder. | Below pelvic brim. X-ray shadow. | | Iliac ureterotomy. Suture. | Recovery |
| Freyer. Lancet, Aug. 29, 1903, p. 585. | Female 18 | Left renal colic with hematuria 18 months. | Para vesical; felt per vaginam. | | Iliac ureterotomy. Silk suture. | Recovery |
| Young. Annals of Surgery, 1903, vol. xxxvii, No. 5, p. 704. | Male 25 | Dull ache with times of acute colic, always on right side, for five years. Previous passage of calculus. | No tenderness; no tumor; less urea from right kidney; obstruction to ureteral catheter; x-ray shadow. | Stone 8x4 mm., pushed up from juxta vesical to iliac portion. | Iliac ureterotomy. Suture. | Recovery |

| | Sex and Age. | Chief Symptoms. | Situation—How Recognized. | Character of Stone. | Operation. | Result. |
|---|---|---|---|---|---|---|
| Legueu. Bull. et Memoirs de la Soc. de Chirurgie de Paris, 1902, vol. xxviii, p. 1132 | Female 37 | Intermittent colic for 7 years with hematuria. Urine clear in the intervals. Left kidney and lower ureter tender. | Lumbar nephrectomy. Stone felt in pelvic part of ureter. | | 15 days later iliac ureterotomy. Stone close to bladder. | Recovery |
| Tenney. | Female 36 | Recurring pain, recognized as renal colic, for 2 years. 10 years previously double ovariotomy. | Microscopic blood in urine, tenderness over lower end of ureter. Intermittent hydro-nephrosis. | Stone just below pelvic brim on left side. Stone rough, 10x8x5 mm. | Lumbar and iliac incisions. Stone pushed up and removed through pelvis of kidney. Suture. | Recovery |
| Stimson. Annals of Surgery, 1902, vol. xxxv, p. 518. | Female | Severe pain in lower part of abdomen. | Nodule felt in roof of vagina, apparently calculus in left ureter. | Small, slender stone, probably branched. | Suprapubic cystotomy and ureterotomy. | Recovery |
| Freyer. Lancet, Aug. 29, 1903, p. 585. | Male 43 | Left renal colic, hematuria, frequent urination. | Cystoscope showed protrusion of left ureter. | | Suprapubic cystotomy. | Recovery |
| Bishop. Edinboro' Med. Journal, 1899, 1, p. 47. | Male 13 | Vesical symptoms. | Projecting into bladder. Felt with stone searcher. | | Suprapubic cystotomy. | Recovery |
| Newman. British Med. Jour., April 21, 1900. | Male 35 | Colic for 3 years. Blood in urine. | Mass seen to project into the bladder. Cystoscope. | | Suprapubic cystotomy. | Recovery |
| Newman. British Med. Jour., April 21, 1900. | Male 54 | Pain in side and bladder. Blood in urine. | Mass projected into bladder. Cystoscope. | | Suprapubic cystotomy. | Recovery |
| Le Filliatre. Ann. des Maladies des Organes Gentto Urinalre, Feb. 15, 1903, p. 313. | Male 50 | Vesical symptoms, pain, hematuria, pyuria. | Vesical and urethral stone found with metallic sound. Both removed by suprapubic cut. | Two weeks later more pain, and a second suprapubic section found a calculus 3½ cm. long, 3¼ cm. wide. | Suprapubic cystotomy. | Recovery |
| Noble. American Medicine, Sept. 27, 1902. | Female 59 | Frequent and painful urination for 9 years; blood and pus in urine. | Mass felt per vaginam near left ureteral orifice. | | Suprapubic section ureteral orifice slit. | Recovery |
| Freyer. Lancet, Aug. 29, 1903. | Female 42 | Left renal colic 2 weeks. | Felt per vaginam. Left ureteral orifice projecting. | | Vaginal ureterotomy. No suture. | Recovery |
| Morris. Surg. Diseases of Kidney and Ureter, 1901, vol. ii, p. 470. | Female 28 | | Two inches above orifice left ureter. Vaginal touch. | Size of hazelnut, ends faceted. | Para sacral incision. | Recovery |
| Morris. Surg. Diseases of Kidney and Ureter, 1901, vol. ii, p. 470. | Female | | Kidney and upper part of ureter previously removed for calculus disease. | Four calculi, each larger than dice. | Para sacral incision. | Recovery Died 4 months later probably from calculus disease of other kidney. |
| Wilcox. N. A. Jour. Hom., July, p. 428. | Male 47 | Left renal pain. | X-ray shadow 2 inches above bladder. | Abdominal exploration showed nothing. | Stone pushed into bladder after locating the ureter extra peritoneally | Recovery |
| Newman. British Med. Jour., Apr. 21, 1900. | Female 26 | Pain on right, blood in urinary sediment. | Orifice right ureter, red and projecting into bladder. Cystoscope. | | Dilatation ureteral orifice per urethram. Stone 1 in. up. | Recovery |
| Newman. British Med. Jour., Apr. 21, 1900. | Female 21 | Pain in back intermittent, hydro-nephrosis left side. | Probably at pelvic brim. | Size of lentil. | Massage t. i. d. for 9 days. Calculus passed into bladder. | Recovery |
| Thompson. | Female 27 | Pain in left side, paroxysmal in character for several months. | Blood and occasional pus in urine. | Size of beechnut. | Kidney and pelvis thoroughly explored; capsule slit; ureter not carefully examined. Stone passed 20 mos. later per urethram. | Recovery |
| Perkins. Denver Med. Times, 1902, p. 481. | Male 22 | | Mass about right kidney found by laparotomy. | Stone ⅜x⅝ in. passed later itself. | Lumbar nephrotomy. Stone passed after some weeks per urethram. | Recovery |
| Cabot. Ann. of Surgery, Oct., 1903, p. 503. | Male 57 | 15 years of intermittent pain in right lumbar region, extending to right groin — with blood in urine. 2 yrs. intermittent pain on left. | Probably low down. Had passed small stones. X-ray showed nothing. Anuria. | Three small stones, the largest crushed and evacuated later from bladder. | Lumbar nephrotomy, ureter stripped downwards; nothing found, but anuria was relieved and stones passed later. | Recovery |

# Clinical Department.

## DECAPSULATION OF THE KIDNEYS.[1]

BY EDWARD REYNOLDS, M.D., BOSTON, MASS.

My experience with this operation is still so limited that I have felt unwilling to publish it in any formal way, or to make any attempt to draw definite conclusions from it, but I am very glad to take this opportunity of reporting my cases as a contribution to a collective investigation.

My experience has been limited to four cases by my belief that, in applying a new and comparatively untried operation to clinical work, we are bound to be exceedingly careful in the selection of cases, and to recommend it only to the few patients to whose circumstances we believe it to be peculiarly applicable; but small as the number of cases is, they may be of some interest, from the fact that they were all operated upon at a comparatively early stage of the disease, that they were all subjected to careful study by segregation of the urines with ureteral catheters, both before and after operation, and that in three of them I am able to make a definite pathological report of the condition of the kidney, at the time of operation, from specimens taken during its performance. All four recovered, two may be called cured, and one relieved, while one is probably unrelieved.

I have been guided by a somewhat different theory of the operation from that advanced by Dr. Edebohls,[2] and have accordingly adopted a somewhat different method in its performance.

Most surgeons who are doing renal surgery have had more than once the unpleasant experience of cutting down upon, and perhaps into, a painful kidney to find it entirely normal, and most of us have had the pleasant experience of finding that in the great majority, if not all of these cases, the exploratory incision was followed by symptomatic relief. Some seven years ago I noticed that when such an exploratory incision was carried through the capsule and into the substance of the kidney, the edges of the capsule usually retracted widely, leaving a portion of the kidney surface exposed, as though the organ were too large for its capsule, *i.e.*, were subjected to tension by an overtight capsule; and I then came to the purely theoretical conclusion that the relief of renal pain by exploratory incision on to a kidney was probably due, first, to the separation of the capsule from painful adhesions to surrounding tissues; second, to the probable freeing of obstructed tubules by the handling and squeezing of the organ during the operation; and third, and to my mind most important, by the relief of tension due to the enlargement of the capsule after an incision in it, and hence that multiple incisions of the capsule might be indicated in renal pain. Further, my experience in renal surgery for other lesions has led me to notice (notably in tuberculosis) that when one kidney has been the seat of disease, the urine from the other has almost invariably shown casts and other evidences of irritation (I have studied all my renal cases by segregation of the urines with the ureteral catheters), and that when the affected kidney has been removed, the casts and other abnormal elements rapidly disappeared from the remaining kidney. This led to the reflection that since we know nephritis to be usually the result of an infection from above, occurring during the elimination of bacteria from the circulation by the kidneys, it is inherently probable that in the early stages, at all events, of chronic disease, the affection will be either limited to, or predominant in, one kidney, and to believe from analogy that if in such cases the worse kidney were relieved by operation, the recovery of the other would probably follow. These theoretical considerations have led to my operating, in the first place, by slashing the capsule in parallel lines rather than decapsulating it, and, second, to my having operated in each case on one kidney only, believing, first, that the patient thus incurred less danger and far less discomfort during convalescence, considerations of prime importance in operating upon cases in the early stages of the disease; second, that there was a probability of obtaining as much benefit from this procedure as from the double operation; and, third, that if the case were relieved, but not cured, by this method, it was a simple matter to operate upon the second kidney later. (It is interesting to note that in two of my four cases the disease was apparently unilateral and that both have been wholly relieved and restored to health, even if it is premature to call them permanently cured.) In three of the four cases I have removed a narrow slice of kidney substance during the operation and subjected it to microscopical examination, in the belief that the knowledge so obtained would be of the utmost value in determining the subsequent treatment and prognosis of the case, as well as in settling the question as to whether the other kidney should, or should not, be subsequently operated upon.

I will not trouble you with prolonged reports of my cases, but will report in each only the important features.

CASE I. Mrs. E., thirty-five; married. Father died heart and Bright's disease; mother, of sepsis; two sisters both well. Thin, in weak muscular condition, unable to work for two years, frequent headaches and disturbed vision, occasional edema of ankles, some frequency of urination, occasionally accompanied by pain. Oct. 21, 1902. Whole urine before operation: normal color, slightly turbid, acid, 1027, albumin slightest possible trace, urea 1.13%, sediment — much vaginal epithelium, some brown granular casts, some hyalin casts, some blood.

Catheter specimens: Left: One-third less in amount than in right, dark and smoky, brown granular casts, much normal blood, many epithelium cells, probably ureteral, rare hyalin cast. Right: Normal color, much normal blood and ureteral epithelium, no casts.

[1] Read at the Annual Meeting of the Suffolk District Medical Society, October 31, 1903.

[2] Compare with Dr. Gifford's experimental results.

Operation Oct. 30, 1902. Left kidney exposed, freed, capsule slashed, organ stitched in position and wound closed; no pathological specimen taken. Nov. 7. Rare granular cast. Nov. 11. No casts seen, slightest possible trace of albumin. Feb. 24. Four months — one hyalin cast found, albumin absent. March 6. No casts, no albumin. This patient has gained color, flesh and strength, and to-day (just one year after operation) seems wholly well; working.

Case II. Mrs. N., seen with Dr. P. M. Smith and referred to the Free Hospital for Women for operation. Thirty; married. Grandfather died of Bright's disease, one brother of phthisis twelve years ago. After diphtheria a year and a half ago she noticed an increase in frequency of urination and a great increase in the total amount of urine passed. She became subject to great general edema, vertigo and disturbed vision. These symptoms improved for a time, but recurred after the lapse of a few months. For seven months she has had a staggering gait and has been mostly in bed, with mild uremic symptoms.

Feb. 12, 1903. Urine on entrance: Total amount 1470 cc., normal color, flocculent sediment, urea 1.13%, specific gravity 1013, acid, total urea 16½ gm., sugar absent, albumin ¼ of 1%, indoxyl minus, total solids 44½ gm., sediment — vaginal epithelium, some pus, normal and abnormal blood, some free fat, occasional bladder cell, a few hyalin casts with fat, a few small round cells probably renal.

Diagnosis: Diffuse nephritis. Catheter specimens show both kidneys to be equally affected. Operation Feb. 26, 1903. Left kidney was selected for operation as a matter of convenience, the two organs being equally affected. The kidney was cut down upon, freed, the capsule slashed, the organ stitched in position. A thin section removed from the substance of the organ along the line of one of the slashes in the capsule was examined pathologically, and reported on as follows: Section from cortex shows everywhere a great infiltration of round cells and beginning connective tissue formations. The tubules have in great part disappeared, or are very much compressed by the invading connective tissue formation. In places there are round areas of round cells like local foci of inflammation. In some places convoluted tubules can be seen which show marked cloudy swelling. Many casts can be seen. The blood vessels show thickened walls. The glomeruli show hyalin change, many of them having become only shrunken hyalin balls. The interstitial element predominates. Diagnosis: Interstitial nephritis. It will be seen that this kidney was in quite an advanced stage of degeneration. Considerable increase in number of casts shown on day after operation. Amount of albumin becomes daily less.

March 4. $\frac{1}{10}$ of 1%. March 10. Both kidneys same — $\frac{1}{15}$ of 1%. The amount of albumin then decreases and averages from $\frac{1}{15}$ to $\frac{1}{20}$. Last report, May 15, albumin $\frac{1}{20}$ of 1%, rare hyalin casts, with very small amount of fat seen. At the end of June she was pale and weak, but had no uremic symptoms. She has been lost sight of since. There appears to me to be every prospect that with long continuous care of her general health she may eventually recover. I have, however, classed her as relieved. It will be noticed that the kidneys were apparently equally affected and that the relief of symptoms followed a unilateral operation.

Case III. R. F., sixteen; single. Father, mother and two brothers all well. Patient at the Free Hospital for Women. Has been for a long time under treatment in the medical wards of one of our large hospitals and was discharged unrelieved. Is pale and weak, incapable of work or other exertion. Has much general edema, increased on any exertion or indiscretions of diet. Is subject to headaches, but has no other well-marked uremic symptoms. Appears to be a case in which the constitutional debility outweighs all renal symptoms and seems unfavorable for operation, but as the prognosis seems entirely unfavorable without it, and she is eager to have it done, is at least worthy of study.

Nov. 27, 1902. Examination of urine for a period of about two weeks upon entrance showed a great variation, depending somewhat upon diet, exercise, etc. Daily amount varied from 16 oz., with a specific gravity of 1024, to 79 oz. and a specific gravity of 1005. Total solids did not show a great variation, averaging about 30 gm. Albumin varied from a very slight trace to ¼ of 1%. Hyalin and finely granular casts, with fat adherent, varied greatly in number, being affected to a certain extent by diet.

Nov. 20, 1902. Ureteral catheter specimens showed both kidneys equally affected. Further trials with diet and rest showed more marked effect on condition of urine.

Operated upon December, 1902. Up to the time of operation the urine averaged 120 oz. daily and reached 165 per diem as its highest mark. The left kidney was selected as a matter of convenience, was freed and capsule slashed, and the organ stitched in position. Immediately after operation the amount of urine fell to 40 oz., from which it gradually increased. For two days after operation a very large number of hyalin casts, with fat adherent, were seen. For a month albumin continued about ⅛ of 1%, number of casts gradually growing less.

Jan. 8. After much ureteral pain patient passed a fibrinous membrane, containing leucocytes and cells, probably from the ureter. During January casts very much less, some days not appearing at all, albumin averaging ⅛ of 1% to $\frac{1}{15}$.

February. Casts entirely disappear and reappear again the last of the month in considerable numbers, when the patient was allowed to be up. During March albumin showed great variation, varying from $\frac{1}{30}$ to ⅕ of 1%. Jan. 20, 1903. Urine passed at home, patient up and about and probably living on ordinary home diet, showed condition of urine same as on entrance to hospital. Feb. 3, 1903. A specimen of urine was sent to Dr. H. S. Hewes, in whose care she had been about a year before, and he wrote saying that if he were to see this urine for the first time he should regard it as a case of interstitial nephritis, but in connection with the history would say that it suggested a general interstitial disease, with parenchymatous areas relieved by operation. The specimen removed showed under the microscope: "Frozen section. There is everywhere cloudy swelling and degeneration of the epithelium in the tubules. Casts can be seen in some of the tubules. In places a slight increase in the interstitial tissue can be made out. There is also some passive congestion. The glomeruli are not maredly changed, though more cellular than normal. Preliminary diagnosis — parenchymatous degeneration."

From that time to this the patient's condition has varied up and down, and she is to-day not in very different condition from that of a year ago before operation. The specimen sent to Dr. Hewes on June 20, 1903, showed both parenchymatous and interstitial disease present, and specimens examined by us since then have varied from absolutely no evidence of pathological up to the evidence of both forms of disease.

The operation cannot be regarded as having benefited the patient's condition, but it is fair to say that she was for a time much better, that she is unintelligent, and has persisted in living in a most unhygienic way.

CASE IV. Although it will be seen this case is not typically a nephritis, its history is so interesting in this connection that I have no hesitation in including it.

Mrs. B. C. Seen with Dr. C. A. Atwood of Taunton, Mass. Thirty-one. Has never been very strong since an attack of scarlatina in girlhood, but presented no renal symptomatology until she was attacked by hematuria in 1893. From this time on the hemorrhages recurred irregularly, but with increasing frequency, at first accompanied by pain on the right side, later by pain referred sometimes to one side, sometimes to the other. She became weak, thin, pale, was troubled with urinary frequency and more or less urinary pain. She had been supposed before I saw her to have tubercular kidneys, the diagnosis having been made by the discovery of bacilli in the sediment by a distinguished urinologist. Subsequent investigation on his part, however, convinced him that the bacilli found were probably imperfectly decolorized smegma bacilli, and several injections of the sediment of the urine into guinea pigs, with negative result, entirely disposed of the tubercular theory. The patient was examined with the ureteral catheters a number of times, both during the attacks and in the intervals, and I more than once saw blood flowing steadily from the ureteral orifice on the side on which the patient was complaining of pain. It became apparent that her symptoms gave definite evidence of which kidney was at the moment attacked. The urinary sediment always showed abundant brown granular casts, much organized debris and a great amount of crystals of oxalate of lime on the right side. The same elements were always present but in less degree in the specimen from the left kidney. In March, 1898, after three months of observation, I dilated three strictures, which had been found to exist in the right ureter, but the patient obtained no benefit, except from somewhat decreased pain in urination. Six months later, the symptoms continuing and the patient's general condition growing worse, I cut down (Oct. 28, 1898) on the right kidney, freed it from its bed, brought it to the surface, palpated it thoroughly, subjecting it to a great deal of manipulation and squeezing in the process, slashed the capsule in several places, and, at the request of her husband, himself a surgeon and present at the operation, removed a slice from the kidney for microscopical examination. It was examined by Dr. Wm. F. Whitney, whose opinion was that it showed merely the presence of granular degeneration. The patient made a rapid and favorable recovery, but three weeks after the operation, when about ready to go home, had a severe attack of pain on the right (the operated) side, terminating with the discharge of a very large amount of organized debris, resembling partially decomposed renal substance, on the exact nature of which no microscopist whom I consulted was willing to commit himself. The discharge of this substance was followed by a considerable attack of hematuria, lasting some hours. Following the operation the patient rapidly gained health and strength, and has to this day (just five years) led an unusually active and energetic life in the possession of apparently the best of health, presenting a most marked contrast to the increasing semi-invalidism which had been her condition before operation, and although four years from the date of operation she had a slight attack of hematuria, with pain referred to the left side, this has not been repeated and has been followed by no decrease of her excellent health. While she cannot be reported as finally cured, the operation has certainly yielded a most gratifying result of five years' duration, and it is also of interest that the single renal symptom which has occurred since operation was referred to the kidney which has not been operated upon, and which previous to operation had been making trouble at frequent intervals.[3]

In summing up my experience, I am led to the following rather tentative conclusions:

(1) We must admit that our present knowledge of the pathological physiology of renal disease is still defective, but we are justified in believing that nephritis has, as a rule, an infective origin, and probably that the defective renal drainage, due to swelling of the organ within a rigid capsule, plays a part in maintaining the disease.

(2) That the cases in which general uremic symptoms are more prominent than the physical signs obtained on the examination of the urine are unpromising cases for operation.

(3) That where the urinary signs and constitutional depression outweigh the distinctly uremic general symptoms, we may regard the cases as favorable for operation.

(4) That where one kidney is mainly or predominatingly affected, a unilateral operation upon that kidney offers an excellent chance of prolonged improvement in health, if not, indeed of ultimate cure.

(5) In women, in whom ureteral catheterization involves little trauma and less risk, all cases of chronic nephritis should be subjected to ureteral catheterization and the unilateral ones selected for operation.

This last of my conclusions is perhaps less tentative in its status than the others and may bear a little amplification.

It is, *a priori*, inherently probable that in this, as in other infective diseases, the affection is likely to localize itself in one portion of the affected organ, or in one of a pair of organs; but for this point we are not obliged to depend on the inherent probabilities. We know from well-established observation that one portion of the substance of the kidney is more likely to be affected in any given case than another, and we have in the last two years accumulated a considerable number of cases in which the disease was definitely known to be localized in one kidney only. We have seen not only in these cases of mine, but in others which have been reported here to-night, and still again in others previously reported in literature, that the unilateral cases may be expected to do well after operation.

I think we may safely conclude that the ureteral catheter furnishes the only method of segregation of the urine which can, as yet, at all events, be regarded as definite. The use of

[3] A report received while this was in press tells of several recent hemorrhages but good general health.

ureteral catheterization in men can hardly yet be considered to have been established as an easy and unimportant examination, but in women the use of the ureteral catheters is exceedingly easy, and may, I think, fairly be said to be non-injurious, since in a very large series of such catheterizations I have never seen an untoward symptom result.

I think, then, we may fairly conclude that in the present state of our knowledge every case of nephritis in a woman should be subjected to ureteral catheterization as soon as recognized, and that in any unilateral case in which the normal state of health is being decidedly and progressively lowered, we may conscientiously recommend the operation as affording a fairly definite prospect of relief to an otherwise incurable condition.

## Medical Progress.

### RECENT PROGRESS IN GENITO-URINARY SURGERY.

BY F. S. WATSON, M.D., AND PAUL THORNDIKE, M.D.

(Concluded from No. 4, p. 96.)

#### A TABLE FOR KIDNEY OPERATIONS.

J. H. Cunningham, Jr.,[17] describes a new table for operations upon the kidney and illustrates the use of such a table by three photographs. The contrivance is cheap and can be placed upon any operating table.

#### CATHETER STERILIZATION.

Goldberg[18] experimented with catheters infected by soaking them in purulent urine for one or more hours. Fluid antiseptics proved entirely unreliable, but a current of steam at 100° C. was effective. Sterilization was always readily and easily accomplished by boiling in water 5 to 10 minutes in a vessel longer than the instruments. He recommends soap and water washing before boiling.

Nancrede and Hutchings[19] find that the larger the size of the instrument the quicker the sterilization, and that preliminary flushing under a water tap lessens the time required for boiling by three quarters. Formaline vapor needs twenty-four hours in order to sterilize. English webbing catheters can be boiled indefinitely in a saturated solution of ammonium sulphate, provided the instruments are kept from contact with the bottom of the vessel. Ten minutes is not too long a time to boil the smaller instruments.

Casper[20] recommends a mixture of glycerine, water and tragacanth, with 1-500 mercury oxycyanate as an ideal antiseptic lubricant for catheters and sounds.

[17] Boston Medical and Surgical Journal, Nov. 26, 1903.
[18] Centralbl. f. Krankh. der Harn. u. Sex. Organe., xiii, 7–8.
[19] Journal of the Michigan State Medical Society, Detroit, June, 1903.
[20] Deutsche med. Woch., xxix, No. 46.

#### RENAL ANEURISM.

Ziegler[21] collected 19 cases of traumatic and 7 cases of nontraumatic renal aneurism. In the latter cases endocarditis with embolism or atheroma of the vessels was the cause. All the cases which were not operated died, while of the 4 cases operated upon 3 recovered.

#### QUICK STAIN FOR THE GONOCOCCUS.

Wahl.[22]

Concentrated alcoholic sol. of auramin 2 cc.
Alcohol 95% 1.5 cc.
Concentrated alcoholic sol. of thionin 2 cc.
Concentrated aqueous sol. of methyl green 3 cc.
Water 6 cc.

This solution is ready for use at once, keeps a year, and stains the cocci dark and the other elements in the secretion, a lighter color. It acts in five to fifteen seconds.

#### INSTRUMENTS TO MAKE THE PROSTATE MORE ACCESSIBLE WHEN ENUCLEATING THE GLAND THROUGH THE PERINEUM.

The instrument devised by Young[23] has two blades at its distal end. It is passed into the bladder through an external perineal urethrotomy incision, with the blades closed; they are then separated in the bladder and, traction being made upon the handle of the instrument, are brought against either side of the enlarged gland and forward toward the surface of the perineum. The prostate is thereby brought within easy reach for the subsequent manipulations required for its enucleation.

The same object is sought by the instrument of Lydston,[24] which is however of different form.

#### CALCULUS ANURIA. ITS DIAGNOSIS AND TREATMENT.

The following are some of the points with regard to the diagnosis and treatment of the above condition dealt with by A. T. Cabot.[25] It may be the result of the gradual disorganization and destruction of the kidneys in consequence of pyelitis and pyelonephritis, caused by the irritation of the stone, or it may be brought about by the stoppage of the ureter by a stone. The latter is the form properly known as calculous anuria. This condition is to be distinguished from other forms of anuria by its sudden onset and the absence of uremic symptoms in many cases. Sometimes death supervenes without uremic symptoms having occurred. The duration is, in some instances, very long. A case of Morris is quoted in which the anuria persisted for twenty days. Sometimes the condition is intermittent. Polyuria follows the cessation of the attack. When both ureters are blocked, the obstruction on one of the sides is usually of long duration, and the kidney on that side is already practically destroyed. In the other cases fatal suppression of urine has been known to follow

[21] Centralbl. f. d. Grenzgebeite, Jena, v, 23.
[22] Centralbl. f. Bakteriol., Jena, xxxiii, 3.
[23] American Medicine, Vol. v, No. 24, p. 947, June 13, 1903.
[24] Annals of Surgery, September, 1903, p. 359.
[25] Ibid., October, 1903.

upon the stoppage of one ureter, the kidney of the opposite one being comparatively healthy.

Morris does not report any cases of recovery in which the latter was brought about by the spontaneous escape of the stone into the bladder. The writer however suggests that the cessation of the anuria was due, in one of his cases, to the expulsion of calculi, very possibly brought about by manipulation of the abdomen in the renal region, and quotes two further cases in which spontaneous expulsion was followed by recovery. The reason given for the infrequency of spontaneous expulsion of the calculus in these cases is the absence of pressure from behind it, due to the completeness of the anuria.

In a series of 104 cases, 56 collected by Legueu and 48 by Morris,— treated expectantly,—there were but 26 recoveries — a mortality of from 72% to 80% following this plan of treatment. In many cases pain is absent, or slight and of very short duration. The article contains other points of interest and the reports of three of the writer's own cases.

THE REMOVAL, AFTER SUPRAPUBIC CYSTOTOMY, OF THE PROSTATE AND THE PROSTATIC URETHRA FOR SENILE ENLARGEMENT OF THE PROSTATE, WITH A SERIES OF TWELVE CASES.

The operation above mentioned is described thus by Moynihan.[26] Previous to opening the bladder 10 or 12 oz. of 1% carbolic acid solution is introduced into it. The viscus is then opened above the pubes, the left forefinger is introduced. A stay suture is passed through either edge of the bladder incision, and the latter are attached to the abdominal wound by them. These sutures are allowed to remain *in situ* for four days.

A snip is made into the mucous membrane of the trigone immediately behind the internal meatus of the urethra with a pair of sharp-pointed scissors. The tip of the finger enlarges this opening. Two fingers of the right hand are then passed into the rectum, the thumb is pressed into the perineum, and the prostate firmly held, while the left forefinger begins the stripping of the gland. The opening in the mucous membrane is enlarged until it completely encircles the internal meatus. The surface of the lobes is rapidly cleared, and finally the prostatic urethra is torn across at its junction with the membranous urethra, after the prostate has been entirely freed elsewhere. The enucleation is, as a rule, performed in from two to five minutes. The prostate, together with the prostatic urethra, is removed in one mass through the suprapubic incision. There follows the description of the twelve cases in which the author has performed this operation.

RESECTION OF URETHRAL STRICTURE.

Therman[27] describes four cases of stricture treated in this manner. In the first the stricture had originated in an injury of the urethra in its anterior portion seven years previously. The caliber of the stricture was 13 (French). Behind it was a diverticulum communicating with the urethra the size of a hen's egg. The stricture was resected, and a urethroplastic operation was done. The result was wholly satisfactory. In the second case a stricture admitting No. 21 (French) bougie was situated in the bulbous urethra. In this instance also it was of traumatic nature, and resection likewise yielded satisfactory results. The third patient had a stricture of No. 8 caliber in the perineal urethra, the formation of which was associated with a suppurative process of the urethra sometime previous to the operation. Resection and end-to-end suture secured a good result. The last case was one in which the operation was done six weeks after the receipt of an injury of the urethra by bullet wound, which resulted in a destruction of half an inch of the canal. Urethroraphy was followed by first intention of the wound and excellent recovery.

[26] Annals of Surgery, January, 1904.
[27] Centralbl. f. Chir., No. 46, Nov. 14, 1903.

## Reports of Societies.

SUFFOLK DISTRICT MEDICAL SOCIETY,

ANNUAL MEETING, OCT. 31, 1903.

DR. F. G. BALCH and DR. J. C. HUBBARD reported cases of

DECAPSULATION OF THE KIDNEY.

DR. A. T. CABOT: It is interesting to consider in the first place what influence for the better the operation exerts on the kidney.

Four ways occur to me in which the interference may exert a beneficial influence on the inflamed organ.

In the first place, the trauma of the tissues overlying the kidney acts in the way of a counter-irritant, and the local blood-letting doubtless assists somewhat in enhancing this effect.

Secondly, the manipulations necessary to free the kidney from surrounding attachments, and to bring it outside the body, produce a vigorous kneeding and massage of the organ. The kidney is wrung out like a sponge. May not this massage squeeze the casts and debris out of the tubules and thus clear the kidney of some of the clogging material that interferes with its function? I am inclined to think that we may find in this a partial explanation of the shower of casts which has been spoken of as appearing for the first day or two after operations.

Thirdly, we may have an improvement of the blood supply through the new connective tissue thrown out during the formation of a new capsule. It is in this way that Dr. Edebohls believes that the principal benefit of the operation is obtained; and Dr. Gifford's observations seem to show that for a time during the healing process some effect of this sort may be temporarily

obtained. That this, however, is not the only way in which the benefit is produced, is shown by the speedy improvement noticed in some of the cases; an improvement showing itself before we can suppose that any considerable collateral circulation has had time to form.

Lastly, we come to what I believe to be one of the most important effects of these operations upon the kidney capsule. This is by the relief of tension both by the splitting and removal of the capsule and by the direct blood-letting of the organ. This effect is produced when the capsule is incised without being stripped off, and it is also obtained in these cases where by a straight cut an opening into the capsule is obtained. Indeed, I have seen a very immediate relief of serious renal symptoms following an exploration with an aspirating needle, where a dram or two of urine was obtained, and where the operation consisted of a number of punctures through the kidney in various directions without incising the skin. The relief in these cases was as immediate as is sometimes seen by puncture of an inflamed testis, and I can only account for it by the relief of tension afforded by these numerous punctures through the capsule.

Now, in regard to the attitude which we ought to bear towards this operation. Every man who is doing much kidney surgery knows how often an acute or sub-acute inflammation of the kidney is influenced for the better by cutting down upon that organ. This improvement is noted sometimes in cases where the capsule is not split, or is opened only for a short distance. Being aware of this benefit obtained in acute cases, the next step made by many operators, but most strongly urged by Dr. Edebohls, was to apply this same treatment to chronic cases of kidney inflammation; to the cases, in short, grouped under the head of Bright's disease.

The cases enumerated this evening show that the operation thus applied is not dangerous, and that many cases show some improvement after it. It is to be remembered that in these operations, as in many others of doubtful utility, operators have thus far felt obliged to confine their interference to desperate cases. If, now, these cases in which the kidneys are already profoundly disorganized are helped in an appreciable degree by the operation, is it not reasonable to hope that by using it earlier, before the kidneys are changed beyond recovery, a restoration to something like a normal condition may be obtained? If this view is correct, and we come to believe that the operation has a power for good, and that in order to do good it should be applied while the kidneys have some possibility of recuperation left, it is plain that we must endeavor to study our cases so carefully as to be able to judge early whether a given case is likely to recover without operation or not, and if we decide that on the whole it is not likely to so recover, I feel that we are then justified in using this operation, which applied thus early in the disease would have practically no danger, and might have the greatest power for good.

Dr. F. C. Shattuck: One of Edebohl's statements was, to me at least, startling. The inspection of the living kidney showed Bright's disease to be, in some cases during a part of its course, a unilateral process. This contravenes post-mortem experience as well as our notions of the origin of Bright's disease in some general, usually toxic, influence. It is the rule that the early lesions of a generic poison are practically symmetrical. Pneumonia, it is true, is an exception. Further evidence on this point seems very desirable. As far as the cases reported to-night go, Edebohl's statement does not seem to be borne out.

I had hoped to get more enlightenment this evening than I have — to be enabled to estimate more closely the value of decapsulation for Bright's disease. The cases of distinct improvement reported this evening are few, and anybody of fairly long and large experience must recall cases alike of diffuse and interstitial nephritis which, after tedious and patient waiting, for no very clearly assignable cause, have turned the corner, made and maintained for years great improvement—amounting, indeed, to the disappearance of symptoms and the ability to lead a practically normal life.

That decapsulation is followed by this result in a larger proportion of cases than occurs without it remains to be proved.

More or less passive observation is harder to practice than active interference in these days of cleanly surgery. And yet it may be the wiser course.

Personally I do not as yet feel warranted in advising the operation in a patient who is fairly comfortable and apparently holding his own.

Dr. J. C. Munro said that he was disappointed in the final results of his cases, but felt that the operation was worth while, considering the desperate nature of the disease. It is important, if surgical aid is to be sought, that the cases should not be turned over to the surgeon when practically moribund, as was unfortunately the state of affairs in at least one of his cases. If, however, as Dr. Shattuck has suggested, the lives of a small proportion of apparently hopeless cases can for some reason or other be prolonged by medical treatment to as satisfactory a degree as by decapsulation, then it is questionable whether the operation is after all justifiable. He was not aware, however, that other physicians had had equally good success.

In reading a recent article by Dr. Thomson of New York, a very suggestive query was forced upon the speaker's mind, which he would like to make to any physiologist or internist present. Dr. Thomson spoke of the similarity between the effects on the circulatory system, etc., as caused by contracted kidneys and by the administration of adrenalin. On this basis it occurred to the speaker that possibly the beneficial effects from decapsulation might come from the disturbance inflicted upon the adrenal capsules in the efforts at delivery and decapsulation, thereby impairing their functions and lessening

the supply of their secretion to the general circulation If this were possible or probable might not the same or better results be attained if we remove a portion of one or both capsules? He thought that this might be worth while doing in a case which would ordinarily be subject to decapsulation. He trusted that some physiologist present could enlighten him in this respect.

DR. PAUL THORNDIKE: The cases reported by Dr. Hubbard to-night have been mentioned in subsequent discussion as "unpromising." There certainly is a very marked contrast between these results and those of many other operators, but it must be realized that several of them were last-resort cases and were not fit subjects for this or any other surgical procedure. Dr. Edebohl has said that the only contra-indications for the operation are the impossibility of anesthetizing the patient and the improbability that the patient will live a month after operation, as it takes at least that length of time for improvement to take place. It seems to me that we have already considerable evidence to show that many of the most brilliant successes have also been immediate successes, and I believe the future will show that the best results will be obtained not in old last-resort cases when all else in the way of treatment has failed, but in those more recent cases where the inflammatory condition has failed to clear up under medical treatment and has persisted with enough urinary and other clinical evidence to make a distinct surgical indication. I therefore do not believe that Dr. Hubbard's series of cases should be considered as significant of the true value of decapsulation.

DR. HENRY JACKSON: If we except the brilliant results obtained in the cases reported by Balch, in which only one kidney was diseased, we find the most satisfactory progress in two cases, one reported by Balch,[1] one by Hubbard.[1] In each of these cases the probable clinical diagnosis was chronic diffuse nephritis. All acute processes as indicated by smoky urine, or blood in the sediment, could be eliminated in these two cases. From the results so far at our command in studying these cases I should be inclined not to favor operation in cases showing evidence of acute trouble. In fact, acute nephritis is especially amenable to medical treatment in most cases.

## THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

PROCEEDINGS OF THE SIXTEENTH ANNUAL MEETING, HELD AT THE PIEDMONT HOTEL, ATLANTA, GA., DEC. 15, 16 AND 17, 1903.

(Concluded from No. 4, p. 99.)

### SYMPOSIUM ON APPENDICITIS.

DR. GEO. R. DEAN, Spartansburg, S. C., read a paper in which he considered it a surgical disease, outside of the pale of the physician, and when it was once discovered operation should be done at the earliest possible moment.

[1] Boston Medical and Surgical Journal, Jan. 28, 1904.

### APPENDICITIS AND ITS RELATION TO PELVIC INFLAMMATIONS.

DR. J. M. BALDY, Philadelphia, Pa., expressed himself as being unable to follow the reasoning of those who adopted the practice of removal, on the ground that the condition of adhesion implied appendicitis or future danger of this disease. He did not agree with that class of surgeons who removed the vermiform appendix as a routine practice as a prophylactic measure. He thought 95% of the mixed class were in origin cases of pelvic inflammatory disease, and the adhesion of the vermiform appendix was a mere coincidence due to inflammation of contiguous serous surfaces, as was so commonly the case of adhesion of intestines in pelvic inflammatory diseases. His experience had led him to differ from those gentlemen who held that appendicitis generated pelvic inflammatory disease, or that pelvic inflammatory disease caused appendicitis. The two diseases were rarely associated, and only then as a coincidence. He was firmly of the opinion that the one never caused the other.

### RETROPERITONEAL INFECTION A RESULT OF APPENDICITIS.

In a paper on this subject, DR. I. S. STONE, Washington, D. C., said it was our plain duty in certain septic cases to investigate the retroperitoneal space with the same care as the cavity of the peritoneum. First, one should consider every delayed case with anxiety, lest there should be retroperitoneal infection. Second, one should be careful to give a guarded prognosis in every case of appendicitis ushered in by or complicated by chills or any symptoms of sepsis. Third, if operating on such cases, one should consider retroperitoneal infection as already started, and act accordingly. The discovery and proper treatment of such infection was quite as important as the usual intraperitoneal techinque.

In view of the possibilities of retroperitoneal infection, the surgeon assumed great responsibility by advising non-intervention in appendicitis, and while one would often advise delay, when he believed the lesions were strictly intraperitoneal, yet it would appear to the writer that such a course is unsafe, and should be condemned when there was reason to fear complications.

### SHORT INCISION IN APPENDICITIS.

DR. ROBERT T. MORRIS, New York, said the beginner in surgery was inclined to make incisions that were too short, rendering his work more difficult and very likely incomplete. The surgeon could not do good work, particularly in abdominal surgery, if he began his work with incisions that were too short. He could not do the best work if he continued to make incisions that were too bold or too free. After one had acquired a certain amount of skill in technique, he could return to the shorter incisions, which would allow the patient to escape with the least

possible length of incision. With long incisions there was more shock, more adhesions, because the exposure of the peritoneum through a long incision excited greater inflammatory reaction, and this resulted in more peritoneal adhesions, which must be disposed of, or which might remain, to make the patient lifelong trouble. The longer the incision, the greater the danger of infection from the aërial bacteria. With long incisions the patient's general resistance was interfered with. He would make this statement, however, that the surgeon should make as long an incision as he felt was necessary, and by no means be guided by the idea that he was to conform to any length of incision. If one could allow a patient to escape with a short incision, he should do so.

### THE SIGNIFICANCE AND MANAGEMENT OF PARALYSIS OF THE BOWEL.

Dr. Geo. S. Brown, Birmingham, Ala., emphasized the views held by the surgeons of the past generation, that paralysis of the bowel in the presence of inflammation of the peritoneum was to be regarded, not as a pathological condition to be combated, but rather as nature's way of allowing the plastic exudate to form adhesions, the use of which was to confine the infection to as limited a field as possible. He held that it was not the paralysis, but the over-distention of the bowel, that should be fought. By following the plan of keeping the upper uninflamed portion of the bowel quiet, until the inflammation subsided, rather than attempting the difficult or impossible feat of waking up the inflamed and paralyzed portion by the use of purgatives, he believed many or the majority of the worst cases of diffuse peritonitis with which the surgeon had to deal would be cured. This rest treatment should be applied after the offending appendix or tube had been removed, and the infected site properly treated and drained. It seemed to him that if the Ochsner plan of treatment would tide over a patient with a gangrenous appendix, such a patient would have a much better chance if the appendix were removed, and to the Ochsner treatment were added the tight abdominal binder, with water to relieve thirst, and washing out of the stomach, if there was vomiting, together with opium *ad libitum*, to relieve pain and keep down peristalsis.

In a total experience of 90 cases of appendicitis he had had 66 pus cases, 24 of which had been treated by the plan of starvation, except as to water, prolonged irrigation of the stomach before leaving the table, a tight abdominal binder and opium. Eighteen of these patients had more or less diffuse peritonitis and 12 of these were so severe that they had to be extensively disemboweled in order that adhesions could be broken up and septic material wiped away. Two only of these died. They might have recovered had they been tided over without operation, but as they were both *in extremis* at the time, probably the only thing saved would have been the reputation of the surgeon. Of five other deaths occurring in the 90 cases, two were due to subdiaphragmatic abscess rupturing into the lung, one to regurgitant vomiting due to the presence of a large quantity of castor oil in the bowel which was not washed out, and two early cases where abscesses that had already set up a diffuse peritonitis were merely incised.

### SEPTIC THROMBOSIS OF THE FEMORAL VEIN FOLLOWING INFLUENZA.

Dr. D. F. Talley, Birmingham, Ala., reported a case of septic thrombosis due presumably to influenza from which the patient was recovering when the phlebitic trouble arose.

### FIVE RECENT SUCCESSFUL LAPAROTOMIES FOR GUNSHOT WOUNDS OF ABDOMINAL VISCERA, INCLUDING ONE WITH TWENTY-EIGHT PERFORATIONS OF INTESTINES AND MESENTERY.

Dr. Robt. W. Johnson, Baltimore, Md., read a paper with this title. The first case was one of gunshot wound of the stomach and liver; laparotomy, with recovery. The second, a gunshot wound of the liver; laparotomy, with recovery. The third was a gunshot wound of the liver; laparotomy; recovery. The fourth was a gunshot wound of the intestine; laparotomy; recovery. The fifth case was one of gunshot wound of the intestine, in which there were 17 perforations of the gut and 11 of the mesentery. The patient was a colored man, aged seventeen. A wound from a 32-caliber ball was found in the left side, just above Poupart's ligament, which, after washing, was found to go directly into the abdominal cavity. A median incision was made below the umbilicus and the belly found to be full of blood. Through this incision the gut was drawn out on to warm towels, and seventeen perforations of the small intestine and eleven of the mesentery were successfully closed by silk Lembert sutures. The patient had no setback after the operation, and was discharged well three weeks after the injury was received.

### CASES OF INTESTINAL OBSTRUCTION TREATED BY RESECTION.

Dr. W. H. Doughty, Jr., Augusta, Ga., reported three successful cases of resection of intestine for obstruction due to gangrenous umbilical hernia, volvulus and intussusception respectively. One of the cases was rather unique, in that the strangulated loop of intestine in the hernia was a part of a greater segment which had been strangulated by volvulus. The descent of the herniated coil took place shortly after the occurrence of the volvulus, and its strangulation was occasioned by the congestion which followed the latter.

The almost invariable fatality which attended the operation he attributed to the toxemia which was induced by gangrene of the intussusception. In one case, in spite of the unmistakably gangrenous patches upon the intussusception and involving even the mesentery, the patient, though far from being in a satisfactory condition, stood

the operation fairly well, rallied promptly from the depression which attended it, and recovered without interruption.

FREE GROWTHS IN THE TUNICA VAGINALIS.

DR. EDWARD A. BALLOCH, Washington, D. C., reported the case of a colored boy sixteen years of age, who came under his care in December, 1902. Family and personal histories threw no light upon the case. There was no history of injury. Present trouble began eight years before, as an enlargement in the upper part of the right of the scrotum, which continued to grow painlessly from that time onward. Examination showed a scrotum reaching nearly to the knees and measuring twenty-one inches in circumference at its largest point. Both testicles and both cords could be made out and felt normal as to size, shape and consistence. There was no fluid in the scrotum, but a peculiar gelatinous, flabby feeling of the scrotal tissue. Three separate tumors were felt in the right side of the scrotum. The growths were freely movable in relation to the cord, testis and scrotal tissues.

The diagnosis of fibroid growths in the tunica vaginalis was based partly on the history of a slow, painless growth, and absence of ulceration and fistulæ, excluding cancer, syphilis and tuberculosis, and partly on the physical characteristics of the growths, together with a keloid behind the right ear, which was interpreted as indicating a tendency to fibromatosis in the patient.

Operation, Dec. 15, 1902, showed the tunica greatly enlarged and thickened and converted into a gelatinous mass. The upper tumor ran into the inguinal canal and was attached there by a pedicle. The other two showed no distinct points of attachment. All the tumors were enucleated and the thickened tunic removed. The testicle was removed accidentally in dissecting out the tunica. The tumors weighed 38 oz. and the tunica 20 oz. The specimens were shown.

The report of the pathologist showed that the growths were soft fibromata, with areas of fatty and myxomatous degenerations. The testicle also showed areas of beginning myxomatous degeneration.

The pathology of the condition was considered briefly, the conclusion being reached that the growths had their origin in the subserous connective tissue.

Examination of the literature showed but one case at all resembling the one reported, although there were several reports of minute fibrous growths on the tunic following hydrocele treated by the injection of iodine.

DR. J. MCFADDEN GASTON, JR., Atlanta, Ga., dealt with the complications encountered in the surgical treatment of disease of the testicle.

EXTRAUTERINE PREGNANCY.

DR. T. J. CROFFORD, Memphis, Tenn., reported a case and exhibited a specimen in which the gestation sac was so thoroughly developed and so strong, that it was enucleated without the loss of any blood. The sac was completely intact all around the fetus. The speaker supposed it to be a parovarian cyst, but after the sac was slit open the fetus was discharged.

COLLOID CARCINOMA OF THE RECTUM, WITH EXCISION BY THE COMBINED VAGINAL AND INGUINAL ROUTES.

DR. J. HORACE WHITACRE, Cincinnati, Ohio, reported a case of colloid carcinoma of the rectum which presented unusual pathological and clinical features. After giving a complete history of the case and describing the operation, the author stated that his chief reason for presenting it was the unusual nature of the primary tumor. He had never before seen a carcinomatous tumor of the bowel which had developed as a hard, uniform thickening of the entire circumference of the tube. The tumor involved the wall of the rectum to almost a uniform degree for six inches of its length, and the organ was transformed into a tube that might very well be compared to a flattened lead pipe with very thick walls. The tube was very rigid and noncollapsible when in a fresh state.

A second point of interest was the strong naked eye resemblance to tuberculosis. The minute bodies which were scattered over the pelvic peritoneum could not be differentiated from miliary tubercles. Large caseous lymph nodes were found in the hollow of the sacrum. The great predominance of fibrous tissue, the uniform involvement of a long segment of the bowel and the appearance of minute nodules resembling miliary tubercles in the primary tumor of the rectum all spoke for hyperplastic tuberculosis of the bowel.

A third point was the exceedingly rapid development of the solidly carcinomatous ovarian tumors from half a dozen minute miliary metastases on the peritoneal surfaces of each. These tumors were friable and almost jellylike, as were all of the metastases, whereas the original tumor was as hard as cartilage.

PNEUMATIC RUBBER SUIT.

DR. GEO. W. CRILE, Cleveland, Ohio, said that the pneumatic suit was constructed of a double layer of specially made rubber, which, when inflated, exerted a uniform pressure upon the surface, constituting an artificial peripheral resistance. It was so constructed that one or more limbs of the abdomen might separately or in combination be subjected to pressure by inflation by means of a bicycle pump. The air valves were so adjusted that the rate of decompression might be completely controlled.

Several cases were reported showing the value of the pneumatic rubber suit in shock and collapse.

RESUSCITATION OF ANIMALS APPARENTLY DEAD.

Dr. Crile also presented a short paper on this subject, in which he gave a summary of experi-

mental data. When asphyxia caused failure of the heart and respiration, vigorous artificial respiration usually restored their function when administered within a few seconds. It was effective in an inverse ratio to the time that had elapsed; it was rarely effective after forty seconds. By the addition of saline infusion a larger proportion of animals could be resuscitated after the lapse of a little longer time. Rhythmic pressure upon the heart, either through the thorax by pressure upon the ribs over the heart or direct pressure within the thorax was also an aid. The effect of the traumatism to the heart by the direct method partially counterbalanced the benefit from this measure. Nitroglycerine, alcohol and digitalis were useless; rapidly alternating the posture, head up, then head down, was not effective. Suspending the animal head down and making rhythmical pressure upon the heart was an effective method. This method gave the brain the advantage of gravity; it provided a moderate artificial circulation as well as respiration. It could be promptly applied. The addition of saline infusion increased the effectiveness of the method. Animals apparently dead for periods up to fifteen minutes were resuscitated by the combined effect of artificial respiration, rhythmic pressure upon the heart and the infusion of adrenalin. When the blood pressure had risen to 30 or more mm. Hg., the heart began to beat and the blood pressure was rapidly restored. The return of respiration was signaled by a short, almost imperceptible movement of the diaphragm, the respiratory action becoming gradually stronger and more frequent. The conjunctival reflex returned early. Some of the experiments failed on account of too great elevation of the adrenalin bottle; some on account of an overdose of adrenalin; several were only partially successful, owing to the great dilution of the adrenalin. Adrenalin, when injected directly into the chamber or into the wall of the heart, caused fibrillar contractions, after which the heart could not be resuscitated. After final cessation of the heart, by employing manual compression of the heart and infusing adrenalin, the blood pressure could be raised even higher than the normal. Respiration in some instances was partially restored.

Experiments in which saline infusion was substituted for adrenalin, and which were unsuccessful, were promptly successful on adding adrenalin. In a patient with crushed skull, whose heart had ceased beating for nine minutes, resuscitation of the heart for thirty-one minutes by this method was made. During the operation for the elevation of the depressed bone, the patient moved his head.

Another patient apparently dead from a severe crushing of the base of the skull was partially resuscitated twenty-four minutes after the apparent death. The proofs of the apparent death were absence of respiration, absence of heart sound on stethoscopic auscultation and, as a final proof, on opening the jugular vein there was absolutely no circulation. In this case the blood pressure rose to 80 mm. at one time; voluntary respiration appeared. These evidences of vital action continued for thirty-four minutes.

### OFFICERS FOR THE ENSUING YEAR.

The following officers were elected: President, Dr. Floyd W. McRae, Atlanta, Ga.; First Vice-President, Dr. Geo. S. Brown, Birmingham, Ala.; Second Vice-President, Dr. J. Shelton Horsley, Richmond, Va.; Treasurer, Dr. Chas. M. Rosser, Dallas, Tex.; Secretary, Dr. W. D. Haggard, Nashville, Tenn.

Birmingham, Ala., was selected as the place for holding the next annual meeting; time, Dec. 13, 14 and 15, 1904.

Dr. John D. S. Davis, Birmingham, was selected as the Chairman of the Committee of Arrangements.

The Council reported that the former action of the Association in appropriating two thousand dollars to a memorial, consisting of a ward bearing the name of the Association in the City Hospital of Birmingham be rescinded, and that in lieu thereof two thousand dollars be appropriated to the erection of a monument to the memory of Dr. W. E. B. Davis in Birmingham.

On motion of the Council, the report was adopted.

## Recent Literature.

*Lessons on the Eye.* By Frank L. Henderson, M.D. Third edition. Philadelphia: P. Blakiston's Son & Co. 1903.

This little book contains about two hundred pages of text which have been so divided into twenty-eight chapters as to provide one lesson for each week of a seven months' course. The author's intention has been to place in the hands of the undergraduate student a means of equipping himself for the later demands of a general practice, and with this purpose in view has described only the commoner conditions of the eye, relegating to the domain of post-graduate instruction ophthalmoscopy and kindred subjects. As it has reached the dignity of a third edition one may naturally infer that the book enjoys a certain popularity with the undergraduate, for whom it is intended, and therefore the author may be considered as having succeeded in his endeavor. As a rule elementary books of this character are of extremely doubtful value, for it seems safe to say that the intellect of the average medical student may safely meet the demands put upon it by any of the standard textbooks on ophthalmology of the present day. In the present instance the subject has been presented with such good judgment, and the appearance of the book is so pleasing both as regards press work and illustrations, that it is to be hoped a careful reading of this book will stimulate to farther effort along similar channels.

THE BOSTON

# Medical and Surgical Journal.

THURSDAY, FEBRUARY 4, 1904.

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## MEDICAL INVESTIGATION IN THE PHILIPPINES.

WE have recently commented on the admirable work being done under the general auspices of the government in investigating disease peculiar to the tropics. From this work it appears clear, for example, that the condition produced by Trypanosoma has been placed upon a definite basis, and has formed the starting point for a series of wide-reaching investigations on analogous affections. Such diseases may only be studied in their native habitat, and it is therefore of much importance to medicine in general that competent men may prosecute their studies on the spot rather than indirectly, and with poor facilities, at a distance. Furthermore, it is evident that the field now opening in the study of the protozoa and other similar organisms offers a peculiar opportunity for young men of capacity who find small scope for their energies at home.

We are interested in noticing in view of these facts that the Harvard Medical School, under the general supervision of Dr. W. T. Councilman, aided by a small fund contributed by several interested and generous donors, has recently sent two men of the Pathological Department, Drs. W. R. Brinckerhoff and E. E. Tyzzer, to the Philippines for the purpose of investigation into infectious diseases. It will be remembered that these physicians assisted Dr. Councilman in his work relating to smallpox, and it is primarily to study further the life history of the causative parasite of that disease that the journey has been undertaken. It is evident that means of experimentation will there be very much greater than in this country, and that the possibility at least exists of determining definitely the susceptibility of certain of the monkeys to the disease and the means of its transmission. It is, however, stated that, although this will be the main object of study, the study of tropical disease in general will also form a part of the work undertaken.

This plan of sending properly equipped medical men to the Philippines cannot be too highly commended. It is inevitable that, with the closer relationships existing between tropical and temperate countries, which the future is sure to bring forth, any knowledge leading to a clearer appreciation of the nature of diseases peculiar to warm countries will be of increasing value to the inhabitants of temperate regions. Apart, also, from this somewhat selfish point of view, it is eminently desirable that the fatal and widespread affections of the tropics should be checked. This certainly can only be done by the application of scientific knowledge already gained to the further problems which these highly infectious diseases present.

## INSANITY AMONG NEGROES.

OUR attention has been called by Dr. W. F. Drewry of the Central State Hospital at Petersburg, Va., to the fact that in our issue of Jan. 7 we commented erroneously on the question of insanity in the negro. In this editorial on the "Distribution of Insanity" we made the statement that, "in the South the negroes are proverbially relatively exempt from such affections, [mental disorders]." Dr. Drewry has for many years been connected with a hospital devoted to the care of insane negroes, and is therefore eminently able to judge of the existing conditions.

In his report for 1903 Dr. Drewry states that from best available information insanity as well as tuberculosis was comparatively unknown among negroes before the war. In 1860 only 25 insane negroes were in the State Asylum at Williamsburg. Ten years later 123 negroes were reported in the state. To-day there are 1,074. In 1860 the ratio of insane negroes to the negro population was 1 to 7,000; in 1900 it was 1 to 640. From 1890 to 1900 the number of first admissions reached 1,512, being a yearly average of 125. From Oct. 1, 1900, to Oct. 1, 1903, 745 cases, or an average of 248 a year, were received. The reason given for this increase is, in general, race degeneration. During

the days of slavery it is maintained the negroes were under strict discipline, lived in clean surroundings, were subject to greater moral control, led systematic, regular lives, and in general were surrounded with conditions which conduced to both physical and mental health. Since emancipation Dr. Drewry asserts that various dissipations, vices, bad habits, irregular living, indolence, privation, etc., have led to a weakening of the negro constitution, and therefore to a natural development of disease, such as insanity and consumption.

With all due respect to Dr. Drewry's opinion, and to his unquestioned means of judging the situation, we are inclined to think he has at least put the case strongly in asserting that the difference between the negro's life before and after the war may be held wholly responsible for this increase in insanity. As we remarked in our previous editorial, the varying conditions underlying the production of mental disorders are far too subtle to permit of general statements. We are nevertheless much interested in Dr. Drewry's point of view and are glad to make the correction which he suggests regarding the prevalence of insanity in the negro population.

## PARALYSING PARSIMONY.

When the appropriation of $8,000 asked for by the Massachusetts State Board of Health for the annual maintenance of its antitoxin and vaccine plant for 1904 was brought up for action in the Senate last week, the chairman of the Committee on Public Health opposed the appropriation, and moved that the latter be reduced to $6,500 — on the ground that the latter sum had been estimated as necessary for such maintenance.

This estimate was made in June, 1902, a year and a half ago, for the production of vaccine alone at a time when the Committee on Public Health succeeded in delaying action on the whole matter for another year, notwithstanding the prevalence of an epidemic of smallpox, such as had not been known for thirty years. Upon revising its estimates, and going over the whole question again, the State Board of Health found it impracticable to carry on the work of producing antitoxin and vaccine for the sum which had been named for the production of of vaccine alone.

It should be borne in mind that the board has saved to the people of the commonwealth from $75,000 to $100,000 per year by the production and free distribution of antitoxin alone.

To the physicians of the state it must appear strange that the health interests of the community are better served by the Committee on Appropriation than by a committee which was perhaps constituted for the purpose of assisting in the protection of the public health.

## THE MULTIPLICATION OF SCIENTIFIC JOURNALS.

It is rare for a month to pass that men of general scientific attainment are not requested to subscribe to a new periodical. This is perhaps particularly true of journals relating to medicine, but a like activity is apparently being manifested in allied branches of science. The reason for this extraordinary multiplication of journals is not far to seek. It depends primarily upon the progress of specialism and upon the somewhat natural desire which each individual group of men has to present its researches in a form and place where they will receive the most sympathetic attention. On the medical side there is hardly a branch of medicine which in any way may lay claim to the title of a specialty which has not its own organ. In one sense this is no doubt a step in advance, but we can easily see that this continual multiplication of journals will in time lead to a reaction.

In the first place the greater the number of journals the less the number of subscribers, and the more demand for an independent fund by which they may be supported. A considerable number of journals is already independent in this respect, and may continue to publish papers irrespective of any possibility of adequate financial return. Others are not so fortunately placed, and the constant and somewhat wearisome appeal for support as a duty which we owe to science in general is becoming a trifle obnoxious.

A further difficulty which every periodical now has to face, as never before, is the question of the reproduction of photographs and drawings, often in colors of most elaborate character. Here, again, a reaction is inevitable. We have been interested, for example, in the last journal which it is proposed to launch, a *Journal of Zoölogy*, to note that in the prospectus it is stated that illustrations designed for publication be made as simple as possible and colors be avoided unless absolutely necessary. We have no inclination or capacity for prophecy, but nevertheless we are inclined to think that a greater

concentration of effort in a few journals, at least for the present, and less dissipation of energy in many would conduce to our greater scientific health.

## MEDICAL NOTES.

THE BALTIMORE TUBERCULOSIS EXHIBITION. — During the past week a Tuberculosis Exhibition has been held in Baltimore in McCoy Hall, which excited much interest.

TYPHOID FEVER AT COLUMBUS, OHIO. — Since Jan. 1 nearly 600 cases of typhoid fever have been reported from Columbus, Ohio. The source of the disease is claimed to be contamination of water.

BEQUEST TO JOHNS HOPKINS HOSPITAL. — It is reported that Mr. Henry Phipps has given $20,000 to the Johns Hopkins Hospital for the purpose of establishing a separate out-patient department for persons suffering with tuberculosis.

GERMS IN BOOKS. — It is reported that the municipal authorities of Berlin are about to undertake to exterminate microbes in the books of public libraries. This possible source of the spread of infection has long been recognized and, we believe, in certain cases demonstrated. The attempt is to be made to disinfect all books after use, by means of a municipal disinfection station.

THE ALBANY MEDICAL ANNALS. — The current number of the *Albany Medical Annals* celebrates the beginning of the twenty-fifth year of this excellent periodical. A sketch of the history of the journal, founded in 1880, is given by Drs. F. C. Curtis and W. G. Tucker, in which the growth from small beginnings of a periodical, which is now representative of the medical work of its city, is briefly portrayed. The volume contains 208 pages with a number of excellent articles. We congratulate the journal on this, the beginning of its twenty-fifth volume.

PROGRESS NUMBER OF THE INTERSTATE MEDICAL JOURNAL. — The *Interstate Medical Journal* of St. Louis published in its January number, as has been its recent custom, an epitome of the important medical literature of 1903, included under twelve headings. As a summary of the best work done during the preceding year it should be of service to those whose time is too limited to consult the original sources, and these are certainly many.

BULLETIN OF THE AYER CLINICAL LABORATORY. — The Ayer Clinical Laboratory of the Pennsylvania Hospital has issued the first number of a bulletin, the publication of which is provided for by a fund given by Mr. F. F. Ayer. The bulletin will appear whenever sufficient material accumulates from the work done in the laboratory. The principal paper in the present issue is an elaborate article by Dr. Longcope on "The Pathological Histology of Hodgkin's Disease."

THE DEATH OF FRIEDRICK JOLLY. — The death of Professor Friedrick Jolly is announced. He was born at Heidelberg in 1844, later held chairs at Würzburg and at Strasburg, and on the death of Prof. Westphal was called to the important position of Professor of Psychiatry and Neurology in Berlin, a position which he held up to the time of his death. Professor Jolly contributed widely to medical literature in his special branch, but was never so prolific a writer as certain of his colleagues.

CENTENARIANS. — The following persons are said to have lived beyond the one hundred year mark:

Mrs. Sallie R. Higgs died in Owensboro, Ky., at the reputed age of one hundred and nine years. She was married at seventeen, had twelve children, the youngest of whom is now seventy-one years old.

Mrs. Catherine K. Steele of Lyndeboro, N. H., died Jan. 24, at the age of one hundred and two years. Beyond a slight deafness she was without physical infirmities at the time of her death.

Mr. Caleb Thorpe, supposed to have been the oldest living veteran of the Civil War, has recently died at the age of one hundred and three in Millersburg, Ohio. He leaves a widow who is reputed to be one hundred and one years old.

### BOSTON AND NEW ENGLAND.

A PRINTERS' STRIKE. — Owing to a strike among the printers the publication of the JOURNAL this week has been unavoidably delayed. We ask the consideration of our readers for this delay and also for any typographical errors that may occur.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Feb. 3, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 47, scarlatina 32, typhoid fever 2, measles 151, smallpox 0.

Salt on Sidewalks and Streets. — The extreme rigor of this winter's weather has induced the Boston Board of Health to relax somewhat the enforcement of its regulations against the free use of salt on sidewalks and streets. But the practice has been resumed with such recklessness, that the board has been forced to remind citizens and corporations of the existence of the ordinance and of the deleterious effects on health of the well-known slushy freezing mixture.

Ingersoll Lecture for 1904. — It will be of interest to the medical profession to learn that this year the Ingersoll Lecture of Harvard University will be delivered by Dr. William Osler of the Johns Hopkins Medical School. This lectureship was established in 1893 with the proviso that each lecture should deal with some aspect of the general subject of the "Immortality of Man." Previous lectures have been given by Professor James, Professor Royce and the late Mr. John Fiske. The question has not hitherto been discussed from the physician's standpoint, and will, no doubt, excite particular interest on this account. The announced subject is "Science and Immortality."

Bequest to the Lowell General Hospital. — Mr. Frederick Ayer has given $50,000 to be used exclusively for the construction of a building in connection with the Lowell General Hospital. The first floor is to be devoted to women and the second to men, with accommodations on each floor for from twelve to fifteen patients. A maternity department will be connected with the building.

The Boston City Hospital Alumni Association. — The Alumni Association of the Boston City Hospital will hold its annual meeting at Young's Hotel on the evening of Wednesday, Feb. 10, at 6 o'clock. Dinner will be served at 6.30 o'clock, immediately after the business meeting. Dr. Charles P. Bancroft will preside. The hospital will be open to the members during the day. Ward visits, medical and surgical, and operations in the amphitheater (10 to 12.30) will be followed by luncheon in the hospital library.

### NEW YORK.

Medical Society, State of New York. — On Jan. 28 Dr. Hamilton D. Wey of Elmira was elected President of the Medical Society of the State of New York and Dr. Joseph D. Bryant of New York, Vice-President. Drs. F. C. Curtis and O. D. Ball of Albany were re-elected as Secretary and Treasurer respectively.

Superintendent of Hospital in Korea. — Dr. Edward de Mott Stryker of Raritan, N. J., has started for Tabowie, Korea, to take charge, for three years, of a hospital which has just been established there by the Oriental Consolidated Mining Company.

Diphtheria Antitoxin for Chicago. — The Health Department has recently made a shipment of diphtheria antitoxin to Chicago, in response to a request from Dr. Reynolds, Commissioner of Health there, who stated that on Jan. 15, when bids were received for the ensuing year, the three manufacturing firms bidding for the furnishing of the supply doubled their prices. Health Commissioner Darlington has announced that if it is necessary in the interest of the poor, the output of the department's laboratories will be doubled, trebled or quadrupled, so that all the cities in the country may secure antitoxin at a reasonable rate.

A Delayed Verdict. — On Jan. 28 the Court of Appeals at Albany affirmed a verdict of $4,500 damages against the Delaware, Lackawanna & Western Railroad company in favor of Ellis R. Williams, who while serving as a brakeman in the employ of the company was injured on July 8, 1882. In the meantime the case has been tried no less than six times. It is believed that the loss to the company, including costs, will amount to $7,000.

## Miscellany.

### AMERICAN NEUROLOGY OF TODAY.

We print the following from the response to this toast by Dr. G. L. Walton, at the celebration of the Twentieth Anniversary of the Philadelphia Neurological Society, Jan. 27, 1904.

Twenty years ago, from each of the principal cities, a pitiful little group of sad-faced scientists gathered yearly in New York, to find mutual encouragement in pursuing a specialty which gave them at home the reputation of being rather persistent cranks who lacked the aptitude to deliver a child or amputate a limb, and who had the curious taste to prefer the study of physiology to the practice of medicine.

Neurological practice consisted largely in pushing the plodding pole and the painful Pacquelin up and down the backs of such chronic cases as were referred by other practitioners, who had exhausted their own therapeutic imaginations. The remainder of the neurologist's time was largely occupied by listening to the tale of the hypochondriacal and the ideo-obsessive psychopath, who goes from office to

office with preconceived and unshakable diagnosis of his own case, in the defence of which he exhibits enough argumentative skill, and prepares sufficiently voluminous briefs, to make a fortune in court, but who is generally unable, or if able, unwilling, to pay for the unsuccessful ministrations of his long retinue of medical advisers.

The professor of clinical medicine taught a few nervous diseases of fairly well-known pathology and a few with an imaginary pathology, like that peculiar form of myelitis whose foundations were laid in emotional excitement and whose development was induced by sleeping on the damp ground, bodily over exertion, and sexual excess. [1] Where there was a chair of neurology, its occupant was allowed to exercise his vagaries for the amusement of such exceptionally inquisitive students as possessed a childlike desire to know what was on the inside of the skull and vertebral column, those legitimate boundaries of anatomical research whose contents were made known to the general student by anatomical plates, from which he could learn little more of the spinal cord compared to what he is taught to-day, than he could from cross sections of a Pittsburg stogy.

Nor were extensive opportunities for anatomical and pathological study of the nervous system offered at that time even by those who pursued this branch, either in this country or abroad. The only opportunity I found in Leipzig in 1881 for neuro-pathological study was the privilege of setting up my microscope alongside that of Strümpell in Cohnheim's Laboratory, helping myself to pieces of his spinal cords, and extracting such information from him as my modesty allowed me to request. This was, in fact, a golden opportunity, to which, I fear, I did not half do justice, but except for that fortunate chance I should have been completely at a loss.

American as well as foreign neurology of to-day offers marked contrast with this picture. Neurology is now generally accorded a dignified and respected place, not only in the curriculum of the school, but by the medical practitioner. The neurologist is not only regularly consulted by the surgeon regarding the advisability of operation on brain, cord or peripheral nerve, and by the physician on obscure neurological cases, but his opinion is given weight by both surgeons and physicians and by other specialists in those obscure disorders, whether of nutrition, of motion, or otherwise involving organs outside the nervous system which baffle diagnostic skill.

The pathological work has advanced meantime with equal or greater rapidity. The second-year students in the Harvard Medical School now spend every day for a month examining pathological and healthy specimens of cord and brain, both macroscopically and microscopically, and by the time they take the fourth-year elective they are able to keep some of us guessing, and in their turn instruct the instructor.

The pathological material the student sought in vain twenty years ago, even on the Continent, he may find to-day in the laboratories of the various general hospitals, and in even greater profusion, and more extensively studied, in the hospitals for mental disease. An example of this advance was given only a month ago in this city, in the remarkable demonstration of neurofibrils, prepared in the Shepard and Enoch Pratt Hospital at Baltimore.

From the numerous instances of neurological advance in pathological diagnosis, I need only mention the monograph of Roberts on "Wasting Palsy," published in 1858, in which he describes amyotrophic lateral sclerosis, and states that the cord in this disease shows no characteristic changes either macroscopically or microscopically. As an instance of therapeutic progress let me remind you that even twenty years ago the surgery of the nervous system was in its infancy.

The present status of the pathological diagnosis of nervous diseases offers marked contrast to that of the comparatively recent date cited, when spinal diseases were classified only by their symptoms

Drug therapy in neurology, in spite of various experiments, is much the same as twenty years ago, except for certain modest but useful acquisitions, like the coal tar products and the thyroid extract; but the armamentarium of the neurologist has been materially increased of late by the development of a system of rational hydrotherapy and other forms of physical therapeutics.

Cerebral and spinal surgery, thanks largely to the neurologist, has now reached so high a scientific plane that its limitations are due to the serious nature of the diseases themselves, not to lack of knowledge on the part of the neurologist or technical skill on that of the surgeon.

While his fellow practitioners are awakening to the importance of the work of the neurologist, he, in his turn, is becoming more and more keenly alive to the importance of keeping, as far as possible, in touch, not only with allied branches, such as psychiatry and comparative neurology, but also with the deductions to be drawn from blood examination and blood pressure, cytodiagnosis and the relation borne by the ductless glands to psychic and somatic life, to say nothing of modern bacteriological methods and the recent investigations in physical chemistry, which seem almost on the verge of initiating us into the mysteries of the nervous impulse itself, and the meaning of myelinization.

I thank you, Mr. President and gentlemen, for the honor of addressing you and for the great pleasure of meeting you to-night. I bear the greeting of my colleagues, members of the Boston Society for Psychiatry and Neurology, who join me in wishing we were sufficiently near to allow more frequent interchange of courtesies. The Philadelphia Neurological Society has occupied, for the past twenty years, the forefront of every advance, and I can wish it no greater felicity than the maintainance of its well-earned prestige.

[1] Ross, Diseases of the Nervous System, 1883, p. 114.

# Correspondence.

## LETTER FROM UPPER EGYPT.

CLIMATE. GROWTH OF ASSOUAN. RESURRECTION OF PHILAE. GOLF. ERADICATION OF OPHTHALMIA. A BISHARIN MOTHER. "PIGEON" ARABIC. SIR STEPHEN MACKENZIE, M.D.

ASSOUAN, UPPER EGYPT,
Jan. 10, 1904.

MR. EDITOR: The brief but acceptable apology for winter which one usually receives in this part of Egypt has not yet been offered. On the contrary, the weather thus far has been of the sort to be expected in March — the thermometer registering 90° F. on several occasions during the past three weeks. In Cairo it is cool and heavy rains have already fallen in Lower Egypt, which leads such of us as have been wise enough to come up the Nile in good season to congratulate ourselves on our foresight.

The season promises to be a most successful one, and very soon the hotel accommodations of the country will be strained to shelter the crowds which the absence of cholera and plague scares and the cold summer which prevailed throughout the world will attract to Egypt. Assouan is being constantly improved in many ways: roads are being widened and well ballasted, pretty little public gardens are springing up along the river front, and new and substantial buildings are being erected.

The gates of the Great Barrage have been recently opened, and Philæ has risen from the Nile not a bit the worse for its long submersion. Those who prophesied that the lines of its temples would be injured by adhesion of river mud are agreeably disappointed, for the little island was never more beautiful. Every day parties visit it to make sure of seeing this gem of all Egypt before the water is again held back and the Nile hides most of its beauties.

Golf has at last come to Assouan, and a very "sandy" nine-hole links has been made. A clubhouse of mud brick is being quickly built, and in a few days coming "events" will cast their shadows on the hotel bulletin boards.

A most interesting experiment is now being carried out. Sir Herman Casell donated £10,000 last spring for the purpose of eradicating, if possible, the dreadful scourge of Egyptian ophthalmia, which causes partial or complete loss of eyesight in so many cases.

It is certain that the flies, which are permitted to remain on and about the babies' eyes, are a potent cause of the disease, which is most difficult to cure unless in the early stages. Three reasons are given for this stupid neglect on the part of Egyptian mothers: laziness; the belief that Allah sends the flies and ill luck must follow their dispersion; and, lastly, that they take away the poison — the fact that they also bring it being completely ignored.

That the women are lazy and superstitious is undoubtedly true; but they are fond of their children, and I fancy the last-named reason is the true one.

Be that as it may the sanitary department has sent out well-qualified medical men with a complete outfit of camels, tents, medicines and supplies of all sorts to begin the crusade, by moving about the country and demonstrating to the natives that the disease is curable, and at the same time preaching the doctrine of cleanliness plus the vigorous use of a fly switch.

If this sanitary caravan is within fairly easy reach (it is in the Fayoum at present writing) when I go down the river, I hope to visit it and learn at first hand what progress is being made.

Here, where flies are comparatively few, one rarely sees ophthalmia, and I have never happened to observe a case in the Bisharin camp, just outside the town.

The average nomad Arab is healthier, cleaner, braver and in every way a better man than the dwellers in towns and mud villages, and when water is scarce these sons of the desert "wash" in fine sand!



A BISHARIN MOTHER.

Those of us who are beginning to qualify as "old Egyptians" gradually acquire a certain knowledge of what may be termed "pigeon" Arabic. The climate is not such as conduces to committing to memory what good linguists lightly refer to as "the few simple rules" (which a bountiful crop of exceptions serve to prove) that aid so much in acquiring the language; and we content ourselves with the ability to make known our simplest wants. The pronunciation is comparatively easy, the crux being the *kh* at the beginning of a word. This has the sound of *ch* in loch, as the Scotch pronounce it, and comes off very well with what I believe is known as a "flying start;" but unless it happens to be terminal is practically impossible for the average (foreign) tongue.

Some of the minor amenities of ordinary intercourse gradually force themselves upon us, as, for example, the addition of "O thou blessed one" to the ordinary form of salutation. This is invariably received with a pleasant smile by the person addressed and also produces a mild sense of triumph in the speaker.

The sounds of the language as spoken by adults is harsh and strident, and to listen to the conversation of two housewives from the roofs of their respective mud huts is a torture to sensitive ears.

Among the old Egyptians who frequent Assouan is Sir Stephen Mackenzie, M.D., who is subject to asthma if he remains in England during the winter months, but is quite free from it in this clear dry air. As I sit writing by an open window with the thermometer standing at 73° F. in the room, it seems hardly possible that I have made no error in my date.

F. G. M.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JAN. 23, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseases. | Typhoid fever. |
|---|---|---|---|---|---|---|---|---|
| New York . . | 3,908,644 | 1,451 | 412 | 19.71 | 22 10 | 2.39 | 2.51 | .34 |
| Chicago . . . | 2,021,086 | 517 | 127 | 22.63 | 20.50 | 1.35 | 4.64 | 1.74 |
| Philadelphia | 1,407,968 | — | — | — | — | — | — | — |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 188 | 46 | 20.21 | 17.02 | 1.06 | 2.13 | 2.66 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 136 | — | 11.76 | 20 58 | 1.47 | .73 | 7.35 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 74 | 26 | 18.91 | 22.96 | 4.05 | 5.40 | — |
| Boston . . . | 617,950 | 222 | 50 | 21.17 | 23.42 | 1.80 | 1 35 | .90 |
| Worcester . . | 136,925 | 32 | 11 | 15.62 | 18.75 | — | 3.12 | — |
| Fall River . . | 119,349 | 38 | 14 | 15.78 | 26.31 | 2.63 | 2.63 | — |
| Lowell . . . | 104,402 | 24 | 4 | 20.83 | 12.50 | 4.17 | — | — |
| Cambridge . | 100,998 | 35 | 7 | 22.85 | 14.28 | 5.71 | — | — |
| Lynn . . . . | 73,875 | 26 | 7 | 7.70 | — | 3.85 | — | — |
| Lawrence . . | 72,348 | 23 | 6 | 34.78 | 17.39 | — | 8.69 | 4.35 |
| Springfield . | 72,020 | 25 | 7 | 8.00 | 32.00 | 4.00 | — | — |
| Somerville . | 70,413 | 12 | 1 | 16.67 | 16.67 | — | — | — |
| New Bedford | 68,863 | 24 | 5 | 16.67 | 25.00 | — | — | — |
| Holyoke . . . | 50,538 | 18 | 4 | 5.55 | 11.10 | — | — | — |
| Brockton . . | 46,601 | 8 | 0 | — | — | — | — | — |
| Newton . . . | 39,310 | 11 | 2 | 18.18 | 18.18 | — | — | — |
| Haverhill . . | 39,061 | 15 | 4 | — | 26.66 | — | — | — |
| Malden . . . | 37,205 | 13 | 4 | 23.10 | 23.10 | 7.70 | — | — |
| Salem . . . . | 37,188 | 9 | 2 | 33.33 | — | — | — | — |
| Chelsea . . . | 36,499 | 10 | 3 | — | 20.00 | — | — | — |
| Fitchburg . . | 36,335 | 11 | 4 | 9.09 | 18.18 | — | — | — |
| Taunton . . . | 34,577 | 20 | 3 | 5.00 | 50.00 | — | — | — |
| Everett . . . | 30,209 | 4 | 1 | — | — | — | — | — |
| North Adams | 29,201 | 7 | 1 | 14.30 | 28.60 | — | — | 14.30 |
| Quincy . . . | 26,798 | 6 | 2 | 33.33 | 16.67 | — | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 12 | 3 | 25.00 | 8.33 | — | — | — |
| Brookline . . | 23,576 | 5 | — | — | 20.00 | — | — | — |
| Pittsfield . . | 22,870 | 6 | — | 33.33 | — | — | — | — |
| Medford . . | 21,956 | 4 | 2 | 25.00 | — | — | — | — |
| Chicopee . . | 21,692 | 11 | 8 | 18.18 | 18.18 | — | — | — |
| Northampton | 20,314 | 5 | 1 | — | 40.00 | — | — | — |
| Beverly . . . | 15,807 | 5 | — | 20.00 | 20.00 | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 5 | 0 | — | — | — | — | — |
| Adams . . . | 14,745 | 3 | 2 | 100.00 | — | — | 33.33 | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 7 | 2 | 14.30 | — | — | — | — |
| Newburyport | 14,478 | 2 | 0 | — | — | — | — | — |
| Woburn . . . | 14,315 | — | — | — | — | — | — | — |
| Melrose . . . | 13,819 | 0 | — | — | — | — | — | — |
| Westfield . . | 13,809 | 3 | — | — | 33.33 | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 5 | 1 | 20.00 | 20.00 | 20.00 | — | — |
| Revere . . . | 13,609 | 3 | — | 33.33 | 33.33 | — | — | — |
| Framingham | 12,974 | 3 | — | 33.33 | 33.33 | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | — | — | — | — | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 3 | — | — | — | — | — | — |
| Weymouth . | 11,350 | 1 | 0 | — | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,042; under five years of age, 772; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 593, acute lung diseases 790, consumption 410, scarlet fever 42, whooping cough 4, cerebrospinal meningitis 9, smallpox 2, erysipelas 14, puerperal fever 12, measles 27, typhoid fever 33, diarrheal diseases 78, diphtheria and croup 61.

From whooping cough, New York 2, Pittsburg 1, Quincy 1. From smallpox, New York 1, Pittsburg 1. From cerebrospinal meningitis, New York 7, Somerville 1, Adams 1. From erysipelas, New York 5, Chicago 2, Baltimore 1, Pittsburg 1, Providence 1, Boston 2, Worcester 1, Quincy 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,425, for the week ending Jan. 9, the death-rate was 20.4. Deaths reported, 5,968; acute diseases of the respiratory organs (London) 248, whooping cough 121, diphtheria 60, measles 132, smallpox 5, scarlet fever 36.

The death-rate ranged from 7.9 in Barrow-in-Furnace to 41.7 in Preston; London 19.4, West Ham 16.3, Brighton 25.6, Southampton 15.3, Plymouth 15.1, Bristol 17.6, Birmingham 23.4, Leicester 17.4, Nottingham 23.1, Liverpool 26.7, Bolton 20.2, Manchester 24.6, Salford 24.1, Bradford 21.2, Leeds 22.6, Hull 17.5, Cardiff 17.7, Rhondda 21.3, Marthyr Tydfil 40.1, Kings Norton 16.4, York 19.9.

## METEOROLOGICAL RECORD.

For the week ending Jan. 23, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. . 17 | 29.92 | 22 | 36 | 9 | 76 | 68 | 72 | NW | N W | 16 | 20 | F. | C. | T |
| M. . 18 | 30.50 | 6 | 14 | -1 | 74 | 73 | 74 | NW | N W | 14 | 18 | C. | C. | 0 |
| T. . 19 | 30.80 | 2 | 11 | -6 | 84 | 53 | 64 | N | N | 10 | 5 | C. | C. | 0 |
| W . 20 | 30.30 | 18 | 28 | 8 | 93 | 76 | 84 | S | W | 11 | 8 | N. | O. | .06 |
| T. . 21 | 30.16 | 30 | 32 | 27 | 73 | 100 | 86 | NW | N E | 7 | 20 | O. | N. | .18 |
| F. . 22 | 30.03 | 27 | 35 | 19 | 94 | 92 | 93 | E | N E | 20 | 11 | N. | R. | .62 |
| S. . 23 | 29.86 | 30 | 42 | 19 | 100 | 95 | 98 | E | N W | 2 | 5 | G. | O. | .12 |
| ☞ | 30.22 | | 28 | 82 | | | | | | | | | | .98 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## RECENT DEATHS.

DANIEL FRANCIS MURPHY, M.D., M.M.S.S., died in Woburn, Jan. 31, 1904, aged fourty-four years.

GEORGE CLINTON HALE, M.D., son of the late Dr. Charles Hale, of Greenbush, N. Y., and a great-grandson of Governor George Clinton, died at Catskill, N. Y., on Jan. 30, in the seventy-second year of his age.

GEORGE H. R. BENNET, M.D., of Brooklyn, N. Y., died on Jan. 26, at the age of sixty-seven years. He was graduated from the medical department of the University of the City of New York in 1860, and during the Civil War was a surgeon in the Twenty-Third New York Regiment.

ROBERT M. WEED, M.D., of New Rochelle, Westchester County, N. Y., died on Jan. 25, at the age of forty-nine years.

## PHARMACOLOGIST.

BUREAU OF PLANT INDUSTRY, DEPARTMENT OF AGRICULTURE.

The United States Civil Service Commission announces an examination on March 1, 1904, to secure eligibles from which to make certification to fill a vacancy in the position of pharmacologist (male) in the Bureau of Plant Industry, Department of Agriculture, at $1,800 per annum, and other similar vacancies as they may occur.

The person appointed to this position must be a man trained and equipped with the knowledge and experience necessary for isolating and handling poisonous and other active principles of plant origin. He must be trained in animal physiology and pharmacology, and must have had experience in studying by exact laboratory methods the effect exerted on the different animal functions by the active principles of plant origin. He should be familiar with the best forms of apparatus used in carrying on such experiments and should have abundant laboratory experience in making such investigations. He should be able to read at least French and German, in addition to English. Age limit, twenty years or over.

This examination is open to all citizens of the United States who comply with the requirements.

Persons who desire to compete should at once apply to the United States Civil Service Commission, Washington, D. C., for application Form 1312, which should be properly executed and filed with the Commission at Washington, with the material required, prior to the hour of closing business on March 1, 1904. In applying for this examination the exact title as given at the head of this announcement should be used in the application.

Issued Jan. 29, 1904.

## BOOKS AND PAMPHLETS RECEIVED.

Report of the Commissioner of Education for the year 1902. Vol. II. Washington. 1903.

The Social Evil in University Life; a Talk with the Students of the University of Pennsylvania. By Robert N. Wilson, M.D. Reprint.

## Original Articles.

### REMARKS UPON CHOLECYSTECTOMY AND CHOLECYSTOSTOMY, WITH SPECIAL REFERENCE TO THEIR COMPARATIVE SAFETY AND EFFICIENCY IN THE TREATMENT OF BILIARY AFFECTIONS.

BY MAURICE H. RICHARDSON, M.D., BOSTON,

*Professor of Clinical Surgery, Harvard University.*

The questions when to drain the gall bladder and when to remove it are, in the present state of our knowledge, very difficult ones to decide. In my operations upon the biliary passages during the present year I have extirpated the gall bladder more frequently than I did formerly. The indications for complete removal have seemed more numerous and less questionable. In certain instances I have removed a gall bladder that was not more seriously diseased than many have been in previous permanently successful cholecystostomies. I am inclined to believe that in operations which do not permit easy and prolonged drainage the chief benefit of surgical intervention in gallstones is lost. I must admit that I am more and more convinced, by these cases in which there has been no free and prolonged drainage, that my earlier views were the proper ones, and that in the performance of cholecystectomy without providing for such drainage we are not only losing one of the most beneficent results of the operation, but are occasionally subjecting a patient to grave risks.

The dangers of cholecystectomy and cholecystostomy in simple cases are probably slight. An incomplete review of my private gall-bladder operations in 1902 and 1903 shows in a total of 51 operations, four deaths; two in 1902, and two in 1903. None of these deaths could have been prevented. In 1902 one patient died of pneumonia in advanced cholecystitis, for which drainage was made. The patient was *in extremis*. A second died of pulmonary embolism, during a satisfactory convalescence from cholecystostomy for acute cholecystitis. In 1903 one patient died of shock within forty-eight hours after cholecystostomy and choledochotomy. The second died of subphrenic abscess after removal of the gauze drain, though the convalescence during the first two weeks was very satisfactory and encouraging.

The arguments based upon mortality in such cases as these have little weight. The method of operation made probably little difference. The patients would have succumbed just the same after any operation of magnitude, or, indeed, after any operation.

The reason why during the past year I have resorted more frequntly to total extirpation is hard to tell. I have been influenced somewhat by the advocacy of others whose experience and opinions I respect; and I have thought perhaps that by my adherence to older ideas I was neglecting opportunities for better immediate and permanent results. A second influence has been the great anatomical attractions of extirpation; and a third, the repugnance I feel against any operation which fixes to the anterior abdominal wall by a local area of adhesions a freely movable organ. Furthermore, I have hoped by extirpation to avoid the great tendency to ventral hernia seen in drained wounds of the right upper quadrant. Another important element has been found in those changes in the gall bladder which at the time of operation made drainage difficult and unsatisfactory. Finally, I have been influenced by changes in the gall bladder itself which, though permitting satisfactory temporary drainage, seemed unlikely to be relieved permanently by that drainage.

The number of cases personally observed and treated, upon which my views are chiefly based, includes 200 operations upon the biliary passages — 140 private and 60 hospital. This list is incomplete, however, as some cases have been overlooked. The number not operated upon will comprise many more cases; and the number which I have observed in the wards of my colleagues will add several hundred more. My views are chiefly influenced, however, by my own cases, for it is these only with which I have been brought into close personal contact.

The operation of cholecystectomy is, in my experience, a very satisfactory one. The mortality has been small; convalescence has been rapid, and, with a few exceptions, permanent; and there is little tendency to hernia. Unfortunately, the data as to the permanent effect of total extirpation — either upon the general well-being of the biliary passages or upon the liability to the re-formation of gallstones — are insufficient for the formation of a positive opinion; for what are one, two, or five hundred cases of a lesion which permits combinations and complications of an almost infinite variety?

The analogy between the gall bladder and the appendix would seem in some respects a close one, and yet the resemblance is more apparent than real. The appendix is, compared with the gall bladder, simplicity itself, and it is impossible to draw deductions from the much greater experience that we have had in the one to aid in the solution of questions in the other.

In the case of the appendix there is simplicity in anatomical structure, in anatomical relations, in modes of infection, in the progress of the lesion and in the ultimate anatomical changes.

The anatomy of the biliary passages, on the other hand, is complex; the ramifications of the bile ducts are far-reaching; the anatomical relations are of the first magnitude. Moreover, the functions of the gall bladder are not understood. That it acts as a reservoir for storing bile is the most obvious idea, and yet this function cannot be of any considerable importance. I have seen many cases in which there has not been the least interference with digestion or with nutrition after the removal

of a gall bladder. In many other patients whose gall bladders have been for years apparently useless I have failed to observe any symptoms attributable to that cause. There is no analogy between the gall bladder and the appendix in this respect at least, except that both for all practical purposes may be regarded as useless appendages. I should not therefore consider the retention of the gall bladder as especially important were it deemed advisable for good reasons to remove it.

Though it is generally admitted that gallstones are the remote results of biliary infections; yet, from the great extent of the radicles of the hepatic duct, it is, in many cases at least, impossible to say where those infections first call into being the microscopic stone. Though the nidus of gallstones is usually in the gall bladder, in a very considerable number of cases the stones are said to form in the liver. Clinically I have found it impossible to tell in any case whether gallstones removed at a second operation were re-formed in the gall bladder or not. In one of my earliest cases, for example, I could feel a stone in the hepatic duct. In trying to dislodge and deliver this stone it slipped from my fingers and became lost in the depths of the great fissure, where I could not again detect it. I have removed large numbers of stones from the hepatic and common ducts, only to have 150 or more subsequently discharged from the hepatic duct through the tube into the dressings. Post-mortem examinations have for years shown the existence of gallstones in the liver. I have removed, in the course of gall-bladder operations, large numbers of stones from the hepatic duct, as well as from the gall bladder and from the cystic and the common ducts. I am convinced that in certain cases of so-called recurrence of gallstones, when I have had to operate a second time, that the stone or stones were in existence at the time of the original operation, and that they were either overlooked in the main ducts themselves, or that they lay hidden far beyond reach in the primary divisions of the duct in the liver. It must therefore be admitted that in a certain percentage of cases removal of the gall bladder itself with the cystic duct does not remove the already existing stones. It must be admitted also that, even if all the stones then existing are removed by cholecystectomy, stones may form anew somewhere in the remaining biliary passages.

I am fully convinced, however, that the gall bladder is the place where, in most cases, the gallstones form, and that their appearance elsewhere is either subesquent to their formation in the gall bladder or directly dependent upon anatomical and pathological changes induced in the hepatic radicles by gallstones which have passd out of the cystic duct. For all practical considerations this explanation seems to me perfectly reasonable and satisfactory. Even when I have removed a hundred or more directly from the hepatic duct, I have been sure that these hepatic stones were formed either in the gall bladder or in ducts dilated above an impaction. I have never seen clinically a gallstone in the hepatic or in the common duct without some evidence of its previous existence in the gall bladder itself. I do not believe that at the autopsy table a perfectly healthy gall bladder will often be found when gallstones have been demonstrated in the hepatic radicles. I would admit the possibility of gallstones in the liver, but would not consider this possibility as an argument of any appreciable weight in deciding between cholecystostomy and cholecystectomy.

I have removed in several cases a gallstone from the cystic duct, or from the hepatic or common, at a second operation. These stones have been of great age, and were undoubtedly overlooked at the time of the first operation.

One of the first facts impressed upon the operator in gall-bladder surgery is the great diversity in the pathological conditions existing at the time of operation. Although in the future it is not likely that ancient gall-bladder lesions will be as common as they have been in the last ten years, yet there will probably be a certain number of cases in which this lesion will be found well advanced, even if the patients are operated upon at the time of the earliest observed symptoms.

The scope of this communication does not include a discussion of the wide diversity in pathology. I have been impressed by these extraordinary variations from the normal at the operating table at a time when the interpretation of the pathological facts was of the greatest importance, and essential to the proper completion of the operation. It is enough to emphasize the fact that changes of great importance and of far-reaching effects, influencing not only the indications for operation but the methods of performing that operation, may be encountered in some of the apparently simple cases. The question of drainage or of extirpation may be settled at once by the condition in which the gall bladder will be found, and in which the operator will have no choice. The very first history of gallstones elicited from a patient by careful questioning may be that of the impaction in one of the ducts of a stone of great age, expelled perhaps after many years of chronic inflammation of the gall bladder, with ulcerations and contractions. Again, a gallstone may have formed and ulcerated through the gall bladder and into the intestine, and it may have caused a complete intestinal obstruction, without having given rise to any symptoms whatsoever. Nothing but the remains of the gall bladder may be found, contracted upon a dilated common duct — the whole taking place so gradually and so quietly as never to cause even a temporary discomfort. On the other hand, gall bladders may be, and often are, filled with large numbers of small gallstones; or the whole capacity of the gall bladder may be taken up by a single large stone, without any marked changes in the gall bladder itself and without any history

of pain or discomfort. Again, a single stone may cause symptoms of almost every kind as to severity and duration without either having become impacted in the cystic duct, or having caused ulceration of the mucous membrane, or having set up a gall-bladder infection. Furthermore, without any apparent cause, either from gallstones or from any other source, the gall bladder may suddenly become the seat of a fulminating infection and of an actual gangrene. And, finally, the gall bladder may become ruptured without any previous symptoms whatever. All of these lesions I have myself seen. Who can doubt that an experience of several thousand cases will show a diversity of lesions and of symptoms and of complications which is, as I have said, of almost infinite variety?

These are, however, but a few of the changes which I have observed in the course of perhaps some three or four hundred gall-bladder cases, including those operated upon and those not operated upon, as well as those discovered in the course of other abdominal operations.

Although an enormous amount of material is at hand to show the truth of the foregoing remarks, and to illustrate the tremendous diversity of pathological conditions, yet this field must be regarded — clinically, anatomically and pathologically — as a field which has been very incompletely explored. In a large number of cases the surgeon will find conditions present — before — during and after operations — for which he will search in vain for a precedent. Many questions in biliary surgery connected with the history — the physical examination, the indications for operation, the operation itself and the after treatment — are still unsettled. We do not even know what the early symptoms of gallstones are. We are seldom able to find any physical signs whatsoever, and we are sometimes unable to detect gallstones in the biliary passages, even with the hand inside the abdomen. Indeed, with the gall bladder between my fingers, I have been unable sometimes to detect gallstones before relieving distention; and yet I have found as many as a hundred stones after the relief of that distention.

The foregoing remarks may be regarded in the light of an introduction to the discussion of the chief subject of the evening — the comparative merits of cholecystectomy and cholecystostomy when a choice between these methods is possible. In many cases, as I have already said, there can be no choice. The gall bladder is already practically extirpated, and in many its condition is such that it must be extirpated. Choice is possible between the two methods only when the gall bladder is comparatively normal.

The question of function is perhaps the most important one from the standpoint of the physiologist. Whatever the truth may be as to the office of the gall bladder in nature, it has been demonstrated often enough that it is not indispensable. If not indispensable, the functions of the gall bladder have little importance in comparison with the advantages of draining the biliary passages. Should drainage be proved, as a rule, unnecessary or even dangerous, the gall bladder may be sacrificed without a thought as to its functions. On the other hand, if drainage is the best policy in gall-bladder surgery, and if the gall bladder provides the best route; if its retention causes, on the whole, less subsequent trouble than its extirpation, then the functions of the gall badder, whatever their importance, may be considered.

The practical arguments in deciding between extirpating and draining the gall bladder are three — perhaps four — in number, and are based : (1) Upon the comparative dangers of the two methods; (2) upon the comparative efficacy of preventing the recurrence of gallstones; and (3) upon the advantages of temporary drainage of the biliary passages ; finally, upon the possible necessity and increased difficulty of draining those passages at some future time.

(1) The comparative dangers of cholecystectomy and cholecystostomy. — As a rule, in gall-bladder surgery, as in all other kinds of surgery, the deeper the dissection and the nearer to vital structures the greater the immediate and remote dangers of the operation. This rule certainly applies to the surgery of the biliary passages. When the manipulations of the operation are carried on at the surface of the body, practically outside of the abdominal wound, there is no hemorrhage; the dissection involves no important structures; and infection, if it is present, is in the superficial areas of the abdominal cavity; the dangers of peritoneal contamination are easily and effectively guarded against. Clinical experience shows that cholecystostomy is the safest of all operations upon the biliary passages.

From the small number of deaths in my series of two hundred cases no deductions can be drawn. It would be unfair to compare the mortality following a number of difficult cholecystectomies with the same number of simple cholecystostomies, and *vice versa*. Taking a small number of any operations and drawing from them conclusions as to mortality rates is extremely misleading. It is absurd to base any argument, for example, upon my own results in extirpation, for all the deaths have been dependent upon causes other than the operation of extirpation by itself. It would be as absurd to claim for choledochotomies, of which I have had a considerable number with a small mortality, as great safety as that of an easy operation like cholecystostomy. I shall assume for purposes of argument that extirpation of a normal gall bladder is in itself an operation almost but not quite as safe as cholecystostomy; that the comparative mortality is, however, practically the same under similar conditions. If there is any choice on the ground of immediate danger, it is in favor of simple drainage — cholecystostomy.

There are conditions, however, in which drainage is quite as dangerous as extirpation. That is when the gall bladder is deeply contracted, hard to find, adherent to surrounding viscera and infected. In such cases the chief danger is from the deep dissection, the hemorrhage and the infection; and it makes little difference whether or not the remains of the gall bladder be removed above the point where the tube is fastened.

In cholecystectomy, even under the most favorable circumstances, a considerable area of the under surface of the liver is left bare and oozing; the cystic artery must always be cut and tied; the dissection is in close relation with the portal vein, and sometimes with the inferior cava; there is always the danger of tying the cystic duct so as partially to obstruct the hepatic and common ducts; the gall bladder may at any time be ruptured, or suddenly cut into, and the field flooded with its contents; hemorrhages from the raw surface of the liver are sometimes controlled only with the greatest difficulty. Occasionally, as I observed many years ago, after apparently the most effective ligation of the cystic duct, a burst of bile takes place from the depths of the wound, whence it must be carried to the surface wholly by the capillary drainage of a gauze wick.

Yet, with all these dangers, removal of a comparatively normal gall bladder, in experienced hands, probably does not, as I have said, add very materially to the risk. The mortality after extirpation of thin, elastic, translucent, unchanged gall bladders, loosely connected with and easily separated from the liver, with an easily isolated and tied cystic duct — is very small. I have had no deaths in such cases, whether operated upon by cholecystostomy or cholecystectomy. Barring certain complications which I will mention later, this seems a most effective method of treating gallstones in the gall bladder. The recovery is always more rapid than after drainage; there is less liability to hernia. But are the ultimate results as good? I believe that they are not.

When the comparative dangers of draining and of extirpating a changed gall bladder are considered,— when we have a gall bladder that is thickened, adherent and infected,— the dangers of extirpating such a gall bladder seem to me greater than those of draining that gall bladder. The question then comes up whether extirpation of such a gall bladder is not followed by much better permanent results than drainage. Operation upon an adherent, thickened, friable, septic gall bladder, with presumably a thickened, ulcerated, strictured duct, with or without gallstones, is a formidable operation, and one of very considerable mortality. The surgeon finds in such cases an increased amount of hemorrhage and greater difficulty in checking it, with much greater difficulty in preventing extensive peritoneal infection. When the gall bladder is contracted and thickened, when its fundus is far removed from the abdominal wound by gradual contraction, then the difficulties of drainage may be much greater than the difficulties of extirpation. In draining such a gall bladder it is necessary, first, to isolate it from surrounding structures — a procedure often of great difficulty, and sometimes resulting in rupture of the gall bladder and extensive infection of the surrounding parts. It is always difficult to fix a tube in effectively, so that bile will not be poured out into the depths of the wound. Once having isolated such a gall bladder down to the cystic duct, ligation of that duct and removal is a simpler and safer procedure than drainage of it.

However desirable it may be to extirpate a contracted, thickened and friable gall bladder, in many cases it is essential under these circumstances to drain the biliary passages. If these passages are not drained through the contracted gall bladder and the cystic duct, then the surgeon must seek for the common or the hepatic duct, and make his drainage through them. The simple extirpation of such a gall bladder is probably a safer procedure than attempted drainage through it. Under the pathological conditions which exist, however, it is generally essential to provide temporary drainage, either by deep cholecystostomy or by drainage through the common or hepatic duct.

The comparative dangers, then, of cholecystectomy and cholecystostomy are chiefly in connection with the normal and the comparatively normal gall bladder.

(2) The prevention of gallstones.— The weight of this argument depends upon the etiology of gallstones. If they are always formed in the gall bladder and nowhere else, this argument is of the greatest possible weight in favor of cholecystectomy. I have already considered briefly this question in the introductory remarks. I am convinced that as a rule gallstones are formed in the gall bladder, and there alone. I have never seen a case which led me to suspect the re-formation of gallstones either in the gall bladder or in the liver. In not a few instances I have been obliged to operate a second time, and I have removed at the second operation one or more gallstones. These stones were not new stones, however. I have found gallstones in the hepatic duct, high up in the liver. In one instance 150 were discharged from the hepatic duct during convalescence. These stones were, I fully believe, formed in the dilated hepatic duct.

The argument of preventing gallstones by removing at once the *fons et origo mali* is, in my mind, a very strong one, and it weighs almost wholly in favor of cholecystectomy.

On the other hand, if gallstones are formed in any appreciable number of cases in the liver, cholecystectomy without drainage of the biliary passages is undesirable. Drainage after cholecystectomy by means of a tube in the hepatic duct will give drainage for the time being. Should a second operation become necessary, drainage will be extremely difficult.

I am fully convinced by my own experience, however, that gallstones are extremely seldom re-formed, even in the gall bladder. That they may re-form in the liver is a possibility so remote that it need hardly to be considered in discussing the comparative merits of cholecystostomy and cholecystectomy. The argument of liability to re-formation, therefore, favors cholecystectomy rather than cholecystostomy, but the weight of this argument is light.

(3) Drainage of the biliary passages is the one great benefit to be gained by the operation upon the biliary passages, whatever may be the lesion for which the operation is undertaken. I am very strongly of the opinion that the free escape of bile through the wound for two or three weeks does more good than anything else connected with the operation. Hence any method which does not provde this free temporary escape fails in the most important element for permanent success.

By cholecystostomy drainage may be provided in the quickest and safest way. When the gall bladder is normal or comparatively normal — though perhaps at this time drainage is least important — a tube fastened in the fundus of the gall bladder by means of a purse-string provides a safe and efficient means for the escape of bile, and for the thorough washing out of all elements of sepsis, of every possible nidus of renewed infection or of repeated gallstone formation. Furthermore, in some way not easy always to understand, it provides for those symptoms and lesions originating in the pancreas. It gives the patient the very best chance for immediate and for remote recovery.

It is true that drainage of the biliary passages may be affected after extirpation of the gall bladder, by means of the cystic, common or hepatic ducts. This operation, however, is not so easy or so safe as it is by some regarded. To hunt for the hepatic duct after isolation of the gall bladder and cystic duct is no small operation in itself. I find it often difficult to demonstrate the hepatic duct in my regional surgery course. The cystic duct is sometimes so small that it will not admit any but the smallest probe. Moreover, the valves of the duct prevent the introduction of the probe. The hepatic duct, unless it is dilated by long-continued obstruction below it, is too small for the introduction of any but the smallest tubes. I need hardly add that the search for the hepatic duct in the depths of the wound requires a very long incision. The technical difficulties of hepatic drainage in the comparatively normal case are, I do not hesitate to say, of great magnitude, besides which such an operation as, say, the isolation of the cervical sympathetic from the jugular and carotid is a trivial task. I cannot imagine how hepatic drainage as a routine procedure can be seriously encouraged, either in connection with cholecystostomy or following cholecystectomy. Furthermore it will take a good deal to convince me of either the necessity or the wisdom of this course when there is at hand so safe and so efficacious a method as cholecystostomy.

Under certain conditions, however, drainage through the hepatic duct must be used whether cholecystostomy or cholecystectomy be performed. When drainage through the gall bladder has been ineffectual or unduly difficult, I have introduced a tube into the hepatic duct through the contracted gall bladder. In other cases, after extirpation of a contracted gall bladder, I have found no difficulty in so doing by incising the dilated duct. In a recent case I drained each primary division of the hepatic duct — one tube going into the right half of the liver, the other into the left. The gall bladder was a rough mass on the dilated common and hepatic ducts, which together resembled closely a thickened and somewhat contracted gall bladder. A free incision into this apparent gall bladder revealed two large openings, each admitting almost the finger tip. A tube in each provided the best kind of drainage. The comparative amount of bile from each half of the liver was then easily determined. The patient made a good recovery. In gallstone impactions of the common duct hepatic drainage is, of course, essential.

Cholecystectomy in the case of the normal or comparatively normal gall bladder does away with drainage, or should do so. If drainage is essential in gall-bladder surgery, cholecystectomy should never be performed in the comparatively normal gall bladder. When the gall bladder is abnormal — infected, contracted —it should be removed for reasons connected with its own pathological condition. Yet I have been surprised to find how many badly infected gall bladders have become perfectly healed after cholecystostomy. On the other hand, I have been disappointed to find fatal gangrene after draining an acutely infected gall bladder.

Drainage of the biliary passages in acute or chronic cholecystitis is indispensable. When, therefore, it is proposed to extirpate such a gall bladder, it is proposed to do away with drainage, except by methods difficult and dangerous already described.

My recent experience tends to confirm the objections to cholecystectomy expressed above. In three cases — all operated upon during the past three or four months — there have been very serious, not to say alarming, symptoms.

Mrs. A. L. M., aged fifty-three, a patient of Dr. Cochrane of Arlington, Vt., had suffered from biliary colic for twenty years. At the operation on June 26, 1903, I found a gall bladder everywhere adherent, contracted so close to the duodenum that separation seemed impossible. The fundus of this contracted gall bladder was at last delivered and tapped. The large, altered gall bladder was enucleated as well as possible. One hundred and seventy gallstones were removed, some of which were in the depths of the sacculated cystic duct. I sewed into the remains of the gall bladder and into the dilated cystic duct the largest drainage tube that I could get in. The whole appearance and feel of the region was that of malignancy, but there was no malignancy.

This patient was discharged from the hospital on Aug. 12. At that time there was a sinus giving exit to perhaps a pint of serum and about half an ounce of mucus in twenty-four hours.

The last of August Dr. Cochrane removed from the sinus two more stones: one as large as a large pea and the other about the size and shape of a kernel of buckwheat. For about a month after this patient's return home the sinus discharged a considerable amount of serum and mucus every day. At the end of this time there was a sudden discharge of bile. For four or five days there was a discharge of at least two quarts in twenty-four hours. The flow ceased almost as abruptly as it appeared. It reduced itself by half at each of the three consecutive dressings (twelve hours apart), and then the sinus closed entirely, and stayed closed.

The question of cholecystectomy and cholecystostomy in a case like this is one of very little importance. Practically the case may be regarded either as one of a very large opening into a very small gall bladder, or as one of a very large opening into the remains of a very small gall bladder. The element of extirpation has, I think, no bearing in a case of this kind. There was nothing else to do except what I did do. It has a bearing, however, on the subsequent history of the case. I have no doubt that the complications which followed the operation in this case were owing to the fact that the lesion, the manipulations of the operation and the drainage, all concerned the common, the hepatic and the cystic ducts — just as they do in extirpation of the gall bladder. The explanation of the symptoms would be either that the stone was overlooked, or that there was a temporary engorgement and swelling of the mucous membrane of the duct. This is one of the cases which is, as far as my experience goes, without precedent.

II. The second case was that of a man of fifty, a patient of Dr. Sullivan of Dover, N. H. The diagnosis was gallstones and chronic cholecystitis. On July 2, 1903, at St. Margaret's, I removed the gall bladder through an incision four inches in length at the outer border of the rectus. The gall bladder was adherent everywhere, and being very friable was removed with difficulty. The cystic duct was tied with silk, and a small gauze drain was left in the depths of the wound.

This patient was discharged from the hospital on July 25, well.

On Aug. 8 Dr. Sullivan wrote that he had been called to see Mr. L., who was suffering extremely from pain in the right side. He was vomiting yellow mucus, and he was jaundiced. The temperature was 101° and the pulse 100. After this attack there was tenderness in the region of the gall bladder, with recurring fever, persistent nausea and vomiting, with insomnia. There was gradual improvement in this case. The pain and soreness diminished; the patient had no further attacks of jaundice, and gained in health and strength, so that by the end of October he was able to resume his position as an engraver.

III. The third case was that of a patient of Dr. I. J. Clarke and Dr. C. E. Durant of Haverhill. The diagnosis made by Dr. Clarke and Dr. Durant was gallstones. I did not agree with this diagnosis, but advised exploration. The attending physicians were correct in their diagnosis. The gall bladder was distended with stones and with pus. It was everywhere adherent, its walls were rotten and friable, and it contained 90 gallstones. One very large friable stone was impacted in the cystic duct. In spite of every care in separating the adhesions of the gall bladder, it tore all to pieces. The fragments were all carefully removed, and the area was cleansed with salt solution and weak corrosive sublimate. An uncovered gauze wick was placed in the depths of the wound.

Two weeks after the operation the patient began to have severe pain, and she has been in pain ever since. She became jaundiced, and that jaundice has also persisted. At last accounts she was suffering severely, both from the pain and from the jaundice. On Dec. 24 I made a careful examination of this patient. There were no physical signs. On the chances, the symptoms are caused by the impaction of a stone which was overlooked at the time of the operation.

I see no escape from the conclusion that cholecystectomy without drainage is an incomplete and dangerous operation; and that cholecystectomy with drainage of the hepatic duct is an unnecessarily dangerous operation when cholecystostomy is so very easy and so safe.

The drainage of the hepatic duct, or the common, by means of a rubber tube has dangers, theoretically at least, which ought not to be disregarded. I refer to pressure ulceration upon the lining of the duct with subsequent cicatricial stenosis. The duct is elastic, contractile, with thin and presumably easily injured mucous lining. The area of mucous lining to spare is extremely limited. It is easily conceivable that two weeks' drainage may result in a serious permanent constriction of the duct. I have observed in dissections into the common duct, when that duct is dilated and thickened, that there may be a very considerable loss of substance as the result of that dissection. May not some of the cases of jaundice after operations upon the ducts result in this way from this cause?

Again, I cannot but regard free dissections and incisions in and about these delicate structures as attended by a hazard unjustifiable from changes — inflammatory, adhesive, or cicatricial — which can neither be prevented nor understood. In a word, there is a possibility of permanent damage even in the hands of the most experienced and skillful dissectors.

There seems to me no escape from the conclusion that biliary drainage through anything but the gall bladder is attended by grave risks of remote trouble — not to mention the greater hazard of the operation itself. Once convinced of the advantages of biliary drainage, one cannot escape the conviction that it is the height of folly to sacrifice in the very beginning of gallstone disease the means by which that drainage is easy and effectual. From this point of view cholecystectomy seems an operation of last rather than of first resort — an operation for old, contracted, infected, useless gall bladders,

through the remains of which, however, temporary drainage may be easily and safely established, as in my earliest operations published in The Boston Medical and Surgical Journal of April 28, 1892.

(4) The great difficulty of secondary operations upon the biliary passages, especially drainage after cholecystectomy, has been frequently impressed upon me when, after choledochotomy, or hepatic drainage with or without cholecystectomy, symptoms have seemed to demand renewed surgical measures. Considering the small number of operations which I have myself performed, the cases in which I have considered this question are few, and the cases in which I have actually operated still fewer. Natural efforts at cure have been almost invariably successful. All the cases that I have actually reopened have been those of permanent biliary fistula caused by a stone impacted either in the cystic or in the common duct. In one case a third operation was performed, the first being cholecystostomy, in 1894, for acute cholecystitis (colon bacillus); the second, in 1900, for stone in the cystic duct; and the third, in 1901, for stone in the common duct. The number of extirpations has been too small yet for any important or valuable deductions; but three out of the last seventeen have already raised this question. In two patients operated upon by competent surgeons I have been consulted for permanent fistula after extirpation of the gall bladder.

After all, the most important objection to extirpation of the gall bladder, when the cystic duct is ligated, is the loss of those great benefits which follow prolonged drainage of the biliary passages. It is true that drainage may be used in connection with cholecystectomy by putting a tube in the hepatic duct, but in many cases it would add enormously to the difficulty and danger of the operation. Moreover, it is a serious objection to extirpating the gall bladder that drainage in the future will be difficult.

The complications that have arisen after extirpations of the gall bladder in the last year, as in the cases previously mentioned, have been owing to interferences with drainage. I have not deemed it advisable in these cases to seek the hepatic or the common duct to establish drainage, hoping that the obstruction to the bile was owing to swelling of the mucous membrane, to a temporary infection, or to some condition which would of itself subside. In the first two cases the symptoms have, in fact, subsided, and the patients are now perfectly well.

Unless it shall appear that total obliteration of the gall bladder diminishes rather than increases these unpleasant post-operative complications, cholecystectomy must remain an operation of necessity rather than of choice. The greater beauty of the operation, the rapid convalescence, the firm scar, should count but little in comparison with the permanent safety and complete recovery of the patient, even at the expense of a long scar and a ventral hernia.

## CHOLECYSTOSTOMY AND CHOLECYSTECTOMY. A STUDY OF A CERTAIN SERIES OF OPERATIONS.[1]

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In the series of sixteen cases here recorded cholecystostomy was done seven times. The gall bladder in each case was attached to the abdominal parietes by suture to the peritoneum. Permanent drainage of the biliary passages was established and drainage of the quadrilateral space (Robson) beneath the gall bladder was provided for by a wick of gauze.

These cases recovered from the operation with one exception. The case which died was No. 4, a woman sixty-six years old, who developed a pneumonia before the gall-bladder fistula had closed and died some few days after the operation.

The general symptoms of these cases of cholecystostomy are here arranged in detail:

Case I. Attacks of gall-bladder pain. No real colic; jaundice absent.

Case II. Acute cholecystitis. Gallstones in the cystic duct; jaundice absent.

Case III. Gallstones; colic; stones in the cystic duct; jaundice absent.

Case IV. Gallstone attacks. Stones in the gall bladder; jaundice absent.

Case V. Gallstone attacks. Stones in the gall bladder and the common duct; jaundice present.

Case VI. Gallstone attacks. Gallstone in the bladder; tarry detritus in the cystic duct; jaundice absent.

Case VII. Gallstone attacks. Stone in the common duct removed through the gall bladder; jaundice absent.

One case had pain referred to the gall bladder region, without genuine colicky attacks. One case was an acute cholecystitis, an acute infection in the presence of gallstones. Five cases had had genuine attacks of gallstone colic.

The contents of the biliary passages and gall bladder as found at the cholecystostomy are here stated in detail:

Case I. Clear fluid in the abdomen, small in quantity; glairy, ropy mucus and a granular, pasty sediment in the gall bladder. No stones.

Case II. A small amount of clear fluid in the abdomen; thick, cloudy mucus and inspissated biliary detritus in the gall bladder. Stones in the cystic duct. The culture from the contents of the gall bladder was sterile.

Case III. Glairy mucus and a puriform-looking material, with a few stones in the gall bladder. The culture from the gall bladder showed bacilli coli communis.

Case IV. Many stones in the gall bladder. The culture from the gall bladder showed bacilli coli communis.

[1] Read before the Franklin County Medical Society, Greenfield, Mass., Jan. 12, 1904.

CASE V. A stone in the gall bladder and one in the common duct.

CASE VI. One stone and a thick, tarry biliary detritus in the gall bladder. Culture from the gall bladder, bacilli coli communis.

CASE VII. A stone in the common duct. No stones in the gall bladder.

The stones were in the cystic duct in two cases, in the common duct in one case, in the gall bladder and common duct in one case, in the gall bladder alone in two cases. In one instance there was no stone but a pasty biliary sediment in the gall bladder and in the cystic duct.

Of these seven cholecystostomies one died of pneumonia. Five of the remaining cases have been carefully followed since operation. Only one case is absolutely well and without pain or discomfort referable to the gall-bladder region. In each of the other four cases there is more or less discomfort. The facts with regard to each of these are given in the detailed account.

Cholecystectomy was done in nine of these sixteen cases. The cystic duct was tied off and drainage provided from the stump of the cystic duct to the surface by means of a wick of gauze, which was removed after four or six days. All of these cases recovered from the operation.

The general diagnosis of these cases of cholecystectomy is here arranged in detail:

CASE VIII. Gallstone attacks without jaundice.

CASE IX. Gallstone attacks with temporary jaundice.

CASE X. Gallstone attacks with temporary jaundice.

CASE XI. Gallstone attacks; persistent jaundice.

CASE XII. Acute cholecystitis without jaundice.

CASE XIII. Gallstone attacks without jaundice.

CASE XIV. Biliary fistula.

CASE XV. Acute cholecystitis following cholecystostomy.

CASE XVI. Biliary fistula.

Five of these cases had rather characteristic gallstone colics. In one of these no gallstones were found, but a pasty biliary sediment filled the lower portion of the gall bladder and the cystic duct. Two were cases of acute cholecystitis. Two were cases of biliary fistula. One of these fistulæ was spontaneous; the other followed a cholecystostomy. The case of spontaneous biliary fistula had had two explorations of the gall bladder done previous to the cholecystectomy.

The contents of the biliary passages and gall bladder as found at operation are here stated in detail:

The contents of Case VIII: Cloudy fluid; gallstones; inspissated bile from the gall bladder.

CASE IX. Mucus; pasty, biliary sediment from gall bladder.

CASE X. Gallstones and no fluid.

CASE XI. Gallstones and no fluid.

CASE XII. Clear mucus, cloudy fluid, biliary slime.

CASE XIII. Slimy, granular biliary detritus and a gallstone in the cystic duct.

CASE XIV. Clear bile; no stones.

CASE XV. Clear mucus; no stones. The culture from the gall bladder: staphylococcus pyogenes aureus.

CASE XVI. Clear bile; no stones.

In only one instance was a culture taken and that was in Case XV. The culture showed the staphylococcus pyogenes aureus. This was a case of acute cholecystitis previously operated upon by cholecystostomy. The cholecystostomy wound had been closed some time. This patient convalesced without incident. In none of these cases were stones left unremoved from the common or hepatic ducts.

The end results of these nine cholecystectomies are particularly interesting. All the cases were traced and a report was obtained in each instance. The longest time which had elapsed since the operation was three years; the shortest time, one month. In each instance there has been no recurrence of gallstone colic and no discomfort whatsoever referable to the gall-bladder region. Each case considers herself well.

Of these sixteen cases, eleven showed no jaundice, or about 68%. Ochsner found in his cases that 50% had not had jaundice. One of the cholecystostomies had had jaundice, due to a stone in the common duct. Four of the cholecystectomies had had jaundice, three of which had temporary or fleeting jaundice, and one persistent jaundice.

Winslow has looked up the records of the cholecystectomies done at the Massachusetts General Hospital over a period of ten years. He will report the details of these cases at a subsequent date. A preliminary report made recently is instructive.

He finds that there have been forty-six cholecystectomies. Twenty-four of these cases have been traced and reports of their present condition secured. The results in twenty-two of the twenty-four cases have been perfectly satisfactory and might be termed ideal results. Two of the cases died subsequently,— one ten months after operation, the other two and a half years after the operation,— each with persistent symptoms, showing that they were not suitable cases for the operation of cholecystectomy.

Winslow has looked up the records, also, of the cholecystostomy cases done at the Massachusetts General Hospital during the past ten years. He finds that there have been 183 operations. Twenty-nine of these died within a week of the operation at the hospital, or 15%. Nine of these 29 deaths were malignant cases. Twenty-nine of the 183 cases, or about 18%, came to secondary operation, most of them because of biliary fistulæ following the cholecystostomy. Thirty-four cases of cholecystostomy, 13 of which were for malignant disease, have

been traced one year and more after the first operation and have been found to have had recurrent attacks or fistulæ persistent. Forty-six cases out of the 161 non-malignant cases gave good results, which might be called ideal results. That is about 28%. These were traced from one year to five years after operation.

It would seem, as some have thought, that the gall bladder and the biliary passages almost equal the appendix as sources of chronic disease and disability in adult life.

The general practitioner should be profoundly impressed by the pathological findings of the surgeon in operations upon the biliary passages and the gall bladder. This living pathology demonstrates that for months, and possibly for years, previous to operation, lesions have been in progress which have been unrecognized. It is possible that in a few of these instances diagnostic symptoms have been absent or concealed. It is far more probable that the attending physician has not recognized the signs of beginning trouble with these parts. It is a fact worthy of consideration that the patients whose cases are here recorded, as well as those mentioned by others in literature, complained of and suffered from what has been called gastritis, dyspepsia, chronic gastritis, indigestion, constipation, bilious headache, sick headache, sour stomach, biliousness, etc. Along with the ordinary symptoms associated with these troubles, enumerated above, occurred chills, loss of flesh, fleeting jaundice, sallowness, nausea, loss of strength, nervous prostration, anorexia, vomiting, pains not particularly localized, — perhaps extending from the general abdomen into the back, — general abdominal discomfort. During these months and years the physician has treated these sufferers expectantly, medically, palliatively, with pills and powders and liquid remedies, with indifferent success, as is now being made apparent by the brilliant success of surgical intervention in certain of these cases of lesions of the biliary passages.

The outspoken classical signs of cholelithiasis — namely, colic, jaundice and tumor in the gall-bladder region — may be absent. It is to-day not only possible but necessary for the physician to make a diagnosis of cholelithiasis and other lesions of the biliary passages, even if all these important classical signs are absent or in the background. It is true that many gall bladders are found at autopsy to contain gallstones, in cases not operated upon. It may be true, as is asserted, that most of these individuals complained during their lifetime of none of the classical symptoms of gallstones. Kehr's statement that only about 5% of those with gallstones in their gall bladders have symptoms seems to me to be rather misleading. Wherever there are gallstones there, there must at sometime have been an infection of a certain virulence. Gallstones represent the result of this infection. It is highly probable that many of the dyspeptic and gastric symptoms hitherto unsatisfactorily treated are symptomatic of beginning disturbances in the gall bladder and the biliary passages.

Adhesions about the gall bladder to the duodenum, to the small intestine, to the stomach, to the transverse colon, to the pancreas, and adhesions of the biliary ducts to the parts about, are known to cause great disability, with signs of gastric trouble. Upon the removal of these adhesions and their cause, when possible, the distressing symptoms vanish. This is the tale told now repeatedly of pathological conditions by gall-bladder patients.

The surgeon finds at operation three general groups of cases, definite pathological groups: the inflammatory disturbances, the cholecystitidies; the gallstone cases, cholelithiasis; and the cases of carcinoma (Quincke). Brewer has admirably arranged the diseases occurring under the above classification as follows: The inflammatory diseases, —

(1) Cholecystitis — subacute.
(2) Cholecystitis — acute (see Case II).
(3) Cholecystitis — chronic (empyema).
(4) Cholecystitis in contracted gall bladder (see Case X).
(5) Cholangitis.

All these diseases are associated more or less closely with signs of fever, local tenderness and pain. The latter disease, cholangitis, is usually, according to writers, associated with stones in the hepatic or common duct, or both, and may be characterized by sepsis of a marked type. Just what the term "cholangitis" means is not altogether apparent. It is used with one meaning by the clinician, be he physician or surgeon, and in an entirely different sense by the text-books of pathology. That the surgeon should use the term to express a clinical picture which, in the event of the death of the patient, does not present a definite pathological condition is not only unfortunate but inaccurate.

In cases of cholelithiasis the surgeon finds various combinations of conditions, arranged by Brewer in somewhat this fashion:

(1) Stones in the healthy gall bladder, ducts free.
(2) Stones in the healthy gall bladder, cystic duct temporarily obstructed by inflammatory swelling or slime (see Case VI).
(3) Stone or granular detritus impacted in the cystic duct (see Case III).
(4) Stone in the hepatic duct.
(5) Stone in the common duct, acute obstruction.
(6) Stone in the common duct, movable chronic obstruction (see Case V).
(7) Stone in the common duct, impacted, chronic.

The symptoms of importance in this group of cases will be those of pain, fever, vomiting and jaundice.

The carcinoma cases according to Brewer may be classified as follows: Tumor of —

(1) The gall bladder.
(2) The cystic duct.
(3) The hepatic or common duct.

(4) The neighboring viscera pressing upon the common bile duct.

The symptoms associated with this group of malignant diseases usually are signs of jaundice, tumor, ascites and cachexia.

It is important that one should have a definite conception of the pathological lesions which may exist in any individual case of disease of the gall bladder and biliary passages. Diagnosis will then be far more likely to be correct and treatment intelligent. It is necessary that a careful analysis of each symptom should be made in order to properly interpret its relative and absolute importance.

The surgeon having, during the past few years, made clear the living pathology of gallstone and biliary passage diseases, and having to these former medical cases brought some measure of relief, the question very naturally arises, What does the surgeon suggest for the treatment of these cases, especially of chronic gall-bladder and biliary passage trouble? There are two generally accepted procedures which the surgeon has found to be of value, namely, cholecystostomy and cholecystectomy. By cholecystostomy the gall bladder may be drained of its abnormal or normal contents, and if the cystic duct is patent, drainage at the same time may be established of the deep biliary ducts, and if the pancreatic duct opens advantageously it likewise may secure drainage through the outlet in the incised gall bladder.

The advantages of a cholecystostomy are that ordinarily it is a simple procedure, may be readily accomplished, and that the mortality is not great and the deep ducts are drained if they are patent. Obviously, in cases of cholangitis, so called, or chronic pancreatitis this procedure is of importance. I think there is, however, a mistaken impression on the part of most surgeons and medical men as to the end results of cholecystostomy. In general, cholecystostomy is supposed to afford satisfactory results. The group of cases here reported in detail, although small, confirms the returns which Winslow makes from a larger group of cases operated upon at the Massachusetts General Hospital, and the finding is that in cases of cholecystostomy persistent biliary fistulæ exist in a number of cases; that the deeper ducts are often not easily explored through the opened gall bladder and adherent parts, consequently stones are left in the deep ducts to be heard from later; that a dragging pain is present in many cases, due to the adhesions between the gall bladder and the abdominal wall, necessitated by the old technique of the cholecystostomy.

With regard to the procedure of cholecystectomy, there are certain cases in which the presence of dense adhesions about the gall bladder, cystic and common duct preclude the possibility, without subjecting the patient to a somewhat prolonged operation, of removal of the gall bladder. Obviously, in such cases cholecystectomy would be unwise. These cases, however, should be fewer and fewer as the surgeon becomes familiar with the anatomy of this region and with the technique necessary to overcome what seem at first insurmountable difficulties.

It is important before cholecystectomy is undertaken that the surgeon be sure that the deep ducts are patent and that there are no stones in the common and hepatic ducts. Should a cholecystectomy be done when stones exist in the deeper ducts these stones will certainly cause trouble, and the termination of such a case may be most unhappy. It seems to me that the exploration of the deeper ducts is rendered comparatively easy by the splitting of the gall bladder upon its under surface and of the cystic duct down to its termination. Coupled with this procedure the deep exploration is facilitated by the arching of the back as suggested by Robson, by means of a hard cushion placed under the lumbar spines, by upward lifting of the liver and traction downward upon the duodenum.

Cholecystectomy is certainly a wise procedure in cases of cholecystitis and its resulting acute conditions of gangrene and empyema of the gall bladder. These conditions are often entirely limited to the region of the gall bladder, the deeper ducts not being involved. In the absence of the involvement of the deep ducts the gall bladder should be treated as an isolated sac and removed.

Wherever gallstones exist in the gall bladder there may be a latent infection, ready to break out at any time; a re-infection may occur from the usual source, the duodenum: so that these two facts are to be given consideration in deciding whether or not the gall bladder should be removed.

It is a fact that carcinoma of the gall bladder is found in about 14% of the operated cases of gall-bladder trouble. In 15% of the secondary carcinomas of the gall bladder there are no gallstones found in the gall bladder itself. On the other hand, in 80% of cases of primary carcinoma of the gall bladder gallstones are present. It is a fair conclusion, therefore, to suppose that the presence of gallstones is an important etiological factor in the production of carcinoma, so that the leaving of the gall bladder as in a cholecystostomy affords the opportunity for the development of carcinoma.

There have been few instances of the formation of gallstones after a cholecystostomy; Homans reported one case, Kehr has reported two cases. It is more than likely that in many of the cases in which the formation of gallstones is said to have occurred after a cholecystostomy, the gallstones found at the second operation were already present in the gall bladder but unremoved at the time of the primary operation, so that the leaving of the gall bladder *in situ* does not involve a very strong probability of the formation of more gallstones.

The doing of a cholecystectomy does not preclude the possibility of drainage of the deeper parts, either by the procedure of Mayo, in dissecting out the mucous membrane of the gall bladder and leaving its peritoneal and fibrous

coat to serve as a trough from the deeper ducts to the surface, or the procedure of Kehr, of drainage of the deep ducts directly through a rubber tube.

The mortality of cholecystectomy is low. Kehr, in 100 cases, shows a mortality of 3%. In the small series here presented there was no mortality. The mortality following the hospital cases quoted by Winslow must be studied carefully before making it count against cholecystectomy. Examination of the group of deaths in Winslow's cases does not make the mortality tell against cholecystectomy.

The operation is simple and ordinarily not difficult; the after results are most brilliant — there are fewer adhesions, consequently there is less complaint of pain in the side; there are no persistent fistulæ. In other words, in ideal cases — that is, in cases which conform to the requirements of the conditions above — cholecystectomy may be regarded as a curative procedure, whereas cholecystostomy cannot be so regarded — it is a curative procedure in some cases but not in all. The position that the gall bladder should receive exactly the same treatment as the appendix is hardly tenable. There are, however, several points of analogy in the two organs.

I would then formulate my feeling with regard to the two procedures mentioned above in somewhat this fashion: Cholecystostomy should be done in those cases of gall-bladder and biliary duct surgery in which quick drainage is needed for the deeper ducts and in which the surgeon is not absolutely sure that the deeper ducts are entirely free. Cholecystectomy should be done in cases of acute cholecystitis, in cases of cholecystitis resulting in gangrene and empyema of the gall bladder, in small contracted (infected) gall badders which are functionally useless and which will not be of service in facilitating drainage, and in all cases in which the surgeon is morally sure that the deeper ducts are free from obstruction.

During an acute attack of gallstone colic it is wise to postpone operative interference. It seems to me that any patient having definite signs of gallstones or an inflammatory process about the gall bladder should be operated upon, and, in general, the earlier operative interference is instituted, other things being equal, the easier will be the operation from a purely technical point of view and the less will be the risk to the patient of the complications and sequelæ of gallstones.

The technique of cholecystostomy is facilitated by not suturing, in certain cases, the gall bladder to the parietal peritoneum, but by so securely fastening the drainage tube within the gall bladder that no leakage of bile takes place about it. The few adhesions arising from the gauze left beneath the gall bladder and tube serve to wall off the general abdominal cavity and cause little if any disturbance subsequently.

I. A. D., woman, forty-six years old, married. Patient of Dr. John Torrey of Andover, Mass. *Cholecystitis. Acute attack just over. No jaundice. Cholecystostomy, drainage of the gall bladder. Recurrence of symptoms after two years. Freedom from symptoms referable to the gall bladder now for another year.*

General health excellent. Six years ago was the first attack attracting attention to the region of the gall bladder. This attack was characterized by pain of moderate severity, referred to the left hypochondrium and then to the right hypochondrium, where it remained. The pain was relieved by hot water applications. It was attended by nausea. Each succeeding year up to the present time she has had a similar attack. The attack one year ago was more severe than any preceding; the pain not only was felt in the right hypochondrium but extended through to the right shoulder blade. During this past year these attacks have increased in frequency and severity, occurring every three months. These later attacks have been attended by severe vomiting. Both morphia and ether have been used to control the pain. After each attack soreness has been present under the right costal arch over the region of the gall bladder. The patient was seen just after one of these attacks. There was no jaundice.

Examination. A moderately stout, well-looking woman. She complained of pain beneath the right shoulder blade and gave evidences of tenderness over the gall bladder. Muscular spasm was present over the region of tenderness.

Operation. Peritoneum opened through the right linear semilunaris. A small amount of clear fluid in the abdomen. The gall bladder presented slightly enlarged, tense, its walls thickened but not friable. It contained a glairy, thick, ropy mucus. A granular sediment removed from the depths of the gall bladder and from the cystic duct, which was obstructed by this material. No stones were felt in any of the ducts. The gall bladder was fastened to the peritoneum, a rubber drainage tube was introduced into the gall bladder, and permanent drainage established. After some hours bile appeared in the drainage tube. The tube was removed after about ten days. The fistulus opening gradually closed and the patient made an uneventful recovery.

Subsequent history. For two years after operation the patient was perfectly well. Then she had an attack of pain and vomiting somewhat similar to the original attacks. The pain radiated to the right shoulder blade. Stools were normal. There was no fever. Pain was controlled by morphia. Now for one year she has been well, having a little mild distress at times in the right side. Her general health has been better than before operation. A thorough exploration of the biliary passages would be wise in this instance, and in the absence of calculi in the common and hepatic duct cholecystectomy would be indicated.

II. J. T., a man sixty-four years old, married. A patient of Dr. Coggswell, Cambridge, Mass. *Cholecystitis. Acute attack. No jaundice. Cholecystostomy. Persistent gall-bladder fistula. Second cholecystostomy and removal of stone in gall bladder and closure of fistula.*

Excepting for chills and fever and protracted diarrhea during the Civil War the patient has been well all his life. A little over forty-eight hours ago he was seized with a sudden, sharp, cutting pain across the upper abdomen. This pain was attended by vomiting. After the pain had first subsided he felt as if there were a tight constriction or band around his waist over the costal arch. He took castor oil, and a little later his bowels moved. The following day the

bowels moved again. He had severe pain throughout the greater part of the day and vomited once. Upon the third day there was a little less abdominal pain, but in the right hypochondrium, where the pain had been most intense, there was marked tenderness corresponding to the region of the gall bladder. Jaundice was absent.

Examination. The abdomen was slightly but uniformly distended and tympanitic all over and in both the flanks. To the right of the umbilicus and extending upward to the costal border a mass was felt which was tender. The liver was not enlarged. Rectal examination showed nothing of importance.

Operation. Under ether the mass felt in the abdomen was found to be continuous with the liver and moved upward slightly with inspiration. The peritoneum was opened through an incision to the outer border of the rectus. Considerable free clear fluid was found in the abdomen, and the culture from this fluid proved it to be sterile. There was found a gall bladder much enlarged, extending nearly to the umbilicus. It was covered with fresh fibrin and was slightly adherent to the surrounding parts, the ascending colon and the lateral abdominal wall. The gall bladder was attached to the peritoneum at the upper end of the incision, walling off gauze placed beneath it, a suture introduced into the fundus of the gall bladder for traction, and the gall bladder aspirated. Three ounces of thick, cloudy mucus was evacuated. The gall bladder was incised and inspissated bile was found in the depths of the gall bladder and cystic duct. Cultures made from the contents of the gall bladder were found sterile. The hand introduced into the abdomen found stones in the cystic duct. These were pushed upward into the gall bladder and removed; seven or eight of them faceted, the size of raspberries. No stones were found in the common duct. The gall bladder was drained by rubber drainage. The tube was removed in eight days. The patient was home in eighteen days, with a small fistula.

The following year, the sinus having remained open and there having been no pain nor jaundice, and the bowels having been regular, an operation for the closure of the fistulous opening was made by another surgeon and a small pocket near the fundus of the gall bladder, containing a slight amount of puriform material and three gallstones, was emptied. The gall bladder was again drained, the tube being removed after two days, there being a free flow of bile. The patient was discharged after two weeks with a small sinus.

After the first operation the flow of bile was very limited.

Subsequent history. One year after the last operation he is in perfect health. There has been no recurrence of the gall-bladder trouble. Fistula has closed. After working hard he feels pain or a pulling sensation at the site of the operation, but it amounts to comparatively little. A cholecystectomy might have been done very properly at either operation after the removal of all stones.

III. M. A., twenty-eight years old, a woman, married. *Gallstones, acute attack. No jaundice. Cholecystostomy, drainage. Small contracted gall bladder, many adhesions.*

She has two children, and has always been in good health. Five days ago she had an attack of severe pain in her "stomach," but did her work about the house. Two days ago pain of a similar character localized itself in the right side of the abdomen under the costal border, extending to the right shoulder blade. She vomited many times. There was no jaundice. The bowels moved naturally.

Examination. The abdomen was uniformly distended; the right half of the abdomen was rigid; there was marked tenderness in the right hypochondrium and to the level of the umbilicus upon the right side. No tumor could be felt. Vaginal examination discovered the uterus retroverted and lying a little to the right.

Operation. The peritoneum was exposed through an incision at the outer border of the right rectus muscle. The small intestine was found adherent to the anterior abdominal wall. The gall bladder was discovered beneath these adhesions as a rounded, hard, tense tumor extending to the level of the umbilicus. The gall bladder was incised, after protecting the parts about with gauze. The walls of the gall bladder were one-half inch thick, a glairy mucus was evacuated, and from the depths of the gall bladder came a puriform-looking material, and finally many small gallstones and two large stones. The culture from the contents of the gall bladder was the "bacillus coli communis." The gall bladder was attached to the peritoneum, a gauze wick below the bladder, rubber drainage of the gall bladder. Only a slight discharge of bile came from the gall bladder, and it was found that the tube was plugged by a few small stones, upon the removal of which the discharge became greater.

An uneventful convalescence; three weeks after leaving the hospital the fistulus opening closed.

Subsequent history. Cannot be found. The culture of the colon bacillus from the contents of a gall bladder shut off from the biliary circulation in the absence of jaundice need not preclude the doing of a cholecystectomy. Drainage in this case, however, proved apparently satisfactory.

IV. W. F., a woman sixty-six years old. Patient of Dr. Malcolm Storer, Boston, Mass. *Gallstone attacks. No jaundice. Cholecystostomy. Death from pneumonia.*

Twenty-five years ago she is said to have had typhoid fever; many years ago attacks of what was called gall-bladder colic. During the past two years and a half she has had many attacks. These attacks were associated with pain in the right hypochondrium, severe enough to double her up, attended by vomiting.

Examination. An old woman with moderately distended abdomen; an indefinable mass upon the right side under the costal arch, which was slightly tender. Jaundice was absent.

Operation. The gall bladder was found adherent to the anterior abdominal wall and to the transverse colon. The gall bladder was moderately enlarged. Upon opening it fifty stones were removed. The cultures from the gall bladder showed colon bacillus. The gall bladder was drained; bile appeared in twelve hours. On the second day the patient showed signs of a pneumonia,— the abdomen appeared normal,— and from this pneumonia the patient died.

V. C. A., a woman fifty-three years old, married. *Acute attack of gallstones. Jaundice. Choledochotomy. Cholecystostomy. Drainage. Recovery.*

For ten or twelve years she has had some stomach trouble, "dyspepsia." The bowels have been constipated. For one year she has been troubled each month by "bilious headache." These attacks have been attended by vomiting and jaundice, and she has noticed the stools have been clay-colored. She has never been severely jaundiced. Three days ago she had a sharp attack of pain in the right hypochondrium which she says resembled the bilious attacks which she has had during the past year.

Examination. The abdomen slightly distended;

no tumor felt. No especial tenderness over the region of the gall bladder, but at the mid-point of the abdomen, over the ensiform cartilage, there was marked tenderness. Incision at outer border of the rectus discovered a slightly contracted gall bladder adherent to the parts about. A small stone was found in this contracted gall bladder, and a large stone, larger than the end of the thumb, was found in the second part of the common duct, and was removed by incision through common duct, suture of duct. Drainage of gall bladder by rubber tube, gauze wick to common duct. Gradual closure of fistula Uneventful recovery.

Subsequent history. One year following the operation the report is that she has not been so well for years.

VI. N. G., a woman thirty-eight years old, married. A patient of Dr. Simpson of Boston. *Subacute attack of gallstones. No jaundice. Cholecystostomy. Recovery.*

Five months ago was the first attack, with pain in the region of the gall bladder. The pain radiated to the right shoulder. Since that time there have been frequent attacks lasting from two to nine hours. These attacks were attended by nausea and vomiting. At no time has there been jaundice.

Examination. The abdomen was generally soft, full and tympanitic. There was no unusual sensitiveness excepting over the gall-bladder region, where there was tenderness. No mass was felt.

Operation. Through the right semilunaris incision the gall bladder was found slightly distended, with some adhesions about it. No stone was felt in the ducts. The gall bladder upon being opened was found to contain thick, tarry biliary detritus and one small stone. Rubber drainage was used. The culture from the interior of the gall bladder showed many colonies of the bacillus coli communis. The color of the stools subsequent to the operation did not return to a normal condition immediately, but rather more slowly than usual. During convalescence there was some pain about the gall bladder and the costal border. The patient went home with a very slight sinus.

Subsequent history. After a few months the wound has closed. Has some pain at times referable to the right hypochondrium. Has had no acute attacks of gallstone pain similar to the attacks previous to the operation.

VII. C. B., a woman seventy-six years old, married. A patient of Dr. Mead of Winchester, Mass. *Acute attacks of gall-bladder pain. No jaundice. Cholecystostomy. Drainage. Recovery.*

Two months ago she had an attack of pain in the back of the neck and between the shoulders, and finally extending to the right hypochondrium, requiring morphia to relieve it. This pain was sharp and shooting in character. It doubled her up. She was somewhat chilly and hot, and distended, at the time of these attacks. She has had several each week since the first attack. The last attack was yesterday.

Examination. She was very thin, almost emaciated. The liver was not enlarged. There was no jaundice. There was slight tenderness and a little spasm over the gall-bladder region.

Operation. Incision at the outer border of the right rectus. No stone was felt in the gall bladder. A small stone was felt in the common duct. The gall bladder was opened and found to be very much thickened, contracted, and the stone felt in the common duct was pushed back and removed through the gall bladder. There were a few adhesions of the gall bladder to the neighboring parts. Drainage by rubber tube was used. A small amount of bile appeared, after a few hours, from the tube. Drainage was omitted and gradually the sinus was closed. The patient has had attacks of colicky pain in the bowels — "wind colic" — not like the previous pain. There has been no jaundice.

Subsequent history. During the past two or three months she has had more or less grumbling pain in the gall-bladder region, and a few weeks ago had quite a severe attack of pain resembling very much the passage of a gallstone. For several months now there has been no difficulty at all with the right side.

VIII. H., a woman fifty-four years old, married. She has had several children. *Cholecystitis. Subacute attack. No jaundice. Cholecystectomy. Recovery.*

She is said to have had "brain fever," pneumonia and at different times "pelvic abscesses." Two months ago she had a "bilious attack" accompanied by chills, backache and vomiting and pain, which extended from the right hypochondrium to the back and right shoulder blade. The present attack is of two weeks' duration and resembled the attack of two months ago. This attack was attended by much tympanites, nausea and needle-like pains extending from the navel through to the back and down to the right hip. During the past year she has had three attacks similar to this present one.

Examination. The abdomen was uniformly distended. In the right hypochondrium was a tumor which extended to beyond the median line and was continuous with the liver dullness. The tumor was movable, smooth and slightly tender.

Operation. Cholecystectomy. Drainage tube out upon the seventh day. An uneventful recovery. The contents of the gall bladder consisted of cloudy fluid, a few gallstones and inspissated bile.

Subsequent history. Three years after operation the patient has had no disturbance in the right side. She has, however, malignant disease, probably carcinoma, of the uterus, from which she is dying.

IX. I. C., woman thirty-nine years old, married. Patient of Drs. Abbott and Torrey, Andover, Mass. *Gallstone attacks. Temporary jaundice. Cholecystectomy. Recovery.*

She has no children and has had no miscarriages. Two years ago she had an attack of bilious colic. Every few weeks since that time she has had attacks of severe pain in the right hypochondrium attended by vomiting and temporary jaundice. She had lost some flesh during this period and was constipated.

Examination. A very stout woman with full abdomen presenting tenderness over the gall-bladder region. Conjunctivæ was slightly yellow.

Operation. Peritoneum was exposed by an incision through the middle of the rectus. No stone was felt in the common duct. A white, round, solitary stone was removed from the cystic duct. The gall bladder was small, thickened and edematous. There were many firm adhesions about the cystic duct. The contents of the gall bladder were mucus and a pasty bile sediment. No puriform material was found. The gall bladder was removed. A bit of omentum was placed over the stump of the cystic duct. Gauze drainage. Recovery.

Subsequent history. She has been perfectly well since the operation, now several months. Her general health has been better than for some years previous to operation.

X. A man thirty-five years old, married. Patient of Dr. Boucher, Watertown, Mass. *Gallstone at-*

*tacks. Temporary jaundice. Contracted gall bladder. Cholecystectomy. Recovery.*

For five or six years he has had attacks of abdominal pain. Lately this pain has been limited to the right side of the abdomen below the ribs, radiating to the umbilicus. These attacks have been attended by vomiting and slight temporary jaundice. The bowels are constipated. The attacks have increased in frequency and severity. The present attack has been a week in its duration. The pain has been very acute, necessitating morphia for its relief, localized in the right hypochondrium and attended by nausea, vomiting and chilly sensations.

Examination. Abdomen markedly distended; no tumor could be felt. There was tenderness on deep pressure over the region of the gall bladder. There was a slight yellowishness of the conjunctiva.

Operation. Peritoneum was exposed from the belly of the rectus. The gall bladder was with difficulty found buried in omental adhesions. A few stones were discovered just outside the gall bladder in a pocket within the omentum. The gall bladder was markedly contracted upon many stones. Cholecystectomy. Gauze and tube drainage. Recovery.

Subsequent history. Seven months following operation he is in perfect health. He has had no recurrence of former attacks and has no digestive disturbance. The scar is firm and there are no signs of hernia.

XI. G. F., a woman forty-nine years old, married. A patient of Dr. Leitch of Andover, Mass. *Persistent jaundice. Gallstone attacks. Contracted gall bladder. Cholecystectomy. Recovery.*

She has three children. Six months ago she is said to have had a severe attack of "dysentery"; otherwise she has been well. One year ago she was seized with a severe pain under the right shoulder extending down the side and around into the right hypochondrium. This attack was preceded by nausea. At no time has there been vomiting. During this past year attacks of a similar sort have occurred as often as each two weeks. These attacks have required morphia to relieve the pain. Occasionally she has had chills with these attacks. During the past few weeks she has lost some flesh, during this present attack her best weight being 198 pounds.

Examination found a stout woman with a large abdomen, rather flabby, not particularly distended. Slight tenderness was felt over the region of the gall bladder. Very little, if any, muscular spasm. Conjunctivæ and skin yellow; urine containing bile.

Operation. Peritoneum opened in the right linear semilunaris. A contracted gall bladder found. Stones in lower part of gall bladder and cystic duct and all deeper ducts free. Gall bladder removed. Drainage by gauze. An uninterrupted recovery.

Subsequent history. The operation was eleven months ago. She has gained over fifty pounds in weight since the operation. She says she is in fine condition, and has no trouble with her side excepting a tiny bit of tenderness in the situation of the scar.

XII. O. T., a woman twenty-five years old, married. A patient of Dr. G. G. Bailey of Ipswich, Mass. *Acute cholecystitis. No jaundice. Cholecystectomy. Recovery.*

A normal confinement four weeks previous to present trouble. Always has had some indigestion; otherwise well. Five days ago was seized with sudden pain in the right hyponchondrium. Vomiting; some fever. Considerable morphia was administered to relieve the pain. Pain was at the edge of the ribs on the right and then moved a little lower toward the umbilicus. No jaundice.

Examination. A nervous, rather thin, but not ill-appearing woman. Tongue coated. Moved herself rather easily in the bed. The abdomen was not distended. There was a muscular spasm on the whole right side of the abdomen. A distinct tumor was felt projecting below the right hypochondrium to the level of the umbilicus. This tumor did not move freely with respiration. The tumor was tender to pressure.

Operation. Peritoneum was opened to the right linear semilunaris. The tumor felt externally was found to be the distended gall bladder filled with clear mucus-like fluid. A yellow, sandy slime was found in the depths of the gall bladder and in the cystic duct. There were no old adhesions about the gall bladder. The foramen of Winslow was patent. There were no gallstones to be felt in the common duct. The gall bladder was removed. Tube and gauze drainage. Uninterrupted recovery. Pathological report: "Acute ulcerative cholecystitis. W. F. Whitney."

Subsequent history. Six months following operation there has been no difficulty with the right side and she is in good health: "My general health has not been so good for years as it is at the present time."

XIII. N. C., a woman thirty-two years old, married. A patient of Dr. G. G. Bailey, Ipswich, Mass. *Gallstones. Acute attacks. Contracted gall bladder. No jaundice. Cholecystectomy. Recovery.*

She had eight children. Ten years ago, she is said to have had typhoid fever. Over a period of two years, at intervals of about three months, she has had continuous pain in the right hypochondrium, colicky in character, extending to the middle of the back, lasting from a few hours to a day. This pain has been relieved by the taking of a cathartic. She has never been obliged to take morphia until recently. These attacks have increased in frequency and severity. The last attack was two weeks ago. The pain was very sharp, colicky, taking away her breath for the time. There was nausea, some vomiting and slight jaundice. Urine dark in color. Had lost some weight recently. Her best weight was 208 pounds.

Examination. A large, well-developed woman presenting a large abdomen with a tender area in the region of the gall bladder and a similar tender area in the back to the right of the vertebræ. There was no muscular spasm. No tumor was felt. The liver was not enlarged.

Operation. An incision through the right rectus discovered the gall bladder much contracted and bound by dense adhesions to the liver, to the large intestine and to the duodenum. The gall bladder was found full of slimy granular material; the cystic duct was dilated and plugged with a gallstone; the common duct was patent. The gall bladder was removed and cystic duct tied and gauze drainage used. All wicks were removed at the end of six days. The patient went home at the end of three weeks.

A gall bladder about 6 cm. in its greatest diameter, outer surface rough and covered with an old fibrinous exudate. The walls were thin and fibrinous and the cavity contained several small gallstones. The mucosa was almost entirely necrotic. Cholelithiasis.

Subsequent history. A few months following operation there has been no recurrence of the difficulty. She is in good health.

XIV. E. D., a woman fifty-four years old, married. A patient of Dr. Bump, Somerville, Mass. *Spontaneous biliary fistula. Cholecystostomy. Closure*

A Series of Certain Gall Bladder and Biliary Duct Operations.

| No. | Sex and Age. | Operation. | Immediate Result. | Pathological Findings. | Symptoms and Signs. | Duration of symptoms referable to gall bladder, although some signs were obscure. | Previous Diseases. | Remote Result. |
|---|---|---|---|---|---|---|---|---|
| I. | Woman 46 yrs. | Cholecystostomy | Recovery | No stones, glairy mucus, pasty sediment. | No colic, gall-bladder pain, no jaundice. | 6 years | | For 2 yrs. no attacks of colic, then 1 attack |
| II. | Man 64 yrs. | Cholecystostomy | Recovery | Stones in cystic duct, thick mucus, inspissated detritus, culture sterile. | Acute cholecystitis, no jaundice. | 48 hours | Diarrhea protracted Civil War. | Past 10 mos. immunity; general health good; no further attacks; feels some pulling at wound after work. |
| III. | Woman 28 yrs. | Cholecystostomy | Recovery | Few stones, mucus, puriform material, culture colon communis. | Gallstone colic, no jaundice. | 5 days | | Not found. |
| IV. | Woman 66 yrs. | Cholecystostomy | Died | Many stones, culture colon bacillus. | Gallstone colic, no jaundice. | Many years | Typhoid fever 25 years ago. | Died—pneumonia. |
| V. | Woman 53 yrs. | Cholecystostomy | Recovery | Stone gall bladder and common duct. | Gall-tone colic, jaundice. | 10 years | | Well, no trouble one year after. |
| VI. | Woman 38 yrs. | Cholecystostomy | Recovery | Stone, thick tarry biliary detritus, culture colon bacillus. | Gallstone colic, no jaundice. | 5 months | | After few months no attacks; some discomfort in right side. |
| VII. | Woman 76 yrs. | Cholecystostomy | Recovery | Stone common duct. | Gallstone colic, no jaundice. | 2 months | | Grumbling right side mild attack. |
| VIII. | Woman 54 yrs. | Cholecystectomy | Recovery | Stones, cloudy fluid, inspissated bile. | Gallstone colic, no jaundice. | 2 months | | Well, no trouble for 3 years. |
| IX. | Woman 39 yrs. | Cholecystectomy | Recovery | No stones, mucus, pasty biliary sediment. | Gallstone colic, temporary jaundice. | 2 years | | Well, no trouble for several months. |
| X. | Man 35 yrs. | Cholecystectomy | Recovery | Stones, no fluid. | Gallstone colic, temporary jaundice. | 5 years | | Well, no trouble for 7 months. |
| XI. | Woman 49 yrs. | Cholecystectomy | Recovery | Stones, no fluid. | Gallstone colic, persistent jaundice. | 1 year | | Well, no trouble for 11 months. |
| XII. | Woman 25 yrs. | Cholecystectomy | Recovery | No stones, mucus, cloudy fluid, biliary slime. | Acute cholecystitis, no jaundice. | 5 days | | Well, no trouble for 1 year. |
| XIII. | Woman 32 yrs. | Cholecystectomy | Recovery | Stone cystic duct, slimy biliary detritus. | Gallstone colic, no jaundice. | 2 years | Typhoid fever 10 years ago. | Well, no trouble for few months. |
| XIV. | Woman 54 yrs. | Cholecystectomy | Recovery | No stones, clear bile. | Biliary fistula, no jaundice. | 18 months | | Well, no trouble for four months. |
| XV. | Woman 26 yrs. | Cholecystectomy | Recovery | No stones, clear mucus, culture staphylococcus. | Acute cholecystitis, no jaundice. | 4 days | | Well, no trouble for few months. |
| XVI. | Woman 40 yrs. | Cholecystectomy | Recovery | No stones, clear bile. | Biliary fistula, no jaundice. | Many years | | Well, no trouble for a month. |

*of wound. Gall-bladder pain. Temporary jaundice. Cholecystectomy. Recovery.*

Eighteen months ago a biliary fistula established itself without operation, and one year ago an operation was done exploring this fistula. The fistula was dilated and it was found to connect with the cavity of the gall bladder, from which a stone the size of an English walnut was extracted. The gall bladder was attached to the skin and drained through a glass tube. Drainage was removed in eleven days. Three weeks later the wound closed. She was practically well up to three months ago, when she began to have cramp-like pain in the right side of the abdomen extending up to the nipple. This pain doubled her up, the paroxysm lasting some twenty-four hours. She has become recently jaundiced. The pain is attended by vomiting and nausea. She has lost some 30 lbs. in weight.

Examination. The abdomen is rather flat, tympanitic, with a slight dullness over the region of the lower border of the liver on the right side. There is marked muscular spasm and great tenderness over the gall-bladder region. There is a tender spot in the back. White count 19,000.

Operation. An incision through the belly of the right rectus. The omentum was found adherent to the abdominal wall and about the gall bladder. Gall bladder also adherent to the intestine and to the duodenum and to the upper end of the old incision. It was difficult to separate it from its adhesions. The gall bladder was very much elongated and looked and felt something like thickened intestine. It was opened and clear bile evacuated. No stones were seen. There were no stones in the ducts. The gall bladder was removed and a plastic of peritoneum placed over the stump. Two wicks for drainage. After operation there was considerable discomfort. The stomach was washed out with great relief.

The patient went home in about three weeks with a very slight watery discharge from a small fistulous opening.

Subsequent history. After four months this patient is perfectly well and comfortable. There is no difficulty with the right hypochondriac region. The wound is entirely closed.

XV. A. J., woman twenty-six years old, married.

Patient of Dr. Dow of Reading, Mass. *Acute cholecystitis following two cholecystostomies. Enlarged gall bladder. No jaundice. Cholecystectomy. Recovery.*

She had four children. Four days ago she was seized with a sudden pain over the gall-bladder region and vomited once. The following day the pain increased and she vomited again. Upon the third day of the attack there was less pain and no vomiting. Yesterday, the fourth day of the attack, there was no pain, but there was soreness in the right side upon moving in bed. The bowels moved after taking salts. There was no jaundice. There were no clay-colored stools and there was no dark urine. One year ago a cholecystostomy was done, and six months ago a second operation was done. At both operations gallstones were removed from the gall bladder.

Examination. A stout woman presenting a tympanitic abdomen somewhat distended and a mass the size of the fist in the region of the gall bladder, which moved with respiration. Underneath a cicatrix of the former operations. The abdominal wall was attached to this underlying mass. There was tenderness and muscular spasm over this mass.

Operation. An incision in the right semilunaris discovered a very much thickened and enlarged gall bladder filled with clear mucoid fluid. The deep ducts were free from stones. The gall bladder was removed; the cicatrix excised at the same time. Gauze drainage. Culture fluid from the gall bladder showed staphylococci. Patient went home after about four weeks having a small discharging sinus.

Subsequent history. The sinus has closed. After a few months has had no recurrence of difficulty. General health is good.

XVI. C. H., woman forty years old, married. *Symptoms of gallstones. Cholecystostomy. Stone in cystic duct removed, flow of bile. Drainage. Persistent biliary fistula. Cholecystectomy. Recovery.*

She has had attacks of epigastric pain for many years, at intervals of about five months. Severe cramp-like pain accompanied these attacks. She has never been jaundiced all these years. Laid up at these times three or four days. The last attack was four weeks ago. She has lost some weight, but not rapidly. Ten days ago she had dull epigastric pain, at first intermittently, but for seven days it has been continuous, in median line, two inches below ensiform cartilage, never colicky or cramp-like. No chill. Vomited greenish material several times. She has never vomited blood. For one week her skin and conjunctivæ have been yellow. The urine has been dark. Stools have been green. Now the pain extends from the median line out to the region of the gall bladder and back to between the shoulders.

Examination. Poorly nourished. Abdomen not distended, tympanitic excepting at ninth costal cartilage, where there is a limited dullness and corresponding muscular spasm. The edge of the liver is not to be felt.

In May cholecystostomy. Stone removed from the cystic duct. Bile then came from deep passages. No stone in the common duct. Small gall bladder. Coagulation time,—four minutes. Wound solid in June.

Operation in September for persistent biliary fistula. Incision through right rectus. Adhesions between omentum, intestine and abdominal wall. Gall bladder found attached to the abdominal wall. Cholecystectomy. One wick to stump of the cystic duct. A slight biliary fistula existed for a few weeks.

One month after operation biliary fistula closed. Wound granulating and nearly closed. Never better health for years.

# Clinical Department.

## A CASE OF PYLORIC STENOSIS IN AN INFANT.

BY CHARLES W. TOWNSEND, M.D., BOSTON.

ALTHOUGH this affection has been reported more frequently of late years, the difficulties in the way of an early diagnosis make it desirable to throw as much light as possible on the subject by the report of cases.

The following case was seen frequently in consultation with Dr. A. E. Rogers. We had also the advice of Drs. C. P. Putnam, J. L. Morse, Rotch, Ladd, A. Thorndike and J. C. Munro.

A. B., male, born Aug. 22, 1903, weighed seven pounds. After ten days on the breast, the supply failing he was placed on modified cow's milk and progressed well until Sept. 12, at which time he weighed eight and one-half pounds. During this time he was having three or four stools daily and there was no vomiting. On Sept. 12, at the age of three weeks, he began to vomit occasionally at first, but with increasing frequency, so that on the 22d of September he was vomiting every fifteen minutes whether food was given or not. Early in October it was evident that by careful feeding it was possible for the baby to retain its food for several hours, but at the end of that time, the stomach contents would be forcibly ejected, sometimes to a distance of several feet. At times he would continue for several days with practically no vomiting, as was the case from the 16th to the 19th of October, on barley water containing a few drops of cream gradually increased in strength. In fact nearly every change succeeded for a while, but the vomiting always recurred eventually. Various weak formulas of cow's milk and whey modified with water, barley water or dextrinized barley were used, as well as the milk of a wet nurse, sucked by the infant from the breast, or pumped out and diluted with water or barley water. Barley water alone, albumen water and meat juices and broths were all tried, but with all the vomiting was sure to return. Bicarbonate of soda in grain doses every hour was given by the mouth, apparently with good effect at times. Bismuth and pepsin had no effect. Bromide by the rectum and bicarbonate of soda in large doses were also used without avail. Lavage also proved useless. When much reduced, salt water infusions under the skin helped to make up the deficiency of fluid in the blood.

After the first it was found impossible to nourish the child or even give medicines by the rectum, as any manipulation in that region brought on vomiting. During most of the illness, especially when vomiting was most severe, there was some tetany, as shown by the drawing in rigidly of the thumbs to the palms of the hands. The vomitus during the first few days contained bile, but never after this. At no time was there mucus or evidence of indigestion, the food sometimes coming up exactly as it went down, at other times showing the effect of acid digestion. The stools, although scanty and far between, as might be supposed from the small amount of food passed beyond the stomach, showed perfect digestion.

From the 27th of October to Nov. 5 the baby did excellently on top milk modified by dextrinized gruel. The stools were large and well digested, and although vomiting never entirely ceased he began to lose his pinched and atrophied appearance. His spirits were

good and everything seemed to point to his recovery. As vomiting returned in force, however, he was put back on dextrinized barley water alone and milk gradually added. With varied fortunes he continued until Nov. 16, when the propulsive vomiting returned as badly as ever. At no time until the 17th could anything abnormal be felt in the abdomen, which was rather flat. At that time a hard tumor could be felt in the epigastrium, and peristalsis of the stomach was made out.

From early in the case it seemed to us that it was one of spasmodic pyloric obstruction, with no evidence of gastric indigestion, or of organic stricture. The intervals of apparently nearly complete recovery with cessation of vomiting and good dejections seemed to negative the latter idea.

With the last return of vomiting it seemed unwise to wait longer, but to submit the child to an exploratory laparotomy at least, before it should succumb from starvation. With this Dr. J. C. Munro agreed. The appearance of a tumor in the epigastrium of course confirmed this decision. On Nov. 19 Dr. Munro performed gastro-enterostomy. The baby rallied well from the operation, but died twenty-three hours later of exhaustion.

A report of the examination of the organs by Dr. G. B. Magrath follows:

Specimen consists of stomach; esophagus and part of lesser curvature absent, with attached segment of small intestine, received in formalin. Length of cardia to end of pylorus 6.5 cm. Length of pylorus 1.5 cm. Diameter of pylorus 1.3 cm. Pylorus is thick, firm and rigid; its lumen is thick, — having been opened, — probably 2 to 3 mm. in diameter. Upon section its walls are about 6 cm. in thickness, the outer two-thirds consisting of a transparent layer 3 to 4 mm. across. The mucous membrane at the gastric end of the pyloric canal, thick and folded. Attached to sutures to the posterior wall of the stomach is a segment of small intestine; the organs in communication from an anastomotic opening, 1.5 cm. in diameter, with roughened edge. The union of the wound structures is firm and in part due to adhesions.

Microscopical examination of sections from the wall of the pylorus at about its middle portion shows extensive hypertrophy of the muscle coats; the muscularis mucosæ shares in this to a slight extent, but the greater part of the thickening is due to increase in the outer muscle coats. The mucous membrane presents a prominent fold but is otherwise not remarkable.

*Diagnosis.* Hypertrophy of the pylorus with associated narrowing of its lumen. Gastro-intestinal anastomosis.

*Summary:* An infant, healthy at birth, began to vomit at the end of three weeks. By careful regulation of the diet the vomiting improved at intervals, but as often returned. The vomitus showed no signs of gastric indigestion; it was projectile in character and often made up of several feedings. Constipation was a feature, but the stools when passed were normal in character. Emaciation became extreme. A visible and palpable tumor appeared in the epigastrium with dilatation and peristalsis of the stomach.

Gastro-enterostomy was performed successfully as regards the operation, but death ensued in twenty-three hours, at the age of three months, after an illness of ten weeks.

The autopsy showed hypertrophy of the pylorus, chiefly of the outer muscular coats, with narrowing of the lumen.

## Reports of Societies.

### SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR SURGERY.

A meeting for this section was held at the Medical Library on Wednesday evening, Dec. 2, 1903.

Dr. F. B. Harrington was unanimously elected Chairman for the winter and at once took the chair.

The section, after discussing the question of holding regular meetings this winter, voted unanimously that meetings should be held and that the details of arrangements be left to the President and Secretary.

The chairman then introduced the general subject of discussion for the evening:

#### SURGERY OF THE GALL BLADDER.

Dr. F. B. Harrington: The surgery of the appendix vermiformis is now ancient history compared with the surgery of the gall bladder; yet the surgery of the gall bladder and the gall ducts is perhaps even more important, certainly it is more difficult than the surgery of the appendix. The pursuit of the appendix frequently led to the gall bladder in supposed cases of appendicitis. The evil effects of gall-bladder disease and of gallstones are very wide spread. It affects, not only the liver and the various bile ducts, but the stomach, the pancreas and the intestines, producing at times in these organs conditions, which if not relieved by operation, may be fatal. Thus we have intestinal obstruction from gallstones or from bands and adhesions, the result of pericystic inflammation. We may have acute pancreatitis and fatal hemorrhages from this cause, or we may have stricture of the pylorus from bands and perigastric inflammation, resulting in gastric obstruction and dilatation. We may have cholangitis and hepatic obstruction from the same cause.

It is a rule, almost without exception, to remove the appendix when operation is called for in all forms of appendicitis. What shall we do with the gall bladder? We cannot argue because the appendix is better out than in that the gall bladder is better out than in.

There are conditions in which all would agree that it is unwise to perform cholecystectomy as, for example, the obstruction of the common duct by inoperable malignant growth, where, by uniting the gall bladder to the duodenum or the colon, drainage for the bile can be obtained. Again, many would say in empyema of the gall

bladder, or in cholangitis, that drainage of the gall bladder was the safest and wisest course. The gall bladder is the origin of the trouble, and if it could be removed without harm of any sort, present or future, it would be better out of the way. Gallstones form from inflammation and infection, but only where there is stasis in the biliary current. If gallstones form in the smaller hepatic branches, such formation will be secondary to inflammation and obstruction lower down.

These considerations lead to the questions which have been printed in the call for this meeting.

WHAT ULTIMATE DAMAGE MAY BE DONE BY REMOVAL OF THE GALL BLADDER?

WHEREIN IS THE RISK OF CHOLECYSTECTOMY GREATER THAN THAT OF CHOLECYSTOSTOMY?

IN HOW MANY CASES OF CHOLECYSTOSTOMY HAVE YOU KNOWN A SECOND OPERATION TO BE NECESSARY?

DO GALLSTONES EVER FORM IN THE OTHER BILE PASSAGES AFTER REMOVAL OF THE GALL BLADDER?

DR. A. T. CABOT said perhaps the easiest way to state his feeling as to the wisdom of cholecystectomy was to enumerate the cases in which he should not do the operation. In cases of infection of the bile ducts in which drainage seemed to be a necessary part of the treatment, he would keep the gall bladder for that drainage, especially in cases of chronic pancreatitis, which have been shown to be so greatly benefited by a long drainage of the biliary passages. He would also leave the gall badder in a case of cholelithotomy, where he was doubtful whether all of the stones had been removed. He would also leave it in acute cases of gall-bladder inflammation, where the end of the gall bladder was readily accessible, and where everything was tied up in such a way as to make the separation of adhesions a serious additional risk to the operation. He reported cases in which he showed that removal of the gall bladder was wise for biliary colic, depending on kinks of the gall bladder, or of the gall ducts.

Dr. Cabot's practice has been steadily tending in the direction of taking out more and more gall bladders. He recalls only one case where gallstones actually re-formed after a case of cholecystostomy. He had met several cases operated upon by other surgeons, and also by himself, in which stones not found at the first operation had been taken out later. He believed that in most of these cases the stones were concealed in the hepatic ducts, and, therefore, not found at the first operation. With the gall bladder removed, he thought the conditions less favorable for the future formation of stones, as the place where stasis of bile occurred would be removed.

DR. H. O. MARCY spoke briefly of the history of gall-bladder surgery in Boston and of the likelihood of its development in the near future. He also mentioned some interesting cases of choledochotomy.

DR. F. B. LUND stated that the question of removal of the gall bladder did not depend so much on the ultimate effect on the patient, as it was well known that the removal of the gall bladder apparently did not affect the general health, but the question to be considered in regard to the removal of the gall bladder rather was, whether it was immediately the safest course for the patient.

Gangrenous, thickened and cystic gall bladders, which were apparently incapacitated from emptying themselves of bile, would better be removed in the majority of cases, but in ordinary gallstone operations, where the gall bladder showed little or no abnormality, except that it contained stones, the organ would better be left. Stones in themselves are evidence, not only of stasis, but of infection in the gall bladder, and wherever infection exists in the gall bladder or ducts drainage of the ducts is fully as important a matter as the removal of the stones. This can be more safely accomplished by using the gall bladder as a tube to drain the ducts than by removal of the gall bladder and tying a tube in the cystic or common duct. Wherever it is known that there was infection of the ducts, drainage is imperatively demanded and best accomplished by cholecystostomy. Wherever it is suspected that the ducts are infected — and this class will include the larger number of gallstone cases — cholecystostomy, with drainage of the gall bladder, is safer than cholecystectomy. After cholecystectomy, it is safer to provide drainage of the cystic duct, and in case of doubt, where there are stones in the common duct, to open that duct and drain it, whether stones can be felt or not.

Suture of the common duct is always a dangerous practice, and whenever it is incised it should be drained freely by tying in a full-sized tube. Some gallstones in the common duct may be impossible to feel, because the duct is so distended and its walls so thickened that the light stone floating in the fluid makes no impression on the finger. Wherever there are symptoms of common duct stone, and the duct is found dilated, even if no stone can be felt, it should be opened, and the stone will generally be found. Cases illustrating this point were briefly related.

DR. E. W. CUSHING: In considering the question of removing the gall bladder, the analogy with ablation of the appendix must not be pushed too far, for while the latter is apparently an organ with little or no function in the human race, and a mere anatomical survival, useless and prone to degenerate, the gall bladder has a definite function. It is clear that a continual discharge of bile into the intestine is not requisite or desirable and that the gall bladder not only serves as a reservoir for the storing of bile until it is needed in digestion, but that as a flush-tank it can at intervals expel its contents in such a way as to clear the bile duct of infective agents, which are always trying to enter from the intestinal canal.

If, then, the condition of the gall bladder is such that it can resume and exercise its proper function, it is best to preserve it, and the burden of proof is on those who would advocate its removal. The operation of cholecystectomy is not yet old enough for us to know what disadvantages may ultimately follow from loss of a functioning gall bladder, although it is of course conceded that it is better to remove this organ when it is functionless, hopelessly diseased and a source of danger in itself. In regard to the comparative danger of the two operations, it seems to me that although in selected cases, and in the hands of expert operators of large experience, cholecystectomy is as easy and as safe as cholecystostomy, yet in patients who are fat and feeble, or whose systems are oppressed with biliary absorption, the latter operation is very much easier and safer. It must not be forgotten, moreover, that these operations must be done by many surgeons who are not particularly expert and have no very wide experience, for as things are going now in the multitude of small hospitals perfectly ideal conditions do not always prevail.

Moreover, when the gall bladder is removed and its duct is tied, we lose the advantages of free drainage, which may be required by the condition of the common or hepatic ducts, or by the presence of stones in these ducts which have not been detected at the operation. It is well known that such overlooked stones will find their way out when the gall bladder is attached to the abdominal wall and drained. I have known stones impacted in the common duct, and detected but not removed at the operation, owing to the grave condition of the patient, to find their way out safely weeks afterward. I have known only one case in which stones kept coming out for over a year, thus keeping open a mucous fistula, communicating with the gall bladder. In this case, however, all the stones were small and had sharp edges, and were apparently pieces of a large stone, which had been broken in dislodging it at the time of operation. The fistula finally closed without subsequent trouble. I have no knowledge of my own as to whether gallstones ever form in the other biliary passages after removal of the gall bladder.

Dr. J. C. Munro agreed with Dr. Cabot in the importance of preserving gall bladders that would eventually return to a normal condition, especially on account of the value of the gall bladder as a drain for the pancreas. He had known of four of his cases which required another operation after cholecystostomy. He could not tell whether stones had re-formed or had been left in the bile passages at the original operation. In three of these he had performed the original operation. He always guided his decision by a suggestion of Mayo's, that the gall bladder should be removed if it were functionless, as in gangrene, obstruction of the cystic duct, or atrophy. He was strongly in favor of not removing normal gall bladders, *i. e.* those which could perform their function, or when the surgical indications at time of operation pointed to an unjustifiable risk in removal of the gall bladder as contrasted with simple drainage.

The question for discussion was, not whether a gangrenous or a malignant and totally useless gall bladder should be removed, but whether an otherwise normal organ, except for the presence of gallstones alone, should be removed or drained. For his part, he still believed in preserving and utilizing such gall bladders.

Dr. Frederick Winslow: I have been studying the end results of all the gall-bladder operations done at the Massachusetts General Hospital from January, 1894, to January, 1903, and think that the bare unvarnished facts in figures may throw some light on the relative value and danger of cholecystostomy and cholecystectomy as operations *per se*, although in the majority of the unsuccessful cases of either kind, the untoward results are due, not to what is *done* to the *gall bladder*, but to what is not done to the deeper biliary passages.

Excluding 13 for malignant disease there were 170 cholecystostomies. Of these 21 died a few days after the operation; 27 came to a second operation; 29 are unrelieved from one to five years after operation; 4 have had fistulas two to four years without symptoms; 46 have been well one to seven years, save for very slight occasional symptoms; and 43 have not been heard from since leaving the hospital. Excluding two for malignant disease, there were 44 cholecystectomies. Of these 9 died within a few days after operation; none came to a second operation; 2 died with symptoms unrelieved, one ten months, the other two and a half years after operation; 2 (in which the choledochus was drained) have been relieved, but still have fistulas one and one and a half years later; 22 have been completly relieved, one to nine years; and 9 have not been traced since leaving the hospital.

It will be noticed from these figures that although the mortality of the cholecystectomies is 20.4% (9 out of 44) while that of the cholecystostomies is 12.3% (21–170), yet, on the other hand, the percentage of cholecystostomies which have been completely cured is but 36.2% (46–127), while for the cholecystectomies it is 62.8% (22–35). This is certainly significant of much, in spite of the dictum, often enough true, that *la statistique est la mensonge en chiffres;* and cholecystostomy must be regarded as an emergency operation only, an elementary and preliminary performance, one which in itself cures only one out of every three cases.

Dr. S. J. Mixter: The subject of gall-bladder surgery is always an interesting one, especially as there are many points in technique and choice of operation that are far from being settled. The point that has been of perhaps the greatest interest to me is the question of the removal of the gall bladder, and I find that I have gradually come to a view where I seldom leave it. There is no doubt but that drainage

will serve in many cases of acute or chronic infection, either with or without stones, but I find that there is little if any more risk in the more radical operation, and that the results seem on the whole more satisfactory.

At first I removed only those that were greatly thickened, where perhaps the stones were so imbedded in pockets in the wall that their complete removal was almost an impossibility. The next step was the removal of the small contracted ones, so often found containing a single or few stones and deeply buried in adhesions; acutely inflamed and gangrenous ones came next; and, finally, the comparatively normal organ containing a stone or stones.

The greatest objection that has been made to cholecystectomy, aside from its greater difficulty, has been that drainage is more difficult. Now I have never seen a case where it was not possible to get good drainage by means of a rubber tube passed through the stump of the cystic duct, or into the common duct when that had been opened. A ligature or suture holds the tube in place and a packing of gauze protects the abdominal cavity.

In suitable cases where the abdomen is opened for any reason, I make it a rule to examine the gall bladder by touch, and if stones are felt, the condition of the patient being good, I close my incision in the usual manner if it be a low one and expose the gall bladder by the usual incision. For the past two years I have removed such gall bladders without opening them, and never have had occasion to regret it. Gauze drainage has never been omitted.

As regards the subsequent history of the patients, I can say that I have never seen a case where the loss of the gall bladder has been the cause of any unpleasant symptoms, and there have been no recurrences of attacks and not nearly so much complaint of the pain caused, I suppose, by the pull of the scar on the gall bladder following drainage.

In gangrenous inflammations the results are perhaps the most thoroughly satisfactory. In one case while removing such a gall bladder which had not perforated, a large abscess was found in the liver, or between it and the liver, the patient making a rapid recovery. There is one class of cases in which I have always left the gall bladder and perhaps always shall, that is, in pancreatitis.

There is no doubt but that the operation of cholecystectomy is more difficult than that of simple opening and tying in a tube, and hence the inexperienced surgeon should choose the less dangerous operation; but I am sure that in the hands of quick and experienced men the operation of cholecystectomy will become largely the one of choice.

DR. E. A. CODMAN showed four gall bladders which he had removed because of stones impacted in the cystic duct. Two had made perfect recoveries. One of the others was complicated by the presence of a fistulous opening between the gall bladder and duodenum, stones in the hepatic and common ducts and an abscess between the gall bladder and liver. This gall bladder was exceedingly small. The case eventually died from leakage of the duodenal suture.

The fourth case was interesting as showing that gallstones may form again after cholecystostomy. Dr. Codman had done the latter operation on this patient two and a half years ago. Complete relief had followed for six months, and then very severe symptoms began again and the patient rapidly lost ground. Owing to her persistent vomiting, nourishment was almost impossible. Though she had greatly abused morphine, it was felt that there must still be some trouble with the gall bladder. At times she had attacks of jaundice and pain. One year after the first operation he therefore removed the gall bladder. The specimen shows a stone impacted in the cystic duct and the gall bladder filled with stones of entirely different appearance from those removed at the first operation.

This patient was unable to retain any nourishment after the operation, vomited incessantly and died at the end of three weeks. The autopsy showed no adequate reason for death except the emaciation due to starvation.

He thought that since he could detect no stones in the common duct at the original operation, and since at the second operation he found the cystic duct occluded with a very small stone, although the stones in the gall bladder were large, and since at the autopsy only three weeks later no stones whatever were found in the common or hepatic ducts, the only rational conclusion is that all the stones were formed in the gall bladder. He believed that had he done cholecystectomy at first he would have saved the patient. When in doubt he thought it was wise to remove the gall bladder.

DR. F. B. HARRINGTON: The absence of the gall bladder and its functions, as far as I have observed, is not injurious to the individual after recovery from cholecystectomy. Some surgeons with large experience in cholecystostomy state that gallstones do not re-form — Robson, Mayo and Kehr. Other surgeons report cases of re-forming gallstones. I have had myself three cases where a year or more after cholecystostomy and drainage attacks of colic and jaundice have recurred, suggesting the passage of gallstones. Dr. Codman has shown us here to-night a gall bladder removed a year or more after cholecystostomy, in which gallstones totally unlike the original ones were found. I doubt if sufficient time has elapsed to determine definitely how frequently re-formation of gallstones occurs in a gall bladder which has been drained. I believe that a gall bladder which has once developed gallstones may do so again.

At the present time I feel that in uncomplicated cases, that is, on the discovery of a gall bladder with gallstones, whether the cystic duct be open or not, and with a patent common duct, that I am doing better surgery to remove

the gall bladder, no matter how nearly normal it seems. I think one should always allow for possible leakage, leaving a gauze drain down to the stump for one, two or three days. In cases of acute cholecystitis and cholangitis without obstruction, I should be governed largely by the condition of the patient in deciding whether the gall bladder should be removed or not. If tubage of the common duct is as satisfactory as described by Kehr, I cannot see the advantage of drainage by the gall bladder except to save time. I think that an objection to bringing the gall bladder to the surface exists because this drags upon the common duct and may cause kinking of the duct.

I have a case of cholecystostomy in which the gall bladder apparently is occasionally caught in a hernial opening of the scar. This causes extreme suffering, which is not relieved until what seems to be the gall bladder is pushed back through the hernial opening by pressure. On one occasion in this patient's case, an attack of this sort has been followed by temporary jaundice, which I think may have been due to obstruction from kinking by the pulling of the gall bladder on the common duct. While I do not believe in the removal of the gall bladder in every case I should advise its removal in a majority of cases of disease of the gall bladder and bile ducts due to gallstones.

Dr. J. W. Elliot and Dr. H. H. A. Beach were not able to be present at the meeting, but have contributed the following expressions of their opinions for publication.

Dr. J. W. Elliot: The ultimate damage done by removal of the gall bladder may be of two sorts. In the first place, we do not know the exact function of the gall bladder, and therefore it may prove more important than we at present suppose. I do not believe that surgery is likely to improve the normal human body. Witness the growth of opinion in favor of myomectomy as against hysterectomy and in favor of conservative operations on the tubes and ovaries and other organs. The second sort of damage may come from its injudicious removal when there is a stone or disease in the common duct. Patients are often sent to surgeons in the later stages of gallstone disease, with profound cholemia or severe cholangitis, and with more or less diseased liver and kidneys, in a condition very unfavorable for a severe surgical operation. In such cases I believe a preliminary cholecystostomy, with drainage of the ducts and liver through the gall bladder, will be attended with a considerably lower mortality than the immediate removal of the gall bladder, with drainage of the common duct direct. In cases where cholecystectomy has been done and symptoms of cholangitis continue or jaundice appears, we have no choice but to drain the common duct, regardless of the patient's condition.

Speaking simply of the technique of the operations I think cholecystectomy is as simple as cholecystostomy, and should have about the same mortality. If the mortality is higher in cholecystectomy it is probably due to some of the reasons given above. I have known a second operation to be necessary in quite a number of cases of cholecystostomy, but as the operation in most of these cases was intended to be only preliminary and often life-saving, a second operation naturally followed. I have also occasionally made the mistake of trying to save a gall bladder too much diseased, which proved to be troublesome and therefore had to be removed later.

I do not know if gallstones ever form in other bile passages after removal of the gall bladder, but I have often found them in the hepatic and common ducts when there were no signs of their ever having been in the gall bladder, and in one case I remember finding hundreds of small stones in the hepatic duct and liver with a normal gall bladder. In this case the stones were evidently forming in the liver.

For the reasons given above I do not believe in the almost routine practice among certain surgeons of removing a moderately distended gall bladder without even opening it or examining the deep ducts. The reasons given in favor of such a procedure are that it is usually less trouble to the patient and that stones do not re-form after removal of the gall bladder. The argument against it is that in many cases of gallstone disease we cannot be certain of finding all the stones, and there is often more or less cholangitis present, which conditions are best treated by drainage; and drainage is usually safer by cholecystostomy. If we are able to give up drainage in a simple case where the gall bladder is nearly normal, I prefer "ideal" cholecystostomy to cholecystectomy. In regard to the re-formation of stones I have reason to believe that they very rarely recur after cholecystostomy.

I think cholecystectomy should be only done when the common duct is clear and there is little or no cholangitis. It is indicated when the gall bladder is so diseased that its normal condition is not likely to be restored, or when there is an irremediable obstruction of the cystic duct. In acute phlegmon or gangrene of the gall bladder it is usually safer to do a preliminary cholecystostomy, packing gauze around the sloughing gall bladder, and later when the acute process has subsided a cholecystectomy. All the cases I have managed in this way have recovered.

Dr. H. H. A. Beach: Gall bladders demanding surgical treatment are in a large proportion infected. The degree of virulence and extent of infection in and beyond the gall bladder varies, whether the infection proceeds from the liver or ascends from the intestine. The certainty of completely removing all infection by cholecystectomy must be conceded, if the patient is to lose so valuable an outlet for drainage as the intubed gall bladder. The damage that may be done through rousing into activity an infected territory by an operation without providing adequate drainage is incalculable,

even if the hepatic and common ducts have already been distended by the passage of the stones.

The risk of cholecystectomy is the uncertainty of completely removing infection by the operation. Its great advantage to the patient is in lessening the liability to cancer by the excision of tissues that have been the seat of chronic inflammation. A second operation after cholecystostomy has been necessary in three of my cases, on account of pain or pain associated with jaundice. The first operations had been performed by surgeons of large experience. In one instance drainage had been maintained for five months. I have never seen but one permanent biliary fistula from a drained gall bladder. In that instance the common duct was completely shut off from the intestine by a large mass of adhesions and the patient refused a cholecystenterostomy.

## Recent Literature.

*Diseases and Injuries of the Eye, with their Medical and Surgical Treatment.* By GEORGE LAWSON, F.R.C.S. (Eng.), Consulting Surgeon to the Royal London Ophthalmic Hospital, etc. Sixth edition with 249 illustrations. Revised and in a great measure rewritten by ARNOLD LAWSON, F.R.C.S. (Eng.), Assistant Surgeon to the Royal London Ophthalmic Hospital, etc. pp. 587. London: Smith, Elder & Co. 1903.

As the last edition of this work was published in 1885, it is obvious upon reading its pages that the new edition has, as its title page says, "been largely rewritten."

It is now a satisfactory texbook of the present period, although in some instances it has not been quite brought to date, according to American standards. The description of the technique of ophthalmic operations is by far the best part of the book, and is superior to that in any general textbook on the eye that has been recently published. The print and paper of the book are good. The index, which is unusually full, occupies forty-six pages, which makes it particularly valuable as a handy reference book.

*Diseases of the Stomach.* A Textbook for Practitioners and Students. By MAX EINHORN, M.D., Professor in Clinical Medicine at the New York Post-Graduate Medical School and Hospital, Visiting Physician to the German Dispensary. Third revised edition. New York: William Wood & Co. 1903.

The ingenious inventor of many of our modern gastric instruments stamps his personality very strongly upon this book. Apart from the sections devoted to descriptions of the author's apparatus, the volume on the whole is concise and practical. We regret the introduction by the author of so many new terms in his descriptions of diseases of the stomach, because they tend to create the feeling among general practitioners that the study and treatment of gastric affections is far more difficult than is really the case.

*Textbook of Diseases of the Eye, for Students and Practitioners of Medicine.* By HOWARD F. HANSELL, A.M., M.D., Clinical Professor of Ophthalmology, Jefferson Medical College, etc., and WILLIAM F. SWEET, M.D., Demonstrator of Ophthalmology, Jefferson Medical College, etc., with chapters by CHRISTIAN R. HOLMES, M.D., CASEY A. WOOD, M.D., D.C.L., and WENDELL REBER, M.D. With 256 illustrations, including colored plates. pp. 532. Philadelphia: P. Blakiston's Son & Co. 1903.

This textbook is one of the most satisfactory put forth in recent years. The text is concise, clear and judicial. Old and disused forms of treatment have been entirely omitted; modern methods of diagnosis and treatment have been emphasized and given first place. New methods which have not yet established themselves have been treated justly, but their tentative positions duly emphasized. The illustrations are good and, with few exceptions, new. The type is clear and the page of convenient size. The index is full and accurate.

*The Purin Bodies of Food Stuffs; and the Rôle of Uric Acid in Health and Disease.* By I. WALKER HALL, M.D., Assistant Lecturer and Demonstrator in Pathology, the Owens College; formerly Senior Demonstrator in Physiology at the Owens College, Victoria University of Manchester; Honorable Pathologist to the Salford Royal Hospital. Second edition (revised). London, W. C., and Manchester: Sherratt & Hughes. 1903.

This book consists chiefly of an account of the author's own work. In it he gives a series of analyses of the various food stuffs for purin bodies, which is more complete than has heretofore been published. The presence of purin bodies was demonstrated in beers and ales and their absence shown in wines, which accounts for the increased excretion of uric acid after the former. It is noteworthy that purin bodies do not alter the blood pressure in rabbits, because this tends to show that one of the many unproved assumptions of Haig is wrong. Haig attributed headache, migraine and many other diseases to the presence of purin bodies in the blood, whereby, as he says, the blood pressure is raised. The work of Burian and Schur on the quantitative effect of purin bodies of the food on those of the urine is confirmed. The metabolisms of purin bodies in health is considered as well as the effect of drugs on the uric acid in the urine in health and disease. Hall's critical study of the methods employed for the determination of purin bodies is valuable.

THE BOSTON

# Medical and Surgical Journal.

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## INTERSCHOLASTIC SPORTS.

Injuries and accidents due to *college* sports have been for many years a favorite theme for the public press. The number and seriousness of such injuries have usually been much exaggerated, though of course there has always been a certain basis of fact for such statements. During the past decade, however, *interscholastic* sports have come into existence and have developed with marvelous rapidity. In these school sports there are real and potent possibilities of danger which are none the less important because they have largely escaped recognition. To these dangers it is high time to call attention and to suggest measures which shall diminish and, if possible, eliminate them.

It may be taken for granted that healthy boys will play games and follow sports, some of which will be rough, some dangerous and some neither rough nor dangerous, requiring skill and dexterity, rather than strength and courage. It would be most unfortunate, even if it were possible, to eliminate the rougher and in certain respects the more dangerous forms of amusements from the boy's life. We can, however, protect him from unnecessary and unjustifiable perils, and we may also exercise a considerable control in the choice of sports and in the manner of their practice. It certainly is no longer justifiable to allow interschool athletics to continue with the lack of supervision which has characterized them in the past.

These school sports have several elements of danger, and it may be said at the outset that the least of these are the bruises, sprains or even fractures which result from such games as football and basket ball. Such injuries are bound to come to active boys, and are of comparatively slight importance. The serious dangers are those of the heart and circulation, the general nutrition and probably, also, the nervous system. The factors which tend to develop and exaggerate these dangers are also numerous. They consist, first, of the unbounded and unquenchable enthusiasm by which the school sports are characterized; second, the immature age and the undeveloped physical condition of the contestants, who range from fourteen to eighteen years; third, the almost complete absence of medical supervision; fourth, the presence of either professional, or very young graduate, coaches, both of whom overlook the fact that their charges are young boys and not young men; fifth, the almost complete absence of age classification, that is, boys of fourteen years may be pitted against others of eighteen; sixth, the definite tendency of a large majority to contest in two, three or even four branches of sports, which follow one another chronologically and with almost no intervening interval of rest.

The writer would submit the following opinions, which probably will not be criticised as being radical or extreme: Cardiac hypertrophy of a degree characterized by an apex beat in the sixth space, an inch outside the mammary line, is not a desirable thing in boys not yet old enough to enter college; collapse, accompanied with unconsciousness, and weakness or nervousness lasting several hours, coming at the finish of the relay race or a 440 yard trial, is likewise an undesirable condition in boys; insomnia, inability to study and continued loss of weight, in the absence of organic disease, are also unpleasant symptoms; yet each of these has more than once been found in the course of a not very extensive experience of examining school boy athletes. These conditions are not necessarily of a merely temporary character, for some of them have been under observation for from one to three years and have improved but little.

The sports in which danger most easily develops are football, basket ball, rowing and the track events of the mile run, the half-mile run and the relay race. Baseball, with the exception of the pitcher's position, is not very exhausting, and the short sprints, the hurdles, the jumps, the field events of the hammer and shot and the pole vault are not of a definitely continued exhausting character. Hare and hounds, or cross country running, is on the border line.

The following precautions suggest themselves: A preliminary physical examination, in which not only the heart, but the general condition, the growth and previous health should be considered; second, an increase of class competition in the same school and a diminution of interschool contests; third, shorter hours of organized practice and the establishment of a rule that none but the most physically competent be allowed to represent the school in more than one branch of sport, and that no one represent it in more than two branches; and, finally, a closer and more reasonable interest by the parents in the boy's physical exercise.

The interscholastic rowing which takes place in the spring on the Charles River, under the auspices of the Boston Athletic Association, is free from many of the objections described above; and the interest which it excites in the contestants, has not been diminished by the physical examination and its resultant exclusion of an occasional boy, or by the careful and limited methods of practice.

This article is not intended to suggest in any way a movement to diminish the amount or the number of the schoolboy sports. The writer is an ardent supporter of them in almost every form. In spite of press notoriety and the disadvantages above discussed, such sports are too valuable to be curtailed. They should, however, be supervised, so that their greatest good may be obtained and their obvious dangers, so far as may be, eliminated. This can be easily accomplished by making the sports a part of each school's curriculum, and by having one or more of the masters in close touch with the various teams.

## THE REPORT OF THE STATE BOARD OF HEALTH OF MASSACHUSETTS.

THE thirty-fourth annual report of the board for the year ending Sept. 30, 1902, presents 649 pages of the high standard of excellence that we expect from year to year.

The death rates for the year and for the previous year, 16.17 and 15.82 per 1,000 living, are the lowest ever recorded in the state, and, in the absence of statistics as to the corresponding birth rates, are explained by the decreased death rate from infectious diseases, including pneumonia and tuberculosis, which destroy mainly the young and middle-aged. From diseases of the heart, brain and kidneys and from cancer the mortality is increased of late years, being in great part of older people who have passed the useful period of life. From these facts the board makes most interesting comparisons of the death rates of cities, which, although largely influenced by birth rates, depend upon the comparative preponderance of the young or the old in their communities.

The reduction of the death rate from "consumption" from 4.27 in 1853 to 1.59 per 1,000 in 1902, even if in part due to improved registration and diagnosis, means enormously improved sanitation; and the very low typhoid rate, 0.183 per 1,000, has the same significance.

The sanitary legislation for the winter of 1902-1903 records material advances in requiring from the towns monthly instead of yearly reports of vital statistics, thus securing much greater accuracy — relative to the destruction by boards of health of infected material; requiring an investigation and report on garbage and refuse dumped into sea or tide water; in regard to the sale of renovated butter; on separate systems of drainage, inspection of food and drug laws; relative to production and distribution of antitoxin and vaccine lymph.

A new office of the board has been created to collect information with regard to matters of public health, to investigate epidemics and high death rates and to bring the board into closer relations with local boards. Dr. F. L. Morse has filled the position to the great advantage of sanitation.

As usual, the greater part of the report (450 pages) is given to the discussion of the large questions affecting water, water supplies, sewerage and disposal of sewage and refuse, and to the advice given in individual cases by the board to cities and towns and corporations on these vital questions. On these matters the reports of the board have become the first authority both in this country and in Europe, and are of the utmost practical value.

There were examined during the year, by the board's officers, 6,256 samples of milk, 3,090 of other food than milk and 1,124 of drugs — in all 10,470, of which 2,989, or 28.1%, were found not to conform to the legal standard; and there were 76 prosecutions with 74 convictions. A list of 61 tonics and bitters is given, in which from 6 to 47.5% of alcohol was found.

In the eight years of that work, the board has manufactured and distributed 181,174 bottles of diphtheria antitoxin. Their records show a fatality of only 6.7% of cases treated during the first two days of the disease, 9 for the third

day, 12.9 for the fourth, 15.9 for the fifth and 17.6 for the sixth and later.

There were 928 specimens of sputum and other material examined during the year for the bacilli of tuberculosis; 217 of blood, for typhoid fever, of which 65 were positive; and 61 for malaria, in 17% of which the malaria parasite was found.

The statistical summary of disease and mortality, the usual comments on the health of towns and an admirable index complete the report.

The confidence of the community in the board and its high valuation of the work done are indicated by the generous appropriations of the legislature, for the year 1902, of $23,000 for general expenses of the board; of $11,500 for inspection of food and drugs; of $34,000 for the protection of the purity of inland waters; and of $2,500 for the examination of sewer outlets.

## ANOTHER ORGANISM IN CARCINOMA.

In a recent number of the *British Medical Journal* Mr. Keith W. Monsarrat, surgeon of the Northern Hospital at Liverpool, describes the morphology of an organism which he has found in carcinoma of the breast. This organism was described by him in 1899. Since that time researches have been continued with special reference to breast carcinoma, and out of the material which has been accumulated in that time he has been able to construct the life history of the previously described organism, and to adduce evidence which he regards of importance relative to its pathological relationship to the disease. Special care was taken in the removal and preparation of the material, and examinations were made at early periods after removal. From twelve specimens he was able to isolate the organism in seven. From observations made on this material, he reaches the following conclusions:

(1) From a considerable proportion (58.3%) of specimens of carcinoma mammæ, an organism presenting characteristic features was isolated.

(2) This organism presents a life-history in which two cycles were traced — the one a vegetative budding cycle, the other a sporulating cycle.

(3) The organism when injected into animals is capable of infecting and inhabiting endothelial and epithelial cells.

(4) The organism initiates in endothelium and epithelium a process of proliferation as a result of which masses of new-formed tissue are built up which consist of a parenchyma and a stroma, and grow and extend actively from their centers of origin.

(5) This new cell-mass formation may be associated with growth of a similar character in neighboring glands, and some evidence was also provided that visceral metastasis occurs.

(6) Intracellular bodies are demonstrable in carcinomata mammæ, which present the same features as the intracellular parasites of the experimentally produced nodules.

(7) The evidence derived from these researches points to the conclusion that the organism described is an etiological factor in the morbid process known as carcinoma mammæ.

We have no means of estimating the value of these observations. We quote them simply as another possible addition to our knowledge of the subject of etiology of cancer. It has apparently been easy to find various organisms in cancer nodules, and to trace certain changes in form. The all-important question of etiological significance, however, must remain unanswered until absolutely convincing experiments substantiate the findings of the microscope. In spite of vigorous and varied investigations this has not yet been forthcoming.

## TESTING OF CLINICAL THERMOMETERS.

By act of Congress in 1901 a Bureau of Standards was authorized, which among other duties was called upon to test clinical thermometers used in medicine. In order to approach the work with accuracy it was necessary to make a preliminary study of the magnitude and character of the defects in ordinary types of thermometers. To this end large numbers were studied relative to magnitude of errors, destructibility of index, time of action, effect of aging, nature of the glass, etc. It was forthwith established that there was a great lack of uniformity in standard among thermometers commonly used in this country. In general it was shown that the scale of thermometers was ordinarily about .2° F. too high, and a further study of the standards used by manufacturers of thermometers led to a verification of the conclusions previously reached. The manufacturers coöperated willingly in the work undertaken, with a result that the degree of error is now very much less, and a "uniform scale of thermometers" has been established.

Owing to the fact that manufacturers have desired to submit thermometers in large numbers for certification, rapid and accurate methods of testing have been devised. First, defects of construction, defective glass, air bubbles in the bulb, destructibility of index and certain other

matters are investigated, and if the thermometer is shown to be defective in any of these respects, it is refused certification. If the error in registration exceeds .3° F., such a thermometer is likewise refused. An important matter also, which is perhaps not sufficiently recognized, is the change which occurs with time. The greater part of such change takes place the first six months after the making of the thermometer, and the element of chief importance in this change is the chemical composition of the glass. If glass of recognized quality is used, the possibility of changes after six months may, from a practical point of view, be neglected.

The importance of this work needs only to be mentioned to be recognized. It is eminently desirable that an instrument so commonly used, and upon which so much often depends in the determination of the course of disease, should be as accurate as it is possible to make it. The work of the government in this respect, both directly and indirectly, has already proved of the greatest value.

## MEDICAL NOTES.

MERGING OF TWO MEDICAL JOURNALS. — It is announced by the publishers of the *International Medical Magazine* and the *Archives of Pediatrics* that these two journals will be merged into a single periodical, retaining the title *Archives of Pediatrics*.

QUADRENNIAL CONGRESS OF POLISH PHYSICIANS AND SCIENTISTS. — The tenth quadrennial congress of the Polish physicians and scientists will be held this year in Lemberg, Austria, July 20–24. Prof. E. Machek is the Chairman of the Committee of Arrangements and Prof. W. Sieradzki, Secretary. Dr. Francis E. Fronczak of Buffalo, N. Y., is the representative of the committee for the United States.

### BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Feb. 10, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 49, scarlatina 38, typhoid fever 6, measles 149, smallpox 0.

A CENTENARIAN. — Mrs. Lavinia H. Crosby of Arlington, Mass., died Feb. 1, at the reputed age of one hundred and one years. She was born in Brewster, Cape Cod, and had lived for sixty-seven years in the house in which she died.

THE NEWTON, MASS., HOSPITAL. — At the annual meeting of the corporation of the Newton Hospital action was taken which practically removes from office the superintendent of the institution. The house officer will hereafter in a measure fill this vacancy. During the past year upwards of 800 patients were treated with some increase in expense over the year 1902. A new ward for maternity cases is needed.

FREE DENTISTRY. — A committee appointed last year by the trustees of Tufts College to visit the Tufts Dental School report, as a result of their investigation, that free dentistry is much needed in the city. The committee urges that approximately $4,000 a year would permit the free treatment of 8,000 more patients than are at present treated, and that such free treatment would be of benefit not only to a large number of individuals in the community, but also to dental students in the prosecution of their studies.

CRIPPLED AND DEFORMED CHILDREN IN MASSACHUSETTS. — According to a recent report of the state Board of Charity, inquiring into the number of crippled and deformed children in this state, who because of their deformity are unable to attend the public schools, it appears that 251 towns had no children of this class, that 65 towns reported 208 and that 36 made no reply to the inquiry. It is estimated that if a more rigid investigation were made, the entire number of children would amount to upwards of 250.

### NEW YORK.

AT the annual meeting of the New York Graduates' Society of McGill University, held Jan. 27, Dr. J. A. Meek was elected President and Drs. H. N. Vineberg and William Ferguson respectively first and second Vice-Presidents.

BEQUESTS. — Among the bequests to charitable and religious institutions, aggregating $80,000, in the will of the late Mrs. Elizabeth W. Aldrich of New York, are the following: $10,000 each to St. Luke's Hospital and the Home for Incurables, and $2,500 to St. Mary's Free Hospital for Children.

DECREASE IN STREET ACCIDENTS. — The president of the Board of Police reports a gratifying decrease in the number of street accidents during the month, as compared with January, 1903, the figures being 159 and 213 respectively. There were 19 persons struck by cars, as against 39 in January of last year.

A Gift for Newark City Hospital. — The mayor of Newark, N. J., has received for the City Hospital a gift of $24,000, from the estate of Joseph Nichols, who died twenty years ago. Joseph O. Nichols, the cousin of the deceased, was appointed administrator, and after the various bequests in the will had been complied with, $11,000, which remained, was placed in savings institutions, where, with the accumulations by interest, the amount has increased to $24,000.

"Liquid Sunshine." — At the annual dinner on Feb. 5 of the Technology Club, which is composed of New York alumni of the Massachusetts Institute of Technology, "liquid sunshine," prepared under the direction of Dr. William J. Morton, was one of the beverages provided. Each guest had a glass of water containing a small quantity of esculin, and into this he dropped a capsule which had been rendered radio-active by exposure to radium. After drinking the liquid none of the diners appeared to become translucent, but they were assured that their interiors were thoroughly illuminated.

Orthopedic Dispensary and Hospital. — At the annual meeting of the Board of Trustees of the New York Orthopedic Dispensary and Hospital, which was held on Jan. 25, it was announced that Miss Emily A. Watson, one of the supervisory board of the institution, who had previously given $100,000 for the erection of a country branch, has now presented an endowment fund of $250,000 for the maintenance of the same. This new building, which is approaching completion, is a substantial structure three stories in height, located at White Plains, Westchester County, and is surrounded by fifteen acres of land. It is designed as a convalescent hospital and industrial school.

Inspection of Schools. — At a meeting of the Board of Education held Feb. 3, Health Commissioner Darlington recommended the temporary closing of one public school and the disuse of certain class-rooms in two other schools in the Borough of Brooklyn. Dr. Darlington also urged improvement in the sanitary conditions in nine other schools in Brooklyn. These recommendations were based on the results of an investigation made by Dr. Charles F. Roberts, sanitary superintendent of the Health Department. The school, the closing of which was advised, is an old one-story frame structure, which was found to be insufficiently heated, while the arrangement of the class-rooms is bad and the plumbing defective.

Mount Sinai Hospital. — The annual meeting of the directors of the Mount Sinai Hospital, the last at the old buildings, was held on Jan. 24. It was announced that the new hospital, at Fifth and Madison Avenues, between 100 and 101st Streets, will probably be opened the middle of March. On Dec. 1, 1903, the entire subscriptions to the building fund aggregated $1,435,568, of which $152,139 was received during the past year. The following figures show the relative size of the old and new buildings: Total number of beds in the present hospital, 225; total number of beds in the new hospital, 456. Cost of maintenance of the present hospital and dispensary, annually, $144,319; estimated cost of maintenance of the new institution, annually, $250,000.

Hebrew Infant Asylum. — The ninth annual meeting of the Hebrew Infant Asylum was held on Jan. 27, when the annual report showed that during the past year the mortality among the inmates, ranging from newborn infants to children five years old, was less than 2½%, as compared with a general outside rate for children between those ages of 10%. Of the 248 children cared for during the year, only 6 died. The president of the institution announced that toward the fund being raised for the erection of a new building, to accommodate 500 children, $40,000 of the $175,000 required had now been subscribed. The asylum is at present located in the eastern section of the Borough of the Bronx, but it is purposed to have the new building on the western side of the Bronx, and negotiations are now in progress for the purchase of a desirable site.

Clean Bank Notes. — On Jan. 29, in Washington, Dr. Darlington, President of the New York Board of Health, was heard by the Banking and Currency Committee of the House of Representatives on the pending bill providing for the issue of new notes to the end that the paper currency may be maintained in good sanitary condition. He expressed the opinion that a provision for keeping this as clean as possible by constant renewal would be a step in the right direction. He also believed that a plan could be arranged by which the money (coins as well as bills) received by the street car companies, large retail stores, etc., of the principal cities might be sterilized each day or each week. At present, he said, an investigation was being made in the New York Health

Department laboratories, to determine, as far as this was possible, to what extent disease germs are transmitted by means of money.

Mortality in January. — The Health Department reports show that during the month of January the mortality in the city represented an annual death rate of 21.22, as against 18.53 in December and 19.32 in January, 1903. The corrected death rate, excluding non-residents and infants under one week old, was 20.32. Among the diseases in which there was an augmented mortality were the following: The weekly average of deaths from diphtheria and croup increased from 47.25 in December to 51 in January; the weekly average from scarlet fever, from 17.75 to 28; from measles, from 9 to 19.25; from influenza, from 8 to 15; from pneumonia, from 186.75 to 226.5; from broncho-pneumonia, from 88.25 to 122.25; from acute bronchitis, from 37.5 to 56; from diarrheal diseases, from 34.5 to 36.25; from diarrhea under two years of age, from 25 to 28; from cancer, from 52.75 to 56.5; from Bright's disease and nephritis, from 114.75 to 137.25; and from organic heart diseases, from 97.5 to 108.25. Among the diseases in which there was a decreased mortality were the following: The weekly average of deaths from whooping-cough declined from 3.75 to 1.5; from typhoid fever, from 13 to 7.5; and from pulmonary tuberculosis, from 162 to 157.75. During the month there were two deaths from smallpox; with the exception of one other, in the early part of December, these are the only deaths reported from this disease for many months.

Extermination of Mosquitoes. — The Park Department, which for some time has been engaged in cleansing the lakes and pools of Central Park, announces that it has got rid of mosquitoes in that resort. Incidentally the investigating committee, consisting of Dr. E. B. Southwick, city entomologist, and Dr. William N. Berkeley, of the Board of Health, has reported that, despite assertions to the contrary made by physicians and others, there never were many mosquitoes of the anopheles variety in the Park.

St. Bartholomew's Clinic. — The Year Book of St. Bartholomew's parish, just issued, has the added interest of being the last to appear during the remarkable rectorate of Dr. David Greer, who has now been made bishop coadjutor of New York. When Dr. Greer took charge fifteen years ago, there was but one feeble little benevolent society; but the religious and benevolent work of the parish has now developed into enormous proportions, and during the past year, at the St. Bartholomew Clinic, fifty physicians and surgeons have given free service to more than 13,000 patients.

## Miscellany.

### THE BUMMER AND THE GUMMA.

by G. L. Walton, M.D., Boston.

The following jingle has served to fix the pathology of central nervous syphilis in the mind of the writer. It is forwarded in the hope that it may serve the same purpose for others equally dependent on kindergarten methods.

The gay and festive bummer, when he goes upon a bum,
Inaugurates proceedings with a bottle full of rum.
This serves the vessels to dilate, resistance to impair
Of tissues of the cerebrum, and thus prevents repair,
Facilitating movements of that wicked little bug,
Which does not hit you on the head like ordinary thug,
But finds its way, without delay, to regions most remote.
(On this authorities agree, too numerous to quote.)

He first attacks the arteries, upon their inner layer,
And when he's caused an exudate, it's apt to be a stayer;
It blocks the passage of the blood, and favors a thrombosis,
Not subject to relief by en-, or even ex-, osmosis.
The adventitia swells a bit; profuse proliferation
Of cunning little rounded cells increases the stagnation.
A little fibrous tissue, and a cheesy breaking down,
Will serve to make a gumma; — for the man who's seen the town.

Its surface is irregular, the cheesing is in spots,
Surrounded by a granuled mass of microscopic dots.
Sometimes the vessel wall is most as jagged as Formosa;
Pathologists call this effect "arteritis gummatosa."
More commonly this growth is found in membranes of the brain,
Or in the substance of a gyre, or in the pons again,
More rarely in the capsule, but quite often at the crus,
Crossed palsy being thus produced with very little fuss.

Sometimes the process is diffuse; a gummous exudate
Spreads round the vessels of the base, not coming quite so late
As gumma, which you sometimes find twelve years or more delayed
Beyond the time the patient states infection was conveyed.
A year will make a gumma, though, says Strümpell in his treatise,
Three months sufficing to produce effective meningitis.

This plays about the cranial nerves, whose endo-
neurium
Swells up in spots unduly prone to pinch the fibers
some!

A gummatous neuritis is the name they give this
stunt,
Of which the nervous fibrils have, alas, to bear the
brunt.
A serous imbibition forms the next important issue,
Which may produce an atrophy, with cicatricial
tissue.
Gelatinous material in diffusive neoplasm
Is found, as Oppenheim has said, of squeezing the
chiasm.
So don't forget to take the fields, 'twill help you out a
bit,
In case you lack paralysis, strabismus, or a fit.

These lesions dire, like forest fire, are very hard to
smother,
To-day appearing in one place, to-morrow in another;
That's why the learned Oppenheim and Peterson, also,
Say "Syph of central nervous Syst," and let the old
plan go,
Of "Syph of cord" or "Syph of brain";— the awk-
wardness was great
Of naming from the part worst hit, by gummous
exudate.
(This exudate is rather prone small lesions to produce,
So never look to find that form of *neuritis* called
*diffuse*.)

Diffuse and circumscribed attack may join in doing
harm,—
There may be palsy of an eye, the face, or leg, or arm;
A gumma, arteritis and neuritis may consort;
So don't be rash in forecasting the pathologist's
report!
When meningitis gets well set, it makes a stiff mem-
brane,
To start which you use iodide again and yet again.
And don't forget the softening, which leaves the brain
forlorn,
In parts from which, through syphilis, the circulation's
gone.

A lobe, or a whole hemisphere, has been known thus
to fall,
Producing hemiplegia; not to mention death at all.
Above all, just remember that the symptoms come and
go,
And change almost from day to day, with gummous
ebb and flow.
Remember that the iodide, in any doubtful case,
May serve at least for rheumatiz, and maybe lead
displace.
Recall G. P., and tabes too, from toxines of the gumma
Which any time may overtake this gay and festive
bummer.

## THE MEDICAL EXAMINING BOARD OF SOUTH CAROLINA.

The medical bill which is now before the legislature of South Carolina, as regards sections which deal with examinations of students by the state board, is drawn entirely from an article entitled, "The True Function of the State Examining Board," prepared and read by Dr. Allard Memminger, four years ago at a meeting of the South Carolina Medical Association and published in this Journal July 26, 1900. Had the ideas contained therein been then adopted it would have probably avoided all the trouble which the exemption clause passed in the students' bill two years ago has caused.

The present bill exempts no one, but provides fully and fairly for the students who graduate at a four-year graded school, and who attain 75% on all of the junior branches. On these they are, by the provisions of this bill, freed from coming before the state board, and these junior branches of the curriculum include general anatomy; physics; chemistry, organic and inorganic; physiology; materia medica and medical botany; bacteriology; histology and pathology.

They thus, after receiving their diplomas, are only examined by the state board on the practical branches of their curriculum, to which they have, of course, devoted all their study during the latter portion of their medical term.

We must again ask the indulgence of our readers for the delay in the issue of the Journal, which has been caused by a continued strike of printers and pressmen.

## Correspondence.

### IMPOSTOR.

Boston, Feb. 8, 1904.

Mr. Editor: Some time ago I called attention in the Journal to a man who then gave the name of Dr. —— Allen of New Orleans, who was soliciting money either by gift or loan (?) from the members of our profession, on the pretence that he had been robbed. This man is again among us, and has already called on some of his former dupes. Will you kindly again warn the profession against this *impostor*, who has a public record for fraud, and thus perhaps benefit some of our associates?

Sincerely yours,
Albert N. Blodgett, M.D.

### MORPHINE AND MENSTRUATION.

Baltimore, Md., Feb. 2, 1904.

Mr. Editor: Your excellent editorial, "The Menstrual Functions of the Morphine Habitué," in the Journal of Jan. 30, contained statements of conditions too little regarded or understood by the average physician. To those who have an intimate acquaintance with morphine victims the reason is obvious.

I have found many women in social life and the theatrical profession, as well as in the *quatre monde* of Paris and Vienna, who commenced the use of morphine with the sole purpose of preventing pregnancy. Only a short time ago a woman of twenty-eight years of age was sent to me for treatment who was using 40 or 50 gr. of morphine a day. This patient informed me that she had been told by a schoolmate that a grain at bedtime and another one in the morning would prevent pregnancy. Several years ago I learned from women on the Continent that they all considered morphine a certain preventive, and, as can be readily understood, when used for a few weeks this remedy is not apt to be neglected.

Truly yours,
William Lee Howard, M.D.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JAN. 30, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseases. | Typhoid fever. |
| New York . . | 3,908,644 | 1,549 | 486 | 19.62 | 26.20 | 3.42 | 2.00 | .45 |
| Chicago . . . | 2,021,086 | 549 | 160 | 18.21 | 22.03 | 1.27 | 2.55 | .91 |
| Philadelphia | 1,407,968 | 562 | 159 | 25.62 | 23.30 | 1.95 | 3.38 | 1.78 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 235 | 55 | 19.15 | 17.87 | .85 | 1.27 | 2.12 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 127 | — | 25.98 | 22.83 | 1.57 | 2.36 | 10.23 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 95 | 22 | 22.09 | 25.25 | 2.10 | — | — |
| Boston . . . | 617,950 | 226 | 65 | 23.00 | 19.46 | 1.33 | 1.33 | 1.33 |
| Worcester . . | 136,925 | 33 | 9 | 27.27 | 12.12 | 3.03 | 3.03 | — |
| Fall River . . | 119,349 | 45 | 23 | 11.11 | 26.67 | — | 2.22 | — |
| Lowell . . . | 104,402 | 31 | — | 16.13 | 19.35 | 3.22 | 3.22 | — |
| Cambridge . | 100,998 | 33 | 11 | 6.06 | 18.18 | — | — | — |
| Lynn . . . . | 73,875 | 11 | 4 | 27.27 | — | — | — | — |
| Lawrence . . | 72,348 | 20 | 3 | 10.00 | 20.00 | — | — | — |
| Springfield . | 72,020 | 21 | 1 | 9.52 | 9.52 | 9.52 | — | — |
| Somerville . | 70,413 | 21 | 10 | 14.28 | 19.05 | 9.52 | — | 4.76 |
| New Bedford | 68,863 | 22 | 9 | 27.27 | 18.18 | — | 9.09 | — |
| Holyoke . . . | 50,538 | 15 | 5 | 6.67 | 20.00 | — | — | 6.67 |
| Brockton . . | 46,601 | 8 | 0 | 12.50 | — | — | — | — |
| Newton . . . | 39,310 | 11 | 2 | — | 18.18 | — | — | — |
| Haverhill . . | 39,061 | 10 | 1 | 10.00 | — | — | — | — |
| Malden . . . | 37,205 | 11 | 3 | — | 18.18 | — | — | — |
| Salem . . . . | 37,188 | 21 | 6 | 4.76 | 14.28 | 4.76 | — | — |
| Chelsea . . . | 36,499 | 17 | 4 | — | 29.41 | — | — | — |
| Fitchburg . . | 36,335 | 6 | 1 | — | 16.67 | — | — | — |
| Taunton . . . | 34,577 | 12 | 5 | 16.67 | 8.33 | — | — | — |
| Everett . . . | 30,209 | 6 | 2 | — | — | — | — | — |
| North Adams | 29,201 | 5 | 1 | — | — | — | — | — |
| Quincy . . . | 26,798 | 8 | — | 12.50 | 25.00 | — | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 4 | 1 | 25.00 | 25.00 | — | — | — |
| Brookline . . | 23,576 | 5 | — | 20.00 | 20.00 | — | — | — |
| Pittsfield . . | 22,870 | — | — | — | — | — | — | — |
| Medford . . | 21,956 | 7 | 2 | 14.30 | — | — | — | — |
| Chicopee . . | 21,692 | 7 | 3 | — | 14.30 | — | — | — |
| Northampton | 20,314 | 7 | 2 | — | — | — | — | — |
| Beverly . . . | 15,807 | 6 | — | 16.67 | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 1 | 1 | — | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 5 | 2 | 20.00 | 40.00 | — | — | — |
| Newburyport | 14,478 | 4 | 0 | 25.00 | — | — | — | — |
| Woburn . . . | 14,315 | 3 | 0 | — | 33.33 | — | — | — |
| Melrose . . . | 13,819 | 1 | — | 100.00 | — | — | — | — |
| Westfield . . | 13,809 | 2 | 1 | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 3 | 2 | 33.33 | — | — | — | — |
| Revere . . . | 13,609 | 2 | — | — | 50.00 | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | 2 | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 1 | — | — | — | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 2 | — | — | — | — | — | — |
| Weymouth . | 11,350 | 2 | — | 50.00 | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,774; under five years of age, 1,061; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 752, acute lung diseases 865, consumption 375, scarlet fever 49, whooping cough 9, cerebrospinal meningitis 14, smallpox 18, erysipelas 18, puerperal fever 9, measles 35, typhoid fever 45, diarrheal diseases 80, diphtheria and croup 87.

From whooping cough, New York 1, Philadelphia 3, Baltimore 1. Pittsburg 2. Boston 2. From smallpox, Chicago 1, Philadelphia 17. From cerebrospinal meningitis, New York 6. Baltimore 1, Providence 1, Boston 2, Worcester 4. From erysipelas, New York 5, Chicago 4, Philadelphia 3, Pittsburg 1, Providence 1, Boston 2, Taunton 1, Marlborough 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,425, for the week ending Jan. 16, the death-rate was 19.0. Deaths reported, 5,557; acute diseases of the respiratory organs (London) 217, whooping cough 131, diphtheria 51, measles 136, smallpox 2, scarlet fever 44.

The death-rate ranged from 8.5 in Coventry, to 38.2 in Wigan; London 18.8, West Ham 19.9, Brighton 15.3, Southampton 20.4, Plymouth 22.9, Bristol 16.6, Birmingham 21.7, Leicester 15.1, Nottingham 17.8, Liverpool 23.1, Bolton 21.1, Manchester 18.9, Salford 20.7, Bradford 20.7, Leeds 21.4, Hull 15.2, Cardiff 18.0, Rhondda 22.2, Marthyr Tydfil 33.0, Barrow-in-Furnace 19.2, Preston 29.0.

## METEOROLOGICAL RECORD.

For the week ending Jan. 30, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in Inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. . 24 | 29.94 | 32 | 41 | 24 | 87 | 54 | 70 | N W | W | 4 | 12 | F. | C. | 0 |
| M . 25 | 30.39 | 18 | 24 | 12 | 52 | 48 | 50 | S W | W | 14 | 10 | C. | C. | 0 |
| T. . 26 | 30.19 | 24 | 36 | 13 | 33 | 100 | 68 | N | E | 6 | 24 | F. | N. | .26 |
| W . 27 | 30.12 | 20 | 28 | 12 | 57 | 52 | 54 | W | W | 18 | 12 | C. | C. | .47 |
| T. . 28 | 30.54 | 15 | 23 | 7 | 67 | 58 | 62 | W | S W | 7 | 6 | C. | O. | 0 |
| F. . 29 | 30.20 | 20 | 24 | 17 | 97 | 93 | 95 | N | N | 14 | 18 | N. | N. | .06 |
| S. . 30 | 30.18 | 22 | 28 | 16 | 79 | 87 | 83 | N | S | 10 | 10 | C. | C. | .05 |
| ☞ | 30.22 | | 29 | 14 | | | 69 | | | | | | | .84 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## RECENT DEATHS.

DR. JOSEPH G. ROONEY of West Hoboken, N. J., died on Feb. 4 in St. Mary's Hospital, Hoboken. His death was the result of exposure in intensely cold weather on the night of Jan. 18, when he nobly attended a number of firemen who had been injured at a fire in Jersey City Heights. His hands were badly frostbitten, and subsequently gangrene set in, the progress of which it was found impossible to stop. Dr. Rooney was a member of an old West New York family, and was formerly town physician of that place.

JOSEPH B. ROE, M.D., of Woodbury, N. J., died on Feb. 5, at the age of sixty-eight years. During the Civil War he served as a surgeon in the army, and from 1888 to 1890 was a member of the New Jersey State senate. During his term of service in the legislature he was a member of the special committee appointed by the State senate to inquire into the Hudson County ballot box frauds, and was instrumental in producing before the committee the testimony upon which sixty-four of the election officers were afterwards sent to State prison.

## SOCIETY NOTICES.

NEW ENGLAND HOSPITAL MEDICAL SOCIETY.—The regular meeting of the New England Hospital Medical Society will be held at Hotel Nottingham Feb. 18, 1904, at 7.30 P.M. Scientific program under charge Section on Nose and Throat. Dr. Alice G. Bryant, Chairman. Paper by Dr. Emma E. Musson of Philadelphia, entitled "Some Recent Experiences with Acute Nasal Sinusitis."

MARION NUTE, M.D., Secretary *pro tem.*
32 Mill St., Dorchester.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.—The regular meeting of the society will be held in Sprague Hall, Medical Library, on Monday, Feb. 15, at 8.15 o'clock. Dr. H. C. Ernst will speak on the "Means by Which Tuberculosis Spreads." "Should the Medical Profession of Boston Urge the Establishment of a Municipal Hospital for Tuberculous Patients?" Dr. Knight, Dr. Otis, Dr. Howard, Dr. Rowe, Dr. Bowditch, Dr. Minot, Dr. Stone, Dr. Cox, Dr. Markley, Dr. Allen and others will take part in the discussion.

CHARLES M. GREEN, M.D., President.
ARTHUR K. STONE, M.D., Secretary.
All interested are invited to attend.

LECTURES ON TUBERCULOSIS: THE HENRY PHIPPS INSTITUTE.—The next lecture in the international course on tuberculosis, under the auspices of The Henry Phipps Institute, will be given by Dr. Herman M. Biggs, Chief of the Department of Health in New York, on Monday evening, Feb. 15, the subject being "The Administrative Control of Tuberculosis." The profession in general is cordially invited to attend this lecture.

## APPOINTMENTS TO THE STAFF OF THE BOSTON DISPENSARY.

Physicians, Dr. F. W. Stuart, Dr. Percy Musgrave. Gynecologists: Surgeon, Dr. Edgar Garceau; Assistant Surgeons, Dr. F. X. Crawford, Dr. Herbert S. Gay. Throat Department: Surgeon, Dr. H. P. Mosher. Rectal Department: Surgeon, Dr. James H. Grimes. Nervous Department: Assistant Physician, Dr. F. B. Granger. Men's Massage Department: Mr. E. H. Harding.

## Original Articles.

### SLIPPING OR RECURRENT DISLOCATION OF THE PATELLA. WITH THE REPORT OF ELEVEN CASES.

BY JOEL E. GOLDTHWAIT, M.D., BOSTON.

The above condition is seen almost entirely in girls or women, and is due, in large part, to the fact that the line of pull of the quadriceps extensor muscle is not straight, this feature being increased in its effect by an unnaturally long patella tendon, knock knee or an imperfectly developed articular surface at the end of the femur. Eleven cases of this condition, seven operative with thirteen operations, and four non-operative, have been seen and treated by the writer, and the observations made in connection with the treatment of these cases represents the basis of this paper.

The first feature, or the indirect muscle pull, is in part normal anatomically. The tubercle of the tibia with the attachment of the patella tendon is distinctly to the outside of the central portion of the patella when the knee is extended and the muscles are at rest. As the action of the muscles, together with the joint motion, is studied, it is seen that during flexion the patella is drawn forward over the articular surface between the condyles of the femur and inclines slightly but distinctly to the outside of the median line. As extension takes place the patella ascends, inclining slightly toward the inner side until, when extension is complete, the line formed by the origin of the rectus femoris, the center of the patella, and the tubercle of the tibia makes an obtuse angle (Fig. 1). As the muscle contracts the natural tendency is to straighten this line, with the necessary result that the patella is drawn outward, representing, as it does, the only movable point in the line. This can easily be demonstrated in any normal joint if the knee be fully extended and the quadriceps muscle be alternately contracted and relaxed. The lateral movement of the patella is distinct, the limit outwardly being controlled in part by the ligaments, but more particularly by the outer ridge of the trochlear surface of the femur, which is distinctly higher in its upper and anterior surface than the same ridge at the inner side (Fig. 2). Against this the patella impinges, and displacement further is impossible as long as all the parts are normal.



Fig. 1 (Gray).

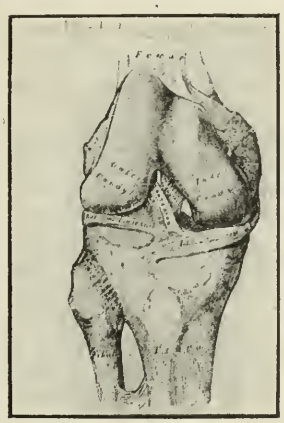


Fig. 2 (Gray).

If for any reason the line of pull becomes less direct or the articular ridge less perfectly formed; if the capsule be weakened by the distention following some acute injury; if the patella tendon be abnormally long so that the patella is drawn above the outer edge of the trochlear surface of the femur; or if the joint can be hyperextended so that during the muscular pull the patella is lifted away from the femur — in any one of these conditions the stability of the joint, so far as the patella is concerned, must be materially lessened.

The displacement of the patella, which results from such a mechanical condition, may occur frequently with simple motion or muscular contraction, or may develop only when attended with the application of considerable force and when combined with some lateral strain, the ease or difficulty of the displacement depending, of course, upon the degree to which the normal condition has been modified. In the extreme conditions the displacement may become permanent, in which case the inner portion of the capsule becomes permanently stretched while the outer portion shortens. In this condition the patella rests upon the outer surface of the outer condyle of the femur, and complete extension,

which depends upon the pull of the quadriceps extensor, acting through the patella over the lower and anterior surface of the femur, is impossible. If this extreme or permanent condition occur in childhood or before the bone growth is complete, the condyles of the femur conform in their development to the range of motion, so that ultimately complete extension of the joint is impossible, the limitation not being due to ligamentous or tendonous contracture, but to a change in the articular planes. These extreme features were present in Case I.

It is also true that if the displacement persist for any length of time in the growing child a twist in the upper end of the tibia results, so that even though the patella be replaced the angle in the pull of the muscle is so much increased that displacement occurs as soon as the muscle contracts.

From my observations in this limited number of cases it seems to be true that if the patella has slipped out several times without special violence it is an evidence of joint instability, due to one of the above-mentioned conditions; and while the slipping may be controlled by simple measures, the weakness usually remains and the joint is unable to stand the strain of normal use. For this reason, although bandaging, braces for the knees, the correction of flat or pronated feet, should always be tried in the early stages of the trouble before the slipping has become frequent, comparatively little is to be expected in the way of permanency of relief from such measures, if the slipping has recurred several times, unless the patient be very young.

The chief point in the treatment naturally consists in the correction of the angle in the line of muscle pull so far as it is possible. If knock knee be present, the lateral motion of the patella during use will naturally be increased. If the knock knee is due simply to the loose internal lateral ligaments, it is conceivable that by thoroughly correcting this the lateral movement of the patella may be lessened and the slipping or dislocation cease. I have not been able to accomplish this in any one of the cases here reported, although one seemed favorable as to age; but to expect improvement is reasonable from the study of the mechanics, if the cases can be seen before bone or other permanent changes have taken place.

If marked knock knee with the usual bone changes be present, this should, of course, be corrected, but as this feature was present in but one of the cases under discussion it is probably not as common as has been supposed.

If the patella tendon be long, so that in complete extension the patella is drawn above the outer ridge on the trochlear surface of the femur, it should naturally be shortened, as unless the normal mechanical relations can be restored the joint must be unstable. To correct this the tendon should be shortened, and in doing this it is better, as it lessens the danger of relapse, at the same time to change the attachment of a portion of the tendon, thus making the line of pull more nearly straight. In the one case in which the tendon was simply shortened relapse occurred, entire relief following the second operation, in which the other half of the tendon was transplanted.

If after studying the mechanics of the given joint carefully the relaxed inner half of the capsule is the only defect, this should naturally be tightened. It is my impression, however, that this is almost never the case, and that the relaxed capsule is a result of an abnormal condition rather than the cause, and that if the cause be corrected the relaxation of the capsule will take care of itself. In the three operations performed by me in which only the inner portion of the capsule was tightened all relapsed, while in the cases which have been operated on since and the patella tendon reattached the capsular relaxation has entirely disappeared, although at the time of the operation the capsule itself was entirely ignored.

In the majority of the cases, when carefully studied, it will be seen that the attachment of the patella tendon is distinctly farther to the outside than normal, making less direct the pull of the anterior thigh muscles, and with this the ridge on the outer edge of the articular surface of the femur is less marked than normal.

The treatment which has been most satisfactory in meeting this condition is an operation in which the outer half of the patella tendon is reattached to the tibia, well to the inside of the tubercle. In this way the angle in the muscle pull is lessened or entirely removed, so that the patella is drawn firmly across the articular end of the femur and the presence of the ridge at the outer side is made of less importance. Of the eight operations which have been performed in which this has been the chief feature, in seven no after trouble has resulted, and the stability of the joints has made them equal to normal use. In one in which the tendon had, at the same time, been shortened, the first attachment did not remain firm, so that a second operation was necessary.

The operation as carried out at present consists of a longitudinal incision four or five inches long, extending from just below the tubercle of the tibia upwards. Through this the patella tendon is exposed and split in halves, anteroposteriorly, throughout its entire length. The outer half is then cut from its attachment, passed under the remaining portion and attached to the periosteum together with the expansion of the tendon of the Sartorius muscle at the inner side of the anterior surface of the tibia (Fig. 3). If it is desirable to shorten the patella tendon the attachment can be so made that the patella is drawn down as much as is desirable, but as this means much tension upon the new attachment a hole should be drilled in the bone at the point of attachment, through which the suture is passed which holds the tendon. The carrying of the free portion under the other is of importance, as in this way the patella is tilted, the outer portion being drawn downwards, and

impinges more firmly against the outer ridge of the articular surface of the femur during muscular contraction so that the danger of displacement is materially lessened.

The attachment is made with strong silk, quilted through the tendon; the wound should be tightly closed, and the leg fixed in a plaster of Paris bandage from the ankle to the groin, the contraction of the quadriceps extensor being eliminated as much as possible by applying a tight gauze bandage from the knee to the groin under the plaster. The fixation should be kept up for about six weeks.

In performing the operation the inner half of the tendon, or that most favorably situated for the direct muscular pull, is entirely undisturbed, so that in case the transplanted portion fails to unite function is still possible, and some improvement must still result, as the simple removal of the outer half of the tendon practically moves the existing attachment of the tendon that much farther to the inside.

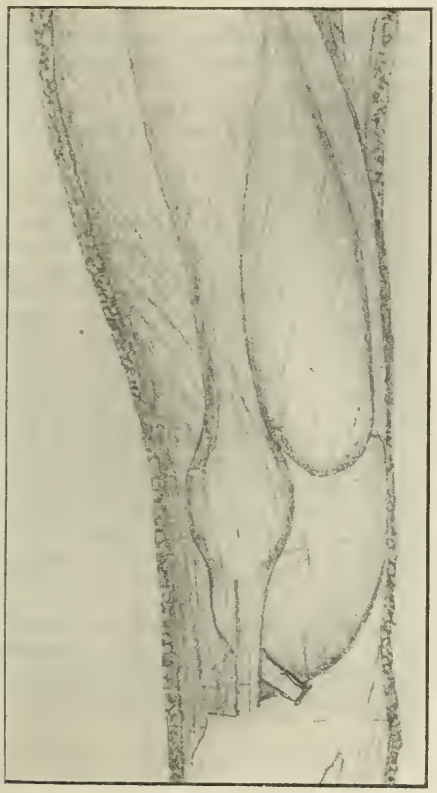


Fig. 3.

In perfecting the operation various measures have been tried. The inner half of the tendon in one case was transplanted with ultimate relapse; the entire tendon was transplanted in one case with a perfect result, but this was not repeated, as the later operation possessed less danger from possible failure of the new attachment to hold; in one case the patella tendons wa shortened with subsequent relapse; and in ona case the entire tubercle of the tibia was transplanted and nailed to the inner side of the tibis with a good functional result, but with a much longer convalescence than is required in the operation described in detail above. The cases in which simply the inner portion of the capsule was shortened all relapsed.

The cases are reported in detail below. In the operated cases, with possibly one exception, a sufficient length of time has elapsed for a thorough test of the joint to have been given.

Case I. This case has been previously reported (Annals of Surgery, January, 1899) and represents a case of dislocation of both patellæ, in which the malposition had become permanent. The patient was a woman thirty years of age, and was first seen in February, 1895. The trouble with the knee began without injury at ten years of age. Treatment was sought because of pain in the back which resulted from the peculiar attitude in standing.

On examination both patellæ were on the outer surface of the outer femoral condyles, and replacement was impossible. The tibia was rotated outward considerably so that the attachment of the patella tendon was much farther to the outside than normal, and complete extension of the knee was impossible, due apparently to the abnormal development of the articular surfaces of the lower end of the femur. On standing, the knees were flexed and braced against each other, increasing considerably the normal lumbar curve, with resulting muscle strain and backache. There was slight knock knee, and the gait on walking was awkward, one leg being thrown around the other. Horizontal extension of the legs was impossible. The correction of the position of the patellæ by any manipulation was impossible, so that the patient entered the Carney Hospital, and in March, 1895, the right knee was operated upon as follows:

Through an eight-inch incision, beginning above the knee on the outside and extending downward across the knee to the inside, the capsule of the joint was exposed. Even with the skin removed the patella could not be brought up into its normal position, and a longitudinal incision three inches long was made through the outer part of the capsule. After this the dislocation could be corrected without difficulty, but because of the change which had taken place in the shape of the ends of the bones, the tubercle of the tibia was so much farther to the outside than normal that, when the joint was flexed, the patella slipped out of place again. In order to obviate this, and to have the attachment of the patella tendon in the proper place, the tendon was cut off and sewed to the periosteum and the expanded tendon of the Sartorius on the inner and anterior surface of the tibia. The loose capsule on the inner side of the joint was next shortened with quilted sutures, and for fear that the strong thigh muscles should tear away the new attachment before it should become firm, about three-fourths of the quadriceps extensor was divided just above the patella. The wound was then tightly closed, the skin being depended upon to close the gap (three-quarters of an inch broad) in the outer part of the joint capsule made necessary to draw the patella forward.

The recovery was uneventful, there was very little pain and practically no elevation of temperature. The wound was healed in one week, and motions, which were not in the least restricted, were allowed at the end of one month. A leather knee splint, to prevent any sudden violence and the possible tearing away of the newly attached tendon, was worn during a part of the time for a few months. As soon as the patient was able to be about, even though one patella

was in place and the action of the knee improved, the difficulty in completely extending the knee remained, so that the lordosis was not lessened. To correct this an osteotomy of the femur above the condyles was performed in both legs and the knees straightened. The convalescence from this operation was uneventful, and eight weeks from the time of its performance the left knee was operated upon to correct the position of the patella. The operation was similar to that which was used in the other joint, except that, instead of cutting off the patella tendon and re-attaching it, the whole tubercle of the tibia was chiselled off and nailed to a depression which was made on the inner side of the bone. The reason for this change in the procedure was that while the other knee had shown no signs of weakness, nevertheless, it was my feeling that a bony attachment would probably be more secure. With this, of course, it was not necessary to cut away so much of the attachment of the quadriceps extensor above the patella.

Instead of the primary union, as was obtained in the other knee, the tendon and the piece of transplanted bone sloughed considerably, so that, instead of healing in one week, about three months were necessary before the wound was entirely closed. During much of this period the patient was able to be about, but the healing was not complete until then. The functional result in this joint is also not as good as in the right, and, while complete extension is possible, there is only about 90% of motion in flexion.

Since the operation there has never been the slightest indication of the old pain in the back, the lordosis has been corrected, the gait is much improved and, except for the limitation in flexion in the left knee, the patient is perfectly well, with the normal function of the joints. On walking or standing the inward rotation of the legs has disappeared, and on sitting complete extension of the leg is easily performed entirely without the twist of the leg that developed with the attempt at such movement before the operation. It is now seven years since the last operation was performed, and during much of that time the patient has been at work in a factory able in every way to meet the demands made upon her.

CASE II. Miss M. L., thirty years of age, was seen in consultation with Dr. Charles P. Putnam, in April, 1897.

Since childhood both knees had slipped on slight provocation, the condition having come on without injury or other known cause. The slipping caused great inconvenience, producing frequent falls, and being followed commonly by joint swelling.

Bandages, massage and appliances had been thoroughly tried and failed. Accordingly both knees were operated upon, and the inner portion of the capsule of the joint was shortened so that when the wound was closed it was impossible to slip the patella out of the trochlear groove. At the time of this operation the importance of attachment of the patella tendon in its relation to the line of pull was not appreciated by me, and as there was no literature upon the subject, this feature was entirely ignored.

After the operation the wounds were tightly closed and the period of healing was uneventful. Very soon, however, after the patient began to go about the capsule stretched again so that the dislocation recurred, there being no permanent improvement from the operation.

Further operation was refused by the patient.

CASE III. Mary F., seventeen years of age, was seen May 29, 1897, because of slipping of the left patella, which had begun five or six years before without known injury, and had slipped at infrequent intervals ever since.

At the time of the first examination the chief feature to attract attention was the abnormal length of the patella tendon. The attachment of the tendon in this instance was not noted and the first operation consisted of shortening the tendon about three-fourths of an inch and quilting the inner side of the capsule of the joint. The healing after this operation was uneventful and the immediate effect was satisfactory, but later on, however, the slipping or dislocation recurred and became as troublesome as before.

As the essential principle of the treatment had been by this time recognized, a second operation was performed Jan. 18, 1901, and the outer half of the tendon was cut away, passed under the undivided portion and attached well to the inside of the tibial tubercle, as has been described above.

The recovery was uneventful, and no further trouble has resulted. The knee is used freely and is apparently perfectly strong.

CASE IV. E. R., a girl of seventeen years of age, came under treatment five years ago for trouble with the left knee which had existed since childhood. Under the simplest movement the patella slipped to the outside, unless controlled by a bandage. There had been no definite injury or known cause for the trouble. The examination showed a strong, well-formed girl with the left knee much relaxed and the patella abnormally movable, so that displacement to the outside was easily produced. The feet were quite flat, but there was no knock knee, and the patella tendon was not unusually long. The attachment of the patella tendon was farther to the outside than normal, so that with every contraction of the quadriceps extensor muscle the patella was displaced laterally an abnormal amount.

On April 27, 1889, the patient was operated upon, and the inner half of the patella tendon was cut away and reattached to the periosteum on the inner side of the tibia. At the same time the capsule at the inner side of the joint was tightened by quilted sutures.

The recovery was uneventful, but a few months later the symptoms recurred and have persisted ever since. The patient is now awaiting further operation, in which the outer portion of the tendon is to be transplanted, thus correcting entirely the obliquity of the muscular pull.

In this case had the inner half been left undisturbed and the outer portion given the new attachment, as has been the case with the later operation, the necessity of the second operation would probably have been avoided.

CASE V. M. C. C., a young woman seventeen years of age, came for treatment in April, 1899, complaining of trouble with both knees. When nine years of age she was thrown down and one patella slipped out. Soon after this the other slipped, and ever since at intervals varying from a few weeks to a year the slipping has been repeated, sometimes one and sometimes the other giving out. After each slipping the joint has swelled, necessitating quiet and bandaging for a few weeks. The slipping occurred sometimes with violent use and sometimes upon slight movement.

The examination showed a strong, well-formed girl, the only apparent defect being the relaxation and weakness of both knees. The patellæ could easily be displaced laterally, and their lateral movement to the outside, during the contraction of the quadriceps muscle, was quite noticeable. There was no knock knee, and but slight pronation of the feet.

Previous to consulting me the patient had had for over a year systematic massage with some mechanical

treatment, without improvement, so that after first correcting the pronation of the feet, still without improvement, an operation was performed, in which the outer half of the patella tendon was transplanted to the inner side of the tibia, as has been described above. Both knees were operated upon at the same time. The recovery was uneventful. At the end of four weeks the plaster bandages were removed and movement allowed in bed. Two weeks later the patient was allowed up, the only protection being a light flannel bandage, which was worn during the daytime for a few months.

As to the ultimate result, in the four years which have elapsed since the operation, the patient has been active in sports and games, with absolutely no weakness or symptoms referable to the knees, except that once in a romp she was thrown, wrenching one knee, causing a few days of discomfort. Even in this violence the stability of the joint was not disturbed.

It is an interesting fact that in this case, while the capsule had been much relaxed, and even though no attempt was made to tighten it at the time of the operation, the normal tonicity of the structures returned with the restoration of the normal mechanical function and the relief of the lateral strain.

Case VI. M. C., a young woman twenty-three years of age, was seen in 1895, and treated for marked flat foot. For several years before this the knees had been quite troublesome, slipping occasionally, sometimes one knee and sometimes the other. No definite cause could be assigned for the trouble.

The examination showed a strong, well-developed woman, with quite marked flat foot and with relaxed knee joints, but with no knock knee. The movement of the patella to the outside during the contraction of the anterior thigh muscles was quite apparent. Because of the definite character of the flat foot it was thought wise to correct this first, hoping that by lessening the strain upon the knees the weakness and slipping might be modified. This, however, did not result, but instead the weakness and slipping became more marked, so that while at first considerable violence was necessary in order to develop the trouble, gradually the displacement became more and more easy, until it was apt to follow any slight simple movement, naturally causing great limitation of activities.

In May, 1901, an operation was performed, and the outer half of the patella tendon was transplanted. Both knees were operated upon at the same time, and after six weeks in bed regular use began. Since then the patient has lived a thoroughly active life without the slightest evidence of weakness.

Case VII. C. G., a young girl seventeen years of age, was seen in June last at the Vincent Hospital, in consultation with Dr. Mary P. Hurd.

The history was that eight months before the left knee was sprained, at which time the patella was probably dislocated. Without special violence the patella distinctly slipped out two months ago, and since that time it has slipped frequently and with but slight movement. On even turning over in bed the dislocation often occurred.

The girl was of good height and of fairly good physical development. The left knee was much relaxed with but little increase in the synovial fluid, and the lateral movement of the patella was so free that with but very little force it could be entirely displaced. The patella tendon was fully a half inch longer than normal, and the articular ridge on the outer edge of the trochlear surface of the femur was much less distinct than usual. The angle in the line of pull of the quadriceps extensor muscle was quite distinct. There was slight knock knee, and the pronation of the feet was marked.

For treatment the pronation of the feet was corrected and the knee strapped with adhesive plaster, and over this a flannel bandage applied, but in spite of this the slipping continued, and, as only when the knee was fixed in a plaster of Paris bandage was the slipping controlled, an operation was advised.

In the early part of July the outer half of the patella tendon was attached to the inner side of the tibia, the only difference from the operation performed in the last two cases being that, as the patella tendon was too long, a lower attachment was made and the patella drawn down to its normal position. The undivided portion was not shortened, as it was considered that this would take place unaided with the relief of the strain, as is seen in other analogous conditions.

The result from this operation was disappointing. When use was first allowed there was no trouble, but very soon the slipping recurred, due apparently to the failure of the new attachment to hold. The slipping was naturally less marked than in the beginning, owing to the removal of the outer half of the tendon, but it was sufficient to cause considerable insecurity in use. To overcome this a second operation was performed and the tendon reattached, the suture being passed through a hole which was drilled in the bone at the point of attachment. The knock knee, even though not marked, was also corrected by osteotomy. The end result in this case cannot be stated, but as the faulty mechanical features have been corrected, it seems reasonable to expect a stable joint.

Case IX. N. M., a young woman twenty-three years of age, was first seen in April, 1899. The patella in the right knee had, without known cause, slipped out ten years before, and three times since the slipping had been repeated.

Simple conservative measures were advised, and the patient lost sight of until a few months ago, when she reported in response to a note. In the interval the weakness of the knee with slipping had become more frequent and the left knee had also given out. In both the capsule is much relaxed, and the displacement of the patella is so easily produced that there was much apprehension on the part of the patient during the examination lest this should happen. The angle in the line of muscular pull was quite noticeable.

For further treatment an operation was advised in both knees, but as yet it has not been performed.

Case X. Mrs. W. R. F., twenty-seven years of age, was seen first in May of 1902. The patella of the right knee had dislocated when she was eleven years old, and this had been repeated about once a year for five years. After this there had been no actual slipping until one week before the first visit. In the interval of eleven years the patient had always been careful of the knee and most of the time had worn an elastic knee cap.

The examination showed an otherwise healthy person with the capsule of the right knee joint considerably relaxed. The lateral movement of the patella was abnormally free and the displacement to the outside during the contraction of the quadriceps extensor muscle was more than normal. There was no knock knee but well marked flat foot.

For immediate treatment the knee was strapped with adhesive plaster, the flat foot corrected and an operation advised to permanently correct the trouble. As yet this has not been performed.

Case XI. F. M., a young and rapidly growing girl of seventeen years of age, was seen in September, 1900,

because of the slipping of the patella in one knee, which had but just developed.

The girl was growing rapidly and all of the structures lacked tone. The knees were relaxed and the feet also, so that there was marked pronation. This feature was corrected, the knee bandaged and a course of general tonic treatment with exercise advised.

For a time there was marked improvement following the treatment, but of late the slipping has recurred frequently, so that the patient has asked to have the operation performed and is simply awaiting a suitable time.

In considering such a series of cases it is at once obvious that the number is too small from which any positive conclusions can be drawn. At the same time there are certain features which are suggestive for application in the treatment of other cases. In the first place the lesion seems peculiar to girls or young women. It develops at the period of rapid growth, from twelve to sixteen years of age. It may develop either with or without violence. It is usually associated with flat foot, which is probably a factor in the development of the weakness of the knees. True knock knee is sometimes present. In all of the cases the tubercle of the tibia was displaced farther to the outside than normal, so that the line of pull of the quadriceps muscle contained a distinct angle. In the extreme cases without treatment the dislocation may become permanent, as in Case I.

It seems probable that if the condition is seen in the beginning, and the flat foot corrected, together with such treatment as would tend to improve the general tone, that the trouble can be corrected without operation. This has not been possible in any of the cases seen by me, but on general reasoning it seems probable.

If, on the other hand, the dislocation has recurred several times, and the period of osseous growth has passed, the weakness will probably increase unless the faulty mechanical features are corrected by operation.

If an operation is to be considered, the chief point to be borne in mind is the straightening of the line of the pull of the anterior thigh muscles. This is best accomplished by transplanting the outer half of the patella tendon so that it is attached well to the inside of the tubercle of the tibia. If the tendon be too long it can be shortened at the same time the attachment is made. The relaxed capsule is undoubtedly a result of the mechanical pull and can be entirely ignored, the relaxation disappearing as the strain is removed. Of the cases treated, seven were operated upon, and two of the others are awaiting operation. Of the operated cases, four had the outer half of the patella tendon, and one had the entire tendon, transplanted to the inside, and as three had both knees treated, there were eight operations, with normally strong joints in seven, the ultimate result in the eighth being uncertain, as sufficient time has not elapsed since the operation. Of the three cases in which other operations were performed, in one with both knees the capsule was quilted, in one the patella tendon was shortened, without transplantation as well as quilting the capsule, and in one the inner half of the tendon was transplanted as well as quilting the capsule; all relapsed. In one of these a second operation with the transplantation of the outer half of the tendon was performed with a perfect result. In both of the other cases I am very sure that if another operation could be performed, and the tendon transplanted as has been described, the mechanical feature which makes the dislocation possible would be removed so that the slipping would cease.

## SCIENTIFIC ASPECTS OF MODERATE DRINKING.

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THE relation of the drinking of alcoholic beverages to the health and welfare of mankind presents several well-defined problems, the study of which has occupied the minds of many scientific investigators in the fields of pathology, psychology and sociology.

The evil results of the use of excessive quantities of alcohol are so obvious and are so noticeably exhibited in all grades of social organization that it is a cause for wonder that in considering the alcohol question so much stress is laid upon the evil effects of excessive use and so comparatively little time devoted to the study of the effects of smaller or the so-called "moderate" amounts of alcohol. To be sure, the fundamental argument that whatever conditions alcohol induces when used in large amounts it must induce in lesser degree when used moderately has been emphasized, but it nevertheless remains a fact that a very large number of individuals use alcohol in moderate amount with no visible signs of deterioration or other untoward effect. Such individuals have long been considered as representing the value of the use, as distinguished from the misuse or abuse, of alcohol; for the enjoyment of the social glass, it has been said, cannot reasonably be considered as injurious to such users of alcohol, and is but a legitimate pleasure that should not be denied a large class of individuals for the sole reason that a certain class, larger to be sure, misuses alcohol.

We speak of moderate drinkers and those that use alcohol to excess; we speak of the use and misuse of alcohol, but is the line between these two degrees, moderation and excess, sharply defined in our minds? In the popular mind at least, a man is not said to drink to excess until he gives some signs of incipient intoxication; until the quantities consumed are sufficiently large to affect the speech or power of locomotion. The use of the visible signs of intoxication as an index of moderate or immoderate use is, however, fundamentally wrong. It is well known that healthy individuals vary widely in their tolerance to alcohol. While the old tippler can drink several ounces of raw whiskey and exhibit

no noticeable effects, the young man unaccustomed to its use may experience headache and dizziness with a single glass of wine.

We may say, in general, that long before intoxication is apparent the user has in nearly every case consumed more than is recognized by all authorities as the limit that is physiologically permissible.

As early as 1864 an English physician, Dr. Anstie, considered that one and one-half ounces of alcohol was the amount that could be taken per twenty-four hours without ill effect. Dr. Anstie's limit is to-day used as the dividing line between moderation and excess by many of the largest life insurance companies in the United States. We find such statements as these in the instructions to medical examiners:

"The daily use of any alcoholic beverage in excess of an amount representing one and one-half ounces of absolute alcohol (Anstie's limit) is not lightly regarded by the home office."

Another paragraph, copied from the medical examination blank of a large life insurance company, is especially interesting, as it endeavors to translate the term 'one and one-half ounces of absolute alcohol" into the equivalent quantities of the various common liquors:

"In reporting 'over-indulgence' in drink, draw the line — since there must be some fixed standard — at Anstie's limit of a daily allowance equivalent to one and one-half ounces of absolute alcohol. Such allowance will be represented, in the case of ardent spirits, by three ounces; of sherry or other strong wine by two wineglassfuls; of claret or champagne or other light wines by one 'pint' bottle; of strong ale or porter by three tumblerfuls; and of light ale or beer by four or five tumberfuls."

Recently we have another standard established by Prof. J. J. Abel of the Johns Hopkins University.

"That there is a 'moderate' or average permissible quantity of alcohol I conclude from the experiments already cited; from the opinions of medical authorities in many fields; from the writings of economists, explorers and military authorities; and, lastly, from my own observations during a long residence in European countries; and this 'moderate' quantity I believe to be represented by one, or at most two, glasses of wine (10% alcohol) or one pint of beer, or their equivalents in terms of alcohol, in the twenty-four hours."

Abel's limit is, it is seen, about one-half that of Anstie.

Even the layman can see that these quantities are very much smaller than those ordinarily required to induce distinct intoxication. Furthermore with those accustomed to the use of alcohol the amount that can be ingested with no visible signs of intoxication is enormous. The following case is not believed to be uncommonly rare, remarkable as it may seem. I give the description as furnished me, prefacing with the statement that I have every reason to believe it correct, for subsequent correspondence has verified every detail.

"I have another acquaintance who is a real first-class 'lusher' and his 'case' I can report on with authority. About three years ago this latter case was boarding in the same house with me and nearly every night he and I played cards together, and it was his invariable habit to 'get outside' of an imperial quart of juice (whiskey) inside of three hours, from 9 P.M. to midnight, and oftentimes another pint on top of that. He never showed any signs of intoxication and was apparently perfectly O. K. in the morning, except his hand was of the 'early morning' variety. Through the day he also took numerous and sundry drinks of more than one variety of cocktails, etc., just how many I cannot say, as I was not with him. His daily quart he kept up from early June till into September, and later in the fall I saw him for several days, when he consumed the same amount. He was about thirty years of age, in apparent excellent health, never drunk to my knowledge, kept up his usual amount with great regularity; his drinking seemed to affect him not at all except shakiness in the morning. I have good reasons for believing he had been keeping this pace up for several years when I made his acquaintance and, so far as I know, still continues. He has, however, grown very stout and not disposed to take any exercise or make any exertion to get about."

Astonishing as these statements seem, it is nevertheless a fact that the large cities supply many such cases, and the use of intoxication, incipient or well-marked, as a measure of moderation or excess appears in the light of such a case distinctly absurd.

The tolerance of persons accustomed to the use of alcohol is no more remarkable than that exhibited by many persons in disease.

It is evident, therefore, that individuality and physical condition play a very important *rôle* in determining what is commonly meant by excess, and in a similar way it can be said that what applies to the state of intoxication likewise applies to the border line between moderation and excess. Moderation for one man may be decided excess for another. In taking into consideration either of the limits set by Anstie or Abel, therefore, we must remember that no general rule will apply in all cases, and one should hesitate very considerably before stating positively that either of the quantities designated by these authorities as "physiologically permissible" could be taken with impunity by all persons.

The first question that naturally arises in considering the effects of moderate drinking is "How does it affect the general health?" Obviously this question needs very careful study. One would naturally suppose that nothing would be easier than to determine this point by asking a large number of moderate drinkers if they noticed any special effect, beneficial or injurious, that they could reasonably attribute to their use of alcohol. A physician would place practically no value on such an investigation, for it is almost universally true that if a man likes alcohol he is

practically sure that, in small quantities at least it does him good.

Where, then, can we turn for impartial information on this most important point? A statistical study of the death-rate in large communities offers an excellent, though recognizably limited, field for study of this question. In hospitals, asylums and public institutions the opportunity is frequently had to secure data regarding the past and present habits of the individual with respect to the use of alcohol, and consequently furnishes the data for determining whether the death-rate is greater among total abstainers or drinkers. It is generally impossible to subdivide this latter class into moderate or immoderate drinkers, and the statistical evidence almost invariably found, *i. e.*, that the death-rate is noticeably lower among total abstainers, does not in reality prove anything except that those who drink to excess raised the death-rate of the class using alcohol.

Perhaps the most elaborate and careful study of the effect of the use of different amounts of alcohol on disease and the death-rate is that instituted by the Collective Investigation Committee of the British Medical Association and republished by the United States Brewers' Association in 1888. The method of investigation was, in brief, as follows:

As a result of a schedule sent to every member of the British Medical Association, 178 replies were received, reporting in all 4,234 deaths. These physicians were asked to copy from their death certificate book data regarding the patients, — occupation, social position, age at death and cause of death, and to indicate to which one of five classes the patient belonged. These classes were: (1) Total abstainers. (2) The habitually temperate, that is, men who drink small amounts and only with meals and rarely take spirits except for medicinal purposes. (3) The careless drinkers — men who without being intemperate or free-drinkers, yet do not confine themselves within a rigid rule; who do not demur to drinking spirits occasionally as a beverage; who may at times drink between meals or even to the extent of intoxication occasionally, but who do not make these practices a habit and, on the average, do not materially exceed what has been termed the "physiological amount" of one and one-half ounces of pure alcohol daily. (4) The free-drinkers — men who drink a fair amount or "take their wine freely," habitually exceeding the physiological amount to a material extent, but yet who cannot be called "drunkards" or considered to have forfeited a character for sobriety. (5) The decidedly intemperate, drinking men, hard drinkers and drunkards.

Though we may not agree with the nomenclature of these different classes, it is certainly obvious that considerable care was taken to segregate the users into fairly well-defined classes. It is very much to be regretted that the data regarding the first class are practically valueless, as it comprised less than 3% of the total number of cases. The conclusions that have to do with the general question we are considering are:

"That habitual indulgence in alcoholic liquors beyond the most moderate amounts has a distinct tendency to shorten life, the average shortening being roughly proportional to the degree of indulgence.

"That total abstinence and habitual temperance augment considerably the chance of a death from old age or natural decay without special pathological lesion."

It is a digression that is, perhaps, warranted if reference is made to the present status of alcohol in medicine. In March, 1902, a meeting of the Suffolk District Medical Society was held in Boston, and a number of papers were read on the use of alcohol in therapeutics. In June, 1902, the annual meeting of the Massachusetts Medical Society was devoted to alcohol in therapeutics. The November (1902) number of the *Practitioner*, an English medical journal of high repute, is devoted to this question, and while there are arguments on both sides, the overwhelming opinion is that alcohol has been accorded a false position in therapeutics.

Alcohol is not going to be entirely discarded. It never will or never should go, as it is a therapeutic agent of great value in certain cases, but its rational use is to be very much more circumscribed than ever before. One very typical example of the change in opinion and custom is furnished by the records in the Massachusetts General Hospital in Boston, which used, in 1884, alcoholic beverages per patient per year to the amount of $1.84, while in 1900 this amount had fallen to 29 cents per person per year.

The therapeutic action of alcohol is not primarily connected with the question we are discussing, — the moderate use of alcohol as a beverage, — but as many use alcohol on the pseudo-basis that it is "good for the health," it ought to be clearly stated that the most progressive medical men are changing their views radically regarding the use of alcohol as a tonic, aid to digestion, heart stimulant, etc. It has been a source of wonder to physicians that so few cases of alcoholic excess are attributable to the initial use of alcohol medicinally. This is undeniably true, but we Americans are notorious self-dosers, and it is certainly true that a large amount of alcohol has been taken, in a sense as a medicine, as an aid to digestion or as an appetizer. It is to be feared that the small percentage of alcoholics arising from alcohol prescribed by physicians would be many times multiplied from alcohol self-prescribed. Alcohol from the therapeutic standpoint of the best medical authorities is primarily a narcotic, and self-dosing with it cannot be countenanced by the medical profession.

We have seen the difficulties in ascertaining the effects of moderate drinking by the direct questioning of individuals, and we have seen that vital statistics in general are capable of a wide degree of interpretation, the chief element of error being the inability to distinguish satis-

factorily between the moderate and excessive users. If, however, instead of taking the vital statistics of a whole community, we take a class of selected lives in which, so far as possible, the excessive drinkers are eliminated and if, furthermore, we have means for distinguishing between the total abstainers and the moderate drinkers, data of much greater value for the question we are discussing may be accumulated. Almost ideal conditions for this differentiation obtain in the statistics of the great life insurance companies, for, as a recent writer in a medical journal strongly phrases it:

"Whatever difference of opinion there may be between the temperance fanatic and the tippler, the W. C. T. U. and Lincoln, as regards General Grant's special brand of fighting whiskey; the army canteen; drinking toasts in the White House; the traditional centenarian, whose chief diet is whiskey and tobacco; or the theory of alcohol as a food—I repeat, whatever opinions may exist on these and kindred topics, one thing is certain, — the financiers all over the world who have their money invested in life insurance companies all agree that drinkers belong in the class of hazardous risks."

In life insurance statistics we have the best separation of heavy drinkers from moderate drinkers that it is possible to make, as is shown by an examination of the conditions under which men are accepted as risks by life insurance companies. It has been said by medical men that a few companies will insure anything this side of the grave, but it is nevertheless a fact that the large number of the old line companies exercise every precaution to examine an applicant thoroughly and eliminate the hard drinkers.

The following questions are taken directly from the printed form of application for a policy in a large life insurance company, and are practically a copy of those used by all the large companies:

"Do you ever use or have you ever used wine, malt liquors or any alcoholic stimulant? If so, which, when and in what daily quantity? Have you ever used any of them to excess? Describe particularly your past habits in all these respects. Have you been or do you intend to be engaged in, or connected with, the manufacture or sale of intoxicating drinks or liquors? Have you been treated for alcohol or narcotic habit?"

The examining physician is also called upon to answer:

"Does applicant use beer, wine or other alcoholic stimulants daily and habitually? If not daily, how often? What is used and how much? What have the past habits been in this respect? Have any of them ever been used to excess? Are there evidences of impaired health or constitution from use of stimulants or narcotics? Has applicant taken treatment for alcohol or narcotic habit?"

In a special statement to medical examiners printed on the reverse of the policy we read: "The applicant's habits regarding the use of alcoholic stimulants . . . should be definitely ascertained, and in stating them in your report avoid the use of such words as 'moderate,' 'occasional' and 'temperate.' Where their daily or frequent use is suspected, assure yourself that the stomach, liver, kidneys and nervous system are free from any evidence of injury."

If the number of questions is a fair index, much more importance is now laid on the applicant's relation to the use of alcoholic liquors than twenty years ago.

In spite of every precaution, a number of heavy drinkers are able to get insurance, and a large number of the lawsuits over insurance matters are on the ground of the excessive use of liquors and therefore a violation of the part of the contract covering the applicant's answers, for those answers are now made a definite part of the insurance contract, and hence greater care must be exercised on the part of the applicant to avoid any chance for suspected fraud.

It is the custom of many of the large life insurance companies to keep an eye on the physical condition of their risks. This shows that there is at least an effort made to keep out the hazardous lives, for in such cases the companies lose no opportunity to drop the risk and refuse to reinstate him after an overdue premium.

Consequently it seems a fair statement that those carrying life insurance are selected lives; the proportion of heavy drinkers is kept at a minimum; and that no statistics as yet available separate in any better way the moderate from excessive drinkers in a community.

The further segregation of risks into the two classes, abstainers and non-abstainers, has not been common, at least in this country, though there are several societies in England that have done this for a number of years. Obviously, a study of the death-rate of total abstainers and the moderate drinkers would give the best comparisons of the effect of the moderate drinking of alcohol upon health.

The office having the largest experience in abstainers' lives is the United Kingdom Temperance and General Provident Institution, which was established mainly by Friends in 1840, and has accumulated funds amounting to about $30,000,000. It is one of the largest English mutual companies. For a number of years after its establishment, only abstainers were admitted. Later on the lives of carefully selected moderate drinkers were accepted, but the two classes were kept separate and distinct, and the bonus or profits awarded each five years to the members of the two classes. During the past thirty-five years (1866–1901), the general average ratio of actual to expected deaths in the total abstinence section has been 24.7% less than that in the general section. The bonus was correspondingly greater in the temperance section. Similar results are reported from all the other companies making this distinction between total abstainers and moderate drinkers.

In the American companies very little data are at hand. The most elaborate investigation was carried out under the direction of Dr. Emory McClintock, actuary of the Mutual Life Insur-

ance Company of New York in 1895. In his report on the results of his investigation, Dr. McClintock says: "The abstainers show, therefore, a death loss of 78% of the maximum and the non-abstainers 96%." This difference in favor of the abstainer is slightly lower than that of the English companies. While undoubtedly there may be a valid question raised as to what proportion of this favorable death-rate is due to general good habits irrespective of the use of alcohol, the difference of nearly 25% in the English companies and of 18% in the investigation of Dr. McClintock is obviously altogether too large to attribute wholly to habits other than that relating to the use of alcohol.

Just what is scientific and what is not is sometimes difficult to state, and although personal opinions founded on impressions can hardly be considered as scientific, in accumulating the material for this paper I have had considerable correspondence with a number of insurance authorities, all high officials in the large old line companies, whose opinions surely are worthy of consideration.

A physician, president of the medical board, writes: 'We have on several occasions endeavored to utilize the statistics in our possession, but have found it difficult to arrive at any satisfactory conclusion, save the general one that anything but the very moderate and occasional use of liquors is prejudicial." (Oct. 28, 1902.)

The president of another writes: "As between the two classes (total abstainers and non-abstainers) we know there is no question that the total abstainers are the better risks." (Jan. 26, 1903.)

From the actuary of another we have much the same: "Personally I am convinced that the mortality among total abstainers always has been and always will be less than among moderate drinkers of alcoholic beverages." (Oct. 15, 1902.)

A recent writer in the *Spectator* the recognized organ of the life insurance business says: "It is now becoming generally recognized that the alcohol habit is one of the main factors in determining the length of life. No life office will knowingly accept the proposal of any one known as a hard drinker. Evidence of a very striking kind is rapidly accumulating which shows that even the moderate use of alcohol is prejudicial to health and longevity. In England about a dozen life offices recognize this fact in one of two ways: (1) By giving a reduction of premium to abstainers, or (2) awarding them a larger share in the profits. Last year the Sun, one of the oldest life offices, established in 1810, opened a special section for abstainers, giving them a reduction of 5% in their premiums. When the Sun life office announced a reduction in premiums for abstainers, *The Financial Times*, commenting on the fact, said: 'A battle has long ranged round the figures of those offices which keep their men in separate sections and always show a higher bonus to the longer-lived abstinent. Strenuous efforts have been made to minimize these important statistics, and it is quite likely that they do not mean all that has been claimed for them, but when we see a first-rate company like the Sun offering a direct and immediate cash bonus to abstainers, it looks very much as if the case had been proved.'" (Aug. 22, 1901.)

Among the multitudinous effects of alcohol on the human organism, none is so characteristic and invariable as that upon the higher senses. Professor Abel says:

"The best bred man indulging in wine with permissible moderation no more escapes the minor psychical changes induced by it than does its meaner slave fail of its sense-destroying power when he drinks 'till he remembers his misery no more.' In the case of the former the mental changes induced will never attain the degree when self-respect and social conduct are outraged and they will pass unnoticed by all except those who are keen observers of their own mental states."

The effects of the smaller or moderate doses on mental activity are generally no more apparent to the ordinary observer than are the effects of similar quantities on health or length of life. To the trained observer in the psychological laboratory, however, small quantities of alcohol produce certain well-marked and characteristic phenomena in the brain action that should be very carefully and clearly stated to the general public, for they play a very important *rôle* in determining a man's efficiency in the struggle for existence. The lesser psychical effects of alcohol were not clearly defined until the experimental psychologist elaborated his methods for studying the mental state of man. By means of certain forms of apparatus and tests to be found in every psychological laboratory, it is not difficult to determine with reasonable accuracy the mental activity of an individual. Any variation from the normal is easily detected, and consequently the work of experimental psychologists, especially Kraepelin and his school, furnishes reliable data for a consideration of the effect of alcohol on these higher mental processes. The initial apparent mental stimulation immediately following the ingestion of small quantities of alcohol observed in some of the simpler tests was generally followed by a retardation period which resulted in a sum total of depression, and with the types of mental activity involving constructive operations, the time required for the completion of the mental process was lengthened from the first.

These results on small quantities of alcohol taken in a single dose are, however, not of as much importance or have not the significance of those experiments in which the alcohol was administered in small quantities for a considerable period of time. In the experiments of August Smith, the amount of alcohol used was about two and one-half ounces per twenty-four hours, and his data admit of no other possible deduction than a noticeably inferior mental activity, which, indeed, was apparent after eight days of abstinence.

In general, we may say that alcohol diminishes

all forms of mental activity. The different phases of this process are very complex, but the accepted explanation of to-day is that alcohol paralyzes the inhibitory functions, and the reserve naturally acquired with age is cast off; a spirit of recklessness and of disregard of consequences is developed. If larger amounts of alcohol are taken, the speech becomes freer, a feeling of egotism is paramount and doubtless more than one brilliant speech has been *delivered* under this apparent stimulus, though in its *preparation* the effect of alcohol could have been but deleterious. As the quantity of alcohol ingested becomes larger, the subject becomes loquacious, boisterous, careless of speech, a coarseness and vulgarity enters into his remarks and finally the speech becomes thick and unintelligible, locomotion becomes impossible and a deep coma is induced. The last acquisitions of mature man are the first to be affected, the first movements of the child the last to give way to the action of alcohol. All these effects, from the retardation of mental processes by small quantities to complete intoxication by larger amounts, form a perfectly connected series of phenomena of alcoholic narcotization.

The consideration of the paralyzing action of alcohol on mental processes brings us face to face with one of the most important phases of the struggle for human existence. By just so much as alcohol in large or small quantities diminishes mental activity, by just so much does it handicap the man whose keenness of perception and manipulative skill are absolutely essential to him in this day of the sharpest competition known in the history of the world. The brain incipiently narcotized is not a normal organ; a man is not that complete master of himself that he must be to succeed, with that most intricate organism, the brain, imperfectly functionating. Smith tells us that quantities of alcohol of about two and one-half ounces retarded brain action even after a week of abstinence. Other observers have noticed this lasting effect, and Professor Cushny points out that if this is true many habitual drinkers, even if using moderate amounts, are persistently narcotized and never their real selves.

One of Kraepelin's pupils, Aschaffenburg, contributed greatly to our knowledge of the influence of alcohol on practical work involving mental processes by his experiment on the effect of one and one-quarter ounces of alcohol on four typesetters. This form of work is peculiarly adapted to the study of questions of this nature. The subjects were all accustomed to the use of beer, but abstained for the experimental period. Every detail was so perfected that the test was scientifically accurate and simultaneously adapted to the practical every-day life of the men, with the single exception of enforced abstinence. On the second and fourth days, each man was given one and one-quarter ounces of alcohol in the form of a Greek wine fifteen minutes before the regular working test began. Although there were no more errors than usual, the amount of work done with alcohol was 15% less than that done without it. Here we have a complete scientific demonstration of the effect of a so-called moderate amount of alcohol (Anstie's limit) on the efficiency of labor.

This brings us to the very important question of the relation of the efficiency of labor to the success of employer and employee alike. America, by reason of her progressiveness and ingenuity, occupies a prominent position in the manufacturing industry of the world and consequently the deleterious action of even small amounts of alcohol on mental activity and efficiency must be carefully guarded against in order to avoid the handicap the English workman has by reason of his custom of drinking alcoholic liquors during working hours. We are told that the recently returned Mosely commission has emphasized this point in comparing American and English workmen. That our manufacturers have been alive to this question is evident from the report of Commissioner of Labor Carroll D. Wright on "Economic Aspects of the Liquor Problem." Of the 7,000 establishments examined, over 75% in employing new men were accustomed to give consideration to the habits as to the use of intoxicating liquors, and more than half made some requirement that all employees or employees in certain occupations shall not use intoxicating liquors.

In response to a letter asking for the rules of the New York, New Haven & Hartford Railroad regarding the use of alcoholic liquors by employees, the following was received from the office of the first vice-president:

"In our book of rules for the government of the operating department we have a rule reading as follows: 'The use of intoxicants by employees while on duty is prohibited. Their habitual use or the frequenting of places where they are sold is sufficient cause for dismissal.'" The writer adds: "This, I believe, is the almost universal practice on railroads in the United States." (Dec. 24, 1902.)

Applicants for employment on the Boston Elevated Road are required to take oath that they do not use intoxicating liquors, if such is the case. Those not taking this oath are not considered. The rules of the company concerning the use of liquor are as follows: "If a car service man is known to enter a saloon in uniform, he is suspended from work for seven days. If he enters a saloon in uniform a second time he is discharged. If he is known to be intoxicated, whether on duty or not, he is discharged."

It is clear that at least in certain employments strict measures are adopted to insure the highest efficiency by practically prohibiting the use of alcohol, for that is what it really amounts to in a large number of cases. A man cannot use alcohol and retain his position. I believe that this action on the part of employers of labor will become more and more universal, for a problem involving so great social and economic interests as the effect of the moderate use of alcohol on the efficiency of labor is sure to attract increas-

ing attention. All employers cannot do as Mr. Carnegie is reported as doing, that is, give each employee a check amounting to 10% of his yearly wages if he can truthfully say that he did not touch intoxicating liquors during the past year, but certainly the increased efficiency and the reliability that is exhibited in a marked degree by the abstainer is sure to tell in the amount, if not the quality, of his production, and ultimately this fact will have to be recognized by all the employers.

Two years ago I heard a young clerk remark that in Boston it was considered decidedly unwise for a bank clerk to use beer or wine at his noon lunch. The following letter from one of the best-known banking men in Boston is self-explanatory: "I know one bank teller who lost his place because the directors knew that he frequented an ale and beer counter for his lunch and took those drinks with the food.

"I know a bank bookkeeper who had been marked for the cashiership of another bank, but the president of the latter, going to New York on the same boat, saw him using similar drinks and concluded that he would better not take the risk. The president afterwards stated this in my hearing. Of course individual opinions differ in that matter as in all others, but the practice is not looked upon with favor by bank managers, at least in Boston." (Oct. 29, 1902.)

A personal letter from a railroad president, probably one of the finest examples of a man living the strenuous life, throws an interesting light on the moderate use of alcohol and the relation between employer and employee:

"I more and more hear it said by business men that the business man of the future must be a total abstainer. It is very generally the practice now, I think, for men who take wine at dinner not to take anything at luncheon or during business hours. This would seem to indicate that the use of alcoholic liquors is considered on the whole injurious. It is well known, also, that so far as employees are concerned, all large employers establish rules which make it practically impossible for an employee who uses liquor to remain in the service." (Dec. 30, 1902.)

The president of a large life insurance company writes in a personal letter, the phraseology of which is so telling that I give it in detail: "More and more does the man who works with either his head or his hands need for the efficiency which is absolutely demanded of him that clearness and steadiness which is possible only to a high degree of temperance; and the man who impairs his efficiency and loses time through indulgence is walking toward the door that will shut him out from promotion and even employment. Men, whatever their position or range of their capacity, cannot in these days afford to be at less than their best." (Jan. 26, 1903.) Such statements as these have a force and significance that must demand attention. The experience of the large employer of labor verifies in the smallest detail the deductions of the psychological laboratory — that the moderate use of alcohol diminishes a man's efficiency.

The fact that a large number of individuals become so addicted to the use of alcohol that it requires all the skill of the medical profession, accompanied by every known psychological aid, to combat the self-destroying appetite, demands a careful consideration of the danger of acquiring the alcohol habit as a result of its "moderate" use. Just what the alcohol appetite is has been the subject of much discussion in medical, sociological and psychological journals. That it is hereditary is in opposition to Weissman's theory, and probably we must admit that a craving for alcoholic liquors is not directly transmitted from parent to child. That the resistance of the individual to the narcotic effects of alcohol is lowered by the alcoholic progenitors seems to be much more likely to be the case. The idea that a craving is transmitted has, as Partridge points out, unquestionably done an incalculable amount of harm by relieving the individual of a sense of moral responsibility. "The belief that a habit is incurable does more than anything else to compel its continuance." The theory that the moderate use of alcohol can transmit a craving for alcohol would hardly seem plausible; but that the resistance to the strong impulse to use alcohol after acquaintance with it may be weaker in the progeny of moderate drinkers is in no sense an unreasonable assumption, though lacking in absolute proof.

That the use of moderate quantities of alcohol has a strong tendency to lead to its excessive use is a matter of common observation. To what extent this acquisition of the alcohol appetite prevails is very difficult to estimate, for unless a man drinks to intoxication we have no means of knowing the quantity used. The only statistical data at hand are those by Neison, quoted in Sieveking's "Medical Adviser in Life Assurance." There it is estimated that there is one drunkard for every 74 of the male population, and a footnote by Sieveking adds, "We fear that more recent investigations show even a larger proportion." In the investigation of the British Medical Association previously referred to, we have, of the 4,234 cases, all over the age of twenty-five years, 30% decidedly intemperate and 15%, or one in six, very hard drinkers.

If these proportions are generally true, the danger of the habit-forming tendency of alcohol is indeed a real one. Furthermore, as we have seen, long before the drunkard stage has been reached, the individual has passed the most liberal estimate as to what is moderation, and is drinking to excess. Consequently we may *very conservatively* estimate that one in 50 of our male population uses liquor to excess and has a well-defined, though not necessarily absolutely, uncontrollable appetite for alcohol. A physician with a large practice, an instructor of twenty-five years' standing in one of our largest medical schools, in answer to a request for his opinion on the habit-forming tendency of alcohol says: "In my experience the habit-forming tendency

has been so apparent in every single individual that I do not think it can be for an instant questioned. I have seen so many times the teaspoonful of whiskey or the half glass of beer or the little glass of wine taken at a regular time so looked forward to and so many times gradually increased, and I have had to interdict the use of it, that I cannot feel this is a thing which can be questioned for a moment, that any amount of drinking, no matter how small, invariably tends to form a habit which inevitably tends to increase." (Oct. 22, 1902.)

The medical director of a large life insurance company writes: "The great trouble (with occasional drinking) is that a young man may get into the habit of taking some form of alcohol every day, and in this I include beer and ale, and as he grows older he may feel the necessity for a larger amount, and before he realizes it he has become an habitual drinker." (Oct. 20, 1902.)

Certainly it is not unreasonable to conclude from this evidence that there is a real danger from the habit-forming tendency of alcohol — a danger that we should not overlook in any consideration of the use of alcohol.

We can now more intelligently consider the conditions existing in actual life and determine in how far the moderate use of alcohol is compatible with scientific deductions. Obviously, we must very decidedly alter our views regarding what is moderation and what is excess. Certainly Abel's limit of one pint of beer per day is not too conservative. Indeed, the facts here collated would lead to the emphatic discountenancing of the *habitual* use of alcohol in any amounts. We may say with entire reason that many of our best citizens, men the products of whose brains have furthered our commerce and industries, literature, science and religion, have used liquors in moderation and perhaps habitually all their lives and yet are apparently not injured by them. But such men are, in fact, but a very small proportion of our male population, and we must consider the effect of moderate drinking not only on a select class of men, whose very success in life has shown their superior ability to exercise judgment and restrain upon their impulses and practices, but we have to consider its effects on the average man.

Dr. J. S. Billings has, at the instance of the Committee of Fifty, prepared a statement of the result of a series of questions submitted to 900 men of the type designated above as "selected." They were the typical brain workers of the United States. Accompanying the schedule returned with the answers, a number of individuals added paragraphs expressing their personal opinion. The same differences of opinion invariably found in an investigation of this nature are here present, though the general opinion is to the effect that the use of alcoholic drinks as a stimulus to mental effort gives bad results, although they may be agreeable as restoratives in fatigue.

Thus these data indicate that even to the select class of men the moderate use of alcohol is, on the average, of doubtful benefit, and we see here nothing to alter our view that the *habitual* use of small amounts of alcohol cannot be considered innocuous even to the select class of men. As regards the *occasional* use we may say that those men over forty, whose self-restraint is such as to insure that "self-respect and social conduct" are never outraged, who use *occasionally* the glass of wine with the last meal of the day and after the important work of the day has been done, are the individuals whose use of alcohol is least incompatible with the teachings of science.

With the average man, and especially with the young man, the case is very different. The average man, with perhaps a family or relatives dependent on him, should not jeopardize his chances for success by the use of alcohol. The diminution in mental and muscular power invariably accompanying the use of even small amounts of alcohol is a potent factor in determining his efficiency, chance for promotion and appreciation by his employers. Clearness of thought, quickness of perception, keenness of sight, deftness of touch, skill and accuracy in manipulation are valuable assets of the successful man, and each and all of these factors are so immediately affected by the use of alcohol as to practically interdict its use with men whose ambition leads them to hope for and strive for the best in life.

Statistics show that the drink habit is formed most frequently between the ages of fifteen and twenty-five, and it is with the young man that special pains should be taken to show clearly that any use of alcohol, even though it be occasional, must be regarded as contrary to scientific teachings. While alcohol in small amounts does not produce any demonstrable changes in the tissues, it certainly does retard the physical and mental growth of youth, for the growing organism is especially susceptible to the injurious effects of alcohol. The habit-forming tendency of alcohol is, as has been stated before, a factor in the moderate use of alcohol that it is absolutely necessary to take into consideration. No man need fear an inherited craving until he first tastes alcohol. As Partridge says, it is inconceivable that a person can crave a thing that is outside of his experience. Because the father was a heavy drinker it is, however, absolutely necessary for the son to abstain wholly would he avoid the great danger of forming a habit.

In general, while the impulses are uncontrolled by that reserve acquired with age, the danger of forming the habit must always be recognized, and by acquiring the alcohol habit I do not necessarily mean to the degree that the user becomes a miserable sot, but the feeling of the need of any amount of alcohol regularly — a feeling that can be considered in no other way than an injurious habit, sure to be followed by a train of physical and mental misfortunes that distinctly incapacitates the sufferer for the normal life of man.

## THE USE OF OBSTETRIC FORCEPS.

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At first thought it may seem a waste of time to ask attention to remarks on the use of obstetric forceps, for almost all men in active practice use the forceps freely and without hesitation, and there are few, I fancy, who seriously question their own skill in the use of the instrument. The frequency with which we use the forceps gives confidence, and in many cases causes a certain amount of carelessness. There is danger that we may ignore the fact that serious harm may be done both the mother and the child.

In my own work I am obliged to criticise my skill not infrequently, and I feel sure, from my observation of the work of others, that due care is not always used and that the principles of the mechanism of labor are not always given proper consideration. There is the danger that we may come to look upon the forceps as a simple and harmless instrument of traction; to think that it is only necessary to grasp the head — no matter in what way — and then pull until delivery is effected. At times it seems as if some men look upon the head as a round, inanimate body which is to be pulled through a perfectly straight, cylindrical tube. If five pounds of traction is not effective, ten pounds is applied; and so on, the only limit being the strength of the man who holds the forceps. I believe, however, that the men who rely upon strength alone and use little or no skill and care are the exceptions. Most men have it in mind that an undue amount of force may do harm, and try to apply and direct the force used according to what they believe to be the proper method. When moderate traction fails to deliver the head, there is a tendency to ignore the art of forceps delivery and fall back upon brute strength. Instead of stopping, examining the situation carefully and perhaps reapplying the forceps, many men become unnecessarily worried, and decide that the child must be delivered at once. Delivery is usually effected, but the operator often has little reason to congratulate himself upon a skilful operation. No one denies that serious harm is sometimes done by the ignorant and careless use of forceps. There is no doubt, also, that the man who uses the instrument carefully and skilfully sometimes inflicts injuries upon the mother or the child.

Forceps extraction is a serious operation in certain cases, and the results are not always satisfactory. Skill in the use of forceps can be acquired only by practice, and it goes without saying that a young practitioner should begin his training with the low forceps operation. When any marked delay occurs in the labor of a multiparous woman after the head has reached the perineum, there is opportunity offered for the use of forceps. In such cases there is usually a well-dilated and relaxed outlet, and there is hardly a possibility of doing any harm. Here one can gain familiarity with the instrument and learn the " feel " of the forceps blade as it glides into proper position upon the side of the head. The forceps should be applied with care and precision even in these simplest cases; and traction should be intermittent and under good control.

It is of the greatest importance that the exact position of the head be determined in every case before the forceps is applied. Neglect of this detail is the chief cause of failure in many attempted forceps deliveries. It is not enough to know that the head presents. The exact position of the head in the pelvis should be determined, and the degree of flexion or extension of the head made out. The more of the necessary information which can be obtained by external examination, the better; but it must be obtained, even if the whole hand has to be inserted into the vagina or uterus. When one is ready to apply the first blade of the forceps, he should be able, so to speak, to see the inside of the pelvis and apply the blades exactly in the proper position.

I have seen the forceps applied so many times when the operator did not know whether the occiput was anterior or posterior, and had made no attempt to find out, that I feel it proper to emphasize strongly the importance of the careful preliminary examination. A man who has not at least a fair amount of skill in making out the position of the head has no right to use the forceps.

I do not wish to discuss the indications of forceps at this time. There are certain conditions which demand forceps interference at once; but there is more or less uncertainty in a large number of cases as to the necessity of such interference. The man who is skilful in the use of forceps is warranted in using the instrument earlier and oftener than a less experienced person. His skill often saves his patient an hour or more of suffering. A poor operator should hesitate to interfere except in the simplest cases; for the saving of a few hours of labor pains hardly compensates the woman for serious laceration of the vagina and perineum.

Laceration of the genital canal is to be guarded against in every labor case for reasons too well known to need enumeration. There are emergencies, however, when it is necessary to deliver at once; and at such times one should not be deterred by the prospect of even serious lacerations, if the life of the mother or the child is at stake.

The term " low forceps " is used when the head has descended far enough to rest upon the perineum. If the head has rotated forward, the application of forceps is not difficult as a rule; but in a primipara, with a head crowded down upon the perineum, and a large caput succedaneum presenting, more or less difficulty may be met at times.

The fingers of the right hand guide the left blade into place along the left side of the pelvis and direct it to its proper position over the left ear. The peculiar motion of the forceps blade as it glides over the head is difficult to describe, and has to be learned by practice. The left blade is held in position by an assistant and the

right blade introduced upon the fingers of the left hand, which guide it to place on the opposite side of the head. If this blade does not lock easily, it should be reintroduced and brought to the proper position. The forceps when locked grasp the head in the occipito-mental diameter, and in low forceps one should not be satisfied with any imperfect or oblique grasp of the head.

Traction should be made forward until the occiput clears the symphisis; then the handles are raised and the head extended over the perineum. The perineum should be dilated slowly by intermittent tractions, the head being allowed to recede between them. It is my custom to remove the forceps when the head has thoroughly dilated the perineum. With the patient on her left side, the thumb behind the anus pushes the head forward over the perineum, and delivery of the face is accomplished as in normal labor.

If the head is delivered by the forceps, there is a little more danger of hurrying the passage of the face over the perineum.

When the occiput is posterior at its engagement in the pelvis, it usually rotates to the front. The mechanism of this rotation has been well described in a recent article by Gossett in the *American Journal of Obstetrics*. When the occiput remains posterior, even after reaching the floor of the pelvis, delivery sometimes occurs spontaneously; but very often it is necessary to deliver by forceps. The occiput usually lies at the right of the sacrum, and the blades of the forceps should be applied to the sides of the head; the left blade over the right ear, which is posterior, handle slightly elevated to grasp well back on occiput; the right blade over the opposite side of the head in a position which allows easy locking. Traction should be downward and backward as far as the perineum permits. Rotation of the occiput to the front sometimes takes place even toward the last of the second stage and during extraction with the forceps. Any tendency of the head to rotate must be watched for and favored. If the handles turn more and more toward the left, the rotary motion may be helped slightly. If the occiput rotates until the sagittal suture is directed to the anterior part of the pelvis, the forceps should be removed and reapplied as in ordinary cases of occiput anterior.

If there is no rotation to the front, traction is directed backward until the root of the nose passes the symphisis; then the handles are carried up as the occiput comes out over the perineum. In these cases extraction is more difficult, and there is more likelihood of tearing the perineum than in occiput anterior delivery.

The term " mid forceps " is used when the greatest diameter of the head has passed the superior strait and the lowest part of the head has not reached the floor of the pelvis. When the head is in this part of the canal the sagittal suture lies in an oblique diameter as a rule, but is sometimes transverse.

With the occiput in the left anterior position, the right hand is introduced along the left side of the pelvis and the posterior ear located. The left blade of the forceps is introduced on the hand and applied over the ear. The right blade is slipped into the opposite side of the pelvis on the fingers of the left hand and brought into a position which permits easy locking. If the blades do not lock at once, the right blade must be reapplied. The left blade has been applied by touch in the proper place and the right blade must be adapted to the opposite side of the head; in order to lock with the left blade, the right has to be rotated slightly forward toward the front. No change must be made in the position of the left blade after it has been properly placed.

In occiput right anterior position, the blades are applied in the same way; but the right blade is placed carefully over the posterior ear and the left blade rotated somewhat to the front to lock properly. In all cases care must be taken to keep the guiding fingers inside the cervix, so that the blades are passed between the cervix and the head. Traction is made downward until the occiput clears the symphisis, as in low forceps. The moderate rotation from left or right to the median line is to be favored.

When the head lies in a transverse position the application of the blades to the sides of the head is a very difficult matter and is sometimes impossible. When applied in this way, the posterior blade lies in the hollow of the sacrum and the anterior blade lies in the median line beneath the symphisis. The difficulty of applying the forceps in this manner is so great that many men advise against the attempt and apply it to the sides of the pelvis. When the blades are applied to the sides of the pelvis, they grasp the transverse head in the occipito-frontal diameter and in locking there is a good deal of pressure exerted upon the head. In transverse positions it is my custom to apply the blades to the pelvic curve and then attempt to rotate them into position on the sides of the head. If much difficulty is met, I am satisfied with an oblique grasp of the head: one blade over one temple and the other over the opposite posterior parietal region.

If it is found, after locking the blades, that the handles do not come into complete apposition, undue compression of the head may be avoided by placing a folded napkin between the handles. It is especially important in these cases to use tentative traction at first, to see if a firm grasp has been secured. As the head is brought down toward the perineum, forward rotation is to be expected and favored; when it has taken place, the forceps should be reapplied or slipped into the more desirable position on the sides of the head.

In describing the use of forceps on the head which lies with the occiput to the rear, I will consider the position O. D. P., since that is much more common than O. L. P. The progress of labor in these cases is usually slow and the head somewhat extended. Forceps delivery is indicated more frequently than in anterior positions.

The right hand is introduced into the left side of the pelvis, inside the os, and the fingers locate the posterior ear. When the hand can grasp

the head an attempt should be made to turn the occiput to the front. In a certain number of cases this is successful, and the head is then in a much more favorable position for the application of forceps.

If manual rotation cannot be accomplished, the left blade of the forceps is slipped in upon the fingers of the right hand until it is in the proper position over the posterior ear. On the left hand as a guide, the right blade is passed in on the right side of the pelvis and rotated forward slightly until it locks easily.

Traction is made downward until the head reaches the floor of the pelvis. Rotation of the head to the transverse and then to the anterior position is to be helped. If the blades of the forceps have been properly applied, it is safe to use considerable force in helping rotation, and a good operator can often bring the occiput to the front. When this has been accomplished, the forceps will have been completely inverted and the tips will be found to lock backward into the hollow of the sacrum. The instrument should then be removed and reapplied to the occiput, which lies in the right anterior position. Extraction then proceeds as in an ordinary low forceps case.

When the occiput is posterior and the head extended, the application of the forceps in a reversed position is strongly advocated by many. The blades are applied to the occipital end of the head, with the tips directed to the back of the pelvis. Traction should be gentle and exerted only until flexion of the head is brought about. After the head has been flexed, the grasp of the forceps in the reversed position becomes very insecure and further traction is not to be made. This procedure is directed solely to the securing of flexion, and is not a method of delivery.

In some cases the attempt to rotate the occiput to the front is not successful, and the occiput settles into the hollow of the sacrum after it has reached the floor of the pelvis. Delivery must then be carried out as described in low forceps operation on persistent occiput posterior.

The term "high forceps" is used when the largest diameter of the head has not passed the superior strait. The head may be free above the strait, or just entering the canal. The high forceps operation is very difficult, and, in the hands of any but the most experienced, dangerous for both mother and child. When the head floats, or the largest diameter of the head does not come through the superior strait, I very much prefer version to forceps. With the average practitioner the results of version are much better. In such cases one's attention should be directed to keeping the membranes intact until he has decided upon his course of action. If the membranes are ruptured and the uterus contracts upon the body of the child, version is dangerous, if not impossible.

When the head has engaged, the forceps should be applied as in the mid-forceps operation. The blades are passed in along the sides of the pelvis and then adapted to their proper positions on the sides of the head. It is often impossible to place them in perfect position, and one has to be satisfied with an oblique grasp of the head: one blade over the temple and the other over the posterior parietal bone. As the head descends, they may be changed to a better position on the sides of the head.

When the head floats and refuses to engage in spite of good pains, there is probably some disproportion in the size of the head and the canal; and the head is partly extended. It is evident that the application of the forceps blades to the sides of such a movable head must be extremely difficult. Most men agree that it is not only almost impossible, but is undesirable. The blades should be applied in the oblique diameters of the pelvis, when there is room for them.

When the head lies in a transverse position, as is often the case, forceps blades placed in position on the sides of the head would shorten the conjugate diameter of the pelvis when this very diameter is probably already too short to allow natural engagement. For this reason it has been the custom to grasp such a head obliquely. A writer in the *American Journal of Obstetrics* for January, 1903, takes exception to the universal application of this rule and describes a method of applying the blades to the sides of the head and delivering successfully.

In median and high forceps operations the condition of the os plays an important part. Care must always be taken to apply the forceps within the os. The cervix must be enough dilated to permit the application of the forceps and allow the passage of the head; for extraction through a firm, partly dilated os results in severe lacerations.

When the head is in the upper part of the canal, and more especially when it has not engaged, extraction with ordinary forceps is difficult and a good deal of force is often necessary. Traction from the handles drags the head against the symphisis and much of the force is wasted. There is also the danger of injury of the soft parts of the mother. In order to exert traction downward in the proper direction, the following method is to be employed: With one hand traction is made from the handles, while the other hand presses downward strongly on the forceps at the lock. In this way the lock acts as a fulcrum and the pull is downward instead of forward against the symphisis.

Extraction of a head high in the pelvis is much facilitated by the use of the axis-traction forceps. With this instrument traction is exerted almost in the axis of the superior strait: less power is needed because very little is wasted in friction against the symphisis. A very good substitute for the Tarnier axis-traction forceps is the axis-traction rods, which can be attached to the ordinary forceps.

In high-forceps operations it is especially important to determine the exact position of the head; and in extraction the mechanism of normal labor must be borne in mind. Flexion and

rotation of the head must not only not be hindered, but must be helped.

The forceps should be reapplied as soon as any change in the position of the head offers a chance for a better grasp.

The essentials for performing a good forceps operation are — ability to make an accurate diagnosis of position, familiarity with the mechanism of labor, deliberation in grasping and extracting the head.

## Clinical Department.

### MASSACHUSETTS GENERAL HOSPITAL.

Clinical Meeting of the Staff, Held at the Treadwell Library, Dec. 12, 1903.

Dr. H. H. A. Beach in the chair.

#### A CASE OF HYSTERIA.

BY H. C. BALDWIN, M.D.

Up to the age of nineteen Miss M., who is now thirty-eight, had been comparatively strong, and was able to walk and run as well as any one. She had never had fainting spells. She had no trouble with her voice. She had done everything like anybody else.

The winter previous had had some pain in her back. One day when her sister put her hand unexpectedly on the patient's back, the patient collapsed. The family doctor was called, and he put her to bed to rest for a week, telling the family that the patient's back would be well by that time. The patient did not get out of bed at all for three years, and was not even able to be lifted into a reclining chair during this time. After she had been in bed six months, she lost absolutely the power of the right leg, and it became perfectly numb, so that she did not feel when a pin was stuck in it. She also had numbness and paralysis of the right arm. The severe pain in her back continued. For a time she ran a continuous low fever, which ended up with a severe attack of malaria. The numbness continued in the right leg and arm for about a year. She recovered the use of the arm perfectly, but she has never moved the leg since.

She was taken to Philadelphia after she had been in bed three years, and remained there for six months in a private sanatorium, where she was under the care of eminent doctors. She was out of bed but very little for five years, and then began to go round a little with crutches. Her left leg was all right, but her right leg was perfectly useless. She could neither move it nor bear any weight upon it. About four months after she began to get round, she lost her balance and fell down a flight of stairs, striking the back of her head. She was not unconscious, but after falling downstairs, she was in bed for four months. For a long period after this accident she was unable to make any sound at all, and since that time until she came under my care — a period of over thirteen years — she has never been able to speak above a low whisper. Before getting out of bed at all, she was fitted to a brace, and she has worn this brace constantly ever since, and for the last five years, both day and night, until I took it off in October of this year.

The patient came to see me at my office Sept. 16, 1903. Physical examination showed lively reflexes — right and left. There was no marked wasting of the right leg, but the muscles were soft and the joints were apparently relaxed. There was marked toe-drop. Dr. Goldthwait examined her back, and reported there was no trouble with the back. Dr. Goodale examined her throat and reported that there was no trouble with the vocal cords. Through the courtesy of Dr. Minot and Dr. Shattuck I have been allowed to have the care of her while she has been a patient in their wards in the hospital.

I told her that I could teach her to talk by developing head tones in the same way that music teachers develop voices in pupils who have no voices. The usual methods of getting a patient with functional aphonia to speak were of no avail in this case, and the voice has been developed gradually by systematic daily practice. It was a period of two months before the speaking voice was natural and before the patient could talk out loud without concentrating her whole attention on her voice.

The developing of the use of the right leg has been a much more difficult matter. A plaster bandage was put on the knee at first, and the patient was told that the plaster would keep the knee from buckling, and that she would be able to push her leg along. It was at least six weeks before the patient could move her toes the slightest, but she was daily made to stand and to work at walking, her right leg being pushed along while she was held by the nurse and myself. The most difficult task has been to teach her to balance. She had completely lost all power of balancing, and has been much more difficult to teach than a child.

Her brace was removed the last of October, and for a week the patient was most unhappy. Within the last month she has learned to make every motion of her right leg; she can stand alone; she can walk a little alone, and with the aid of a cane can get about pretty well. Yesterday she went up and down a flight of sixteen steps alone.

#### THYROIDECTOMY FOR EXOPHTHALMIC GOITER.

BY JAMES MARSH JACKSON, M.D.

The first case which I wish to show is the patient with exophthalmic goiter on whom Professor Mikulicz performed thyroidectomy last summer. She first came to the Out-Patient Department Oct. 2, 1901, and was under medical treatment for some time without deriving material benefit. (She is not included in the series of cases treated by bromide of quinine.) The prominent symptoms before operation were exophthalmos, large goiter of both lobes (especially the left) tachycardia (140), tremor, sweating, diarrhea (four to eight movements a day), nervousness and irritability of temper, hoarseness and inability to stay in a hot room.

Examination at that time showed marked prominence of the eyes, but no Stellwag sign. Von Graefe's sign was present. She was able to wrinkle the forehead slightly, and convergence of the eyes was normal. Examination of the throat showed no paralysis of the recurrent laryngeal. The hands were moist and warm; there was marked sweating of the body and considerable tremor of the hands and tongue. The heart was enlarged slightly to the left; first sound at apex loud; second weak; no murmurs. Patient was unable to work, and was sent into the hospital for rest and treatment. Operation was performed by Professor Mikulicz on May 20, 1903. The left lobe of the thyroid was extirpated as a whole and the superior and inferior thyroid arteries were tied, stopping completely the pulsation of the right lobe. For ten days she ran a slight temperature, 99° to 101.5° F., and the pulse 130 and 140 at first, gradually diminished until on the tenth day it was reduced to 68. No change in respiration noted. Recovery otherwise

uneventful. Since operation the following changes have occurred: In the first place the patient feels much better, and has been able to work continuously since leaving the hospital. The pulse rate, according to the records of the Out-Patient Department, has never been above 84, whereas you will remember formerly it was rarely under 130. The heart has diminished in size and is now normal. Eyes: Patient thinks that her eyes were much less prominent after the operation. Von Graefe's sign is now absent. Tremor is less marked but still present. She has gained thirteen and three-fourths pounds since operation. Now has no diarrhea. There has been no change in sweating since the operation; it is still very marked. Irritability of temper decidedly worse since the operation. Now sleeps well, though previously was considerably troubled with insomnia. Headache has been more marked since operation. Hoarseness remains the same. Had a short, hacking cough before operation, none since. Polyuria has been a marked symptom from the beginning, and no change was effected by operation.

Of late patient has noticed that the right lobe of the thyroid has been increasing in size and that the eyes are becoming more prominent. She says, also, that the cough, which has been absent since May, has again returned and is about the same as it was prior to operation. In conclusion I wish to draw attention to the marked improvement which has taken place in her general condition and the particular symptoms of exophthalmos, pulse rate, tremor, diarrhea, insomnia and cough, whereas the following symptoms are either not improved or slightly worse: perspiration, irritability of temper, headache, hoarseness and polyuria. I have recently started her on bromide of quinine, five grains three times a day, and shall watch the effect of this before considering the advisability of another operation.

OBSTRUCTION OF THE SUPERIOR VENA CAVA.

Mrs. M. S., aged thirty-five, married.

Family history: Mother died of heart disease, otherwise negative. Past history: Has always been well and strong, and has borne two children, the last three years ago.

Present illness. On Oct. 22, 1903, patient came to the Out-Patient Department of the Massachusetts General Hospital, complaining that for the past three years she has had more or less shortness of breath, smothering sensation, attacks of palpitation, rush of blood to the head, loss of strength and pain under the sternum. These symptoms have been growing worse of late, and she is now seriously inconvenienced in her work. A year ago, she says, a lump appeared over the right parietal bone, which increased gradually in size until it became as large as an egg. Her doctor incised this, but found no pus, there being only a discharge of dark blood. She was given some medicine, the nature of which she does not know, and the tumor disappeared. This is, of course, suggestive of gumma. Examination of the chest shows a marked dilatation of the superficial veins from mid-sternum to umbilicus. The heart is normal in size and nothing abnormal is made out by auscultation. Percussion over the upper border of the sternum gives a sense of resistance over an area about the size of a silver dollar. The x-ray plate shows a broadening of the upper part of the cardiac shadow. The probability is that we have here a tumor pressing on the superior vena cava in the mediastinum, and as there is a possibility that this is a gumma, she has been given iodide of potash and mercury. As yet no change has been noted from the treatment.

# Medical Progress.

## RECENT PROGRESS IN LARYNGOLOGY.

BY A. COOLIDGE, JR., M.D., BOSTON.

### HAY FEVER ANTITOXIN.

THE recent work of Dunbar[1] of Hamburg in separating a toxin from the pollen of different grasses, from which he has produced an antitoxin for hay fever, may be justly called the most striking laryngological novelty of the year. The author was led to the supposition that flowering grasses had a causative relation to hay fever. By carefully collecting the pollen of different gramineæ he found that when some of this pollen is brought in contact with the conjunctiva or nasal mucous membrane or any other mucous membrane of a hay-fever patient, an itching, tickling and burning will be produced, followed by a vascular injection, swelling and excessive secretion, whereas it is inert in persons who do not suffer from hay fever. The experiments showed great variations in the sensitiveness of different hay-fever patients toward the pollen; it is, however, present in all cases, and the accompanying symptoms correspond to the symptoms observed in many patients in natural hay fever. It is possible that there are persons who do not react to the pollen of grasses, but to pollen of other plants in a similar manner. It is true that some persons suffer from nervous coryza who do not react to the pollen granules of the gramineæ, but the author suggests that the term "hay fever" should be used only in such cases as react. The results of experiments led him to the conclusion that grass pollen granules contain the exciting agent of the disease called hay fever, which is differentiated from other similar affections essentially by the fact that it appears only at one period of the year. The positive conclusion of the causative effect of pollen granules in the production of hay fever led to the inquiry into the chemical or mechanical action of these bodies. The pollen granules of grasses found active had without exception a smooth surface. Products obtained from the pollen granules by the action of alcohol or ether had no specific effect upon hay-fever patients. The pollen granules retained their specific action in full force after the extraction of these substances. The pollen of the gramineæ differs from the pollen of other plants in containing starch granules which entirely fill the body of the pollen. When immersed in water the starch bodies of the pollen appear as rods. When immersed in salt solution these rods often remain unaffected, but when immersed in secretions of mucous membrane, in lachrymal, in nasal or salivary secretions or in blood serum and kept at body heat these starch rods will soon begin to dissolve. If at the moment of complete solution the undissolved portion be separated by centrifugal process, it will be found that it is inert in its effects.

[1] Berl. klin. Woch., 1903, 24, 25, 26. English translation by Joachim, Annals Otol., Rhin. and Laryngol., September.

With the solution hay fever can be produced. The iodine reaction of the starch rods is somewhat atypical, this suggesting a double product containing besides starch an albuminous substance. This albuminous substance was extracted from the pulverized pollen. It reacts to all tests for albumen, contains the entire hay-fever poison, and it is possible to extract it so completely from the pollen granules that the residue is inert. The protein obtained is extremely poisonous to hay-fever patients. After establishing the fact that the pollen of grasses contained the hay-fever poison, experiments were at once begun to obtain a specific antitoxin. It became evident that animals of the same kind differed remarkably in their resistance to the hay-fever poison. Of the horses treated some reacted but feebly to the toxin, others not at all. One horse of blooded stock reacted so violently to a much smaller dose than had been well borne by goats that for days it was doubtful if he would survive. Several horses have been found reacting to the pollen toxin. These when injected with 4 gr. of pollen granules, or with the toxin derived from this amount of pollen, began soon after the subcutaneous injection to show symptoms of disturbance, loss of appetite, muscular twitching, urticaria, rise of temperature. In the blood of susceptible horses antitoxic properties could be discovered after four weeks, four injections having been administered. If a drop of the toxin solution containing $\frac{1}{40}$ mgm. of the protein, which produces severe reactive symptoms in hay-fever patients, be mixed with a drop of the horse serum possessing antitoxic action, it will be found that this mixture, when applied to the mucous membrane of hay-fever patients is no longer productive of irritative reaction. In the course of a few months this antitoxin reaction increases many times. With this serum it is possible to neutralize the pollen toxin as well as to subdue a reactive inflammation previously produced by the application of pollen toxin to mucous membranes of hay-fever patients ; larger doses of antitoxin are necessary to overcome already existing irritations than are needed for immediate neutralization of the poison. As a result of the report of cases in which the serum has been used by patients habitually subject to hay fever, the author concludes that a careful prophylactic use of the serum, or its use as soon as the first symptoms of irritation appear, will bring about a surer result, and with a smaller amount of serum, than when used after a severe attack. The use of antitoxin externally is preferable to the subcutaneous use, if it should prove efficient in the control of asthma ; subcutaneously antitoxin is entirely inert on normal human beings, while on hay-fever subjects it gives rise to disagreeable symptoms of irritation.

OPERATIONS UPON THE ACCESSORY SINUSES.

For the last few years the surgery of the accessory sinuses has been a subject of especial study, to which Luc has contributed in no small degree. During his recent visit to this country at the time of the Medical Congress in Washington, Luc presented a paper summarizing his present opinions on the radical treatment of chronic suppurations of these cavities.[2] In regard to the maxillary antrum he believes that it is not advisable to adopt the radical operation in any case of chronic abscess without having previously attempted to cure it by washings of the diseased cavity, after a puncture through the inferior meatus. In the radical, commonly known as the Caldwell-Luc operation, after making a wide opening through the canine fossa and cleaning the cavity, an opening is made at the expense of the internal or nasal wall of the sinus, in order to create a wide and permanent communication between the antrum and the nasal fossa. This resection, which requires simultaneous ablation of the greater part of the middle and inferior turbinals, is greatly facilitated by the introduction of the little finger into the nostril. The antro-nasal communication must be a large and permanent one, whereas the antro-buccal one is to last only as long as it is necessary for cleaning and curetting the cavity.

In regard to the frontal sinus the author has found that the so called Ogston-Luc operation has its limitations, and after reviewing the more radical operations of Kuhnt and Jansen, recommends the method of Killian, which is a sort of combination of all three. It implies the immediate closing of the wound and the subsequent drainage by the nose, and it opens the floor of the sinus. It removes the greater part of the anterior wall, but it preserves a bony bridge corresponding to the orbital arcade, which greatly lessens the deformity. He regards this operation as being at present the surest and safest method for radical cure of chronic frontal suppurations in cases made difficult by abnormal dimensions of the cavity and especially by its extension to the temporal region, whereas the Ogston-Luc method, which is easier for the surgeon and less disfiguring to the patient, finds its ideal application in patients with a small sinus.

The most interesting part of the paper is that relating to the ethmoid cells. The middle and even the posterior cells, including the sphenoidal cavity, which may be considered as the most remote of them, are within reach of our eyes and our instruments, but the anterior cells that line the naso-frontal outlet will always escape unless we make a previous resection of bone. A result of experience has been to abandon the use of nasal curettes. He uses a special forceps, whose blades are large enough to seize much at a time and flat enough to be easily thrust into the recesses of the middle meatus. If the nasal fossa is filled with polypi they are removed by means of the cold snare. Under cocaine the middle turbinal is first attacked with the largest flat forceps, squeezing bone, mucosa and polypi, tearing them off with

[2] Trans. Amer. Laryngol. Asso., 1903.

a rapid twisting movement. After checking the hemorrhage with gauze, any myxomatous mass or bony trabeculæ met by the forceps are to be seized till the instrument finds no other resistance than that of the bony walls limiting the nasal cavity. The only wall which the author has involuntarily opened is the anterior wall of the sphenoidal sinus. The method when applied to the ethmoidal suppuration complicating a frontal maxillary empyema can but be considered as a preliminary step to the radical operation for the latter disease, since the Caldwell-Luc as well as the Killian method affords the surgeon every facility for the opening and curetting of the neighboring cells.

The sphenoidal cavity, in a case of chronic empyema, may be approached either through the nose or through the maxillary antrum. When the only difficulty in getting at the sphenoidal front wall is the middle turbinal and the posterior ethmoid cells there can be no simpler method for reaching and opening the sinus than the one described for curetting the ethmoid cells. In case of abnormal resistance of the anterior wall it might be advisable to use a perforator. The coincidence of an antrum empyema with the sphenoidal suppuration makes the antral passage to the sphenoidal sinus the proper one, as being both easier and safer. A resection of the anterior and internal walls of the antrum opens a direct and simple route, which should be chosen even through a normal antrum, if the passage through the nasal cavity is obstructed.

### OPERATION FOR DEFLECTED SEPTUM.

Although different operations and modifications of operations for the straightening of deflected septa have increased each year, we seem to be as far as ever from universally accepted methods. The problems are so varied that general rules are difficult. As a result of study and experience Douglass [3] concludes that the theory that the forceps by twisting and bending break the septal cartilage into several fragments enclosed in a layer of mucous membrane is fallacious. What appears to be a lessened elasticity of this cartilage after use of forceps is in almost every case the result either of the incision through the cartilage or its separation from the bony septum. When sections are made of the fractured septum some time after healing it is not found that there has been any attempt at the production of a new cartilaginous tissue. The displaced fragments remain separate, and connective tissue has been formed uniting these fragments. The only way of dealing with the fibrous bands of tissue formed along the line of fracture is by incision, and these incisions should be as few as possible. Incisions intended to correct septal deflections should be made along the entire length of the triangular cartilage. The greatest fallacy in septal work is the belief that it is necessary to make many incisions, especially the crucial incision. Every angle from a cross incision increases the tendency to displacement of the fragments and leaves a tendency to perforation.

An important point is the recognition of the part played by the superior maxillary spine. This spine receives anteriorly the triangular cartilage and posteriorly the anterior edge of the vomer. The septum may be incised, the forceps may break the triangular cartilage from its attachment, the vomer may be fractured and separated from the superior maxillary ridge, but if the cartilage is not separated from the superior maxillary spine the result in many cases will not be good. The relation of the septum to the superior maxillary spine is somewhat analogous to the main sheet of a sail. If this is cut the septum will be found freely mobile and can be placed and retained as desired. So important is this spine that when it has been completely severed it is often unnecessary to make any cut in the septum or to use forceps to break the septum from the ethmoid. After anesthesia the spine may be cut either through the lip or nose. In the former case the lip is raised and the knife plunged to the right or left of the raphe; the chisel is introduced and one finger placed in the nostril to determine the position of the chisel and the spine; the chisel is then gently forced through the bone by light blows. In operating through the nose the incision is made just behind the vestibule on the floor of the nose, where it joins the septum, and the spine is cut by the chisel as before.

### PARAFFIN INJECTION.

A review of the reports on the injection of paraffin in addition to his own observations and experiments with animals leads Schleifstein [4] to the following conclusions: Both the harder form of paraffin and that which melts at a lower temperature is well borne by animal tissues. If the skin into which it is injected is too tense there may be destruction of the hair follicles, with loss of the hair, and also the wound made by the needle may not properly heal, or there may be even a sloughing from pressure. This is dependent upon tension and not upon the kind of paraffin used. The injected paraffin is in time penetrated by compact connective tissue, which beyond increasing its bulk does not affect it. Hard paraffin which melts at a high temperature has no special disadvantages and is less liable to give trouble in case the temperature of the body rises. In parts of the body where it is not under accurate control during injection the hardest paraffin should be used, as it is less likely to reach undesired spots and to cause trouble. In cases where the injection may be considered curative it may be used without hesitation, but where its use is purely cosmetic it is not yet possible to be perfectly sure of results. There is sometimes an unexpected development, and the operator should be sure that the patient understands the situation and expresses a wish that it should be tried.

[3] Laryngoscope, April.

[4] Fraenkel's Archiv., xiv, 3.

TREATMENT OF ATROPHIC RHINITIS WITH MUCIN.

A report of advanced cases of atrophic rhinitis treated with mucin is given by Stuart Low.[5] The results are distinctly good. The mucin is given both internally and locally. A solution is made by rubbing up one tabloid and one "soloid" of mucin in 2 dr. of warm lime water and 6 of sterilized water. This solution may be used as a spray. At the beginning of the treatment the patient should be seen daily for a week, and the mucous membrane of the nose cleaned and massaged with mucin solution. The patient is at first to syringe with the solution twice a day, but soon need do so at night only. Internally eight to twelve mucin tabloids are taken daily, both before and after meals. This treatment improves the digestion as well as the local trouble. The solution as given above for local use may be found painful for the patient, in which case it should be diluted.

TREATMENT OF LUPUS OF THE RESPIRATORY MUCOUS MEMBRANE.

Christiansen, in a report to the Danish Oto-Laryngological Association of Copenhagen,[6] states that three-fourths of the patients who apply to the Finsen Light Institute for treatment for lupus of the skin are found to have it also of the mucous membrane. The mucous affection has generally been primary. Lupus is most frequently situated in the foremost part of the nasal cavity, the septum and the vestibule, then on the lips and upper gum. The nodules appear as dark red spots upon a lighter red background; there are also often miliary tubercles and ulcerations. The disease requires a very energetic local treatment. Wherever possible the light is applied as to the skin, by "compress glasses," and is focused upon the spot. The reaction appears as a hyperemia in severe cases with a loss of epithelium, but never as a bulla. The results are almost as good as in the treatment of the skin disease. When the disease is situated where it cannot be reached by the light, the nodule is punctured with the galvano-cautery, care being taken not to burn anything except the nodule. Solutions of iodine, corrosive sublimate 1–1000 and permanganate of potash 1–700 are also used. The use of lactic acid has been found to be valueless. The patient is seen daily and the surface kept free from crusts. For the details of treatment, both with and without the light, the reader is referred to the fuller report.

(*To be continued.*)

## Reports of Societies.

### BOSTON SOCIETY OF PSYCHIATRY AND NEUROLOGY.[1]

J. W. COURTNEY, M.D., SECRETARY.

Regular meeting Thursday, Oct. 15, 1903, Dr. G. L. Walton in the chair.

[5] Journ. Laryngol., Rhin. & Otol., April, 1903.
[6] Ibid., October.
[1] The following discussion was received too late for publication with Dr. G. L. Walton's paper. See Journal, Jan. 21, p. 61, 1904.

ORAL COMMUNICATIONS.

Dr. E. W. Taylor: I have three specimens to present, with brief reference to the clinical histories.

POTT'S DISEASE.

The first is an unusually striking case of Pott's disease occurring in an adult. The patient, a man of forty-five, was taken with typhoid fever. Three weeks after the onset of the typhoid fever he developed Pott's disease. What relation the Pott's disease has to typhoid fever I am not able to state. He was admitted to the Long Island Hospital, and became paraplegic with a large kyphosis in the dorso-lumbar region. During his stay he grew continually worse. Operation was considered, but not attempted. He was transferred to the Carney Hospital, under Dr. Goldthwait's care, who, by assiduous treatment, was able to bring the man to his feet; he later returned to the Long Island Hospital, and died of generalized tuberculosis, particularly of the genito-urinary tract. The autopsy was done by Dr. Magrath, and I present a vertical section made through the spinal column which illustrates extremely well the method by which compression of the cord takes place in Pott's disease associated with paraplegia. You will see on the dorsal surface of the body of the vertebra a tuberculous deposit which has gradually encroached upon the spinal cord, forming a kyphosis at this point which is, in the specimen, not particularly apparent. One body is practically eroded. The cord is pressed upon and virtually destroyed at this point.

DEFECTIVE CEREBRAL DEVELOPMENT.

The other cases I have to report are both instances of defective cerebral development. The first is from the Massachusetts School for Feeble Minded. The brain is extremely interesting, because it shows a tendency to simplification as a whole, without any definite defect in any particular portion. This brain, if presented to any of us, I think, might be regarded as the brain of one of the lower mammalia. The cerebellum extends out behind, the convolutions are small, and yet the brain as a whole shows a very perfect development. This came from an idiot child of four, of Italian parentage, as I remember it, of very feeble mental development; one, I think, of several in the same family. This is a striking and, so far as my knowledge goes, unusual type of brain defect.

The third case is a still more remarkable one in many ways, coming from a child of six, for several years an inmate of Long Island Hospital, suffering from infantile cerebral paralysis. This child was born, I think, of healthy parents. At a very early age he began to show spastic symptoms, and the legs were drawn up and contracted. The development of the child mentally and physically was very much retarded, and for several years he lay at the hospital helpless and apparently hopelessly so. The condition of the brain, however, could not

have been suspected from the clinical phenomena. The more we study these cases the more we find it is impossible to predict what the condition of the brain is going to be, from the clinical phenomena during life. The hemispheres are present but the convolutions are highly defective. On one side is a cyst which is not common. There is a large opening in the occipital lobe which connects with the dilated ventricle. The autopsy was done by Dr. Magrath, and at the time of the autopsy this defect was closed over by membrane which was probably the pia.

DISCUSSION.

DR. G. B. MAGRATH: I remember very well indeed the case to which Dr. Taylor has just referred and the statement as to what the covering-in membrane of this depression was. The opening which existed in that part of the hemisphere was covered in the fresh state by a very thin layer of pia. It was intact at the time of the removal of the calvarium, but was continuous with the remainder of the pia.

SPINAL SYMPTOMS OF BROWN-SEQUARD TYPE.

DR. G. L. WALTON mentioned a case with rather baffling symptoms pointing to the spinal cord. A woman of middle age gave a history of having fallen down a flight of stairs six months ago, after which swelling of the legs appeared and pain in the back, with gradual progressive loss of power and sensation in the lower extremities. It seemed also that after a previous accident she had lost power and had more or less pain. The whole course of the case seemed to show that irrespective of the accidents the whole trouble was a gradually progressive one. There had been one miscarriage, and though no definite specific history was made out, large doses of iodide of potassium were given, in view of the possibility of specific meningomyelitis, but with no result. She now requires morphia for the pain. In view of this history and the patient's desire to have something tried, Dr. Warren will make an exploratory operation in the hope of finding a tumor. The distribution of the paralysis is of an incomplete Brown-Sequard variety, namely, complete loss of power in the left leg, with partial loss of power in the right, loss of pain and temperature sense on the right up to the groin, and loss of muscle sense on both sides. There is an area of hyperesthesia in the right flank and over the left lower ribs. There is exaggeration of the knee jerk and a Babinski on both sides; ankle clonus on the left. The tenth dorsal lamina will first be removed, and operation extended upward if nothing is found at that point. (At the next meeting Dr. Walton reported that although several laminæ were removed and the exploration extended further by the probe, nothing abnormal appeared beyond an unusual spurt of clear fluid upon opening the dura. The cord appeared of normal size, color and consistency. No ill effects followed the operation. There had been slight improvement in the paralysis but no relief of pain.)

DISCUSSION.

DR. P. C. KNAPP: In specific meningomyelitis I have not noticed such striking hyperesthesia as noted in this case, which is more suggestive of something malignant. I have seen such hyperesthesia with malignant disease of the vertebræ.

OBSTETRICAL PALSY: OPERATION.

DR. J. W. COURTNEY: I have here a small boy whom I want to show, not because of the nature of the case, but on account of the ingenious surgical measure that was devised by Drs. Cumston and Cotton for the purpose of relief. The case is an unusually severe one of obstetrical palsy, resulting in a flail-like condition of the right arm. When I first examined the boy, some months ago, I found the extensors of the hand to be the only muscles capable of function. I found also that these muscles had retained their faradic irritability. Now, as extension of the hand was of no practical use to the boy, the surgeons cut nearly all the tendons about the wrist, thrust the upper ends of the severed extensors between the bones of the forearm to its anterior surface, and there sewed them to the lower ends of the flexors. Union was obviously successful, for the boy is now beginning to grasp objects, although with little power as yet. I think, however, that with time his power will grow in this respect.

In connection with this case it is interesting historically to note, although it has no bearing on the boy's condition, that his maternal great-great-grandmother and great-grandmother had goiter, that his maternal grandmother and uncle now have enormous goiters, and that his own mother is developing that disease.

DR. GEORGE L. WALTON read a paper entitled,

THE PREVAILING CONCEPTION OF DEGENERACY AND DEGENERATE, WITH A PLEA FOR INTRODUCING THE SUPPLEMENTARY TERMS, DEVIATION AND DEVIATE.

DISCUSSION.

DR. WALTER CHANNING: I don't know very much about "superior" degenerates. That expression is more or less recent. I have had something to do at times with inferior ones. I fully agree with what the reader has said, and I should certainly approve using either the expression he suggests or some other one in a good many cases where we make use of the ordinary ones of degeneracy or the stigmata of degeneration. I suppose a man like Nordau is largely responsible for the prevalent use of these expressions. There is a popular and scientific way of using them, and I don't know what we can do to interfere with the popular use, but it seems to me scientifically we can do a great deal. It is hard to know what a real stigma of degeneracy is. Many of us have adopted views in regard to the palate, but from recent investigations I have made I

have come more and more to the conclusion that we have so far had very little accurate information about the shape or development or significance of slight deformities of the palate. The results that I have obtained during the last year in regard to the palate corroborate those I have obtained before. There has not been any standard of comparison in estimating what a normal palate should be, except in a very empirical way. During the last year I have had made at the American Museum of Natural History, at New York, under the direction of Dr. Boaz, all the casts of palates I have, and all the casts of school children, the length, width and height measured, and I have had constructed from those measurements what would be regarded as an average palate for a normal school child from the age of six to thirteen. This has not been done before, as far as I know, with regard to the palate. We have constant reference by writers to the significance of slight aberration of the palate. In regard to the palate of the adult we have not any standard of comparison; we do not know what an average palate of the adult is. I had taken, last year, some 200 casts of normal adults to find out what may be a standard of comparison. It is so with regard to many other stigmata of degeneration. We have no standard of comparison, and the observations are of very little value. I am willing to adopt the suggestions of Dr. Walton and do all that is in my power to make the use of the word degeneration less common and less unscientific.

Dr. C. F. Folsom: I have very little to say. I agree with Dr. Walton. When I was in London, about twenty years ago, some of my friends were interested in this subject, and had been for a number of years getting a fashionable hatmaker in London to preserve unusual forms of heads with the names of the people to whom they belonged. The series has never been published and never used except in private. There was every deviation in the form of the skull which Nordau and Lombroso would class as degeneracy, and yet the men were not men who in any sense of the word could be called degenerates. The term degeneration was used by the writers in Morel's time, and most of us are familiar with his classical work in which the term is used with reference to individuals who have reverted to a lower type or to a distant ancestral type and so inferior that one could not fail to recognize them. The term has been widened until, in Nordau's time, Byron and Tolstoi are called degenerates. Dr. Walton's distinction, it seems to me, is an exceedingly important one and important in many ways. In a medico-legal way alienists are very apt to be satisfied in classing a criminal as a degenerate, and when they label him as a degenerate they call him irresponsible, and there is a great deal of confusion of terms and a very uncertain and unscientific classification of criminals. The difficulty Dr. Channing speaks of is practical, and that is, of estimating standards. If we adopt Dr. Walton's term it is not necessary to adopt any standard, because we do not commit ourselves to any theory with regard to capacity or responsibility or anything of the sort in using the word deviate. In using the word degeneration for these individuals who are not in any proper sense degenerates but simply deviates from the ordinary type, we carry with it a sense that degeneration involves lack of capacity, judgment, self-control and self-management, which is a far different case.

Mr. Walter Soren: Really, the only reason why I was asked to come to this meeting was because Dr. Walton feared that the medical brethren might severely attack his paper, and he wanted the support of some layman of whom he could make sure in advance. I have long had the feeling, expressed by Dr. Walton and others, that the public has been led to associate an evil meaning with the terms degenerate and degeneracy. Those of us who are so unfortunate as to dabble in criminology constantly run across it; and it may be that criminologists are primarily responsible for the association in the public mind of moral delinquency with these terms. How inseparable the meaning of wrongdoing is from the word degenerate is frequently apparent in the trials of criminal cases. In the popular estimation a degenerate is synonymous with an unregenerate. For this reason alone, aside from the desirability of a more precise scientific classification, the substitute proposed by Dr. Walton would be very welcome. It would be very helpful to work I am interested in if his suggestion were adopted, and the public became impressed with the idea that a degenerate or deviate is not necessarily a moral delinquent.

Dr. Woods: It struck me that Dr. Walton's new word "deviate" is a very good expression, inasmuch as deviation is to be expected in all attributes, whether physical or mental. If we measure the physical characteristics of mankind — stature or strength, for example — and arrange the measurments in a series, we find that they fall on either side of a common center or mean. As far as investigations have gone into the measurements of mental traits — such, for instance, as Francis Galton has made — it appears that similiar deviations occur. Thus the term "deviate" carries with it the idea that we have something to be expected from the theory of chances. Degeneration, on the other hand, implies something associated with moral baseness, weakness or disease. So it seems to me the term is a very good one, as it provides for a much-needed distinction.

Dr. J. J. Putnam: I have been very much interested in Dr. Walton's paper, and I should entirely agree with him that the condition has become intolerable with regard to the use of the word degeneration. At the same time it certainly has been of a great deal of use in stimulating observation and discussion. I should think the only question in regard to the substitution of the terms deviation and deviate would be whether they really mean enough. As a matter of fact the normal condition is a devia-

tion; in other words, there is no normal. Every individual is a bundle of qualities. There is no normal, and if the people get to using freely the terms deviation and deviate there will soon be no pretence at a norm; everything will be "deviation." We might be stimulated to study slight peculiarities, and the term might lose its meaning and dignity through abuse. On the other hand I believe that the proper popularization of the term deserves encouragement.

*(To be continued.)*

## Recent Literature.

*A Textbook of the Practice of Medicine.* By JAMES M. ANDERS, M.D., Ph.D., LL.D., Professor of the Practice of Medicine and of Clinical Medicine, Medico-Chirurgical College, Philadelphia. Sixth edition, thoroughly revised. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

The sixth edition of this well-known textbook on the practice of medicine contains 1,295 pages. Although much of the material which would naturally have been included in such a book fifteen or twenty years ago is omitted, a number of new subjects have been discussed, among which paratyphoid fever, trypanosomiasis, adiposis dolorosa and amaurotic family idiocy may be mentioned. We are a little surprised that the two latter affections have not found space in earlier editions. The general appearance of the book is as heretofore. We would especially commend two admirable colored plates on the parasite of malaria.

*A Surgical Handbook.* For the use of Students, Practitioners, House Surgeons and Dressers. By FRANCIS M. CAIRD, M.B., F.R.C.S. (Edin.), Assistant Surgeon, Royal Infirmary, Edinburgh, and CHARLES W. CATHCART, M. B., F.R.C.S. (Eng. and Edin.), Surgeon Royal Infirmary, Edinburgh. With very numerous illustrations. Twelfth edition. London: Charles Griffin & Co., Limited; Chicago: W. T. Keener & Co. 1903.

This little handbook has reached its twelfth edition. On looking it over, we find that the authors have kept the book up to the progress of surgery. The book considers case-taking, treatment of patients before and after operations, anesthetics, general and local, etc.; in fact, all that a surgical dresser needs before beginning a service in the hospital. Besides that, it has in a condensed form the general information that a practitioner would care to turn to in case of necessity. The cuts are very crude but expressive. It is a good book of reference in minor surgery.

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## THE ANNUAL REPORT OF HARVARD UNIVERSITY, 1902–3.

THE annual report of Harvard presents, as usual, many data of much general interest, and instructive comments thereon, especially from the president of the university. He points out that the death-rate of the university is remarkably low, being only 4.7 in 1,000 for the 632 members of the governing boards and the university staff. Among the 4,261 students in the university there were 10 deaths, being only 2.34 in 1,000. These figures lead President Eliot to reflect:.

"How great a reduction in the death-rate may be hoped for in civilized countries from the development of general intelligence, the progress of medical science, and particularly of preventive medicine, and the enforcement of wholesome conditions of life, may be inferred from a comparison of the above statistics with the following death-rates in 1900 of certain classes of males in the city of Boston:

| | | |
|---|---|---|
| Males 15–20 years | 5.71 | per 1000 |
| " 20–25 " | 8.13 | " " |
| " 25–30 " | 9.79 | " " |

"The members of Harvard University are more intelligent than the average of the population; with a few exceptions they take advantage of all existing medical knowledge and skill; and they live under more wholesome conditions than those of the people at large. Hence their low death-rate in comparison with that of average men of like ages."

On the other hand, the amount of sickness in some of the departments, and especially in the undergraduate department, as indicated by the

"sign-offs" given in at the department office, which are supposed to state the cause of absence from usual duties, was considerable. Moreover, there was an extraordinary difference in the amount of sickness in the various departments. The students in Harvard College seem to be sick nearly twice as much as the students in the Lawrence Scientific School; and, curiously enough, the special students in these two undergraduate departments are ill much less than the regular students. The students in the college are sick more than ten times as often as the students in the professional schools. The figures given are not taken very seriously and in all probability do not correspond with any real facts. "It is the opinion of the *Medical Visitor* that a large proportion of the 'sign-offs' of undergraduates are uncalled for. The real disease is what soldiers call 'malingering,' which is a moral and not a physical disorder." Attention has been called to this in a previous report.

The Stillman Infirmary was in use during the year 1902–3 for the first time, and is reported as having amply demonstrated its usefulness and the excellence of its appointments. Two hundred twenty-three cases were admitted, of which 146 were discharged well, 74 were discharged relieved. The private-room patients numbered 89 and the ward patients 134. Good progress has been made toward finding means of support for the infirmary, but much remains to be done.

President Eliot states that the exercises most used by the students are gymnasium exercises, lawn tennis, hand-ball and golf. The games in which the public is most interested — namely, football, baseball and rowing — are serviceable to much smaller numbers of students, no one of these three sports serving more than one-sixth of the total number of students who reported the exercises they used. The game which has been conducted at Cambridge with the least intelligence and success is football — except from a pecuniary point of view.

"The breaking up of college work for the individual student by frequent absences to play games at a distance from Cambridge is an evil which ought to be checked. It is a greater evil than formerly, now that intercollegiate games take place all the year round; that is, in winter as well as in spring and autumn."

The dean of the college reports that the tendency at Harvard at the present time to complete the work for the degree of Bachelor of Arts in three years is very strong. Of the class of 1903, with a membership of 381, no less than 146 men completed their academic work in three years. Of these men a few go into business, but by far the greater proportion carry on professional or graduate studies either at Harvard or at other universities. The president considers that, with the present rate of increase, it probably will not be long before the majority of each entering class will obtain the Bachelor's degree in three years. On the other hand, he points out that "the ages at which young men are taking the degrees of Master of Arts, Master of Science and Doctor of Philosophy at Harvard University are still deplorably high. A young man who has come steadily on through all the grades of his education ought to procure the degree of Master of Arts with ease by the time he is twenty-three years old. Of the 94 men who took that degree at Commencement, 1903, 12 were under twenty-three, 16 were twenty-three, and 66 were over twenty-three. Of these 66, 35 were over twenty-eight. The degree of Doctor of Philosophy ought to be easily taken by the age of twenty-five. Last June, of the 28 men who received the degree of Doctor of Philosophy, 2 were under twenty-five, 4 were twenty-five, and 22 were over twenty-five. More than half the candidates were over twenty-eight. These figures show how irregular, broken and often belated the higher education of young Americans in arts and sciences still is. The candidates for these degrees, as the dean of the Graduate School points out (p. 139), are often men who come to the university for a year or more of study after having been for several years engaged in active pursuits."

The year 1902–3 is reported as having been for the Medical School a very interesting, but financially a bad one. A considerable deficit is stated to have been due in part to the progressive reduction of the number of students caused by the requirement of a degree for admission. The plans and estimates for the new buildings of the school were completed, the contracts were signed and construction is now well under way. Moreover, transactions were concluded with the trustees of several hospitals for their occupancy of portions of the large tract of new land belonging to the school. One urgent need of the Medical School — a dormitory with a common-room and restaurant attached — has not yet been provided for. Although the number of students has temporarily diminished, the activity and variety in medical

and surgical research has increased. A tentative schedule has been adopted for an elective fourth year. The "block" system of instruction continues under trial.

The dean reports that "the comparison of scholarship attained by the different classes since the requirement of a degree for admission has been in force proves the wisdom of the step taken — so far as the qualifications of the future graduate are concerned.

"The increase in the number of men taking graduate courses was very marked, the receipts being double that of the previous year, and the number of graduates attending the courses showed an increase of 64%. The summer courses showed also a decided gain in the number of students and of the courses taken."

During the year no less than four professors in the Medical School resigned: Professor Draper of the Department of Legal Medicine, Professor Wadsworth of the Department of Ophthalmology, Professor Porter of the Department of Surgery and Professor Dexter of the Department of Anatomy.

The Dental School stands greatly in need of an endowment, and as it also has raised its standard of admission its ability to meet expenses from receipts is likely to be further curtailed.

## THE ETIOLOGY AND PATHOGENESIS OF PANCREATIC LITHIASIS.

PANCREATIC lithiasis being far less frequent than the hepatic or urinary forms, statistics are wanting for this reason so that it is difficult to say whether or not calculi of the pancreas are more infrequent in the male or children than in the female, as is the case with biliary lithiasis. The time of life at which this affection appears and whether climate has any influence in its production are as yet unsettled questions, and all that can be said is that the pancreatic calculus often coincides with other lithiases in the same individual, and from this fact it is quite probable that it has the same etiology.

Pancreatic lithiasis consequently belongs to that vast group of affections united under the name of arthritism. In point of fact direct and homogenous heredity of lithiasis is infrequent, but one often notes the pathological antecedents of calculous subjects, such as gout, rheumatism, obesity, asthma, biliary or urinary lithiasis, certain chronic dermatoses, migraine or hemorrhoids. All these affections are associated, succeed or substitute each other in the same families or in the same subject with such frequency that a general cause has been attributed to them. This general cause is due to a permanent hereditary disturbance of nutrition, giving rise to tardy oxidation, delay in the nutritive changes and uricemia. A sedentary life and also an excessive amount of food appear to play the *rôle* of predisposing causes in the formation of pancreatic calculi. Perhaps one might also add a generalized arteriosclerosis.

The afferent cause of pancreatic lithiasis in no way differs from that of biliary calculi. The pathologically changed pancreatic structures without doubt also contribute to the precipitation of the salts contained in the pancreatic juice and thus tend to form foreign bodies.

The various changes which are the starting point of calculi formation are both external and internal. Among the former we would mention neoplasms compressing the pancreatic ducts, such as primary or secondary carcinoma, fibroids or cysts. The internal lesions are those producing stricture of the ducts either of an inflammatory or neoplastic nature. We could also add as a cause an obstruction of the canal of Wirsung at its distal end.

All these different conditions favor the precipitation of the pancreatic salts and finally give rise to the formation of stones in varying number and size, but which do not necessarily have a central nucleus, as do those arising in the urinary tract, or gall bladder.

Other causes of pancreatic lithiasis have been put forward; one of the principal ones being direct infection of the pancreatic ducts from the digestive tract, as is the case of the gall bladder, or infection of the vessels of the gland by toxins manufactured during one of the infectious diseases.

The experiments of Duclaux have shown that in a normal state the pancreatic juice is aseptic. Now should its chemical composition become altered or should its free exit become hindered from narrowing of the ducts, the pancreatic juice becomes changed; it has become an excellent soil for the development and growth of pyogenic bacteria. Its component salts are precipitated and are the starting point for the formation of more or less voluminous calculi.

The toxins elaborated during infectious diseases, typhoid fever among others, act in the same fashion; so also do foci of suppuration in the neighborhood of the pancreas. These are causes which, by producing epithelial or fibrous pancreatites, set up inflammatory processes in

the canaliculi and ducts of the gland, and these, by the various changes produced in the pancreatic juice, engender lithiasis. One may admit that, in the case of the pancreas, there is infection of the excretory ducts, an angiopancreatitis, just as there is an angiocholitis or pyelonephritis.

The question now arises, Is it microbic infection or the diathesis of the subject which dominates the pathogenesis of pancreatic lithiasis? An answer to this may be sought thus: If typhoid intestinal catarrh propagated to the bile ducts becomes a lithogenous catarrh, if, in other words, the bacillus of typhoid is capable of producing biliary lithiasis, the question relative to the pancreas is a settled one. It remains to establish what other bacteria play such a part, other than the specific agent of typhoid. It is quite possible for any bacteria pullulating in the mucus of the bile ducts and gall bladder to set up chemical changes leading to a deposit of the mineral constituents of the bile. Consequently biliary lithiasis results from the manner of penetration of bacteria into the ducts and gall bladder, their number and especially the composition of the mucus. Should the latter hypothesis express the reality, the soil would be more important than the seed; biliary lithiasis would no longer be an accidental phenomenon, but would remain the expression of a previous condition of the organism, of an hereditary or congenital modification *totius substantiæ*, a diathesis. Pancreatic lithiasis should not, we think, form an exception to the rule, since it belongs to the same pathological family.

## A STUDY OF RINDERPEST IN THE PHILIPPINE ISLANDS.

A PRELIMINARY report on the study of rinderpest of cattle and carabao in the Philippine Islands from the Serum Laboratory of the Bureau of Government Laboratories, published under the auspices of the Department of the Interior, is at hand. This report from the pen of Dr. James W. Jobling, director of the laboratory, concerns itself particularly with information regarding the disease for the benefit of cattle shippers and breeders, giving the symptoms, means of prevention and treatment of the affection.

It appears that the disease, rinderpest, dates back almost to the Christian era, when an epidemic was described which bears a close resemblance to those later observed. Rinderpest has led to the death of several million cattle in Europe alone, the disease usually appearing in the form of epidemics. In 1708 the affection was prevalent in Russia, whence it spread to all parts of Europe, leading to an enormous death-rate among the cattle attacked. Apparently the disease first appeared in the Philippine Islands in 1882, and since then has extended to most of the islands of the archipelago, with a loss among cattle and carabao estimated by some as 90%.

The actual cause of the disease is not known, but by analogy it is fair to assume that a microörganism is ultimately responsible. Transmission is usually by infected ground rather than by atmosphere or running water. The danger apparently lies in careless disposition of the objects which have come in contact with sick animals. Carcasses of animals are also liable to spread the infection as well as the hides. The danger to cattle shippers lies in transporting animals in vessels which previously have been used in the transportation of diseased animals. Experimentally it has been shown that the injection of 0.1 cc. of blood from a sick animal is sufficient to reproduce the disease. In general, experience shows that if the precaution were general of isolating animals sick with the disease the danger of infection would be very greatly reduced.

The incubation period is from six to ten days. There is a preliminary rise of temperature; a disinclination on the part of the animal to take food; infection of mucous membrane of the eye, with a slight watery discharge; increased discharge of mucus from the nose; evidence of great thirst and general apathy. The animal ultimately becomes greatly prostrated, weaker and finally dies, with an increase of the symptoms noted, in a period of from two to ten days from the first rise of temperature. Postmortem the tissues show various forms of inflammatory change, together with distinct alterations in the intestinal tract. Peyer's patches are often enlarged, but apparently never ulcerated.

Practical suggestions are given in the pamphlet before us regarding measures of prevention, which consist essentially of complete isolation of the diseased animal, together with directions as to the disposal of animals dead of the disease. The hides, if preserved at all, should be thoroughly disinfected. Investigation is progressing regarding immunization by various methods, some of which are encouraging. Regarding immediate treatment, it may be said that up to the present time no treat-

ment has proved of any benefit when once an animal has contracted the disease. Various experiments made at the laboratory bear out this observation previously made by others. It is, therefore eminently desirable that prevention should be thorough and as complete as possible. In conclusion Dr. Jobling makes the following pertinent statement:

As no treatment has any effect upon the course of rinderpest, and as it has been proven that an animal which has been inoculated and has shown a good reaction seldom contracts the disease, it is evident that it is not only necessary to inoculate all the animals now in the Philippine Islands but also those to be imported. By this means it will be possible to completely remove rinderpest from the islands, but if such precautions are not taken, it will continue indefinitely, spreading from one point to another, killing off a large percentage of the young animals, and so working a continual hardship on the people.

We have no doubt that this disease will yield to the investigations which are now being made and which, no doubt, will be still more thoroughly carried out in the future.

## ANTITOXIN: THE COST OF ITS PRODUCTION.

In view of our statement (Jan. 28) "that under existing circumstances it would seem as if Massachusetts had no immediate reason to regret her arrangements for making her own serum," and in view of several articles which have recently appeared in different medical journals during the present season relative to the price of antitoxin as sold to consumers throughout the country, we have obtained from the Massachusetts Board of Health the following figures relative to the cost of production during the four years ended March 30, 1903. The production and output of diphtheria antitoxin depends largely upon the prevalence of diphtheria from year to year. For example, the total number of reported cases of diphtheria in Massachusetts in these four years was 36,604 and the mean annual number was consequently 9,151. The maximum number was 12,641, in 1900, and the minimum 7,134, in 1899. The number of bottles of antitoxin produced and distributed in the four years was 159,072, the maximum being 53,389 bottles, in 1900, and the minimum 31,997, in 1899, the average number distributed for each reported case being a little more than four bottles.

The statement that a considerable percentage of bottles is returned to private producers unused (to be replaced by them with a fresh product) applies equally to the State board's product, since unused packages are returned to the office of the board, after becoming inert in the hands of local boards of health. This fact would probably reduce the actual consumption per case to less than four bottles each.

The product produced and issued by the State board during those four years has been put up in small bottles, each containing 1,500 units of antitoxin, the quantity varying slightly from $3\frac{1}{4}$ to $4\frac{3}{4}$ cc., according to the strength of the product prepared. It has given uniform satisfaction to physicians and boards of health throughout the State, as to the quality of the product and the results obtained from its use. The cost of production during these four years was $31,543 for the 53,389 bottles, or 19.8 cents each. Since a package of this strength and size is not mentioned in the advertised statements of manufacturers, an exact comparison cannot be made. It is safe to call the retail price of a similar article at least $2.75, at which price the cost to the people of the State would not have been less than $437,438 for the four years. A saving of $405,905 was therefore effected to the commonwealth by this method of production. It is proper to say that the Board of Health enjoys some advantages for economical production which a commercial house would not have. The effect of this, however, upon the cost must be small.

## MEDICAL NOTES.

SMALLPOX IN PHILADELPHIA. — Smallpox in Philadelphia is showing a tendency to decrease. There are still, however, each week a very considerable number of new cases, and deaths continue to occur. It has been ordered that visitors to the Philadelphia Hospital must either show satisfactory evidence of vaccination or else be vaccinated before entering the wards. Inmates must be vaccinated before visiting relatives in the city. These somewhat stringent measures are adopted to prevent the spread of the disease to the 5,000 inmates of the hospital.

DEATH OF DR. E. A. DE SCHWEINITZ. — Dr. E. A. de Schweinitz, chief of division in the Agricultural Department of the Government, died in Washington, Feb. 15. He was born in Salem, N. C., Jan. 18, 1866, and later was graduated from the University of North Carolina. He received the degree of Ph.D. from

Göttingen, and M.D. from Columbian University. He had attained a high rank as a chemist, and had published papers of value on bacteriological topics. For several years past he had been dean of the Medical Department of the Columbian University.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Feb. 17, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 41, scarlatina 28, typhoid fever 12, measles 240, smallpox 0.

Measles in Connecticut. — According to the monthly bulletin of the Connecticut State Board of Health, measles is prevailing as an epidemic in many towns of that state. Dr. Lindsley in his report considers the spread of the disease as in a measure due to a certain misunderstanding of the town regulation on the part of health officers. This regulation states that all cases of diphtheria and primary cases of measles shall be quarantined in such manner as the health officer may direct. Neglect of this rule has apparently led to the spread of the disease.

Annual Meeting. — The annual meeting of the Boston City Hospital Alumni Association was held on the 10th of February. The hospital was open to the graduates during the day, and a luncheon was given by the trustees at one o'clock.

The business meeting was held at Young's Hotel at six o'clock and at seven one hundred and twenty-four men sat down to dinner. Dr. Charles P. Bancroft of Concord, N. H., presided.

Speeches were made by Dr. Francis S. Watson, who spoke very beautifully of the late Dr. William Ingalls, for many years a surgeon to the hospital; Mr. Edmund Codman for the trustees; Mr. Moses of the New Hampshire Forestry Commission; Mr. Lyford, naval officer of the Port of Boston; Mr. Leach, president of the Brown Alumni; Dr. John G. Blake and Dr. Cheever. Dr. Paul Thorndike and Dr. J. Bapst Blake delighted the alumni with a humorous song.

Copies of a new catalogue were given to the members.

### NEW YORK.

Address on Pancreatic Disease. — In assuming the duties of president of the Medical Association of the Greater City of New York Dr. Thomas E. Satterthwaite delivered an address, the greater portion of which was devoted to a consideration of pancreatic diseases and their treatment. This was by way of introduction to a general discussion on this subject, which was participated in by Drs. John C. Hemmeter of the University of Maryland, Richard M. Pearce of the Albany Medical College, George P. Müller of the University of Pennsylvania, Charles G. Stockton of the University of Buffalo, Glentworth R. Butler of Brooklyn and John B. Deaver of Philadelphia.

College of Pharmacy and Columbia University. — Arrangements have been made, subject to the approval of the college authorities, for uniting the New York College of Pharmacy with Columbia University. Nicholas Murray Butler, president of Columbia, has been nominated as president of the college by the trustees of that institution, and Prof. Charles F. Chandler, now president of the college, as first vice-president. Several years ago proposals by the College of Pharmacy to unite with Columbia had no result, but recently the university has determined that some provision for the teaching of pharmacy must be made in its educational system. The nominations for second and third vice-presidents respectively are William Jay Schieffelin and Herbert D. Robbins, both well-known members of large manufacturing drug houses.

A Tribute to Dr. Darlington. — In his address, on Feb. 8, on retiring from the presidency of the Medical Association of the Greater City of New York, Dr. Andrew H. Smith referred to the appointment of Dr. Darlington (one of the charter members of the association) as president of the board of health in the following words: "For the first time since its organization the health department has a medical man at its head. The insanity of our lawmakers, that in express terms forbade that this should ever be the case, experienced a lucid interval at the moment when the new city charter was under revision, and now at last it is recognized that knowledge of the laws of health does not unfit a man to be president of the health board, even as a knowledge of law does not disqualify a man for the bench, nor familiarity with finance for the presidency of the Chamber of Commerce. I am sure that I express the sentiment of this association in felicitating the city on the one hand and Dr. Darlington on the other."

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, FEB. 6, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseasee. | Typhoid fever. |
|---|---|---|---|---|---|---|---|---|
| New York . . | 3,908,644 | 1,590 | 438 | 22.95 | 22.89 | 3.90 | 3.08 | 1.51 |
| Chicago . . . | 2,021,086 | 596 | 162 | 18.12 | 25.33 | 2.01 | 2.18 | 1.00 |
| Philadelphia | 1,407,968 | 623 | 174 | 24.39 | 21.66 | 2.25 | 3.05 | 1.28 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 216 | 55 | 26.85 | 15.74 | 2.78 | 3.70 | .93 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 150 | — | 24.66 | 22.66 | 4.00 | 4.67 | .67 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 62 | 20 | 9.04 | 22.60 | — | 1.13 | 1.13 |
| Boston . . . | 617,950 | 197 | 47 | 16.75 | 19.29 | 1.52 | 1.00 | .50 |
| Worcester . . | 136,925 | 31 | 11 | 6.45 | 16.13 | — | — | — |
| Fall River . . | 119,349 | 47 | 17 | 21.27 | 17.01 | 2.13 | 2.13 | 2.13 |
| Lowell . . . | 104,402 | 26 | 8 | 7.70 | 23.10 | — | — | — |
| Cambridge . | 100,998 | 38 | 6 | 26.31 | 13.15 | — | — | 2.63 |
| Lynn . . . . | 73,875 | 20 | 3 | 10.00 | — | — | — | — |
| Lawrence . . | 72,348 | — | — | — | — | — | — | — |
| Springfield . | 72,020 | 8 | — | 25.00 | — | — | — | — |
| Somerville . | 70,413 | 28 | 9 | 17.85 | 14.28 | 3.57 | — | 3.57 |
| New Bedford | 68,863 | 22 | 2 | 22.72 | 13.63 | — | — | — |
| Holyoke . . . | 50,538 | 10 | 4 | 40.00 | 10.00 | — | — | — |
| Brockton . . | 46,601 | 13 | 3 | 15.40 | — | — | — | — |
| Newton . . . | 39,310 | 10 | 3 | — | 10.00 | — | — | — |
| Haverhill . . | 39,061 | 11 | 4 | — | 9.09 | — | — | — |
| Malden . . . | 37,205 | 14 | 1 | 14.28 | 35.70 | — | — | — |
| Salem . . . . | 37,188 | 8 | 2 | 12.50 | 25.00 | — | — | — |
| Chelsea . . . | 36,499 | 13 | 4 | 7.70 | — | — | — | — |
| Fitchburg . . | 36,335 | 7 | 2 | 14.30 | 28.60 | — | — | — |
| Taunton . . . | 34,577 | 10 | 3 | — | 30.00 | — | — | — |
| Everett . . . | 30,209 | 4 | 2 | 50.00 | — | — | — | 25.00 |
| North Adams | 29,201 | 12 | 3 | 41.65 | 16.67 | 16.67 | — | 16.67 |
| Quincy . . . | 26,798 | 1 | 1 | — | — | — | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 3 | — | — | 33.33 | — | — | — |
| Brookline . . | 23,576 | 5 | — | — | 40.00 | — | — | — |
| Pittsfield . . | 22,870 | 2 | — | 100.00 | — | — | — | — |
| Medford . . | 21,956 | 5 | — | — | 20.00 | — | — | — |
| Chicopee . . | 21,692 | 7 | 2 | — | 14.30 | — | — | — |
| Northampton | 20,314 | 2 | 2 | — | — | — | — | — |
| Beverly . . . | 15,807 | 8 | 1 | 12.50 | 12.50 | 12.50 | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 2 | — | — | 50.00 | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 6 | 3 | — | 83.35 | — | — | — |
| Newburyport | 14,478 | 4 | 0 | — | 50.00 | — | — | — |
| Woburn . . . | 14,315 | 3 | — | — | — | — | — | — |
| Melrose . . . | 13,819 | 5 | — | — | 20.00 | — | — | — |
| Westfield . . | 13,809 | 6 | 1 | — | 33.33 | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 5 | 0 | — | 20.00 | — | — | — |
| Revere . . . | 13,609 | 3 | — | 33.33 | — | 33.33 | — | — |
| Framingham | 12,974 | 4 | — | 25.00 | 25.00 | — | — | — |
| Peabody . . | 12,406 | 2 | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 5 | 2 | 20.00 | — | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 3 | 1 | — | — | — | — | — |
| Weymouth . | 11,350 | 5 | 2 | — | 20.00 | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,852; under five years of age, 998; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 823, acute lung diseases 844, consumption 404, scarlet fever 48, whooping cough 10, cerebrospinal meningitis 12, smallpox 17, erysipelas 22, puerperal fever 13, measles 30, typhoid fever 42, diarrheal diseases 100, diphtheria and croup 108.

From whooping cough, New York 3, Philadelphia 4, Pittsburg 2, Boston 1. From smallpox, Philadelphia 16, Pittsburg 1. From cerebrospinal meningitis, New York 6, Baltimore 1, Boston 1, Fall River 1, Lynn 1, Brockton 1, Gardner 1. From erysipelas, New York 7, Chicago 3, Philadelphia 5, Baltimore 2, Providence 1, Boston 2, Springfield 1, Pittsfield 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,425, for the week ending Jan. 23, the death-rate was 18.1. Deaths reported, 5,304; acute diseases of the respiratory organs (London) 208, whooping cough 121, diphtheria 64, measles 114, smallpox 1, scarlet fever 36.

The death-rate ranged from 2.3 in Kings Norton, to 39.4 in Merthyr Tydfil; London 17.4, West Ham 22.6, Brighton 17.3, Southampton 14.8, Plymouth 17.8, Bristol 19.3, Birmingham 18.4, Leicester 12.6, Nottingham 21.4, Liverpool 22.8, Bolton 21.7, Manchester 20.6, Salford 20.7, Bradford 17.0, Leeds 20.3, Hull 17.3, Cardiff 18.3, Rhondda 20.5, Barrow-in-Furnace 8.7, Wigan 23.2.

## METEOROLOGICAL RECORD.

For the week ending Feb. 6, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. Daily mean. | Thermometer. Daily mean. | Thermometer. Maximum. | Thermometer. Minimum. | Relative humidity. 8.00 A.M. | Relative humidity. 8.00 P.M. | Relative humidity. Daily mean. | Direction of wind. 8.00 A.M. | Direction of wind. 8.00 P.M. | Velocity of wind. 8.00 A.M. | Velocity of wind. 8.00 P.M. | We'th'r * 8.00 A.M. | We'th'r * 8.00 P.M. | Rainfall in Inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. . 31 | 30.04 | 31 | 39 | 23 | 76 | 86 | 81 | S W | S | 10 | 9 | C. | O. | 0 |
| M. . 1 | 29.43 | 24 | 39 | 10 | 98 | 51 | 74 | E | N W | 2 | 26 | G. | O. | .03 |
| T.. 2 | 30.04 | 26 | 34 | 6 | 50 | 71 | 62 | W | S | 8 | 6 | C. | O | 0 |
| W. 3 | 30.06 | 26 | 35 | 17 | 52 | 41 | 46 | W | S W | 18 | 7 | C. | C. | .02 |
| T.. 4 | 30.22 | 16 | 21 | 11 | 69 | 37 | 53 | W | W | 12 | 19 | C. | C. | 0 |
| F.. 5 | 30.19 | 18 | 25 | 11 | 54 | 70 | 62 | S W | W | 14 | 5 | O. | C. | 0 |
| S.. 6 | 29.94 | 22 | 29 | 15 | 94 | 77 | 86 | S E | N | 8 | 5 | N. | O. | .33 |
| ☞ | 29.99 | | 32 | 13 | | | 66 | | | | | | | .38 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

DELAYED PUBLICATION.—The continued strike among printers and pressmen is responsible for delays in issuing the JOURNAL.

## RECENT DEATHS.

H. LYLE SMITH, M.D., of Hudson, N.Y., died on Feb. 11, in his sixtieth year.

AUGUST KREHBIEL, M.D., a retired physician of New York, died on Feb. 11, in his sixty-fifth year. He was graduated from the University of Würzburg in 1864.

CHARLES AUGUSTUS WHEELER, M.D., M.M.S.S., of Leominster, died Feb. 11, 1904, aged sixty-seven years.

## EXAMINATIONS FOR ARMY MEDICAL SERVICE.

THE examination of applicants for appointment as Assistant Surgeon in the United States Army will be resumed in Washington immediately after the close of the present session of the Army Medical School; it will embrace the full examination (as heretofore), at the conclusion of which those found qualified will be commissioned. Full information as to the requisite qualifications for appearance for examination, method of application, nature and scope of examination, etc., may be obtained upon application to the Surgeon-General U. S. Army, Washington, D.C. The examining board will probably reassemble about the middle of April next, and those desiring to present themselves before the board should make application at once. Applicants are restricted in age to thirty years, and one year's hospital experience or its equivalent in private practice is required.

## BOOKS AND PAMPHLETS RECEIVED.

Transactions of the American Dermatological Association at its Twenty-seventh Annual Meeting held in Washington, D. C., May 12, 13 and 14, 1903, in connection with the Sixth Triennial Session of the Congress of American Physicians and Surgeons.

Leprosy in the Hawaiian Islands. By Judson Daland, M.D. Reprint.

The Complete Medical Pocket-Formulary and Physician's Vade-mecum. By J. C. Wilson, A.M., M.D. Third Revised Edition. Philadelphia: J. B. Lippincott Co.

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, Neurology, Pediatrics, Obstetrics, Gynecology, Orthopedics, Pathology, Dermatology, Ophthalmology, Otology, Rhinology, Laryngology, Hygiene and Other Topics of Interest to Students and Practitioners. By leading members of the Medical Profession throughout the World. Edited by A. O. J. Kelly, A.M., M.D., with the collaboration of twelve others. With regular correspondents in Montreal, London, Paris, Berlin, Vienna, Leipsic, Brussels, and Carlsbad. Vol. IV. Thirteenth Series, 1904. Philadelphia: J. B. Lippincott Co.

Rabies. Its Place amongst Germ-Diseases, and its Origin in the Animal Kingdom. By David Sime, M.D. Cambridge: The University Press. 1903.

# Original Articles.

## THE GENERAL MANAGEMENT OF DIABETES.[1]

BY FREDERICK C. SHATTUCK, M.D., BOSTON,
*Jackson Professor Clinical Medicine, Harvard Medical School.*

ALTHOUGH pathological knowledge affords the best basis of therapy it is not always the sole basis. We cured malaria long before we knew its cause. Syphilis was controlled long before bacteriology was born, and all that we know of the cause of syphilis to-day is that it must be dependent upon some form of living organism having the power of indefinite reproduction.

When we use the term diabetes mellitus let us clearly grasp the fact that we speak probably of a symptom rather than a disease; that the presence of sugar in the urine means a greater or less impairment, temporary or permanent, of the power of the organism to consume sugar; that while our knowledge of the starting point of such impairment is very imperfect, we have good reason for believing it may be as widely separated as Langerhans' islands in the pancreas, the liver, or several portions of the central nervous system; that during life, at least, we can rarely determine the point of origin in a given case.

Useful as the term glycosuria may be for clinical purposes as denoting the milder grades of the condition, in these brief remarks I shall, for simplicity's sake, include all grades of the failure to burn sugar under the term diabetes. Although we treat a condition and a patient, not a disease and a patient, treatment may be of much value, resulting in prolongation of life and promotion of comfort, sometimes in absolute cure. The means to the end are diet and mode of life, the *rôle* of drugs being, as I am sure my friend Dr. Thomson will agree, a subordinate one.

Prevention, being the highest form of medicine, comes justly first. What can we do to prevent diabetes? Very little. Human life in civilized regions unavoidably tends to become more complex, the struggle for existence fiercer, competition of all kinds, but especially among brain workers, more keen; and we must recognize nerve overstrain as one of the predisposing causes of diabetes. Even if it were practicable and wise to make periodical tests of the sugar-burning capacity of all our adult patients in active life, how many would heed the danger signal of sugar in the urine after the ingestion of a hundred grams of sugar fasting? Some even of the godly say, "Tush! there shall no harm happen unto me," showing an attitude of mind possibly more conducive to happiness and comfort in life than that of Martha, "careful in many things."

I have in mind a man approaching middle age whose great-grandmother, grandmother and mother all died of diabetes,[1] and whose own urine has been saccharine. With such an inheritance it is fairly in place to examine the sugar combustion power of such members of the family as we can, and to enjoin a careful life as to diet and strain. Until we know far more than at present, I do not see much more we can do in either special or general prophylaxis.

Time does not permit, even if the occasion demanded, much detail; and I propose, therefore, to deal mainly with the principles which, as it seems to me, should guide us in the management of our diabetic patients. A diabetic who consults us and has not been treated should, I think, be told to collect his twenty-four hour urine for, say, three successive days, without change in either diet or mode of life, the amount of urine and sugar being important factors in the estimation of the gravity of the case. If, on the other hand, the patient is under rational treatment which has reduced or done away with his sugar it is rarely desirable to let down the bars, as experience shows that sugar production is in many cases more easily controlled the first than on subsequent attempts. In general, with the exception of cases which are evidently very mild or severe in type it seems to me wiser to enforce an absolute or nearly absolute diet at once, — just as it is more humane to complete the shortening of a dog's tail at one rather than in successive operations. The very mild case probably does not require great restrictions. If acetone and diacetic acid are present a radical and rapid change in diet is dangerous. The striking improvement in strength, weight, and general symptoms which we so often see rewards the patient for his self-denial, and thus encourages him to persevere.

So wide is the variation between the different cases of diabetes, and so emphatically do we treat the patient, the more we individualize our patients, applying general principles to special cases, the better results shall we have. The diet list should be adapted to each case. I do not like the printed lists disinterestedly furnished us by some of the manufacturers of food products. They encourage laziness and routine — those two cardinal vices. Moreover, quantity is only next in importance to quality in the food of a diabetic. An approximate adjustment of the amount of food to the requirements of the special case must be aimed at. The body weight should be noted at stated intervals, weekly during the earlier part of treatment, at longer intervals later and in the more favorable cases. I doubt the wisdom or necessity in most cases of such accuracy as some of the modern German writers seem to enjoin; and yet, although it may not be essential for the patient to provide himself with scales and weigh out his portions, nor to dine in scales like Dr. Sanctorius of old, he should be given a rough idea of the size of a given weight of bread, meat, and fat. An increase in the amount of fatty food may be of importance nearly comparable to that of a diminution of starch.

The weight of the patient, his general symp-

[1] Read before the Medical Society of the State of New York at its Annual Meeting, Albany, Jan. 26, 1904. Symposium on Diabetes.

toms or their lack, and the condition of the urine, taken together, will generally prove safe guides as to the judiciousness of the diet. Under a strict diet the sugar and polyuria, one or both, are practically sure to diminish, and may disappear. In a favorable case I expect to see the sugar disappear in two or three weeks, the weight increasing. How long a strict diet is to be maintained must depend upon the type of the disease, which, again, largely depends upon the age and nutrition of the patient. In milder cases I believe it to be wiser to keep the patient on a strict diet for one to two months, and then to test the tolerance for starch, giving first 2 or 3 oz. of bread daily and increasing the amount weekly as toleration warrants. In more severe cases which are rendered sugar free with difficulty one must be more careful in allowing bread, and watch its effect even more closely. In the severest cases, in which the diet does not cause the sugar to disappear, it is ordinarily better to allow a fixed amount of bread. It is certainly so if under the strict diet weight and strength fall off. The sugar is then made from the nitrogenous food or the body tissues and the danger of acid intoxication is increased.

A diabetic who loses weight does so for one of three reasons: His diet is not strict enough; or it is too strict; or, finally, the case is a hopeless one. Every case is a law unto itself. Severe diabetes is not a disease for a lazy doctor to treat, or for a careless or willful patient to well endure.

As I have grown older I find that I have more and more discarded the use of diabetic breads. No diabetic bread which is palatable for any length of time is safe. We must always reckon with human greed for gold, and I much prefer to give ordinary or perhaps graham bread, the percentage of sugar-forming material in which is known, than to run the chance of deluding myself and my patients. I once visited incognito the agency of a well-known company which purveys for diabetics. "Have you bread for diabetics?" "Yes." "How much starch does it contain?" "None." "What! No starch?" "None!" My friend, Professor Wood, however, said the bread contained 60% of sugar-forming material. Gluten flour from another manufacturer had a low sugar-forming percentage one year and a high one the next.

If alcohol is considered desirable it is best given in the form of whiskey or brandy, a brut champagne, Moselle wine, or one of the California hocks, some of which contain practically no sugar.

I have never used the skimmed-milk cure as advocated by Donkin. To remove the fat and leave the sugar does not seem consistent with common sense. I concede that it has worked well in some cases, but wonder if the explanation does not lie in the fact that these patients had been eating far too much and would have done equally well under a diet judiciously restricted in quantity as well as quality.

A day of starvation once every two or three months is very useful in some cases. Austin Flint's plan of keeping a patient in bed from Saturday night until Monday morning, fasting, has seemed to me a good one. If hunger is felt a little beef tea may be a comfort without really invalidating the fast.

The bowels should always receive careful attention. All the more so if acetone and diacetic acid reactions are present in the urine. The skin also should not be neglected. Hot or vapor baths at home followed by active friction, a Turkish or Russian bath at a well-managed establishment, if the general state of the patient permits, are useful adjuvants, especially if the skin be harsh, dry, and inactive. Ralfe thinks he has succeeded in preventing impending coma by the hot bath. In milder cases, with the skin still relatively active, the tonic effect of a daily cool or cold bath, provided that reaction be prompt, thorough, and maintained, is of service. Diabetics are sensitive to cold, and wool or silk underclothing of light or moderate weight is usually desirable. I think we generally err in this country in the colder season by wearing too heavy underclothing. We keep our houses at summer temperature, and voluntarily load ourselves with clothing which we would think justified revolution if a czar compelled its adoption. A diabetic should have several overcoats of varying thickness and warmth, and can scarcely be too well wrapped up while driving in an open carriage, the only form of conveyance really fit to drive in except in stormy weather.

Worry and anxiety are to be avoided as far as possible. Such avoidance is — alas! — only too often easier to enjoin than to secure; but we must do our best. The man of large affairs and responsibility must be helped to systematize his work, to throw every possible detail on subordinates, and to shorten his working hours. How many of us inspect the down-town offices of our patients in active business in order to remedy defects of light, ventilation, and heating of the apartments where more time is passed than anywhere save in the bedroom? In many cases the sum of small advantages forms a large aggregate, and sunshine and open fires are better classed among the greater than the small advantages. In a word, we are dealing with a class of people whose resistance and vitality are more or less diminished; in many of whom, we have reason to believe, the nervous system is especially at fault. The desirability of moderating nerve strain is therefore obvious.

Muscular exercise is useful directly, in that it burns sugar; indirectly, in that it aids blood and lymph circulation. It is therefore peculiarly adapted to diabetics, provided that thought and intelligence govern its use. In excess it is potent for harm. Outdoor exercise is far better than in any confined space, if the condition and circumstances of the patient permit. As to the form — walking, golf, tennis, horseback — it must depend upon the purse

and taste. We are all so constituted that what we enjoy is, on the chances, better tolerated than what we dislike. Calisthenics and the various forms and degrees of massage, carefully adapted to the individual patient, are for the severer cases. Patients debilitated from any cause rightly ask direction as to the amount of exercise they can take. If the intelligent co-operation of the patient can be secured, better results will follow, even in sanitarium treatment; and most diabetics are not, and cannot be, under constant supervision. The best rule I have been able to formulate is the following: The patient is told, "You exercise; you feel tired; you rest an hour and fatigue passes. That fatigue was physiological, healthy, beneficial. If, on the other hand, after you rest you are still tired, you have done too much."

A change of climate during our Northern winter, with all that such change carries with it in freedom from care and in the ability to be in the open air, may be of great importance.

I am painfully conscious of the sketchiness of these remarks, but try to derive some consolation from the thought that, after all is said, is not he the best practitioner of medicine who, reasonable diagnostic acumen being assumed, at the expense of his own gray matter most skillfully adapts general principles to the particular needs and circumstances of the special case? In passing it occurs to me to add that, unless my experience has been exceptional, it is unusual to observe a case of diabetes from start to finish. The very rapid cases are not very common. Others co-operate heartily for a time; the restrictions then become irksome, and they sometimes shun the doctor, partly because they see that he does not attach much importance to drugs, the giving of which still represents too largely in the public mind the function of the physician, and partly because they do not want to exercise the self-denial which they feel will be demanded of them. In the milder cases past middle life perhaps no great harm results. It is the cases of medium severity which are most apt to suffer from this ostrich-like procedure. We can roughly classify our diabetic patients into those of (*a*) severe, (*b*) moderately severe, and (*c*) mild type.

The classification of any given case can usually be more accurately made after than before a suitable diet is enforced, as some cases prove more or less manageable than we expect when we first see them. And yet, classify as we will, there is every possible gradation between the extremes.

I trust that a few illustrative cases will not trespass too much upon your patience. A patient under twenty is sure to be of the severest type, and is, with very rare exceptions, beyond hope; and yet life may be prolonged even for ten years, as in a young man of exceptional resolution and force of character whom I saw several times. A rigid diet should be enforced as long as it can be tolerated and strength and weight are maintained.

I. Two years ago I saw a girl of ten. Polyuria and sugar had recently and inexplicably appeared. Under strict diet she became sugar free for a considerable time. She now, under the same diet, passes about 50 oz. of urine containing 8% of sugar, looks and feels well, and has held her weight.

II. A school girl of eighteen spent Christmas vacation at home and appeared to her mother as well as usual. She returned to boarding school and soon complained of extreme hunger and thirst, with increasing lassitude. Polyuria was also noted. She lost flesh rapidly, and was sent home Jan. 27. She passed four quarts of urine in the twenty-four hours following her return, and the amount of sugar was 4.6%. There were marked acetone and diacetic acid reactions. In spite of large doses of bicarbonate of soda, and without much change in diet, she went into coma, and died Jan. 30, three days after her return from school. The whole process, as nearly as could be ascertained, was of a little less than a month's duration.

III. A man now thirty-eight, active, florid, muscular, weighing 206, consulted me seven years ago for marked polyuria and 4% of sugar. The polyuria was recent, but the sugar was probably of older date, as he had had eczema of the penis the previous summer. Under strict diet in two weeks the urine became normal. There was a slight loss of weight. He now weighs 175 to 180. He is in good general condition, in spite of extreme and unavoidable business worries and hard work the past four or five years. He has relaxed, and again restricted his diet, sugar reappearing in the urine with less provocation than formerly. I doubt if he will attain old age, though I hope I may be mistaken.

IV. A woman of forty-one, weighing 185, entered the hospital in July, 1891, for sciatica. She had a moderate polyuria with about 1% of sugar, varying from day to day. Under treatment the sugar disappeared from the urine, and she was discharged much relieved after a month in the hospital. A brief record in 1897 states that she was looking well, sugar present. Two other records the same year show sugar in her urine in amounts varying from 1% to 1½%. She entered the hospital again in December, 1903, saying she had taken no special care of herself, except to avoid sweet stuffs. During her two weeks' stay in the hospital this time the urine varied between 42 and 72 oz., the largest amount of sugar being 6%, the lowest, under strict diet, $\frac{6}{10}$ of 1%. She was discharged at her own request, the urine still containing sugar; no acetone or diacetic acid reaction at any time. Weight 175. In twelve years she seems to have lost no ground, and her case is probably to be classed as a favorable one.

V. Seven years ago a man, then sixty-three, of large business responsibilities, first consulted me. Ten months before that a competent observer had found no sugar in his urine. I found a moderate polyuria, and a percentage of sugar.

Weight 184. He was easily rendered sugar free, and after a time could tolerate a moderate amount of starch. From time to time he broke loose, has gradually developed a marked arteriosclerosis, which last spring led, through rank imprudence, to a uremic attack. This has necessitated some change in his diet, and he has never fully regained the weight he lost last spring, now weighing 165, and passing about 2% of sugar without polyuria. He feels well and is in active work, having few mental resources outside of his business.

VI. Shortly after this his brother, one and a half years younger, came to me with great polyuria and much sugar, recent in onset. All symptoms disappeared rapidly under diet, and I have not seen him professionally for six years. About that time he was elected to Congress, and has been since active in political and campaign work, feeling very well with moderate dietary restriction. These brothers are fair examples of diabetes coming on after middle life, in well-nourished though not obese persons — the milder type of the disease. It is usually not necessary to enforce an absolute diet in such cases long; moderate restriction can then be allowed. Some of these cases can later return to practically an ordinary diet without reappearance of sugar. The experience of all of you can, doubtless, duplicate such cases as I have sketched.

In the young, treatment can at best only delay the fatal result. In those in the prime of life great service can generally be rendered, though actual cure occurs only in the minority of cases. In those past middle life the disease is usually well tolerated, and may be of comparatively little moment, provided that reasonable care be exercised; and yet, now and then we encounter cases the course of which proves other than first impressions would lead us to expect.

## MEDICAL TREATMENT OF DIABETES.[1]

BY W. H. THOMSON, M.D., LL.D., NEW YORK.

THE pathology of diabetes mellitus has been the most elusive subject of modern medicine. Repeatedly during the past forty years we have seemed to be on the verge of important discoveries relating to it, only to find that our uncertainties, instead of being dispelled, had simply taken new forms, which in turn have raised other problems to solve.

It is, of course, due to the great obscurity resting upon the physiological mechanism for the disposal of the carbohydrates of food in the system that the pathology of diabetes has remained so uncertain. Fifteen years ago in a symposium like this, held at a medical gathering in New York City, I suggested that we were yet without any knowledge of a seemingly important factor in the problem, and that was the relation of the muscular tissues to the utilization of the saccharine elements of food. The facts which we did know then were that the muscular tissues were virtually the chief generators of animal heat, and that quite apart from their function of contraction and of relaxation was their function of oxidation, so that the blood collected from the veins of a large muscle like the gluteus, though the muscle were at perfect rest, yet contained less oxygen and more carbon dioxide than the blood of the right ventricle itself, as this latter was mixed with blood from the great glandular viscera, where oxidation is less active than in muscle. This shows how much burning up of blood contents occurs when the blood is coursing through muscular tissue, and as the chief material for such oxidation consists of carbohydrates, some failure in this muscular function might have much to do with the pathological failure of sugar oxidation in diabetes.

This suggestion was received with incredulity, and most of the speakers confined their attention to the supposed relations of the nervous system and of the glycogenic functions of the liver to this disease. Not long afterwards the pancreas in its relation to diabetes came to the front, and has maintained its place as one important factor in the problem ever since. Lately the news comes that O. Cohnheim finds that an enzyme is produced in muscle which if alone does not act upon sugar, but when mixed with the secretion of the pancreatic cells of Langerhans is a very energetic solvent, in the same way that trypsin becomes effective only when conjoined with the kinesic ferment in the intestine.

Until physiology becomes settled, pathology cannot be settled; and, therefore, therapeutics, while matters so stand, must remain mainly empirical. And so I confess that I regard the subject of medical treatment of diabetes, which has been assigned to me, as one to which I can contribute little beyond the results of my experience, based upon written notes of the histories of patients whom I have treated in the course of years.

To the question, When does glycosuria mean diabetes? my answer is that we do not know. That glycosuria, limiting that term to dextrosuria, is an epiphenomenon, appearing in the most diverse connections, we all know. Like albuminuria, it occurs too often and too variously as a temporary accompaniment of different disorders to be rated as frequently no more than a symptom. In the case, however, of albuminuria we usually can form some conception of its causation. But with glycosuria we do not know whence it cometh nor whither it goeth; and, therefore, we can never be sure what its significance is. Hence, I feel skeptical about the assurance with which some pronounce offhand a given case as one only of glycosuria and another as surely diabetes, because in my experience some patients come with both a moderate and an intermittent presence of sugar in the urine, and with no consti-

[1] Read before the Medical Society of the State of New York at its Annual Meeting, Albany, Jan. 26, 1904. Symposium on Diabetes.

tutional disturbance, but who in time develop into confirmed diabetics, while others may come with very saccharine urine and severe constitutional symptoms, only to improve under treatment and finally get well. Nor does the recent date of the disorder make much difference. Some begin suddenly and soon develop grave symptoms, and then become permanently free from their trouble, while others begin just as suddenly and never get well. The only valid distinction which I admit is that the presence in the urine of diacetic acid, shown by the ferric chloride test, is generally indicative of confirmed diabetes.

My practice, therefore, is to pronouce a glycosuria which has lasted more than a year diabetes. Time, in other words, and not the variability either of the glycosuria or of any other accompaniments, is my ground for diagnosis. Persistent glycosuria in its way is much the same as persistent albuminuria in its way, that is, each means that the patient has a serious disorder; and *pro tanto*, it does not much matter what name we choose to tack to the disorder when the question is how we are to treat it.

As it is the patient, and not his named disease, which is to be dealt with, all factors entering into his story have to be taken into account; and the first of these facts is age. The rule is, the younger the patient, the worse it is for him. Why it should be so I do not know. The chief significance of this fact, however, is that it points to diabetes as a deeply seated constitutional disorder, and not a localized disease of any one organ, pancreas or other. In keeping with this inference is the hereditary or family proclivity to the disease in instances too numerous to be accidental, and equally so the greater liability of certain races to it. In my experience there is no race which is so subject to diabetes as the Jews. The bearing of this clinical fact upon what remedies we are to expect the most from, and also what reputed remedies we are not to expect much from, we will soon note.

The next consideration to age is the state of the nutrition of the patient. I always make it a point to determine what the daily output of urea is, as well as the amount of sugar passed. If the percentage of urea is continuously high there is real emaciation going on, even if the patient be fat. The sugar itself, indeed, may disappear, but the urea excretion may remain one-half more or double what it ought to be. The patient must have medicines for that.

The patient may be obese. This condition calls for special medication on account of danger from the heart. If he has oxalates alternate with abundant uric acid crystals in his urine, all the better for him. He may be a profitable patient to us for years, though, *pace* glycosurists, he should not be allowed to forget that he has diabetes, and so on. All I wish to illustrate by this preface to my subject, announced on the card as "Medical Treatment of Diabetes," is that I would prefer to have it read, "Medical Treatment of Diabetic Patients."

As to medicines, I would begin with the statement that I but rarely prescribe opium, codeine or any other of the opium derivatives; and I beg leave to take a short time to explain why, in such a constitutional disease as diabetes, I cannot regard this drug as of real service, though it has been long and generally recommended in textbooks. Nervines, such as opium, belladonna, strychnin, aconite, etc., are agents which affect certain functions of the nervous system. They, therefore, are only functional remedies, and they have no power whatever in therapeutic doses to directly affect structure or nutrition, however long they be prescribed. All that they ever do is temporarily to produce some functional symptoms, but they never affect the texture or the nutrition of tissues or organs, either beneficially or injuriously. Therefore, none of them can touch diabetes itself any more than they can touch typhoid fever; however, some of them may relieve for a time some serious symptoms in both diabetes and in typhoid fever. As a veteran teacher of materia medica, I used to urge that no functional or symptom medicine, such as the nervines, could be expected to modify an organic disease in any way, either for good or evil, the only exception being in the case of colchicum,[2] which can produce organic changes. Alcohol produces organic changes only by virtue of its chemical and not by its nervine properties. One of the most powerful nervines for properties is nicotine. There is a great deal of functionally active nicotine in a cigar. Let any one who has never smoked a cigar try it, and he will soon illustrate what nicotine can do. Now, my father, my grandfather and my great-grandfather began to take nicotine by smoking tobacco about the same time of life that I did, namely, at twelve years of age, and continued the same to the last year of their lives, which was at the age of eighty-eight, eighty-seven and ninety-two, respectively, while I am well on to my three-score and ten. Can nicotine, therefore, not injure the bodily mechanism? Never, in rational doses, for like all other nervines, in such doses it can neither do permanent good nor permanent harm.

To this class of functional medicines belongs opium and its derivatives; and, therefore, diabetes continues progressive, however continuously or fully opium is prescribed. A functional medicine is one whose whole action can be secured by one dose. Its hundredth dose does not do any more than the first dose does, sometimes not as much, for with many of this class,

[2] Dr. Norwood of Alabama, well known for Norwood's Tincture of Veratrum Viride, narrated to me how five young men in his neighborhood, while on a "spree," broke into a country doctor's office, in the doctor's absence, and drank to his health out of a bottle of wine of colchicum, which they mistook for sherry. Two of them died, but Dr. Norwood saw the survivors a number of weeks afterwards, when they had lost all their hair, including their eyebrows, and were as generally yellow as persons recovering from cobra snake venom. Now, recovery of healthy persons from the most dangerous degrees of poisoning by opium, belladonna, aconite, etc., is generally complete after twenty-four hours, with no lasting nutritional change whatever.

as with tobacco, the system becomes used to them. A man may for many years relieve an asthmatic attack by stramonium, but it is not his disease — asthma — which is thereby dealt with, but its symptom, bronchial spasm, and his last dose of stramonium does not do more for him than the first dose did, taken years before. More efficacious against his asthma itself would be arsenic and potassium iodide, which no more act in one dose than mercury does in syphilis, or iron in anemia. The fundamental difference between functional medicines, which influence only functions, and organic medicines, which change the nutrition of tissues or organs, would be more widely recognized but for the confusion which exists in many minds about the term "function." Because function is deranged whenever organism is deranged, therefore it is supposed that the converse of this statement is equally true, namely, that a derangement of function must always imply a corresponding derangement of organism. A simple illustration will show the difference. The function of an oil lamp is to give light. Derange the mechanism of the lamp by a leak in the globe, or by an injury to the wick-holder, or by the loss of the wick, and the light-giving function of the lamp is correspondingly deranged. But the entire mechanism of the lamp may be perfectly intact, and yet it will give no light because the source of its function, namely, the oil, is changed by mixing it with water. So a steam engine may be perfect in every detail of its mechanism and yet not go because the source of its function, namely, the coal, is lacking. So in the living mechanism, its functions need power therefor, and that power is in the blood. Functional medicines act only on and through the blood, and not on the tissues. This being so, functional medicines can act only temporarily; they have to be renewed just as the oil in the lamp has to be renewed, though the lamp itself remains the same indefinitely. The oil can remedy no injury to the mechanism of the lamp; and likewise every functional medicine is powerless against a truly organic injurious change going on in the living mechanism.

Functional medicines we need constantly in practice to relieve symptoms, or to meet emergencies. They are indispensable for such purposes, but we should always remember that they are powerless against an organic injurious change going on in the living mechanism. All which a functional medicine can do is to deal with a temporary derangement, not in the structure but in the working, that is, in the function, of the body; and this it does immediately in one dose. But no specifically permanent changes should be expected from it. Opium may affect the symptom, sugar in the urine, by temporarily diminishing it, but it has no effect on the disease causing that symptom.

We must look elsewhere in such a constitutional disease as diabetes than to such functional medicines as opium, and I notice that of late experience is leading many physicians to abandon its use in this disease. For a number of years I have advocated the free use of cod liver oil in diabetes. I was specially led to do this by its remarkable effect in the case of two brothers whom I treated thirty-two years ago. The first, an active business man, aged thirty-five, came to me with polyuria, thirst, emaciation and progressive loss of strength, for which he had been treated unavailingly for a year with the usual course of diet and drugs. He then took larger doses of cod liver oil than any patient in my experience, for he said that he never measured it, but took it directly from the bottle as a drink, followed by Vichy water. In another year's time he was cured, and he has remained well ever since. His brother, two years younger, came to me the following year with much the same condition, as far as the great quantity of sugar in the urine was concerned, but he suffered in addition from general bronchitis. He found that he could stomach cod liver oil as well as his brother, and with equally good results. The younger the patient, the more persistently I urge the taking of this remedy, and I adopt every resource to make its free use possible by the patient, by the administration with it of pepsin and bismuth. So long as the stomach does not rebel, diabetic patients of this class cannot take too much cod liver oil. Whether this oil acts as a substitute for the starchy elements, or whether it spares the proteids from disintegration, or whether it acts as a nerve food, or whether it acts by increasing the red corpuscles, I do not know; but as an empirical fact I can testify that it both diminishes the sugar and the excess of urea eliminated whenever it is taken freely and is well borne. As in all cases where we aim at influencing nutrition by any measure, it must be used both systematically and perseveringly. Obesity contraindicates it, and likewise I should not give it to patients of very sedentary habits; but it is quite useful with many elderly people.

Next to cod liver oil, I would mention iron. As before remarked, I have long suspected diabetes as largely a muscle disease, and throughout the animal kingdom muscular power is directly proportioned to the intake of oxygen. As iron can act in us only in its capacity of an oxygen carrier, I try to give diabetics all the iron which they can take, along with all the fresh air which they can get. As iron in many forms tends to cause constipation, which itself not infrequently becomes a serious trouble to diabetics, a very serviceable preparation for them is the old-fashioned Hooper's Pills, whose formula is: ℞. Ferri sulph. ʒss; powdered senna, powdered jalap, cream of tartar, powdered ginger, each gr. xii. Ext. gentiani q. s. M. Div. in pil. * * *

The progress of medicine in our time has added a class of remedies which are coming more and more into daily use, and to which I would apply the term medicinal, in distinction from surgical, antiseptics. They include a

varied list of phenol derivatives, among which I would include quinine, for sooner or later we may look for its synthetic production from coal tar, as well as the salicylicates and the benzoates. In this class of medicinal antiseptics I would also include arsenic.

It is not improbable that one of the properties of this class of medicines is to start the activity of various enzymes, which in particular states cause derangement of metabolic processes in the body, or lead to disintegration of its tissues. We are only beginning to get some insight into the relations which certain internal secretions bear, on the one hand, to the assimilation of food or, on the other, to the neutralization of poisons in the system, or to the disintegration of the tissues themselves. One of the most striking facts in this connection is the singularly small quantity of the secretions themselves which seems to suffice to maintain the important functions which they subserve. Thus the total extirpation of the pancreas in dogs induces a fatal diabetes. This diabetes is ascribed to the removal of the scattered glandular structures in the pancreas, called the islands of Langerhans. But if three-fourths of the pancreas be excised, so that only one-fourth remains, the small remnant of these island cells is yet enough by their secretion to prevent glycosuria. This indicates that this internal secretion is of the nature of an enzyme, which can propagate its action from very small beginnings. The small bodies, called the parathyroids, have recently been proved to be essential to life, owing to their internal secretion neutralizing a virulent poison, generated most probably in the alimentary canal, and which poison causes fatal tetanic convulsions. So excision of three-fourths of the kidneys, leaving only one-fourth of kidney substance, is followed by death, preceded by great polyuria, with such excessive excretion of urea that it seems as if the proteid tissues were undergoing rapid dissolution. This remarkable result is ascribed to the kidneys, having as their function not only to excrete, but also to regulate, the production of urea by an internal renal secretion.

However that may be, I have for some time been much interested with cases which have come under my observation of excessive secretion of urea which, in a way, resembles saccharine diabetes. On the 5th of last month I was consulted by a healthy looking young man, aged twenty-three. He seemed to be a typical neurasthenic, for his complaints were that two years ago he had a sudden nervous breakdown, ever since which he could not apply his mind to anything. He has a constant sense of fatigue, is very nervous and dyspeptic, especially intolerant of starchy food and very insomnic. His pulse was soft and weak. Examination of his urine showed that he passed no less than 51 gm. of urea a day, while according to his size and on his restricted diet, he should normally pass only 22 gm. The total solids of the urine amounted to the high figure of 114.37 gm., or 1,715 gr. There was no albumen, nor casts, nor sugar in the urine by any test, and he had no fever. His family history was decidedly unfavorable in the respect of neuroses, one brother being in an asylum, an elder sister with something like cyclical insanity, and another sister, younger than himself, is abnormally fleshy.

I put him on the same treatment that I would a diabetic, namely, a shellac-covered capsule, containing 5 gr. of sulpho-carbolate of soda and 1 gr. of potassium permanganate, to be taken half an hour after meals and at night; and one hour after meals t. i. d. a powder of 10 gr. of sodium sulphate and 10 gr. of sodium benzoate. On the 16th he came again, remarkably improved in all his symptoms. His urea had fallen from 51 gm. to 30 gm., and the total solids had decreased 250 gr. To add now 10 gr. of aspirin to each dose of the sulpho-carbolate, or 40 gr. per diem. On Jan. 16 he reported that he was able to do more work than he had done for some years, and that he was now studying to pass a university examination.

I believe that if physicians, instead of being content in their examinations with discovering whether there were abnormal ingredients in the urine of patients, would also uniformly investigate whether the normal ingredients were present in their healthy proportion, more cases of this kind would be found than are generally suspected. What special process led to such abnormal waste in this patient I do not know, any more than what the real processes are which underlie the disease diabetes. The processes of the chemistry of life are altogether too complex, and too imperfectly understood as yet for us to make more than doubtful guesses. But as an empirical fact, I am sure that I succeed better in controlling diabetes mellitus, as far as the use of drugs goes, by a persistent and free administration of antiseptics than by any other means, cod liver oil and iron excepted. In such a disease the therapeutic tests should be sought for only in severe and prolonged cases; and I will beg leave, in illustration, to cite briefly one such history. He was a gentleman, aged forty-two, who after a year of severe mental strain noticed that he was passing water very often, and that his shirt when wet by the urine was stiffened by it. He was put on diet, opium and codeine, by his physician; but as he was steadily losing flesh and strength and was subject to alarming attacks of syncope, he finally consulted me. I first saw him after one of these attacks. He was cyanosed and extremely dyspnoic. Another attack soon occurred, in which he seemed to be passing into diabetic coma. For sixteen years after this I conducted the management of his case, watching him very closely, as he was a most intimate friend of mine, and though I never found sugar absent from his urine, during those sixteen years he ably performed the exacting duties of chief editor of one the largest of New York's daily newspapers. He then moved to another city, to enter upon a much less exacting business. I

warned him that he was by no means a well man, and that he should continue his treatment without change. I learned, however, that he became quite careless, and in three months he succumbed to an attack of bronchitis. Such histories of years of active life while keeping up treatment, soon followed by fatal decline on cessation of the same, have occurred more than once in my experience. Nature does not cure diabetes.

As remarked before, I would include arsenic in this class of antiseptics, as it comes nearer in its properties as a medicine to such agents than to any other. My usual practice is to combine it in the same prescription with them, and, therefore, I ordinarily give arsenious acid itself, watching for the development of arsenical symptoms, just as in prescribing it for any other purpose. Some of the liquid preparations, as Fowler's solution, the Lig. arsenici hydrochlorici or the bromide of arsenic, have the advantage that the dose may be increased or diminished more readily; but I have failed to note any special advantage in changing the form of the drug, because it is arsenic itself in them all to which the effect is due. As to the rest, their administration should be varied from time to time, on the general principle that the too continued use of any drug tends to lessen its efficacy, or in the case of the salicylicates to irritation of the kidneys. If called to a patient who is voiding so large an amount of sugar that a speedy reduction of it is imperative, I would give 15 gr. of antipyrin, with the same of sod. benzoas, four times a day. After a time I would substitute 15 gr. of aspirin with 10 of bismuth salicylate. In subacute cases, illustrative prescriptions would be somewhat as follows: Benzosal gr. 48; Sodium benzoate dr. 4; Arsenious acid gr. 1; Sodium salicylate dr. 11. Make 48 capsules. Two an hour after meals and at night. Or, Sodium sulphocarbolate dr. 2; Salicin dr. 1; Phenacetin dr. 2; Ammonia benzoate dr. 4. Make 48 capsules, shellac covered. Two a half hour after meals; and if there be much insomnia, 20 gr. of strontium bromide and 15 of antipyrin at night. Of course, each physician can vary such medication according to indications. A weekly dose of blue pill is nearly always beneficial to patients after middle life. Unless the patient be much emaciated, one of the means which works well to prevent the tendency to constipation is a powder, dissolved in a tumbler of hot water and sipped slowly on rising, of a drachm and a half of sod. bicarb., half a drachm of sod. sulphas. and of magnes. sulphas. each, and 10 gr. of sod. salicylicas.

Alkalies, in the form of mineral waters, have always held a deserved place in the treatment of diabetes. There is, however, one caution to be always borne in mind, and that is that the free use of all saline water tends to increase the waste of the system, so to speak, and they should not be given to any one who is really losing flesh. I think that I have seen them do harm to emaciating diabetics.

Diabetes is a very serious disease on one account alone, if not on other accounts, in that it virtually compels a starvation of an essential element of food. The system must have sugar, and if it does not get the sugar which it can use in the food, it will turn to its own proteid for sugar. Along with this profound perversion poisons begin to be generated, of which oxybutyric acid and its derivatives are doubtless only a part, and which poisoning we are practically unable to neutralize. Our function, therefore, is to put off the evil day of these terminal developments as long as possible; and to do that, I am sure that merely functional medicines will afford us no help. The essentials of the chemistry of this specific toxemia are yet unknown. The formation of acetone and of diacetic acid occurs early, but the blood itself often changes its color, owing to the abundant presence in it of fatty and of proteid granules. Something, however, holds back the carbon dioxide in the tissues, for it is a mistake to ascribe the low percentage of carbonic acid in the blood to its hyperacidity, because the blood of these patients when drawn will take up oxygen or carbonic acid about as freely as normal blood. The last step is the rapid disappearance of sugar from the urine. Why sugar is absent in diabetic coma we do not know, but significantly enough the first danger signal comes from the kidneys, for before drowsiness begins the urine often deposits an enormous number of peculiar looking casts. To postpone the well-nigh inevitable death in these conditions, I rely upon the most trustworthy diuretic which we possess, namely, prolonged intestinal irrigation with hot normal saline solution, by means of the best instrument for the purpose which I know of, Kemp's rectal irrigator. Hypodermic injections of 7 to 14 gr. of camphor in sterilized almond or olive oil answer best to sustain the failing heart, while diluted milk holding all the sodium bicarbonate which the patient can take is the only recourse left for food. Some of the fatal poison doubtless could be washed out if we could bleed the patient freely and transfuse an equivalent amount of normal saline.

## A COMPARISON BETWEEN THE MEDICAL USES OF THE X-RAYS AND THE RAYS FROM THE SALTS OF RADIUM.[1]

BY FRANCIS H. WILLIAMS, M.D., BOSTON.

THE greater interest in the salts of radium lies in their relation to science, especially to physics and chemistry; but as they can be of service in medicine, it will be instructive, I think, to attempt to estimate the probable value in this field of the rays which they emit; we will not consider the emanation. Perhaps this can best be done by comparison with another

[1] Read at the Annual Meeting of the Boston Society for Medical Improvement, Jan. 18, 1904.

Lantern projections were shown of a frog taken by the Beta and Gamma rays together, by the Gamma rays alone and by the x-rays; projections were also shown of a number of patients, chiefly with superficial cancers, who had been successfully treated by the x-rays. The fluorescence excited in willemite by pure radium bromide was also shown.

form of radiation, namely the x-rays, which has been in use for nearly eight years and has had time to give proof of its value in diagnosis and treatment.

The beautiful radiographs that can be taken by the x-rays make them of great assistance in surgical diagnosis in cases of fractures and diseases of the bones, for example, in the location of foreign bodies and in the detection of most varieties of calculi, whether in the kidneys, ureters or bladder.

Radiographs and the fluorescent screen render valuable assistance in medical diagnosis. An aneurism of the aorta in the early stage can be detected more certainly by an x-ray examination than by any other method, and its progress can be watched in a way that has hitherto been out of the question. Mediastinal growths, the size and position of the heart and central pneumonias, for example, can be recognized better by means of an x-ray examination than by any other method. The question as to whether or not fluid is present in the chest is sometimes doubtful by the usual physical examination, but its absence can be determined by means of the fluoroscope. The great service of which the x-rays are capable in the most fatal of all diseases, pulmonary tuberculosis, deserves especial emphasis and cannot be repeated too often; the diagnosis of this disease in an incipient stage can be made with more certainty by the aid of the x-rays than is otherwise possible; it may sometimes be satisfactorily made before there are any definite physical signs in the chest. The frequency with which this disease occurs and the opportunity which an early diagnosis offers for successful treatment make the x-rays peculiarly valuable when there is a question of this disease; moreover, not only is the proportion of recoveries larger in the early stages, but also the patient is obliged to give up much less time to the restoration of his health than is necessary when the disease is further advanced, a very important consideration.

The abdominal cavity offers less opportunity for the use of the x-rays, but this is a field which can be further cultivated.

The x-rays are also useful as a therapeutic agent. They may not only relieve the pain that accompanies cancer, but also pain produced by other causes, that of intercostal neuralgia, for example; they may be employed as what, for want of a better name, I may term a tonic and a cardiac stimulant; they may be used for the treatment of skin diseases and new growths; many cases of skin diseases and many forms of superficial new growths, especially face cancers, have been healed by their means.

I attempted some months ago to make a comparison between the results following the use of surgical treatment of new growths and those I had obtained in 150 cases of new growths that I had treated by the x-rays, up to Jan. 1, 1903, but was unable to find tables giving exactly the percentage of success to be expected in different forms with the usual surgical treatment. Such statistics would be helpful in estimating the value of the x-rays and of radium.

The outline given above is sufficient to indicate the directions in which the x-rays are of assistance; now let us consider what can be expected from radium salts as an aid in diagnosis, whether by means of radiographs or by fluoroscopic examinations or as a therapeutic agent. To this end it is necessary to appreciate the fact that this new substance, which belongs to the class Mme. Curie has called radioactive, emits three kinds of rays, named by Rutherford Alpha, Beta and Gamma, which differ greatly in their power of penetration, the Alpha being the most easily absorbed and the Gamma the most penetrating.

Radium salts are unlikely to be of any service in diagnosis by means of radiographs, for if the Beta and Gamma rays are used together (the Alpha do not need consideration, as they are so easily absorbed), the radiograph shows no differentiation between the tissues; if the Gamma rays alone are used, there is a slight indication of the bones, but the results cannot be compared for a moment with those made by the x-rays. Further, the time required is very long, many thousand times that needed for taking a photograph by the x-rays, unless the radium is placed close to the photographic plate, that is, within the fraction of an inch.

Let us next consider whether radium will be of any service in fluoroscopic examinations. The two sides of the chest can be compared in cases of pneumonia or pleurisy, for example, by placing the fluorescent screen on the front of the patient's chest and the radium salts, due precaution being exercised, on the back. The practitioner may thus be able to determine whether or not one part of the chest is denser than the other by watching the fluorescent screen, as it will be less brightly illuminated, of course, on the side where the increased density occurs. For thus observing the chest the Gamma rays only should be used, for if the Beta and Gamma rays were employed together there would be risk of burning the patient; moreover, the Beta rays would be of no advantage, because they would be largely absorbed in the body, as their power of penetration does not compare with that of the Gamma rays. This method of examination would be a very crude one, as these rays have little power to differentiate the tissues.

It is, then, only in the comparatively narrow field of therapeutics that we may expect radium salts to be of value. Dr. William Rollins of Boston was, so far as I am aware, the first to appreciate that this new substance would probably be of service in the treatment of certain diseases. At least two or three years ago he put into my hands a metal box with an aluminum front, containing some chloride of radium, and at his suggestion I employed it for therapeutic purposes, but the radium to be had at that time was too weak to give definite results.

The strength or, to use the term generally

employed, the radioactivity of a given specimen of radium salts is estimated by comparison with that of uranium as a unit. The weaker qualities of radium, which it is comparatively easy to obtain, have a radioactivity of 1,000 or 8,000 or considerably more, but the pure radium salts, which can be had with difficulty only, have a radioactivity of about 1,500,000.

Recently I have employed the pure radium bromide in 50 cases, as described below, using generally 50 mgm. when making an exposure, but on some occasions amounts varying from 10 to 100 mgm. I have abandoned the use of the weaker salts, as they are inefficient.

The 50 cases are divided as follows:

One case of acne, 2 of psoriasis, 5 of lupus vulgaris, 2 of lupus erythematosus, 2 of eczema, 1 of keloid, 5 of rodent ulcer, 28 of epidermoid carcinoma and 4 breast cases.

The case of acne healed under the use of the radium, each pustule being exposed through an opening in a thin sheet of lead foil. The two cases of psoriasis were treated in certain areas with radium and in others by means of the x-rays, for purposes of comparison; healing took place much more quickly in the parts which were exposed to the radium than in those exposed to the x-rays. The two cases of lupus erythematosus are still under treatment. Two of the five cases of lupus vulgaris have healed, and three are under treatment and doing well; in one of these cases a comparison was made between the action of the radium and that of the x-rays, the upper half of a large patch, which involved the greater part of the side of the face, being chosen for the application of the radium, as the disease seemed most severe in this area. The area thus treated has largely healed, whereas less progress has been made in the tract exposed to the x-rays. The same is true of the one case of keloid; the half treated by radium has nearly disappeared, but that treated by the x-rays has only somewhat improved.

The two cases of eczema, on the contrary, did not improve rapidly under the use of the radium, and the itching was not relieved; therefore this treatment was stopped and the x-rays applied.

Three of the five cases of rodent ulcer have healed, and one has nearly healed; the fifth deserves special mention. In this case the growth is very extensive, has involved the side of the face and orbit and has penetrated deeply; it has been operated on several times during the past twenty years, and when a recurrence took place after the last operation was treated by the x-rays, and yielded to this treatment. Later an extensive recurrence took place, which the x-rays on further trial *did* not and which the radium *may* not heal, but the radium has checked the growth of the rodent ulcer and has arrested the rapid loss of strength of the patient. This case would indicate that radium is more efficient than the x-rays.

Fourteen of the 28 cases of epidermoid carcinoma have healed, thirteen are still under treatment and one has discontinued treatment and been operated on for the third time. This patient had a growth on the tongue which was operated on twice. A second recurrence then took place; the x-rays and radium were applied, but although some improvement followed their use, it was not sufficient to warrant the delay of a third operation. In another of the cases of epidermoid carcinoma, in which the new growth was widely distributed over the cheek and a considerable portion of the upper lip, both the radium and the x-rays were used. The part treated by the radium healed more promptly than that exposed to the x-rays.

Three of the four breast cases were recurrences after operation; the radium diminished the indurations in the scar or in the parts in its neighborhood. These indurations yielded more readily to the radium than to the x-rays. The fourth case was a patient who was suffering from carcinoma and who had refused operation. In this case the diseased area was treated both by radium and the x-rays. The results are not yet definite.

In some cases the rays from radium act as an analgesic.

It is evidently the Beta rays which play the greater part in the healing process, rather than the Gamma rays, although the Gamma rays may contribute; but as the exposure in my cases has been, as a rule, from one to three minutes in duration, there would hardly be time for the small proportion of Gamma rays to exert much action. Experience has shown that irritation may be caused in some patients after one minute's exposure to the Beta and Gamma rays together, whereas I have found that an exposure of forty-five minutes to the Gamma rays alone produces no irritation.

The patient and the practitioner must be protected from radium, as they must be from the x-rays, or burns may result a week or two after the undue or, in the case of the practitioner, the unnecessary exposure. Patients vary in their susceptibility to the effect of radium salts, and therefore the dose must be varied to suit the individual patient. The burns caused by radium, like those produced by the x-rays, are, it is said, very difficult to heal. I have had no experience with them.

I am now studying the question as to whether or not radium salts can be of service in treating deep-seated new growths. We have seen that the Beta and Gamma rays together cause healing in cases in which the disease is near the surface, but as the Beta rays are readily absorbed, they will not be of value for the deep-seated growths. I tested the penetrating power of the Beta rays by separating them from the Gamma and then placing my little finger in their path, and found that by this obstruction the Beta rays were largely absorbed. I am now using the Gamma rays in certain superficial cases, by covering the radium capsule with an aluminum cap that shuts off the Beta rays altogether, but does not obstruct the passage of

the Gamma rays. If the Gamma rays cannot cause healing in diseases near the surface, their use as an agent for treating deep-seated new growths may be abandoned. On the contrary, if the superficial cases yield to the Gamma rays, it will be well to study their effect on deep-seated growths. Under no circumstances should the Beta and Gamma rays be used together for deep-seated diseases, because the Beta rays would cause serious injury before the Gamma rays had time to produce a beneficial effect.

Radium as a therapeutic agent has certain advantages when compared with the x-rays. Obviously a grain or two of radium salts is far more convenient as a source of radiation than a large, cumbersome apparatus. The radium is always ready for use, and the amount of radiation it gives off is uniform, so that, without having recourse to the fluorometer to measure the output, as in the case of an x-ray tube, the dose can be adjusted exactly in two ways, — either by varying the time during which the part to be treated is exposed or by varying the distance of the radium from the patient. Radium can also be better used in cavities.

The healing action of radium salts, as ordinarily used, that is, when the Beta and Gamma rays are employed together, is limited to parts on or near the surface of the body or its cavities, and to a small area, unless the radium capsule is moved from place to place. The x-rays, on the contrary, can act at one time on the whole side of the trunk. On the other hand, certain superficial new growths yield to radium that do not to the x-rays, and the action of the radium is more prompt. Whether or not these results will be permanent time only can show.

Since many superficial new growths are healed by radium or the x-rays, although more slowly by the latter, it is quite possible that in many cases it would be an advantage to use both forms of radiation, either on the same or on alternate days.

*Summary.* — (1) The rays from radium salts, unlike the x-rays, are not serviceable in diagnosis either by means of radiographs or of fluoroscopic examinations.

(2) The Beta rays are useful as a therapeutic agent in certain skin diseases and new growths, if the diseased tissues are superficial or are not more than about 1.25 cm. (one-half an inch) below the surface of the skin or accessible mucous membranes.

(3) The Beta rays from radium salts will heal some cases of new growths that are not healed by the x-rays, and they act more promptly, but not over so large a surface at one time as the x-rays.

(4) Radium salts of an activity of 8,000, or considerably more, are not sufficiently strong to be efficient. Pure radium salts, which have a radioactivity of about 1,500,000, are not too strong for the work to be done.

(5) The radiation from radium salts, unlike that from the x-ray tube, is uniform.

(6) Great care should be exercised to avoid burns.

## THE PROGNOSIS OF IDIOPATHIC PLEURISY.[1]

BY GEORGE G. SEARS, M.D., BOSTON,

*Visiting Physician, Boston City Hospital; Assistant Professor of Clinical Medicine, Harvard Medical School.*

The statistics which form the basis of this paper are drawn from 439 cases of pleurisy which were treated in the Boston City Hospital between the years 1880 and 1895. They include those only in which no suspicion arose that the acute attack was a secondary manifestation of some process already existing. The possibility of a previous tuberculosis, as shown by a history of cough for several weeks, of hemoptysis, hip disease, etc., was thought sufficient to exclude, and none are included which appeared in the course of pneumonia, typhoid fever or other acute disease. They are grouped together as instances of acute, idiopathic pleurisy, the pleurisy *a frigore* of the older writers, without regard to their possible etiology. They have been studied with the sole purpose of determining whether they threw any light on the question of prognosis, which, apart from its immediate interest to the individual, has assumed economic importance since life underwriters have begun to consider that an attack of pleurisy is sufficient to postpone the acceptance of a risk until a certain period of probation has elapsed. No attempt has been made to trace their later history except in the mortality records in the state archives, which, owing to the shifting character of the population from which they are drawn, can at best contain only a portion of the actual deaths which have occurred among them. Eighty-six (20%) of these 439 cases are known to have died within seventeen years, and this number should possibly be increased by 23 who are classed in the following table as "doubtful" because the hospital record and the death certificate failed to tally sufficiently closely to make identification absolutely complete. If the latter are added the percentage of the dead rises to 25. Their length of life after the attack of pleurisy is given below, the doubtful cases being included in brackets.

| | | |
|---|---|---|
| Number died within 2 years | 30 | (5) |
| Number died 2 to 5 years later | 26 | (6) |
| Number died 5 to 10 years later | 15 | (9) |
| Number died 10 to 15 years later | 13 | (2) |
| Number died 15 to 17 years later | 2 | (1) |
| | 86 | 23 |

The cause of death appears in the following table:

| Cause of Death. | Identified. | Doubtful. |
|---|---|---|
| Phthisis | 45 | 13 |
| Pleurisy | 5 | 1 |
| Empyema | 1 | 0 |
| Bronchitis | 3 | 0 |

[1] Read at the Annual Meeting of the Boston Society for Medical Improvement, Jan. 18, 1904.

| Cause of Death. | Identified. | Doubtful. |
|---|---|---|
| Edema Lungs | 1 | 0 |
| Pneumonia | 6 | 4 |
| Meningitis | 3 | 2 |
| Intestinal Obstruction | 1 | 0 |
| Nephritis | 3 | 0 |
| Apoplexy | 2 | 1 |
| Heart | 5 | 2 |
| Typhoid | 2 | 0 |
| Chronic Hepatitis | 1 | 0 |
| Gastritis | 1 | 0 |
| Alcohol | 2 | 0 |
| Accidental | 5 | 0 |

The difficulty of connecting the deaths with the attack of pleurisy is obvious in many of these cases. A fatal result from accident, alcohol, apoplexy, heart disease, gastritis or chronic hepatitis shows no reasonable dependence on it; on the other hand, suspicion arises when the cause is assigned as nephritis (amyloid kidney?), pneumonia or typhoid that the whole truth may not have been told, and that an effort has been made either to avoid the necessity of notification or to save the small insurance which many of them carry, and which might have been forfeited if a frank declaration of tuberculosis had been made. Mays' recent analysis of the death returns from pneumonia and phthisis gives distinct emphasis to this point, since he shows that the number of deaths from the former is relatively much greater in the states where notification of tuberculosis is compulsory.

The relation is clear where death was attributed either to pleurisy or empyema, of which there were six instances. It is more than probable, considering our present ideas as to the etiology of cases of idiopathic origin, when some form of tuberculosis has been assigned, of which there were 45 cases, and probable where death has been certified as occurring from edema of the lungs of five months' duration, bronchitis or meningitis (seven cases). The case of intestinal obstruction may also belong to this class, but without this there are 58 (13%) where the connection seems very probable, or, including the doubtful cases, 74 (17%). Their length of life after the attack of pleurisy is given in the following table, the doubtful cases appearing in brackets:

| | | |
|---|---|---|
| Under 2 years | 23 | (4) |
| 2 to 5 years | 18 | (6) |
| 5 to 10 years | 7 | (4) |
| 10 to 15 years | 9 | (2) |
| 15 to 16 years | 1 | |
| | 58 | 16 |

The table shows that over 39% of the deaths among the patients who could be definitely identified had occurred within two years, and over 70% within five. This ratio is not materially altered if the doubtful cases are included. The number whose death occurred within two years is noteworthy; some of them might have been omitted as victims already of a well-marked tuberculosis if a more detailed history had been given or if an autopsy had been held.

A similar series of cases, drawn from the records of the Massachusetts General Hospital, was more fully reported by Dr. R. C. Cabot, in that he was able to trace a considerable portion that were still living. It was his conclusions, which were much more optimistic as to the ultimate outcome than those usually accepted, which stimulated me to make the present investigation. He found among 300 patients that 117 (39%) were known to be living and well from two to more than twenty years after their discharge, more than half of whom had been followed for over ten years, while 31 (10%) had died. Of the latter group 17, more than half, had died of some form of tuberculosis, and 6 others were then suffering from a tubercular process. 43.5% had contracted tuberculosis within five years, and 78% within ten. 146 patients could not be traced. A comparison of these figures with those furnished by the City Hospital shows that in the former 7.6% of all cases are known to have developed tuberculosis against 13% in the latter; while of the total deaths 55% of the former and 67.4% of the latter were attributable to some condition presumably connected with the original attack of pleurisy. Cabot brings out the striking fact that among the Massachusetts General Hospital cases 67% of those who became tuberculous had tuberculosis in their immediate family or in their own past history, while only 25% of those who had remained in perfect health for five years or more were so tainted. This difference was not noticeable among the City Hospital cases, possibly because the earlier records were often silent regarding the family history. In both series the percentage of cases with recurrent attacks was about 3% (3% and 3.8% respectively).

The sources of error in the interpretation of these figures are many and obvious. They do not appear, however, to justify so hopeful a view as Cabot has expressed, but rather to give reason for the suspicion that an attack of pleurisy may be a manifestation of a constitutional taint, which may be the cause of death years after apparent recovery. How great the danger is they do not show, for the only conclusions which they justify are these:

(1) That about 10% of these cases are known to have developed tuberculosis.

(2) That over 55% of all cases which were followed to their death had died from some form of tuberculosis.

(3) That tuberculosis, when it occurred, developed within five years in over 50% and within ten years in over 70%.

(4) That this danger is much increased by a tubercular family history or a personal history of some form of tuberculosis previous to the attack.

# Clinical Department.

## MASSACHUSETTS GENERAL HOSPITAL.

Clinical Meeting of the Staff Held at the Treadwell Library, Dec. 12, 1903.

(Concluded from No. 7, p. 186.)

### A CASE OF RUPTURED SPLEEN. OPERATION AND RECOVERY.

BY G. W. W. BREWSTER, M.D., BOSTON.

Jennie W., aged six, was brought to the accident room of the Massachusetts General Hospital July 2, 1903, with a history of having been run over by a team. Examination by the house physician showed slight pain in the right leg and a little abdominal tenderness around the umbilicus, with bruises over the legs and back. No one saw the accident, and no facts as to the severity of the injury were obtained. She was sent home and told to report to the Out-Patient Department the next day. Examination the next day by Dr. Greenough in the Out-Patient Department led to the child's being sent into the hospital for observation. He was suspicious of some abdominal lesion.

On entrance again to the hospital the examination showed a temperature of 100.2, pulse of 132 and respiration 44. The abdomen was generally distended, with muscular spasm and slight tenderness in the region of the umbilicus. The child was seen by Dr. S. J. Mixter, who advised an immediate operation. The parents would not consent and decided to take the child home against advice.

The same night I was called in consultation by the family physician. I found her with a temperature of 102, pulse 130. The abdomen distended but not tender, somewhat rigid, and dull in the flanks. She was drowsy and though she had been restless, was now stupid. The mother said she had vomited three times during the afternoon. It was explained to the family that the child ought to be operated upon, and that it was her only chance. At that time it seemed probable that there was a ruptured intestine. Finally she was taken back to the hospital and prepared for operation.

As there was nothing to indicate in what part of the abdomen the lesion, if present, existed, I made a median incision just above the umbilicus. On opening the peritoneum dark-colored free blood escaped. This welled up from the pelvis, and fearing a lesion in that part of the abdomen, I rapidly enlarged the opening down to the pubes. After sponging the pelvis free of blood with large pieces of gauze, no lesion could be found. On exploring the left side a small amount of blood was seen trickling down from the region of the splenic flexure. In the mesentery of the descending colon was a small hematoma. The incision was enlarged by cutting across the left rectus. On walling back the intestines with gauze a fissure was seen near the lower pole of the spleen, from which venous blood was trickling. There was no large hemorrhage, but only a small flow of blood. This was entirely controlled by the pressure of two strips of gauze, the ends of which were carried out of an opening in the flank. The abdominal opening was then closed. The cut surfaces of the rectus were sutured with buried chromic catgut and the rest of the incision closed with "through-and-through" silkworm gut sutures.

The wound healed by first intention and the patient was discharged at the end of four weeks.

### REPORT OF A CASE OF BONE CYST OF A DIGITAL PHALANX.

BY E. A. CODMAN, M. D., BOSTON.

I want to show this case on account of the rarity of the disease and because the operation and its result are interesting.

This patient is about forty. She came to the Out-Patient Department of the Massachusetts General Hospital in the spring of 1900, complaining of a swelling of that portion of the middle finger, on the left hand, represented by the middle phalanx. There was an enlargement on the sides and dorsum of the finger. It was painless and of bony hardness and not in the least tender. The patient had noticed the swelling of the finger for many months. There was no history of injury or any disease of the bone in other portions of the body. She was otherwise in good health and always had been. There was no specific history.

The surgeon who saw her at the time, suspecting syphilitic dactylitis, prescribed iodide of potassium. She took this faithfully for a while, but it did no good. The phalanx continued to enlarge, and in the spring of 1901 she returned again to the hospital under my care. The accompanying skiagraph shows the tumor at intervals of a year, and the appearance is characteristic of medullary sarcoma. I felt that amputation was indicated, but, bearing in mind the good results which were obtained without amputation from simple excision of medullary sarcoma, I decided to remove the middle phalanx alone and allow the digital phalanx to drop back on the proximal. Under cocaine I removed the affected phalanx with its periosteum, leaving the tendons intact. The wound united by first intention, and for some days, owing to the filling of the space from which the phalanx was removed by blood clot, the finger presented almost a natural appearance. As weeks and months passed, however, a shrinking of the tissues took place and the terminal phalanx was slowly drawn towards the proximal. As the tissues between the phalanges became firmer, the flexor and extensor tendons began to control the movements of the distal phalanx, so that now you will see that there is a very marked flexion and pretty decided extension. She can hold a 5 lb. weight on the flexed finger tip, and the finger is quite useful. The presence of the fingernail makes the cosmetic result much more agreeable to the patient than the stump of the amputated finger would have been. On sawing open the phalanx after it was removed it was found to be a shell of bone containing a cavity filled with straw-colored serous fluid and lined by a soft translucent myxomatous membrane. The cavity was crossed here and there by fine trabeculæ.

Dr. Whitney, from the gross appearance, considered it a myxo-chondroma, but unfortunately the decalcified sections were lost and I have no microscopic report. It seems probable that the tumor was at first an enchondroma which later had undergone a myxomatous degeneration. Bone cysts are very rare in any portion of the body, and as far as I can find this case in a digital phalanx is unique. It is not unlikely that such cysts are formed by the degeneration of chondromata, though it has also been supposed that a blood clot caused by trauma may have sometimes been the original lesion.

The result of the operation is at least interesting, though had I known beforehand what the

tumor was, I should simply have packed the cavity or perhaps done sub-periosteal excision of the phalanx.

EXPLANATION OF PLATE.

Fig. 1. As seen in 1900.
Fig. 2. As seen in 1901.
Fig. 3. As seen in 1903.
Fig. 4. Photograph of hand at rest.
Fig. 5. Holding 5 lb. weight.

Dr. F. B. Harrington showed a case of

PERFORATION OF THE ACETABULUM FROM A FALL OF FOUR AND A HALF FEET.

The patient made a good recovery.

Dr. George L. Walton spoke on

THE DESIRABILITY OF SUPPLEMENTING THE TERMS DEGENERATION AND DEGENERATE BY DEVIATION AND DEVIATE.

(Full paper published in JOURNAL, Jan. 21, 1904.)

## Medical Progress.

### RECENT PROGRESS IN LARYNGOLOGY.

BY A. COOLIDGE, JR., M.D., BOSTON.

(Concluded from No. 7, p. 189.)

#### THE REGENERATION OF THE NASAL MUCOUS MEMBRANE.

THE regeneration of different tissues has been recently extensively studied, especially in Italy. The mucous membrane of the nasal cavities is a complicated structure, and one which in recent years has suffered much at the hands of enthusiastic operators. The processes of repair of this membrane have been carefully studied by Citelli,[7] using the material of Gradenigo's clinic in Turin. A small piece of mucous membrane was removed from the turbinate in many cases, and after the end of from two to sixty days a larger piece, including the previous wound, was removed and examined. Two days after the removal of the first section, the wound surface and the epithelium bordering it was covered with a fibrinous exudate containing leucocytes and red blood corpuscles, which remained until the eighth day. The epithelium in the neighborhood of the wound contained leucocytes and showed signs of necrosis. Most of the glands which were injured by the operation and the erectile tissue, to a greater or less distance from the wound, showed a similar necrosis. The process of repair began in the first few days by proliferation of the oval and round cells of the deeper layers of the epithelium. In eight or ten days these formed the greater part of the epithelium of the new cicatricial tissue. This epithelium was also in part supplied by the glands which escaped destruction in the wounded area. The glands which lay under this area, by vigorous proliferation of the epithelium of their ducts, established an outlet through the newly forming tissue and contributed to the formation of the superficial epithelium. There did not appear to be any reproduction of glands nor any formation of ducts by the invagination of surface epithelium. The erectile tissue showed but little attempt at regeneration, but the necrosis seldom included much more than what was injured by the operation. The granulation tissue which appeared within a few days after the operation arose chiefly from the capillaries and small veins of the superficial layers of the epithelium, and only to a small extent from the underlying erectile and connective tissue. These experiments tend to show that in the removal of superficial parts of the nasal mucous membrane the glands and the erectile tissue are commonly not destroyed. The superficial layers of the mucous membrane are replaced by connective tissue, by the shrinking of which a depression is formed which may be of considerable therapeutic value in cases of obstructed respiration. The removal of the whole turbinate, which was formerly a common operation, is now properly abandoned, since the normal function of the nose is endangered. With the galvano-cautery it is difficult to control the extent of the destructive process, and the time of healing is prolonged.

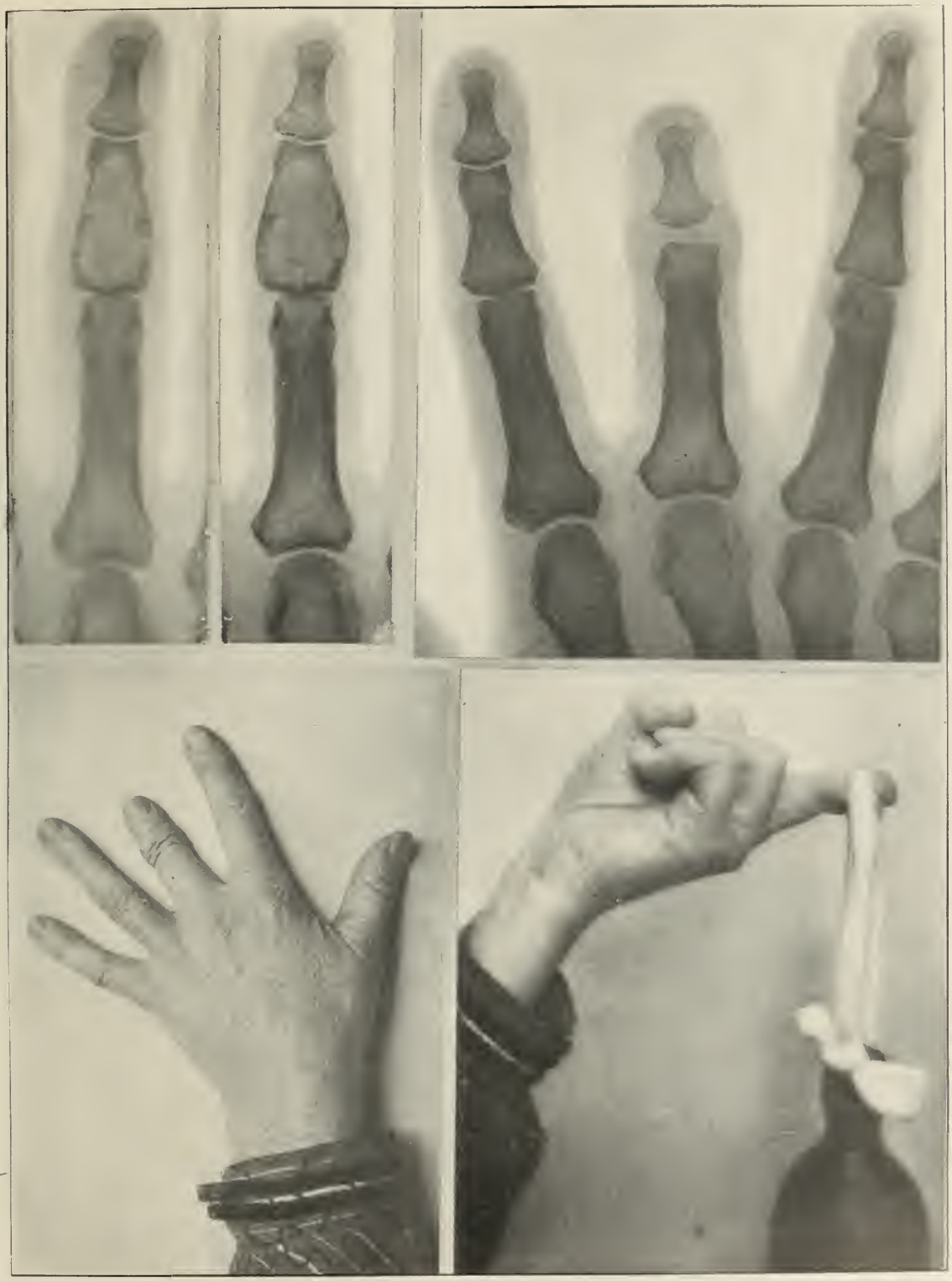
[7] Archiv. f. Laryngol. und Rhin., Bd. xiv, Hft. 2.

#### THE ARCH OF THE PALATE.

When some years ago it was suggested that the high narrow palate with crowded teeth was the result of adenoid vegetations and proved their past or present existence, this statement was commonly accepted without question. Later this dictum was questioned, and even by good authorities denied. The subject has been recently studied and discussed, with a growing conviction that the causes of the high palate are many and often obscure. Two able papers on the subject appeared a short time ago, one by Swain [8] and one by Bentzen.[9] Swain argues well in opposition to Grosheintz [10] that the upper jaw cannot fail to be affected by abnormal conditions during the years of its development, of which conditions nasal obstruction and mouth breathing are the more common and important, but that other influences may change the shape of the palate is shown by a comparison of the skulls of flat-head Indians with those of other tribes. The paper should be read as a whole to do it justice. In discussing the cause of the arch of the palate the author points out that in the newborn babe the hard palate at the height of the arch is considerably above the level of the Eustachian tube. In the child at puberty it is considerably below the Eustachian tube. Consequently the palate has grown away from the base of the skull by the downward growth of the superior maxillary bone, the septum and the pterygoid processes, so that the palate may be said to grow down instead of up. It would be easy to believe that in an obstructed nose this growth would be retarded, as any growth is retarded by faulty function. Also the child who goes around with his mouth open tends to have the muscular force, the weight of the jaw, the lack of the restraining influence of the upper lip and the streaming of the air through the mouth which adds to the buccal tension and removes

[8] Trans. Amer. Laryngol. Asso., 1903.
[9] Archiv. f. Laryngol. und Rhin., Bd. xiv, Hft. 2.
[10] Boston Med. and Surg. Journ., Jan. 24, 1901.

1 2 3



4 5

Bone Cyst of Phalanx.

the tongue away from exercising any influence upon the upper jaw, all tending to draw down the outer side of the superior maxillary bone. Another factor in the shape of the adult palate, as well as the alignment of the second teeth, is the preservation of the deciduous or milk teeth and in general the care of the teeth of the young child. The circumference of the horizontal arch and the perfect anterior curve are influenced by the retention of the first teeth as long as possible. Of all the arguments presented by dentists, the strongest evidence is that which appears when we consider the trifling force they are constantly using to spread the abnormally contracted jaw in order to give space for replacing the teeth that are out of line. The author concludes that it is possible by deforming processes which artificially alter the shape of the skull to produce a change in form and shape of the hard palate; that in considering the various causes which produce the abnormalities of the palate, we must lay stress upon the lack of proper aëration of the maxillary sinuses retarding their development and hence that of the whole superior maxilla. The conservation and general care of the deciduous teeth help to produce a normal horizontal curve in the hard palate and lessen the tendency to narrowing.

Bentzen's paper, or more accurately treatise, on the etiology of the high arch reviews the literature of the subject and contains the records of many measurements. The literature shows that most authors consider mouth breathing as the cause of the high arch. The opposite theory of Siebenman and his followers looks upon it as hereditary or developmental. The author's researches show that there is no definite relation between the height and breadth of the hard palate, but there may be greatly differing ratios within normal limits. The height of the palate increases up to the twenty-fifth year, after which it recedes, whereas the breadth increases through life. The most rapid growth in breadth is just after the second dentition; in length after puberty. Men have a broader and women have a narrower and relatively higher arch. As a rule, individuals with adenoid vegetations have a higher arch than those without. A curious fact appears that in leptoprosopic skulls the arch is low and in chameprosopic skulls high before the second dentition, whereas after that period the opposite is the rule. This applies both to cases with adenoids and those without. The V-shaped as well as the high arch is much more common with mouth breathing than without; they are more common in males than in females, and in leptoprosopia than in chameprosopia. In conclusion it may be said that after other influences have determined the height of the palatal arch, this height will be increased by adenoid vegetations.

### COCAINE.

The use of cocaine in operations upon the upper air passages is the subject of a paper by Bodine.[11] A thorough knowledge of the limitations of this drug, together with a perfected technique in its use, is to be acquired only by patient, persistent effort. Wide variations in strength of solution and manner of application obtain in different patients and in different parts of the body of the same patient. Not only is the manner of introduction of the solution essential, but the psychic element in the patient is to be considered. Actual vasomotor paralysis occurs in proportion to the patient's nervous susceptibility. The acquirement of a personal calmative in the operator is essential. In surgery of the upper air passages, local anesthesia is especially advantageous — we command the cooperation of the patient; his ability to voluntarily cough and expectorate are to our advantage. A greatly diminished number of fatalities from cocaine poisoning are now encountered in current literature, a decrease due to the weaker solution employed. The urethral mucosa is as effectually anesthetized by application of a 2% solution as by one of 10% strength. In all infiltration work it is important to remember that to anesthetize the skin or mucous membrane the injection is made into the skin, not beneath it. If acid secretion covers the nasal mucosa it is of advantage to use a nasal douche of bicarbonate of soda before applying the cocaine. Cocaine will bear momentary boiling without chemical change, though the practical sterility of the solution may be assumed if freshly prepared with sterile salt solution. Cocaine acts by paralyzing the sensory nerves; acute local anemia and pressure are invaluable accessories in producing this effect. Morphine is a reliable antidote to cocaine poisoning; even in profound morphine narcosis cocaine is the quickest and safest antidote. They antidote each other. Crile has lately shown that the nerves of the pharynx and larynx, especially around the glottis and the terminals of the recurrent laryngeal, are endowed with strong inhibitory functions. Rough manipulation of these regions, such as often occurs in removal of adenoids and foreign bodies, and in laryngotomy, may induce alarming and even fatal collapse through reflex inhibition of heart and respiration. Crile and Matas have found that cocainization of a nerve absolutely prevents reflex impression. In connection with surgery in the region of the larynx, he states that the extensive experimentation justifies his statement that cardiac and respiratory inhibition is impossible if the area be cocainized.

### THE INFECTION OF THE CERVICAL GLANDS THROUGH THE TONSILS.

This has been the subject of several papers during the past year. Koplik[12] in reviewing the subject points out that the tonsils have long been studied as a seat of tuberculosis, and the literature is quite voluminous on this theme. Conclusions vary because one set of observers has studied the disease from clinical, while another

[11] Laryngoscope, April, 1903.
[12] Amer. Journ. Med. Science, November.

has analyzed pathological material. Tuberculosis of the tonsil may be a primary isolated process unaccompanied by tubercular foci elsewhere; this is exceedingly rare. Several authors speak of primary tuberculosis of the tonsil with accompanying tuberculosis of the cervical lymph nodes. The disease may be limited to these organs, or may spread thence and involve other organs. Secondary forms of tuberculosis of the tonsils are very common, in which tonsilar infection follows pulmonary tuberculosis. In both the primary and secondary forms the cervical lymph nodes are quite constantly affected. Children furnish by far the greater number of cases both of tonsilar tuberculosis and the form of the disease in which the tonsil draws into the infection the cervical lymph nodes. In some cases the tonsil appears normal, in others hypertrophied, the external surface showing no erosions or ulcerations; in fact such pathological appearances are extremely rare. In all the forms the cervical lymph nodes may be enlarged. The largest nodes and those supposedly first affected are found high up behind the tonsil. The affected nodes form a packet, stretching from behind the angle of the jaw along the greater vessels towards the clavicle. Many cases of tubercular cervical adenitis have been shown to have had tonsilar tuberculosis undoubtedly primary, and there is no reason why the tonsils should not admit tubercular infection as well as pyogenic or diphtheritic infection.

The author concludes that the tonsil is the seat of primary tubercular infection, though rarely as compared with the pyogenic forms of infection. The tuberculous tissue is found in the form of giant cells and tubercular nodules; cheesy degeneration is not common; as a rule the lymph nodes leading from the tonsil are affected. Tonsilar tuberculosis may be the source of a general tuberculosis. As far as the cervical lymph nodes are concerned, when found the seat of isolated tubercular infection of a primary nature, it can be justly claimed that such infection has proceeded from the tonsil.

A general discussion of this subject, in which several papers were read, was held by the Section of Laryngology of the British Medical Association at its last annual meeting.[13]

### THE OPERATIVE TREATMENT OF MALIGNANT DISEASE OF THE LARYNX.

In spite of the fact that this subject has been discussed for years and that recent discussion presents nothing essentially new, it is well to repeat principles which seem to be gaining ground, although not universally accepted. These principles may be briefly summarized as follows: An early diagnosis and treatment are of primary importance. Intralaryngeal methods are to be condemned. Under modern surgical proceedings an exploratory thyrotomy, followed if necessary by a generous removal of tissue, is not a very dangerous operation, and in case of a circumscribed growth is comparatively rarely followed by a recurrence. For a good argument on the subject the reader is referred to a paper by Sir Felix Semon read at the last annual meeting of the British Medical Association.[14]

As a general principle operation should be at once proceeded with if the case lends itself at all to operative interference as soon as the diagnosis is made. We must distinguish between intrinsic and extrinsic malignant disease of the larynx, the former comprising the true interior of the larynx from the ventricular bands downwards, the latter the tumors situated on the aryteno-epiglottic folds, the arytenoid cartilages, epiglottis and the posterior wall of the cricoid cartilage. The distinction from a practical point of view is all important. The intrinsic form remains much longer a purely local affection, and shows very little tendency until the disease is much advanced to infect the neighboring lymphatic glands. Upon this fact depends the enormous difference between the two forms with regard to prognosis, extent and danger of the operation.

We possess at present five different operative methods of dealing with malignant disease of the larynx. The intralaryngeal method, with some extremely rare exceptions, is absolutely unsuitable for the radical extirpation of malignant disease of the larynx. After opening the larynx the affection is generally found much more advanced than appeared from laryngoscope inspection. The advantages sink into insignificance in comparison with the dangers which loss of precious time and undue postponement of really radical operation brings about.

In cases of intrinsic malignant disease in which the diagnosis is made when the disease is not too extensive, thyrotomy and thorough removal of the growth with a sufficient circumference of healthy tissue is an ideal operation.

Partial extirpation of the larynx in which no less than one entire wing of the thyroid and possibly an arytenoid and parts of the cricoid cartilage are removed does not offer any greater technical difficulties than mere thyrotomy.

Total extirpation is an operation which cannot be described as a pleasant one, but in extrinsic malignant disease and particularly when it is situated on the posterior surface of the cricoid cartilage, the smaller operations are of no avail.

Sub-hyoid pharyngotomy is suitable for cases in which the disease starts from the epiglottis or from the aryteno-epiglottidean fold, and its technique is an easy one; but a curious fatality has reigned over this operation, the causes of which have not as yet been sufficiently elucidated.

Whilst the microscope may be of infinite value in deciding the question of diagnosis, its *rôle* in this question is that of a helpmate, but not of an infallible arbiter; the clinical observer must have the courage of his own opinions, and in suspicious cases perform an exploratory thyrotomy.

[13] Brit. Med. Journ., Oct. 31.

[14] Ibid.

# Reports of Societies.

## MEDICAL SOCIETY OF THE STATE OF NEW YORK.

Ninety-Eighth Annual Meeting, Held in Albany, Jan. 26, 27 and 28, 1904.

Algernon T. Bristow, M.D., of Brooklyn, president.

First Day, Tuesday, Jan. 26.

### PRESIDENT'S INAUGURAL ADDRESS.

Dr. A. T. Bristow, in this address, called attention to the fact that the present membership of the state society was 1,135, and of the county societies, 5,680, and estimated the membership, if the two state organizations should combine, at 5,700. He declared that the time was ripe for putting an end to the strife of the past twenty-two years, and expressed the hope that not only would this be done, but that, in the near future, distinctive sectarian titles would no longer be recognized by the state.

### REPORT OF COMMITTEE ON CONFERENCE.

Dr. Henry L. Elsner of Syracuse presented this report, which has already been extensively printed by the medical press. He was followed by Dr. A. Jacobi of New York, who urged all to forget the past in the pleasure of this supreme moment, when they were about to end all schisms. He then brought the question of consolidation and unity to a climax by moving the adoption of the following resolutions:

"*Resolved*, That the report of the Joint Committee of Conference be accepted, and that the proposed agreement for the consolidation of the Medical Society of the State of New York and the New York State Medical Association be and the same is hereby approved, and the president of the society is hereby authorized and directed to execute the same in the name and on behalf of the society, and the secretary is hereby authorized and directed to affix the corporate seal thereto; and be it further

"*Resolved*, That the committee of the society, heretofore appointed for the purpose of bringing about the consolidation, be and is hereby continued as such committee, with full power and authority to do whatever may be necessary to carry the agreement into effect."

These resolutions were unanimously adopted.

### TIC DOULOUREUX AND OTHER NEURALGIAS FROM INTRANASAL AND EXCESSIVE ACCESSORY SINUS PRESSURES.

Dr. Sargent F. Snow of Syracuse read this paper, based on an experience with 20 chronic cases. In every one of these there was present either intranasal pressure or an accumulation in some of the sinuses, and in none of the cases was it necessary to resort to excision of the nerve to obtain relief.

### ENURESIS.

Dr. George E. Beilby of the State Industrial School at Rochester presented a paper on this subject. He had had exceptional opportunities for studying this condition, as it was present in from 4 to 10% of the population of that institution. His paper was founded on a study of the records of 75 well-marked cases. In only a few of the cases was there any marked phimosis, and the urine was almost uniformly normal. Of the 75 cases, 60 had nocturnal enuresis, 2 diurnal and 13 both nocturnal and diurnal enuresis. It was very significant that 71 of the 75 patients were confirmed masturbators. The author's conclusion was that the majority of the cases were dependent upon an abnormal irritability of the lumbar enlargement of the spinal cord. His treatment consisted in circumcision, for its mental and moral effect, the use of cold spinal douches, counter-irritation over the lumbar spine and the use of antispasmodics.

### TOXEMIA IN TUBERCULOSIS OF THE CERVICAL LYMPHATIC GLANDS.

Dr. Arthur W. Elting of Albany reported a case of supposed Hodgkin's disease occurring in a patient twenty-six years old, in which, after the removal of the glandular mass by operation, the patient's condition became very critical, apparently from the entrance into the circulation of a quantity of toxins set free during the operation. Microscopical examination showed the glands to be distinctly tuberculous.

### SYMPOSIUM ON DIABETES. PATHOLOGY.

Dr. R. M. Pearce of Albany opened this symposium by a discussion of the pathology. He reviewed the well-known theories and facts bearing on the etiology of this disorder, laying special stress on the recent work inaugurated by Opie. He pointed out that diabetes practically never occurred in the interlobular form of chronic pancreatitis, but in the interacinar form, in which the islands of Langerhans were often involved, diabetes was not infrequent. In 23 cases of cancer of the pancreas collected by the speaker glycosuria was present in only three, and in these cases there was distinct involvement of the islands of Langerhans. It was an interesting fact that when the pancreas was the seat of destructive processes these islands proved more resistant than the surrounding tissues.

### PHYSIOLOGICAL CHEMISTRY OF DIABETES.

Dr. David Edsall of Philadelphia, Pa., discussed this subject. He detailed certain experiments on birds and frogs, showing a relation between the liver and pancreas in the matter of the production of glycosuria. He was inclined to believe that there was a greater variety of sugars than was generally believed. In diabetes there might be a defect in glycogen construction, or an excessively rapid conversion of glycogen into sugar.

### MEDICAL TREATMENT OF DIABETES.

Dr. William H. Thomson of New York presented this paper. He said that he very seldom prescribed opium or its derivatives for diabetics, believing that they not only were incapable of permanent good, but were in themselves deleterious. As a matter of experience he had learned that persons suffering from diabetes who were not very obese often improved very decidedly under the administration of cod liver oil, and that they tolerated large doses of this remedy. Iron and arsenic were also beneficial. In severe cases he began the treatment by prescribing 15 gr. each of antipyrin and benzoate of sodium, four times a day, and, after a time, substituted 15 gr. of aspirin and 10 gr. of bismuth salicylate. Alkaline waters were often of benefit, but it should not be forgotten that all such waters were apt to cause emaciation if given for a long time.

### GENERAL MANAGEMENT OF DIABETES.

Dr. F. C. Shattuck of Boston read this paper. He favored the adoption at once of a rigid diet, but

in the mild cases after one or two months it was proper to cautiously test the patient's powers of tolerating starch. If diacetic acid and acetone were present in the urine, a radical change in the diet was dangerous. The speaker said that he had but little faith in the diabetic breads, personal investigation having shown their unreliability. If such a bread were made so as to be palatable it would not be a safe article of diet to continue for any great length of time. Diabetics should be warmly clad, and should lead a life free from fatigue and anxiety. The amount of exercise to be taken must be carefully graduated to the individual needs.

THE OCCURRENCE OF DIABETIC AND NON-DIABETIC GLYCOSURIA IN THE SAME INDIVIDUAL.

DR. HEINRICH STERN of New York was the author of this paper. It may be summarized as follows: Diabetic glycosuria is nothing more than the salient feature of the second stage of the diabetic deterioration. Glycosuria is a symptom of many other disturbances, both ectogenous and endogenous in origin. Duplex melituria is the result of two concurrent or intercurrent affections of dissimilar character having the one symptom, glycosuria, in common.

CONFLICTING CLAIMS OF GENERAL EDUCATION AND PROFESSIONAL EDUCATION.

ARTHUR T. HADLEY, LL.D., president of Yale University, addressed the society at its evening session, taking the above for his theme. He said that in the professional school there was a greater intensity of application, but this was attained at a sacrifice of some breadth of view. The sooner a man's brain began to turn to his life work the better, but the later a man's horizon became narrowed to the sphere of his special activities, the better also. The true system of education should help men to broaden their mental and moral horizon even while they were concentrating their vision on their specially chosen work. It should not be necessary to shorten the college course, but this should be made to include within it all of the scientific studies that it was practicable to embrace.

PRESIDENT'S ADDRESS, "THE PRESENT STATUS OF THE MEDICAL EXPERT."

DR. A. T. BRISTOW of Brooklyn delivered an address on this subject. He denounced the sneering criticisms of courts on the character of medical experts as libels on a noble profession, and declared that the evils, which all admitted to exist, were not related to the personal character of such experts, but were inherent in the antiquated and very faulty mode of legal procedure. In the first place, it was a most pernicious rule which placed the youngster just out of college and hospital on the same level with men in the profession full of years and rich experience. Another source of confusion was the hypothetical question, a device often so constructed as to prevent the witness from telling more than a part of the truth. If the legal profession showed a greater inclination to assist in this much-needed reform, it would be possible in time to have laws enacted which would secure the calling of properly qualified experts, and would make their testimony less biased than at present.

SECOND DAY, WEDNESDAY, JAN. 27.

THE SUBMERGED TONSIL.

DR. THOMAS J. HARRIS of New York read a paper with this title. He said that the submerged tonsil was usually of the hyperplastic form. The general symptomatology embraced attacks of peritonsilar abscess and of non-suppurative tonsilar inflammation, pain in the throat, the collection of mucus in the throat, with, perhaps, annoying cough or earache. The ordinary operation of tonsilotomy secured only the partial removal of the tonsil. The treatment which he recommended was the thorough separation of all adhesions of the tonsil and then the complete removal of the tonsil by means of the tonsilar punch. His own practice was to operate upon one tonsil at a time, at an interval of a week, doing the operation under cocaine anesthesia.

SOME PHASES OF CHRONIC LARYNGITIS.

DR. Z. L. LEONARD of New York presented this paper. He reported several different types of cases, and emphasized the general amenability of the affection to rest of the part, change of climate and, perhaps, of occupation.

A PLEA FOR ACCURATE KNOWLEDGE IN THE DIAGNOSIS AND TREATMENT OF CHRONIC SUPPURATIVE OTITIS MEDIA.

DR. J. F. MCCAW of Watertown pointed out the necessity for examining every case of chronic suppuration of the middle ear for obstructions in the nose and nasopharynx, and urged that the treatment, to be successful, must be based upon the pathological conditions found to be present.

IRRITABILITY OF THE BLADDER IN WOMEN.

DR. R. L. DICKINSON of Brooklyn read this paper. He classified the chief causes according to their frequency, as follows: (1) Inflammation of the base of the bladder, at times the after-result of gonorrhea; (2) uterine, ovarian and tubal trouble; (3) inflammations about the meatus; (4) urethritis; (5) hyperemias of masturbation; and (6) prolapsed conditions. Cystoscopy of the base of the bladder was easily done with the woman in the knee-chest position, but it was important, in the average woman, to make use of the smallest size of Kelly's instrument, and, after the nature of the trouble had been discovered, to carry on the treatment through a still smaller instrument.

FIFTEEN YEARS' EXPERIENCE WITH UTERINE FIBROIDS.

DR. W. E. FORD of Utica presented in this paper the results of a study of 162 cases, which had been followed long enough to know the ultimate result of treatment. This number included 37 single women. In his earlier years he had treated 96 cases by the galvanic current, using a pressure of 40 volts and from 50 to 150 milliampères. Of these 96 cases, there were 7 in which both tumors and symptoms disappeared. In 26 there was a symptomatic cure. The accuracy of these statements was attested by the fact that 25 of the cases had been followed for five years or more. He was not at all in sympathy with those who attributed all sorts of dire results to the galvanic treatment, for most of them could be better explained in other ways; moreover, he had met with no accidents except in one case. In that one, the patient died of infection arising from an unrecognized gonorrheal salpingitis. He had tied the uterine arteries per vaginam in a number of cases but had soon abandoned the method as hazardous, difficult and useless. He had lately stopped the bleeding produced by uterine fibroids by the administration of suprarenal extract. He had operated upon 61 women for fibroids, 34 of them by Baer's method.

Probably not more than 20% of the cases of fibroids required operation.

RESULTS IN DIFFUSE SEPTIC PERITONITIS TREATED BY THE ELEVATED HEAD AND TRUNK POSITION.

Dr. Russell S. Fowler of Brooklyn said that before the employment of this position the mortality in this class of cases was 25%. The paper reported an experience with 100 cases, many of them being profoundly septic and almost moribund at the time of the operation. There were 67 recoveries. The general method of treatment consisted in sponging accessible infected areas and flushing successively with a mixture of equal parts of soda solution and peroxide of hydrogen, and with salt solution. Finally, the same procedure was employed in the pelvic and abdominal cavities, using a large Chamberlain tube, and a large tube was inserted in the pelvis and brought out through the abdominal wound, but was dressed separately therefrom. Immediately after operation the head of the bed was raised at least one foot. Of the 33 deaths, 17 occurred in the first twenty-four hours after operation.

ASTHENOPIA; A CLINICAL STUDY.

Dr. D. H. Wiesner of New York said that if the pain were near the eye the asthenopia was probably due to some refractive error, but if further away it was more likely to be of muscular origin.

*(To be continued.)*

## ANNUAL MEETING OF THE BOSTON SOCIETY FOR MEDICAL IMPROVEMENT, JAN. 18, 1904.

A. L. STONE, M.D., SECRETARY.

Dr. E. O. Otis: I desire to express my appreciation of the exceedingly interesting and valuable paper which Dr. Sears has presented to us. A series of statistics, such as these, relative to the end results of pleurisy are of very great value, particularly with regard to the etiology of the disease. Whether or not all cases of primitive pleurisy will eventually be found to be of tubercular origin, as Damanoy and other French authorities seem to think, it is a fact attested by the experience of us all that many cases make a permanent recovery, even when the evidence points to a tuberculous infection. As illustrative of this I recall the case of a family of four children under my care some fifteen or more years ago. Two daughters died of pulmonary tuberculosis, one at the age of about seventeen years and the other somewhat older. A third girl developed acute pleurisy, for which I aspirated her several times. She made a complete recovery and subsequently went through the Boston City Hospital Training School for Nurses, became a nurse and remained well thereafter. The fourth member of the family, a young man in the Massachusetts Institute of Technology, also had acute pleurisy, for which he was aspirated. He likewise recovered and was enabled thereafter to devote himself to the arduous duties of a mechanical engineer and so far as I know is at the present time well and attending to his professional duties. From the family history I have always believed that these two cases of acute pleurisy were of tubercular origin, and yet they made complete and lasting recoveries. If, as we now know, pulmonary tuberculosis is curable in so many cases, why should not tuberculous pleurisy likewise be permanently recovered from? The useful and practical lesson to be learned from such a discussion as this, it seems to me, is that we should bear in mind the possibility of a tubercular origin in every case of apparent primitive acute pleurisy, and exercise great care not only in the treatment of the acute stage but in the convalescence, and see that the patient is placed under such hygienic conditions that he will, as speedily as possible, regain complete expansion of the lung — indeed treat the convalescent from acute pleurisy much as we treat an incipient case of pulmonary tuberculosis by the open-air method.

Dr. George B. Shattuck: Dr. Sears' paper serves once more to emphasize the importance of having in mind the question of tuberculosis in all cases of pleurisy which present themselves to the medical practitioner. The percentage of deaths and recoveries, and the period of intervention between the attack and recovery, or the reverse, undoubtedly would be found to differ in a series of statistics made up on hospital cases and on private patients, or those outside of hospital services, and certainly the difference would be marked in cases occurring in such material as presents itself at our City Hospital and in families such as the one referred to just now by Dr. Otis, from which he reported several cases of pleurisy, two with recovery. Certain pathologists, those of Vienna, for example, I believe, claim that the percentage of autopsies in which some tuberculous focus is not found, provided the examination be sufficiently minute and careful, is practically *nil;* in other words, that 97 or 98% of autopsies, minutely carried out, reveal the existence at some time or other of a tuberculous lesion.

Dr. William T. Councilman: Anatomically there was not very strong evidence in favor of the tuberculous character of all pleurisy. It is comparatively rare that a tuberculous pleurisy is the primary tuberculous lesion in the body and a point of departure for a further tuberculous infection. It cannot be said how frequently the pleurisies which leave behind traces of their presence in adhesions had been accompanied with effusion. With regard to the general frequency of tuberculosis at autopsy Dr. Councilman said that he did not regard it as too high an estimate to say that three-fourths of all individuals at autopsies had some tuberculous lesion in the body.

## BOSTON SOCIETY OF PSYCHIATRY AND NEUROLOGY.

J. W. COURTNEY, M.D., SECRETARY.

(Concluded from No. 7, p. 192.)

Dr. Magrath: Dr. Walton pleads for a greater precision, which, it seems to me, would be very greatly advanced by the use of the terms deviation and deviate to designate conditions of departure from the type in any direction. The condition of degeneration in cells and in tissues may be a normal condition. A degeneration of the omphalomesenteric artery, changes in blood vessels which accompany the alteration in circulation from the fetal to the adult type, is accompanied by degeneration of tissues; therefore, degeneration in this morphological sense is normal. The absence of degeneration, persistence of what for the fetal conditions is normal, would be a deviation of type, and in itself would be an atypical condition, in that sense a degeneration, as departing from the normal. I feel grateful to Dr. Walton for making this plea for greater precision and suggesting the means to the end.

Dr. Sawin: I am very glad to be present because of the interest I feel in the kind of work

done by the members of this society. I was particularly interested in Dr. Walton's paper, and it seems to me there is a vast amount of material in this state in connection with the penal institutions that is not utilized, particularly in the state prison and the reformatory at Concord. It seems to me, also, that some members of your society ought to make efforts either to get on the commission or have some connection with those institutions to study the material. While I was at the state prison seven years I was more or less interested in the work, but did not feel competent to pursue the study as I should.

At a recent conference on charities, at Buffalo, N. Y., Dr. Laub of Dannemora claimed that 20% of the inmates of state prisons are insane, and Dr. Robertson of Elmira Reformatory recommended the addition of an experienced alienist to the prison department, to regularly visit each penal institution, and thus minimize dangers to society by transfer to insane hospitals of criminals whose terms are about to expire.

DR. W. E. PAUL: The consideration of the word deviate as presented by Dr. Walton will serve one good purpose in that it will clear in one's mind the significance of degeneracy. That a new term is needed as an equivalent of degeneracy may be questioned. The uncertainties as to the meaning of degeneracy and the varying use and ambiguities of the term should influence us to fix more firmly and clearly the meanings the word should convey, rather than be accepted as a demand or justification for a new word.

It seems to me that at present any use of the term degenerate carries with it some reference to mental qualities always in the nature of a blemish. The long list of anatomical deviations from the ideal normal called stigmata should be observed and described; but one should not at once assume that the individual thus marked is inefficient or peculiar physically.

I do not believe Dr. Walton can assure us that deviate, if adopted, would escape all the difficulties attending the use of degenerate. Perhaps all this discussion really represents a call for more terms, or subheadings, in the general subject, a better classification and a more systematic arrangement of all the branches included under degeneracy. Deviate and deviation would, it seems to me, be admirable terms to apply to anatomical variations.

DR. W. E. FERNALD: It seems to me a change in the nomenclature, as Dr. Walton suggests, would tend to clear the air somewhat in that it would help us to recognize that certain variations in type are normal. I was consulted, a few days ago, by an educated woman who came to see me in great distress because she had discovered that her eleven-year-old daughter had a Darwinian tubercle. She had consulted various physicians and was in a distressed condition. It seems to me that we forget that every individual is the sum of his ancestors and that the tendency for nature to seek a common denominator explains some of the variations from the normal type.

DR. J. W. COURTNEY: I have long been interested in the subject which Dr. Walton has so convincingly presented to the society this evening. At the present time it may be said that the popular conception of the term degenerate has been attained largely through the propaganda of pseudo-science and the yellow press. With the idea of doing something toward establishing a more rational view of the matter I some time ago wrote the following for a semi-popular medical work: "At the present day we frequently hear the term 'born degenerate' used to designate some unfortunate who happens to be the possessor of a high-arched palate, misshapen ears or an asymmetric skull, and who, under the stress of circumstances, betrays some mental or moral obliquity. The argument is that nature, while inflicting upon this individual outward stigmata of her freakishness, has been equally unkind in the matter of moral and intellectual endowments, and that he, in sinning against well-recognized laws, is simply the victim of his own vicious organism. To argue thus is fallacious in the extreme, for it throws a most unwarrantable burden upon nature, and leaves absolutely nothing to the account of two factors which are of vast importance in determining the mental,moral and social status of the individual — namely, education and environment. In proof of this one has only to seek in the circle of his own acquaintances. This all leads, however, to the matter of heredity and its influence upon a person's nervous and mental welfare. Upon this point may be quoted the following admirable statement of the facts in the case by Dr. James J. Putnam: 'Fortunately for the educational outlook, the evidence has begun to accumulate that a morbid inheritance is not the inevitably crushing and baneful thing that it has been thought. We come into the world, each one a being of limited capacity, but in other respects free to become what circumstances make us, and responsible, to the extent of our capacity, for our lot. We bring no ticket-of-leave which stamps us as drunkards or maniacs on probation, but we do bear, in the histories of our ancestors, a certificate that hints by what efforts and by what avoidances we can make ourselves reasonable successes in our respective lines. There is no original sin, and not even, as it seems to me, original propensity, but only original capacity and original limitation, and even limitation is only another name for latent capacity.'"

DR. P. C. KNAPP: I think we would all agree that there is something in degeneracy; that a degenerate as depicted by Morel is a being who cannot be exactly described or classified, yet whose existence can be in a measure recognized; just as we would all agree that there is something in physiognomy, without accepting all the doctrines of Lavater, and that there is something significant in the shape or form of the hand, without going into the extravagances of Des-

barrolles; but the work done by many pseudo-scientific men in describing the so-called stigmata of degeneracy seems extravagant, while the incessant measurings to get the quarter or half-inch deviation from the accepted standard suggest Cowper's lines:

> "The toil of dropping buckets into empty wells
> And growing old with drawing nothing up."

I think, therefore, Dr. Walton has done a service in bringing forward this substitute, which is open to the objection that it is too general. We are all deviates, and the perfect type is one which does not exist. It is simply a question of averages, and the departure from the average, whether in height or weight or color, is not in any way to be regarded as an indication of disease or abnormality. Some of the stigmata of degeneration which Lombroso, Peterson and others have enumerated may fairly be regarded as such stigmata; they are the indication of a morbid heredity, a decline of the individual; but others may be due to acquired disease in the individual, others still to mere mechanical influences, as the amputation of the hand in utero. An abnormally shaped palate which was due to some acquired disease in the nasal tract would count as a stigma of degeneration as much as some marked moral or physical perversion which was an actual indication of hereditary taint. I think Dr. Walton's term is very much more appropriate, but it is open to the objection of being too general.

Dr. Walton, in closing: It is not proposed that the word degeneration be abandoned, but that its use be curtailed. It should not be supplanted, but supplemented. Only such stigmata as are undoubtedly deteriorative should be called stigmata of degeneration, and the word degenerate should be applied only to individuals in whom the signs of deviation are of such character or in such number as really to indicate degeneracy, mental, moral or physical. All individuals deviate from the average normal, and if the proposed nomenclature be accepted, a person might be said, for example, to be a deviate but not sufficiently to be placed in the degenerate class.

## Recent Literature.

*Physical Diagnosis of Diseases of the Chest.* By Richard C. Cabot, M.D., Physician to Out-Patients, Massachusetts General Hospital, Assistant in Clinical Medicine, Harvard Medical School. Second Revised Edition. Wm. Wood & Co.

Successive editions of a book may be said to justify themselves in the demand to which they furnish the response, and this manual, surely, in quality or presentation of subject matter, needs no higher compliment. The revision, however, has not been made with that care that might reasonably have been demanded. Obvious errors in proofreading, an occasional crudity of diction, a carelessly compiled index, are all details which, even if excusable in a hastily prepared first edition, are certainly not to be tolerated in the second. Thus, for example, pneumohydrothorax has become pneumoserothorax, but figures also as seropneumothorax and sero-pneumothorax, while to hydrothorax has been granted no variety from its old nomenclature. Those of the illustrations which are reproductions of photographs or radiographs are either poorly or atrociously executed, and there are several which, good or bad, might well have been spared.

Of new matter the only essential addition is a short and comprehensive description of apparatus and methods used in the testing of blood tension.

*A Textbook of Legal Medicine and Toxicology.* Edited by Frederick Peterson, M.D., Chief of Clinic, Nervous Department of the College of Physicians and Surgeons, New York; and Walter S. Haines, M.D., Professor of Chemistry, Pharmacy and Toxicology, Rush Medical College, in affiliation with the University of Chicago. Two volumes of about pp. 750 each. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

We have already commented in our issue for Sept. 3, 1903, upon this work on Legal Medicine and Toxicology as a whole, with special reference to the first volume, which at that time had alone appeared. Twenty-four contributors write for the second volume, and, as stated in the preface, their papers have been inserted practically without editorial change, which, with its evident possibilities of repetition and confusion, the authors regard as the wiser plan, inasmuch as individual responsibility more than compensates for such possible defects.

The second volume is comprised in two parts, the first of which is concerned largely with the medico-legal aspects of sexual matters. Part II takes up the general questions of toxicology as applied to medico-legal investigation, a matter which has been of increasing importance during the past few years. The list of authors of the various articles is a guarantee of the carefulness of the work. A section of the book which should be of much value, and so far as we know is unique in the form here presented, is that concerning laws relating to the insane, being a digest of the statutes of all the states and territories and of the District of Columbia relating to the commitment, care and custody of the insane. To have this information, ordinarily somewhat difficult to obtain in concise form, brought within the limits of about one hundred pages cannot fail to be extremely useful.

This volume, like its predecessor, is adequately illustrated with colored plates where necessary, as well as with the ordinary text cuts. We have no doubt the volumes will fill the place for which they are designed, namely, to provide for physicians and lawyers "a fairly comprehensive survey of forensic medicine in moderate compass."

THE BOSTON

# Medical and Surgical Journal.

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## PREMATURE BURIAL.

A BILL has been presented to the Massachusetts Legislature, now in session, entitled an "Act to restore Life, and to prevent Premature Encoffinment, Burial, or Cremation," the provisions of which are of sufficient interest to the medical profession to warrant careful consideration. The act reads as follows:

SECTION 1. That no person shall place the body of any human being in a coffin, casket or other receptacle by which air or light is excluded, or by which free movement is prevented, or bury or cremate such body except after a certificate of death as hereinafter provided.

SECTION 2. Whenever any person in any city or town apparently deceases, the board of health of said city or town, or the selectmen of such town, if no board of health exists, shall within six hours of such event being known be informed of such apparent death by any person or persons having the body in charge.

SECTION 3. As soon as is possible after such information the board of health, or said selectmen of such city or town in which such apparent death occurred, shall cause an examination of such body to be made to determine whether death is real or only apparent, and certification of the fact of death shall not be made until the following facts are established by actual tests, wherever possible, viz.: One, Heart sounds entirely absent, the test being by the stethoscope. Two, Respiratory sounds entirely absent. Three, Temperature of the mouth same as that of surrounding air. Four, A bright needle plunged into the body of the biceps muscle, left there, shows no sign of oxidation. Five, Intermittent shocks of electricity at different tensions passed by needles into various muscles and groups of muscles give no indication whatever of irritability. Six, Fillet test applied to veins of the arm causes no filling of veins on distal side of fillet. Seven, Opening of vein shows the blood to have undergone coagulation. Eight, Subcutaneous injection of ammonia causes a dirty brown stain indicative of dissolution. Nine, Careful movements of the lower jaw and of lower extremities and of occipito-frontalis indicates the presence of rigor mortis. Ten, Scarlet line (diaphanous test) is absent. Eleven, Decomposition has set in. And provided, further, that, if there is an absence of any of the signs of death except decomposition, all known means of resuscitation shall be tried while such signs are absent.

SECTION 4. The tests provided for in Section 3 shall be made by not less than two doctors of medicine in person, who shall have lawfully received the degree of M.D., one of whom shall be appointed by the board of health, and said doctors shall certify to the several tests made with the result of each test.

SECTION 5. No provision of this act shall be construed to prevent any means being used by any person to restore life to the supposed dead body.

SECTION 6. Every city and town shall provide suitable rooms for the carrying out of the provisions of this act, wherein tests may be made. Said rooms shall contain conveniences for resuscitation of bodies and for funeral services: *provided, however*, that the provisions of this act shall preferably be carried out in the domicile of the supposed deceased, his relatives and friends; but in no case shall any provision of this act be omitted. The expense of said rooms shall be included in the annual expenses of the city or town and provided for in the annual appropriation of money for city and town purposes.

SECTION 7. The fee for the services provided for in Section 3 shall be fair and reasonable, and shall be fixed by the board of health and be at the expense of the city or town.

SECTION 8. Any violation of this act on the part of any person responsible therefor shall be deemed a crime, and shall be punished by a fine of one thousand dollars or by imprisonment for one year, or by both such fine and imprisonment.

SECTION 9. All laws or parts of laws inconsistent with this act are hereby repealed in so far as they apply to this act, but no further.

SECTION 10. Copies of this act shall be conspicuously posted in all cities and towns of this Commonwealth by their respective boards of health.

The peculiarity of some of the foregoing provisions is worthy of comment. If a householder, or any one having charge of the body of a deceased person, does not inform the board of health of a town as to the fact of such death within six hours after its occurrence, he is liable to a fine of $1,000, or imprisonment for one year, or both fine and imprisonment. Ignorance of

law is no excuse for violation, but, nevertheless, the penalty here seems severe.

According to the terms of Sections 3 and 4 two physicians must see each dead body, armed with the following paraphernalia — stethoscopes, thermometers, bright needles, electric batteries, fillets, lancets and syringes, and if any one of the eleven tests or signs named in Section 2 do not respond, then the physicians must continue "all known means of resuscitation, while such signs are absent." If the attending medical men become weary and cease their exertions, a fine of $1,000 awaits them.

The expense of providing rooms for such examination as is required by this act is to be borne by the cities and towns. This, however, is but a small portion of the expense of carrying out the provisions of the act. A "fair and reasonable fee," such as is named in Section 7, for making all of the eleven tests described in Section 3 and of keeping oneself supplied with all the necessary apparatus for making them, should not be less than $5 for each physician or $10 for the two, and this would entail upon the cities and towns a new tax of about a half-million dollars annually, since the yearly number of deaths is about 50,000.

The demand for such legislation arises from the morbid fear which some people have of being buried alive, an occurrence which is less likely to happen than that of being struck by lightning. Without presuming to doubt the rare occurrence of such an event, we can hardly deem it reasonable to enact such legislation as is here demanded for its prevention.

Professor Brouardel, a high modern authority on medical jurisprudence and director of the Paris Morgue, admits the possibility of premature burial in rare instances,[1] but adds, except a single case which he cites: "None of the cases as such are very conclusive. The newspapers describe them, but no medical man has been a witness. When I read of such a case in a newspaper, I make an inquiry, as other physicians have done. I write to the mayor or to the health officer and ask him if the facts are genuine. The reply I am wont to receive is that the story is quite unknown in that part of the country whence it is supposed to have come, or that the person mentioned is not dead, and has not been placed in a coffin."

In several cities of southern Germany, establishments have existed for many years (since 1821 in Munich and for more than a century in Weimar) where every body of a deceased person is exposed for at least two days. The writer visited two of the cemeteries in Munich, a few years since, where these reception houses exist, one near the center of the city, another outside the city across the river Isar, and learned that out of the many hundreds of thousands of corpses that have been brought to them during these many years, not one has ever shown signs of life.

Most of the published statements upon this subject consist of a curious collection of sensational stories copied from public newspapers, traditions, fables and falsities, with here and there a grain of wheat among the chaff. Considered as additions to science they have but little value.

Looking at the subject, however, from the standpoint of protection from crime, there is room for improved legislation, such as was once asked for by members of the Massachusetts Medical Society. It is desirable that the small percentage of deaths which occur without the cognizance of an attending physician, but are not apparently due to violence, should receive the attention of some medical official clothed with authority to issue a certificate of death. For this purpose, however, it would not be necessary to enact legislation of so cumbrous and stringent a character as that required by the provisions of Senate Document 69.

[1] La Mort, et la Mort Subite, p. 35.

## A MEDICAL MEMBER OF THE PANAMA CANAL COMMISSION.

The Committee on Medical Legislation of the American Medical Association, consisting of Drs. C. A. L. Reed of Cincinnati, Wm. L. Rodman of Philadelphia and Wm. H. Welch of Baltimore, is vigorously urging the appointment of a representative of the medical profession as a member of the Panama Canal Commission. The National Legislative Council of the Association, consisting of the above committee and one representative from each state medical association, at its regular session held in Washington, Feb. 11 last, adopted the following:

*Whereas*, a well-known unsanitary condition prevails on the Isthmus of Panama, as shown by the large percentage of sickness and death among the laborers engaged in the previous work on the Panama Canal, and in view of the fact that the successful prosecution of future work on the canal must largely depend upon the sanitary administration, which includes the prevention of sickness and the saving of the lives of the laborers, quite as much as upon the solution of the great engineering problem:

*Resolved:* That a representative of the medical profession who is an authority upon the advanced methods of investigating the causes and of the prevention of disease should be appointed a member of the Panama Canal Commission, that he may have authority to protect the health and thereby save the lives of persons engaged to work on the proposed Panama Canal.

A letter has been addressed to the President of the United States by the Committee of Medical Legislation enclosing this resolution, advocating the appointment of a medical member of the Panama Canal Commission, and suggesting Col. W. C. Gorgas of the United States army for the place. The committee also asks for a personal hearing before the commissioners are finally selected.

The commission is to consist of seven members, of whom four, under the law, must be engineers. As we write, it is generally understood that a majority of the members have been already selected. The Congress very properly recognized that engineering problems are the essential ones to be solved at the Isthmus, and as properly that the necessary technical ability to be efficient should be clothed with full authority. If the sanitary problems connected with the construction of the canal are also of prime importance the same consideration applies in a measure to them. Past experience has shown that the sanitary problems at the Isthmus, if secondary in any degree to the engineering problems, are certainly not far behind these latter in importance. We have no desire to exaggerate the unhealthfulness of the Isthmus or of any part of Central America. It is doubtless as untrue that the whole line of the canal is one unbroken zone of plague as that it is a region foreordained as the white man's sanitarium. Rather favorable statistics have been quoted as to the percentage of sickness and mortality rates among employees in recent years and working at a higher altitude. However this may be, we think the unprejudiced and those most competent to judge will agree that the construction of this canal at that site cannot be carried to a satisfactory and creditable conclusion without a constant, an intelligent and forceful control of all hygienic and sanitary considerations and details. It is not enough that good advice should be available; there should also be prompt and efficient execution.

In suggesting the name of Colonel Gorgas for the commission the committee of the American Medical Association has selected a person well qualified to secure the realization of these general considerations. His work as sanitary officer of Havana in clearing that city of yellow fever is well known to the medical profession at large. He is no less favorably associated with recent investigations in regard to malaria. He shared with Maj. Walter Reed the honor of a recommendation by the Secretary of War, in his report for 1902, for special recognition of services from the government of the United States. Colonel Gorgas was born in Alabama, and is about fifty years of age. Much of his military service has been at stations on the Gulf coast. He is at present stationed at Governor's Island, New York Harbor, as chief surgeon of the Department of the East.

Colonel Gorgas has theoretical knowledge, technical skill and practical experience in sanitary matters; moreover, these are combined with a knowledge of men and affairs and a tried administrative ability. This combination of characteristics would seem to constitute what is required of at least one member of the canal commission.

In addition to safeguarding the health of employees, such a commissioner would find in the sphere of his functions such problems as securing a better understanding than now exists of the etiology of Chagres fever, and the gradual establishment of such conditions on the Isthmus as would give guarantees against its becoming later, when the canal is open to traffic, a distributing center to the eastward of such a disease as yellow fever, and to the westward of cholera and plague.

Since the above was written and in type, the commission has been made up without a medical representative. Whatever method may be favored for securing the sanitary requirements of the situation, we see no occasion to change our statement. The disappointment of the medical profession that no sanitarian has been placed on the commission may be mitigated, though not removed, by the report that the services of Colonel Gorgas are likely to be retained in an advisory capacity.

## MEDICAL NOTES.

AMERICAN GYNECOLOGY. — The January number of *American Gynecology* was destroyed in the fire which recently visited Baltimore.

BURNING OF AN INSANE HOSPITAL. — It is reported that the Racine, Wis., County Hospital Asylum was burned on the night of Feb. 19.

There were at the time under treatment 133 patients, who were taken from the building in safety.

A Centenarian. — Miss Clarissa Merrill died in Utica, N. Y., Feb. 28, in her one hundred and first year. She retained her mental power essentially unimpaired up to the end of her life.

In Honor of Dr. D. B. St. John Roosa. — A dinner was given at Delmonico's, New York, Tuesday evening, March the first, in honor of Dr. D. B. St. John Roosa and to commemorate the twenty-one years since the inauguration of post-graduate medical instruction in this country. Dr. William Osler of Baltimore presided.

Printers and Editors. — The following statement, taken from the columns of our contemporary, the *Journal of the American Medical Association*, expresses our present point of view: "That Chicago publications are not the only ones that are embarrassed sometimes by strikes in the mechanical department, is evidenced by the apology for lateness of issue which the *Boston Medical and Surgical Journal* gives in a recent number. Our contemporary has our sympathy, as has also the *Journal of Medical Research*, which likewise has the misfortune (we use the word only in its application to the existing delay) to be issued in Boston. A card announces that the *Index Medicus* is also a sufferer, the annual indexes for 1903 being still unfinished. We wish our Boston friends speedy release from their handicap. Our sympathy is born of experience."

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Feb. 24, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 31, scarlatina 29, typhoid fever 6, measles 214, smallpox 0.

The Usual Antivivisection Bill. — Hearings have been held this week (March 4) before a committee of the Massachusetts Legislature on the usual bill for the restriction of vivisection.

Typhoid Fever in Franklin, N. H. — It is reported from Franklin, N. H., that a number of cases of typhoid fever have appeared in that city, supposed to be due to the use of river water for household purposes. This was necessitated by a temporary deficiency in the regular water supply.

### NEW YORK.

A Bill to Legalize "Optometry." — Much protest has been evoked by a bill recently introduced into the Legislature designed to give legal status to the business of opticians ("optometry," so-called) as a profession separate and distinct from other branches of medical science, and the State Medical Society, working through the sixty county societies represented in it, is conducting a vigorous campaign against the measure. Three years ago a somewhat similar movement was made in the Legislature of Massachusetts.

The New York Eye and Ear Infirmary. — It is announced that the New York Eye and Ear Infirmary has not been able to meet expenses, with the unfortunate result that there is now a possibility of its entire discontinuance. It is to be hoped, however, that some less radical course may suffice either through a certain restriction of the hospital work or, what is much more to be desired, through the increased financial support from public-spirited citizens. The institution is an old one; it has done admirable work in the past; and there is an increasing need of its services to the poor in the future.

## Miscellany.

### MEDICAL UNION NUMBER SIX.[1]

"Medical Union Number Six takes for a theme the growing arrogance and unbridled excesses of labor unions. It casts a long look ahead, and, in the form of fiction, describes in biting satire a condition of things that might be the logical outcome of unrestrained labor unionism carried to the extreme toward which its dominant impulse of to-day is directing it. The book is at once a protest and a warning.

"The scene of the story is laid in New York, in the middle of the twentieth century, when the country has become completely unionized. Even the ministers and doctors are banded together in unions. One, Dr. Schneider, joins Medical Union Number Six, and the story presents the theories, principles, working methods and rigid rules of that organization as it is controlled by its riding delegates, and relates the experiences of the doctor under the new order of things. It appears that the union doctors work only six hours a day, and one man is permitted only to treat ailments in certain designated parts of the body. Patients must take such doctors as may be sent to them from union headquarters, and no doctor is allowed to work beyond the prescribed hours for his tour of duty, or to treat anything outside his specified field of operation — the throat, the chest, the extrem-

[1] Medical Union Number Six. By William Harvey King. 16 mo. 60 pp. The Monograph Press, 25 West Broadway, New York.

ities, etc. — no matter how serious a case may be or what emergency may arise. Non-union or unfaithful doctors are promptly killed, and union undertakers and clergymen refuse their services for those who are so heedless as to die in the hands of a non-union doctor.

"A tragedy ends the story. Because Dr. Schneider lets a patient die rather than transcend a union rule there is a popular uprising against the Medical Union. The physicians go on a strike, but the people hold out, and finally the union, in order to bring the public to its senses, causes an outbreak of the bubonic plague, which devastates the country. Then the people humbly sue for relief, and the strike is declared off, after millions of men, women and children have died, and towns and cities have been wiped out. 'Of course,' the story says in conclusion, 'there was nothing left for the doctors, but the principles of the union were maintained.'

"The work is not pretentious, either in size or in plot, but into its pages are crowded a great deal that is food for serious thought. Many of the ideas, as set forth, are, of course, intentionally extravagant, as befits satire, but, after all, they are not altogether so extreme as might seem at first blush. Almost a parallel for some of them may be found in recent union disturbances in Chicago, when churches and funerals were mobbed, and the dead with difficulty were buried, and in other affairs in Connecticut, where strikers stopped funerals and would not allow graves to be dug.

"A vein of humor, grim though it be, pervades the book, but underlying that is a serious purpose that marks the real aim and worth of the work. Its hits are so palpable and so merciless that they draw blood, and are not likely to be very much relished by those at whom they are aimed."

The above is an abstract of a little brochure just received. It has an especial interest, as the JOURNAL is at present suffering from a strike of compositors and pressmen, the latter going out in sympathy with the former, although contrary to a contract of their own union. Perhaps these pages may meet the attention of strikers as well as those of the stricken. It is a very fair *reductio ad absurdum*.

## Correspondence.

### "ARRESTED TUBERCULOSIS."

SHOULD UNPROVED CASES BE THUS RECORDED?

BOSTON, Feb. 23, 1904.

MR. EDITOR: At this time when Boston physicians are specially interested in the control of Tuberculosis, the statistics of institutions for its relief are of unusual importance. May I therefore be allowed a few words in the JOURNAL on this subject?

A report has recently been published on "Arrested Tuberculosis. Subsequent histories of 79 arrested cases treated at the Sharon Sanitarium from 1891 to 1902."[1] In this paper the term "arrested" is explained by Dr. V. Y. Bowditch as including "all those cases in which abnormal outward symptoms have disappeared." He says: "Seventy-nine of these 164 cases were recorded as 'arrested,' a percentage of 48.17+ of all the phthisical cases," and still further, "Of these 79 cases, . . . 12, or 15.2%, have died since leaving the institution, after varying intervals of comparative health."

An inspection of the table of the 79 cases of arrested Tuberculosis shows that the diagnosis of phthisis was not confirmed by the presence of Tubercle bacilli or the use of Tuberculin in more than one-half of the cases (41 out of 78).[2] In justification of their inclusion it is said that "only those cases have been taken which experience teaches us usually develop later more definite signs of disease under unfavorable conditions." Not only at Sharon, but also in other sanitaria, both in this country and abroad, Tubercle bacilli are found in the sputum in only about one-half the cases of incipient Tuberculosis reported as cured[3]; and in the remaining cases the use of Tuberculin as a routine is not mentioned. The cases at Sharon, therefore, may fairly be taken as an example of those from other similar sanitaria.

An inspection of the physical signs in these 41 cases shows, as might be expected in incipient Tuberculosis, that practically all of them had very slight changes in one or both apices, such as suggestive modification in the respiration, localized râles or slight deviations from the normal percussion note, singly or combined. These physical signs in conjunction with the history of the cases suggest, but it does not seem to me prove, the existence of pulmonary Tuberculosis. Within the past few years it has been recognized that other bacterial infections of the respiratory tract may closely resemble Tuberculosis, and the history of the case and the physical examination cannot with certainty be relied on for diagnosis. The Tuberculin injection in cases suspected of pulmonary Tuberculosis without Tubercle bacilli in the sputum is subject to the error of a reaction in a certain proportion of apparently healthy individuals. The absence of such a reaction, however, in patients with pulmonary symptoms without Tubercle bacilli in the sputum excludes Tuberculosis as conclusively as our present means of diagnosis allows. Prof. R. Koch,[4] in his address at the British Congress on Tuberculosis in 1901, speaking from an experience of over three thousand cases in which Tuberculin had been used under his supervision, said: "The Tuberculin test is of special value in judging of catarrh of the apex pulmonis without Tubercle bacilli in the sputum, especially when influenza is prevalent, because then cases pretty often occur which to the eye of the clinical observer exactly resemble Tuberculosis but are not that. Among our numerous patients suffering from catarrh of the apex pulmonis there were almost 15% in whom no reaction took place; and in all the cases which could be observed long enough, the further course of the disease confirmed our opinion that they were not cases of Tuberculosis."

The validity of a reaction after the use of Tuberculin for the diagnosis of pulmonary Tuberculosis in any series is questionable when we consider the proportion of apparently healthy individuals who have been shown to have latent Tubercular foci. MacFadyen,[5] for example, found Tubercle bacilli by animal inoculation in the mesenteric glands in 25% of 20 cases unsuspected of Tuberculosis. P. Baumgarten,[6] excluding cases with Tuberculosis as a cause of death, said that he had found latent Tuber-

[1] Journ. Am. Med. Ass., Nov. 14, 1903.

[2] One case (No. 49) is omitted because there are no data concerning the presence or absence of Tubercle bacilli or the Tuberculin reaction.

[3] Reports from different sanitaria are very meagre concerning Tubercle bacilli or Tuberculin reaction in apparently cured cases. In some no mention of either is made. Among those giving data are:

Brown (L.): Adirondack Cottage Sanitarium. J. Am. Med. Ass., Feb. 21, 1903. In 76 incipient cases, T. B. found in 26%.

Elliott: Am. Med., Phila., 1903, v, 294–6. Of 96 cases apparently cured, T. B. found in 64%.

Pickert: Zeit. f. Tuberculose, 1902, Bd. iv. Collected statistics from nine sanitaria, T. B. found in 45.7%.

Engelmann: Results of Open-Air Treatment of Consumption, Berlin, 1901, p. 12. Of 393 patients in the first stage from five sanitaria, T. B found in only 25.4%.

[4] Trans. Brit. Cong. on Tuberculosis, 1901, p. 93.

[5] Brit. Med. Journ., 1903, ii, 129.

[6] Volkmann's Vorträge, 218.

cular foci in about one-third to one-fourth of his autopsies. His results have been abundantly confirmed, and explain the proportion of apparently normal individuals who react to Tuberculin.

The recognition of Tubercle bacilli in the sputum, therefore, must be regarded as the only infallible indication of Tuberculosis of the respiratory tract.

In the work at the Massachusetts General Hospital I have been impressed with the constant prevalence of influenza and its close resemblance in many cases to pulmonary Tuberculosis, not only in apex catarrh, but also in signs of persistent pulmonary solidification. These cases have shown influenza bacilli in practically pure culture in the purulent and at times bloody sputum and Tubercle bacilli have been absent after careful and repeated search. In some of my earlier work the mistake was made of not subjecting all such cases to Tuberculin, but in later cases there has been no reaction.

These observations have led to the belief that some at least of the incipient cases, without Tubercle bacilli, recorded as "arrested" in this and other sanitaria may not be Tuberculosis. Unlike Tuberculosis these cases do not tend toward a fatal termination, but rather remain stationary or slowly progress toward recovery. If such cases, therefore, are included among the 41 unproved cases in the Sharon report, their course should be more favorable than that of the 37 remaining cases with positive evidence of Tuberculosis. On tabulating the cases into two classes, according to the presence or absence of proof of Tuberculosis, there is much to confirm this possibility.

Class I.[7]

| | Excell. | Good | Fair | Poor | Dead | ? | Total | Mortality |
|---|---|---|---|---|---|---|---|---|
| With T. B. or Tub'l'n. react. | 2 | 21 | 1 | 1 | 9 | 3 | 37 | 24% |

Class II.[8]

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Without T. B. and no mention of Tub. react. | 0 | 34[9] | 3 | 0 | 3 | 1 | 41 | 7% |

The cases in both classes are much alike in physical examination, but a mortality more than three times as great among the proved cases (Class I) strongly suggests other organisms than Tubercle bacilli as the cause in some at least of the unproved cases (Class II). This difference in the mortality is even more striking when one considers the three fatal cases in Class II. One of these (No. 45) had "mitral disease" and another (No. 52) had been "without cough for some time; died suddenly." The more favorable result in these unproved cases obviously raises the percentage of those with arrested disease.

A more favorable result in cases without Tubercle bacilli in the sputum is shown not only in the Sharon series but also in the statistics of other sanitaria. It is usually ascribed to treatment in the very inception of the disease, which is manifestly of great importance. Brown,[10] speaking of the results in the Adirondack Cottage Sanitarium, said that "when the diagnosis was made before Tubercle bacilli were found in the sputum before ulceration had begun, the chances for recovery were at least twice as good and on the whole seemed many times as good." What proof have we, however, that the symptoms in such cases are not due to infection with other organisms?

The great value of the sanitarium treatment of Tuberculosis is beyond question and is demonstrated by an "Excellent" or "Good" result in 23 of the 37 cases of proved Tuberculosis in the Sharon report. It seems to me, however, an error in classification in this and other sanitaria to include unproved cases among those with "Arrested Tuberculosis."

Truly yours,

Frederick T. Lord, M.D.

[7] Four cases (Nos. 21, 74, 75, 79) though recorded in the table as negative for T. B. are included in Class I, No. 21 because of the finding of T. B. later, the others because of positive Tuberculin reaction.

[8] In one case in the series the examiner appears doubtful of the presence of Tubercle bacilli (No. 48 + ?), in another of their absence (No. 29: 0 ?). Both of these cases are placed in Class II.

[9] One case (No. 19) is classed as "Good," as this is the condition mentioned under "Remarks."

[10] Brown (L.): Loc. cit.

## RECORD OF MORTALITY

For the Week ending Saturday, Feb. 13, 1904.

| Cities. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseases. | Typhoid fever. |
|---|---|---|---|---|---|---|---|---|
| New York . . | 3,908,644 | 1,578 | 487 | 19.64 | 25.03 | 3.55 | 2.85 | .25 |
| Chicago . . . | 2,021,086 | 661 | 171 | 18.45 | 26.48 | 1.66 | 2.11 | .60 |
| Philadelphia | 1,407,968 | — | — | — | — | — | — | — |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 244 | 68 | 28.68 | 20.49 | .81 | 3.69 | .41 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 157 | 56 | 21.02 | 21.65 | 2.55 | .64 | 7.64 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 84 | 30 | 13.09 | 25.00 | 2.38 | .12 | — |
| Boston . . . | 617,950 | 201 | 48 | 17.91 | 20.40 | 2.00 | 1.49 | .50 |
| Worcester . . | 136,925 | 41 | 13 | 12.19 | 12.19 | 2.44 | — | 2.44 |
| Fall River . . | 119,349 | 46 | 18 | 21.74 | 28.26 | 6.52 | 8.69 | — |
| Lowell . . . | 104,402 | 33 | 15 | 6.06 | 42.42 | 3.03 | — | 3.03 |
| Cambridge . | 100,998 | 22 | 5 | 4.54 | 18.17 | — | — | — |
| Lynn . . . . | 73,875 | 25 | 7 | 25.00 | — | — | — | — |
| Lawrence . . | 72,348 | 19 | 2 | 31.58 | 31.58 | 5.26 | 5.26 | 5.26 |
| Springfield . | 72,020 | 14 | 2 | 21.43 | 21.43 | — | — | — |
| Somerville . | 70,413 | 32 | 11 | 12.50 | 9.37 | 3.12 | — | — |
| New Bedford | 68,863 | 24 | 6 | 12.50 | 16.67 | — | — | — |
| Holyoke . . . | 50,538 | 13 | 3 | 7.69 | 7.69 | — | — | — |
| Brockton . . | 46,601 | 9 | 1 | 11.11 | — | — | — | — |
| Newton . . . | 39,310 | 4 | — | 50.00 | 25.00 | — | — | — |
| Haverhill . . | 39,061 | 8 | 3 | 12.50 | 25.00 | — | — | — |
| Malden . . . | 37,205 | 8 | 1 | 25.00 | 12.50 | — | — | — |
| Salem . . . . | 37,188 | 8 | 3 | 12.50 | 25.00 | — | — | — |
| Chelsea . . . | 36,499 | 9 | 3 | — | — | — | — | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 10 | — | 20.00 | 20.00 | — | — | — |
| Everett . . . | 30,209 | 6 | 2 | 16.67 | — | — | — | — |
| North Adams | 29,201 | 9 | 0 | 22.22 | 11.11 | 11.11 | — | — |
| Quincy . . . | 26,798 | 5 | 1 | 40.00 | 20.00 | — | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 3 | 1 | 33.33 | 33.33 | — | — | — |
| Brookline . . | 23,576 | 6 | — | — | 33.33 | — | — | — |
| Pittsfield . . | 22,870 | 15 | 1 | 13.33 | 46.66 | — | — | 6.67 |
| Medford . . | 21,956 | 7 | 4 | 14.30 | — | — | — | — |
| Chicopee . . | 21,692 | 4 | 1 | 25.00 | 25.00 | 25.00 | — | — |
| Northampton | 20,314 | 7 | 1 | — | — | — | — | — |
| Beverly . . . | 15,807 | 5 | 2 | — | 40.00 | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 5 | 3 | — | — | — | — | — |
| Adams . . . | 14,745 | 1 | 0 | — | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 4 | — | — | 25.00 | — | — | — |
| Newburyport | 14,478 | 4 | 1 | 50.00 | — | — | — | — |
| Woburn . . . | 14,315 | 4 | 1 | 25.00 | — | — | — | — |
| Melrose . . . | 13,819 | 7 | — | 14.30 | 42.90 | — | — | — |
| Westfield . . | 13,809 | 4 | 1 | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 7 | 2 | 28.60 | 14.30 | — | — | — |
| Revere . . . | 13,609 | 4 | 1 | 25.00 | — | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | — | — | — | — | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 2 | — | 50.00 | — | — | — | — |
| Weymouth . | 11,350 | 4 | 0 | — | 25.00 | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,363; under five years of age, 975; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 645, acute lung diseases 799, consumption 329, scarlet fever 42, whooping cough 6, cerebrospinal meningitis 7, smallpox 2, erysipelas 15, puerperal fever 16, measles 16, typhoid fever 27, diarrheal diseases 78, diphtheria and croup 88.

From whooping cough, New York 5, Pittsburg 1. From smallpox, Pittsburg 2. From cerebrospinal meningitis, New York 2, Boston 3, Malden 1, Marlborough 1. From erysipelas, New York 5, Chicago 4, Baltimore 3, Boston 2, Pittsfield 1. From measles, New York 14, Baltimore 1, Boston 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,425, for the week ending Jan. 30, the death-rate was 19.4. Deaths reported, 5,669; acute diseases of the respiratory organs (London) 258, whooping cough 167, diphtheria 77, measles 114, smallpox 2, scarlet fever 39.

The death-rate ranged from 6.4 in Hornsey to 38.0 in Merthyr Tydfil, London 19.5, West Ham 14.5, Brighton 21.1, Southampton 14.4, Plymouth 18.8, Bristol 16.6, Birmingham 22.3, Leicester 16.3, Nottingham 17.6, Liverpool 21.5, Bolton 19.3, Manchester 25.4, Salford 22.3, Bradford 21.2, Leeds 20.5, Hull 20.5, Cardiff 19.5, Rhondda 19.2, Kings Norton 9.4.

## METEOROLOGICAL RECORD.

For the week ending Feb. 13, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S.. 7 | 29.55 | 34 | 48 | 19 | 87 | 95 | 91 | E | S W | 3 | 9 | F. | C. | .05 |
| M. 8 | 29.98 | 26 | 43 | 10 | 47 | 48 | 48 | W | W | 15 | 17 | C. | C. | 0 |
| T.. 9 | 30.38 | 8 | 14 | 1 | 70 | 76 | 73 | W | W | 8 | 10 | C. | C. | 0 |
| W.10 | 30.36 | 12 | 24 | –1 | 71 | 62 | 66 | W | N W | 15 | 8 | C. | C. | 0 |
| T..11 | 30.38 | 13 | 20 | 6 | 82 | 68 | 75 | N W | N | 13 | 5 | O. | C. | T. |
| F..12 | 30.34 | 18 | 26 | 9 | 76 | 66 | 71 | N W | N | 8 | 11 | F. | O. | 0 |
| S..13 | 30.34 | 24 | 30 | 19 | 87 | 77 | 82 | N | N | 17 | 6 | O. | O. | T. |
| ☞ | 30.19 | | 29 | 9 | | | 72 | | | | | | | .05 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

DELAYED PUBLICATION.—The continued strike among printers and pressmen is responsible for delays in issuing the JOURNAL.

## SOCIETY NOTICES.

SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR SURGERY. — A meeting of this section will be held at the Medical Library on Wednesday evening, March 2, at 8.15 o'clock. There will be no formal paper read, but the members are invited to discuss the Surgical Treatment of Hypertrophy of the Prostate. Members who cannot attend the meeting are requested to send to the secretary brief reports of any cases (particularly the unsuccessful ones) illustrating special points of interest in relation to this subject.

E. A. CODMAN, M.D., Secretary.
104 Mt. Vernon St.

MEDICAL SOCIETY OF THE MISSOURI VALLEY. — The spring meeting of this association will be held in Lincoln, Neb., March 24 and 25, under the presidency of Dr. A. D. Wilkinson.

CHARLES WOOD FASSETT, M.D., Secretary.

AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION. — As heretofore announced the American Medico-Psychological Association will hold its next annual meeting in St. Louis, May 30 to June 3, inclusive, under the presidency of Dr. A. E. Macdonald of New York.

C. B. BURR, M.D., Secretary.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY. — The tenth annual meeting of the American Laryngological, Rhinological and Otological Society will be held in Chicago, Ill., May 30, 31 and June 1, 1904, under the presidency of Dr. Norval H. Pierce.

WENDELL C. PHILLIPS, M.D., Secretary.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.—The regular meeting of the society will be held in Sprague Hall on Monday, March 14, at 8.15 P.M. Drs. George H. Monks and Charles Harrington will present short papers on the subject of "Some Weak Points in Surgical Asepsis." These papers will be discussed by Drs. F. B. Harrington, James G. Mumford, J. Bapst Blake, F. B. Lund, F. S. Newell and others. After the meeting there will be a social half-hour.

ARTHUR K. STONE, M.D., Secretary.
543 Boylston St.

## LECTURES TO NURSES.

A COURSE of lectures is being given at the Boston Medical Library to the nurses and their friends. The first was by Dr. Paul Thorndike, Feb. 23, 1904: "The Private Nurse from an Educational Standpoint, Comparing the Past, Present and Future."

The other lectures arranged for are:

March 2, 1904, 8 P.M. Dr. John Lovett Morse, "Infant Nursing."

March 8, 1904, 4.30 P.M. Dr. E. Channing Stowell, "Children."

March 22, 1904, 8 P.M. Dr. A. K. Stone, "Tuberculosis," with lantern slides. The public are especially invited to this lecture, as the subject is of general interest.

## ERRATUM.

WE beg leave to correct an unfortunate typographical error which occurred in our issue of Feb. 18. On page 196, second column, line 18, 53,389 (bottles) should read 159,072.

## RECENT DEATHS.

WM. RANKIN, JR., M.D., a prominent specialist in diseases of the eye and ear in Newark, N. J., died on Feb. 26 at the age of fifty-six years. He was a graduate of Rutgers College and of the College of Physicians and Surgeons, New York. After receiving the degree of M.D. in 1871 he studied for a considerable time in Vienna. He was for many years attending physician to the Newark Charitable Eye and Ear Infirmary, and was also secretary of the old Newark Medical Library Association.

GUSTAV LIEBMANN, M.D., M.M.S.S., died in Boston, Feb. 20, 1904, aged seventy-one years.

JEFFERSON CUSHING GALLISON, M.D., M.M.S.S., died in Franklin, Feb. 22, 1904, aged sixty-three years.

## PUBLIC HEALTH AND MARINE HOSPITAL SERVICE EXAMINATION.

WASHINGTON, D. C., Feb. 16, 1904.

A BOARD of officers will be convened to meet at the Bureau of Public Health and Marine Hospital Service, 3 B Street, S.E., Washington, D. C., Monday, April 4, 1904, at 10 o'clock A.M., for the purpose of examining candidates for admission to the grade of assistant surgeon in the Public Health and Marine Hospital Service.

Candidates must be between twenty-two and thirty years of age, graduates of a reputable medical college, and must furnish testimonials from responsible persons as to their professional and moral character.

The following is the usual order of the examinations: (1) Physical. (2) Oral. (3) Written. (4) Clinical.

In addition to the physical examination, candidates are required to certify that they believe themselves free from any ailment which would disqualify them for service in any climate.

The examinations are chiefly in writing, and begin with a short autobiography of the candidate. The remainder of the written exercise consists in examination on the various branches of medicine, surgery and hygiene.

The oral examination includes subjects of preliminary education, history, literature and natural sciences.

The clinical examination is conducted at a hospital, and, when practicable, candidates are required to perform surgical operations on a cadaver.

Successful candidates will be numbered according to their attainments on examination, and will be commissioned in the same order as vacancies occur.

For further information, or for invitation to appear before the Board of Examiners, address,

SURGEON-GENERAL,
Public Health and Marine Hospital Service,
Washington, D. C.

## BOOKS AND PAMPHLETS RECEIVED.

Annual Report of the Health of the Imperial Navy for the year 1901. Tokyo.

The Lorenz Method. By Edmund W. Holmes, A.B., M.D. Reprint.

Left Sided Appendicitis. By Edmund W. Holmes, A.B., M.D. Reprint.

The Use of Wet Specimens. By Edmund W. Holmes, A. B., M.D. Reprint.

The Levator Ani Muscle. By Edmund W. Holmes, A.B., M.D. Reprint.

Suprapubic Cystotomy. By Edmund W. Holmes, A.B., M.D. Reprint.

The Deep Fascia. By Edmund W. Holmes, A.B., M.D. Reprint.

Moderne Arztliche Bibliothek, herausgegeben von Dr. Ferdinand Carewski, Berlin, Heft 1. Die wissenschaftlichen Grundlagen der Kryoskopie in ihrer klinischen Anwendung. Von Prof. Dr. A von Korányi. Berlin: Verlag von Leonhard Simion. 1904.

Excision of the Frenum Preputii following Laceration during a Suspicious Intercourse. By Charles C. Miller, M.D. Reprint.

Are We to Have a United Medical Profession? By Charles S. Mack, M.D. La Porte, Indiana. 1904.

Gynæcological Nursing. By Netta Stewart. Illustrated. New York: William Wood & Co. 1903.

Lessons on Massage. By Margaret D. Palmer. Second edition. Illustrated. New York: William Wood & Co. 1904.

## Original Articles.

# THE RELATION OF SOME SPECIAL CAUSES TO THE DEVELOPMENT OF NEURASTHENIA.

BY ROBERT T. EDES, M.D., BOSTON.

The field of functional nervous disease grows narrower year by year, but there still remains much where no lesion is discoverable by the microscope, no microbe or toxin by the incubator or test tube, and where symptoms are not accompanied by enough of that ever-increasing group of stigmata to form any reasonable basis for a diagnosis of degeneration or, as rightly and forcibly suggested by Walton, are not sufficiently variant from the average structure to make it even probable that a departure in the downward direction from the normal function must exist.

All these may be suspected but are not yet proved. Observation, however, has in so many cases found causes of irritation or sources of fatigue distant from the organs apparently most affected that a systematic search for peripheral disorders or systemic poisoning is the logical and correct procedure for therapeutic purposes.

This search resulting, as it should do, so often in a success which furnishes strong evidence in favor of the dependence of psychic or general nervous derangements upon local irritations or special nervous drains, when applied to large numbers of cases has resulted in so many theories, each claimed by its advocates as almost exclusive, that they cannot easily all be true, certainly not to the extent of being each exclusive of the others.

Unfortunately, many of them were apparently formed upon the basis of some special group, and the deductions, legitimate as applied to this, have been carried too far and made to demand a forced agreement from others which do not belong there.

Each one of these may alone seem reasonable, is undoubtedly based upon more or less well-observed facts and may lead to important therapeutic results, and yet when brought into confrontation with others in the attempt to construct an orderly etiology the results are contradictory and confusing.

Each under the advocacy of an enthusiast is satisfactory to him and to the disciples who are sure to attach themselves to any novelty, but each as it is tested beyond the original group fails to cover the claim. We have advocated as potent and comprehensive causes for neurasthenia, for epilepsy, for the severe headaches and other pains which are by some considered typical of neurasthenia, and by others the preludes thereto, several more or less distinct conditions which have been claimed either as covering almost the entire field or else, what would be the very perfection of diagnosis and pathology if it could be true, a definite and reasonable cause corresponding to a special and well-defined symptom-complex related to, but not identical with, neurasthenia. Such are overwork and worry, lithemia, eyestrain of two kinds, sexual diseases and abuses of the sexual organs and abnormal sexual feelings, ovarian irritation, displacement of the abdominal viscera, to say nothing of the remoter consequences of too fine wheat flour and too coarse Indian meal.

Difference of opinion is often really difference of definition and nomenclature, and the discrepancies may often be at least much diminished by a mutual understanding of what is meant. The name "neurasthenia" is not infrequently used to cover any mere jumble of nervous symptoms which are quite distinctly not to be referred to any of the recognized organic nervous diseases and do not readily fall into any of the established categories of the functional. Hence it may mean anything from melancholia on the one side, when we use it to avoid hinting at anything like insanity, or, on the other hand, epilepsy, chorea, bad habits, bad temper, general debility, hypochondriasis, indolence and so on.

The description of Glenard, though inaccurate and misleading except so far as it applies to his exclusive theory, is certainly a vigorous one.

"Neurasthenia (névrosisme, névropathie, névrose protéiforme, maladie nerveuse, état nerveux, nervosité, fievre nerveuse, épuisement nerveux, surexcitation nerveuse, vapeurs, maladie vaporeuse névropathie cérébro-pneumogastrique, dyspepsie nerveuse, etc.) is a chronic affection, in which all the organs, all the apparatus, all the systems may suffer successively or together, where no local lesion can be found, an affection of which the diagnosis is not made until after the elimination of all distinct diseases, of which the prognosis is contingent on the result and demands the proof of time, and of which the treatment exhausts the patience of the patient and the physician. It is because no lesion has been found that we have agreed to say that there is none, and then because we cannot explain the symptoms that we have agreed to incriminate the nervous system. Neurasthenia is an arbitrary morbid entity."

It is possible, however, without straining the facts, to accept the view that neurasthenia is not merely a name to cover want of classification, but is a fairly well-defined condition, if not a distinct disease, and has a real pathology. It is necessary to do this if we wish to get any correct idea of its relation to its alleged causes.

Neurasthenia is a state of diminished energy of the nervous centers, especially the higher psychical, closely akin to ordinary fatigue, of which, indeed, it is an extreme development, but so extreme as to have become different in kind, that is, in incapacity for rapid restoration under favorable circumstances and in a time in some measure corresponding to that taken in its development.

The ordinary everyday expenditure of energy, be it small or great, should be restored also within the same time, or, if there be a little falling behind, the accumulating loss made good at somewhat longer intervals.

When this loss becomes too great to be made up easily and the strain goes on without relaxation the condition becomes neurasthenia, *i. e.*, the centers are no longer capable of rapid restoration even under favorable circumstances. What the limits are is a matter which varies immensely in different persons. There are those who are practically beyond the chances of neurastnenia, and there are others whom only a very slight excess, especially of emotional strain, brings dangerously near the line. Within these limits the mass of civilized mankind is found, each having his capacity for carrying his burden, which may or may not be reached according to circumstances, a capacity which again is capable of considerable modification according to the way in which the load is carried. It is in the proper adjustment of the strength to the load, the selection of the proper rhythm of work and rest so far as possible, that the prophylaxis of nervous exhaustion consists. It is upon learning how to do this after a first failure that anything like a permanent cure depends.

To use a morphological illustration which may or may not have an actual basis in fact, we know that the examination of ganglion cells by Hodge and others has shown visible changes, diminution of the chromophile bodies and shrinking of the nucleus, dependent upon ordinary fatigue. It is possible that nervous exhaustion may depend upon a process which is more permanent and more resembling degeneration, as actual dislocation of the nucleus, and atrophy resulting from using up of more than the hydrocarbon elements, and a resort to the complicated proteid components which go to make up the structure of the cell itself and which cannot be replaced at short notice.

There are many forms of insanity which do not imply any weakening of the central impulses, but often the contrary. It might happen in such that there would not be so much change visible as in ordinary fatigue, although of course in others the lesions of the neuron are not only extreme but irreparable.

To use another simile, fatigue is a temporary weakening of the battery from keeping the circuit open too long. Neurasthenia is a using up of the elements, destruction of the zincs. Insanity may or may not include these, but is essentially a disarrangement of the connections, burning out of fuses and short-circuiting between centers which are not arranged to work together.

We must look to experiment and observation to determine which centers, which groups of neurons or which faculties are chiefly affected and have lost their capacity to store energy rapidly enough to renew constant losses. While it is probable that all are so to some extent, the essential point which must be yielded before neurasthenia can be said to exist is that which controls all the rest, which determines the direction and intensity with which the psychic apparatus shall expend its energy, that is, the attention, will, active apperception. This function is invariably attended by a motor impulse and usually by some degree of actual motor activity,—attention to visual objects by muscular contraction under the influence of the oculomotorius and the ciliary muscle; perhaps, also, by more or less of the muscles of the neck and trunk; auditory attention by contraction of the tensor tympani and stapedius; ordinary sensation by contractions of the muscles of the fingers, toes or tongue; perhaps, also, of the trunkal muscles holding the body perfectly still.

It must be considered, also, that inhibition of certain motions, as in the act of listening or watching, is also a motor impulse, even if resulting in no visible or perceptible motion. It is negative only in the sense of being in the opposite direction and calls for a positive expenditure of energy. The fatigue of restraint is a matter of common observation.

If emotional excitement is involved we have the reaction of the muscles of organic life, the heart, the respiration, vasomotor apparatus or intestine. It is immaterial what the amount of work measured in foot-pounds may be. It is the amount of nervous force expended in keeping up the necessary tension which has the controlling influence — the amount of psychic effort and not the muscular work done is the important factor and standard of fatigue. The amount of energy liberated in the ciliary muscle in the effort to focus a printed page, which is very often thoroughly fatiguing, is almost infinitesimally small compared with that involved in the movements of the great masses in the back and legs in walking, which may be kept up for hours with comparatively little. Even this latter kind, however, is subject to the same rule. Hurrying to catch a train is felt as greater fatigue than walking the same distance at a leisurely gait.

It may be possible for simple thinking, revery or dreaming, the uncontrolled association of ideas, to go on without the motor idea, but it is difficult to imagine anything like careful or purposive thinking without it. Certainly all having any practical end in view must involve much of such ideas.

The intensity of thought is developed by emotional stress and when intellection is kept up continuously and at a high tension the fact of itself argues emotional stress of some kind, such as ambition, affection, fear or conscience. Worry may be defined as continuous mental activity under emotional stress of a painful kind, traversing the same ground with weariful iteration because coming to no useful conclusion. Here fatigue is not in the least a measure of valuable mental labor performed, but only of the activity of the attention in keeping the mind fixed. It is a matter of the most common observation that the inexperienced accountant, for instance, is much more tired from a mistake in a simple column of figures than the mathematician who soars into the regions of the calculus and astronomy. The possibility of keeping the attention fixed varies immensely in different persons, as every teacher knows, and it can be greatly improved by training, which is and should be one

of the chief ends of school life. The teacher soon knows who are the patient plodders, who learn and learn well because they keep at it, and which are the bright ones, who learn perhaps but little unless they can see it at the first glance. The training of the child's attention should, however, be gradual. He is naturally incapable of long periods of work without great fatigue. Short periods of real work with frequent pauses may be gradually lengthened as he grows older.

Fatigue is first felt in the muscles, but at that point is capable of very rapid restoration, next at the motor center and finally, when continued and when accumulating under pressure, felt most strongly and most permanently at the centers of will and attention which keep the lower ones up to their work. If this view or something like it be accepted it is easy to see how such various causes as have been alleged, and which are all probably to a greater or less extent operative, may lead to almost identical results, modified, perhaps, according to the channels through which peripheral irritations reach the psychic centers or through which the resistances are offered to the motor discharge.

We may say that neurasthenia is a paresis of the attention and will, the result of long-continued overfatigue, which in its turn is the consequence of enforced and often unsuccessful overaction of some motor activity carried on under emotional stress.

Apparently the simplest, most obvious and most frequently assigned cause for neurasthenia is mental overwork and, in the cases of the young, overstudy. Much has been written on these subjects, many experiments of the amount of fatigue produced by the various school studies and many warnings given. In one sense overwork, that is, the overaction of certain nerve centers, is the *only* cause of neurasthenia, but in the more limited sense of overwork in business, profession or school it is of much narrower application. The ordinary everyday work of the breadwinner, the housekeeper or the scholar, even if covering many more hours than are considered desirable by physiologists or approved of by labor organizations, but coming to a definite end at the end of day, brings fatigue, perhaps even intense fatigue, but it is rarely to the degree which is not susceptible of rapid restoration, either day by day or with the addition of the holiday or vacation.

It is when it is enforced or added to by responsibility, anxiety, ambition and especially when even with these reinforcements it is doomed to constant failure, to hopeless and fruitless endeavor, the labors of Sisyphus and the Danaidæ, that it becomes a crushing burden to those not richly endowed either by birth or by education with adequate resistance, or who have not acquired sufficient prudence to resolutely refuse to carry more than they know they can struggle under. It is on the correct estimation of one's nervous power and the resolution not to go beyond it and in the selection of the rhythm of work, whether it be the steady daily task or the "spurt" and long rest, whichever is most suitable to the individual, that the prophylaxis of this form depends.

Even utter monotony, which seems at first sight to be a safeguard, and probably often is so as transferring the responsibility of conscious cerebration to a mere automatism, may in reality be more wearing than some forms of mental labor of higher order or calling for much more individual action. The exhaustion, however, comes not from the amount of mental labor, not from the actual cerebration, but from the fatigue of the will in forcing one's self to keep on in spite of want of interest, disgust and *ennui*.

The muscular fatigue from the action of a large number of muscles, which represents the maximum of expenditure of energy at a low tension, is never itself a cause of nervous breakdown, but as an accessory and additional cause when injudiciously taken as a relief from intense mental activity it is of some importance, as, for instance, in the case of breakdown in teachers of physical culture.

The relation between muscular and mental fatigue is shown by the observation first made by Mosso of the shortening of the fatigue curve lasting for many hours after the subject had been engaged in an examination. This is not true of everybody and it would not be difficult to suggest an explanation in the difference to which the feeling of responsibility was present in different cases.

On the other hand, every one knows that extreme muscular fatigue renders one incapable for a time of doing his best mental work, but mere muscular fatigue is very rapidly restored.

As regards overstudy in school so often talked of as the cause of breakdown in young people, I believe it is very seldom seen from genuine overwork. There may be a good deal of fatigue, but it is of the kind and degree which does not go beyond physiological limits and is capable of rapid restoration. The fatigue may interfere with proper exercise and sleep and in this way promote ill health and retard development so that it would be a contributor to the result, but there is almost certain to be in such cases something outside or else, perhaps not very infrequently, something in the way the task is attacked which transforms what should be an interested search for knowledge or a gradual training of attention into an eager and thoughtless race for distinction or an anxious struggle to avoid failure. These are quite as likely to be seen among teachers as scholars and more among girls than boys.

When a young man or woman is heard of as completely broken down by overwork in college, it is safe to conclude or, rather, since it is not safe to conclude anything in medicine from hearsay, there is generally reason to suspect that other causes have been at work than that which is intended for the public announcement.

The great development of institutions of higher education, especially among women, has not resulted in any increase of nervous diseases. The

breakdowns in later life — whether of men in active business or of women engaged in the self-imposed tasks which they are pleased to term their social duties (such cases are not alarming), or much more probably and seriously those of a class who figure on the books of institutions as "no occupation," meaning in reality a dozen which do not count because from no one of them can they gain a living — do not necessarily imply any cause outside the life work, but do testify to a wrong method of conducting it, either by choice or by necessity.

Many are, of course, neurasthenia by courtesy only, but many others present the purest type of those forms which begin at the psychic center. Bartholow pithily remarks: "When a man says he is suffering from efforts of mental overwork I want to know what his vices are. Worry may be one of them. It is the ease and luxury of American life that cause mischief. It is the indulgence in eating and drinking, the abuse of alcohol and tobacco, sexual excesses, sedentary habits and too luxurious lives generally, that induce the state of the system called nervous exhaustion. I deny that it is a primary nervous affection and that it is a substantive disease. I hold that it is symptomatic and secondary." These remarks are true and perfectly applicable to the first of the cases which he gives as typical, but it is one which I should not consider true neurasthenia at all. In the second there was a comoination of dyspepsia, malaria and unusual mental exertion.

It is, however, possible for intense intellectual exertion involving an emotional element to be the source of great fatigue without calling in any secondary cause or primary weakness.

James Russell Lowell, who was no weakling, but whose personal feelings were deeply involved in his task, after several days' ineffectual brooding over the "Commemoration Ode," completed it in six hours, two days before it was to be delivered, and afterward wrote that it "made him lean and so nervous that he was weeks in getting over it." This was not neurasthenia and there was no danger of it. It was the natural effect of intense intellectual effort upon a thoroughly sound and healthy nervous system, a system controlled by a genius as far removed as possible from any trace of degeneracy.

But if a lesser man had had his daily bread to earn by a similar task every week and were aware that he was not doing it well, he would need but little outside pressure to bring him dangerously near the line. Then if, according to Stiller, he were pale and lean and his tenth rib were not united by cartilage to the sternum, or if, according to Glenard, his abdominal viscera were not firmly fixed in their places, or if, according to Bartholow and many others, he were to try to indulge in that ease and luxury which are not very likely to come to a man in his position, or if he tried to keep himself up to his work by alcohol and tobacco or cocaine or "nerve tonics" (which might be the same thing), or if, according to the Austrians and French, he appealed to Venus rather than to Bacchus for relief, or if, according to Stevens and Ranney, he could not easily converge his eyes upon his paper, or, according to Gould, could not focus them in their different diameters alike, he would surely cross the line.

If he had done or suffered all or several of these things it would depend upon the physician into whose hands he fell to say which one was responsible and whether he should get good advice, baths, calomel and exercise or have his kidneys triced up or his eye muscles cut or only put on the right pair of spectacles and go off a well man.

The influence of the sexual organs and either the overexercise or suppression of their normal function upon the development of neurasthenia has been from an early day in the distinction of this as a separate condition, and indeed, in a more general way, almost from the beginnings of medicine, invoked as a powerful one.

There can, of course, be no doubt of the deep and far-reaching associations of this primitive and powerful impulse with all parts of the system, physical and psychical, but of the actual effect of organic disease, or much more of misuse and irregularities of function, in the causation of neurasthenia and allied conditions it is difficult to speak statistically without inquiries more minute and embracing larger numbers than would be easy in the face of American and English reticence upon such matters, but it is not going too far to say such a causation would be found a real one, or at least the preponderating element, in many more cases than would appear upon the records. As a sole determining cause, however, and as covering the great majority of cases, I have little doubt its frequency has been exaggerated.

The theory of ovarian irritation as a cause not only of local pains, but of general nervous breakdown, leading to so-called "normal" oöphorectomy, has apparently passed through that boom period with which each novelty in treatment is favored among us, and at present finds its application, as its proposer, Battey, expressly said it should do, only in the extremest cases where there is practically no other hope of relief.

The question of the influence of pelvic disease, and the same might be said of the other kinds of local irritation, can only be fairly looked at in the opposing light of the well-known effect which nervous and general debility has in aggravating the severity of any local lesion upon the system. The patient labeled neurasthenic may be immensely benefited by local treatment, but, on the other hand, many a woman has gone through with this in good hands without relief until she has had a thorough rest and treatment directed to her general condition. In the given case it is likely to happen that neither the gynecologist nor the neurologist can establish a clear and exclusive claim and the patient benefits by their co-operation.

The phrase "sexual neurasthenia" is applied to cases in which real or supposed sexual abuses or excesses have been more or less important factors in the origin and in which the symptoms are especially connected with weakness of the sexual

function. In many cases of this kind the condition is the product of more than one factor.

The symptoms as regards their intensity and tenacity are determined by the loss of energy in many directions, of which the sexual is only one, but the emphasis of the hypochondriacal disposition is likely to be determined chiefly by that which takes so strong a hold on the imagination, and is felt in the corresponding centers. Every practitioner is aware how easily the thoughts and attention and apprehensions of a young man can be turned in this direction by the slightest departure from the normal, aggravated by timidity, self-reproach and quack literature. The actual influence of this set of causes it is impossible, as remarked before, to express in percentages, but is undoubtedly very considerable.

Some recent foreign observers and theorists have made the connection between this class of causes and certain groups of symptoms a very exact and definite one, assigning not merely sexual excesses and abuses as one among several causes of functional nervous diseases, but each special form to a special set of symptoms. Neurasthenia proper is thus referred almost exclusively to solitary sexual indulgence, while Freud and his followers, whose psychical analyses, both in this and other departments, are certainly very ingenious, claim that the " phobias," or morbid fears of various kinds, which he separates off as a distinct group from neurasthenia, but does not unite with any form of insanity, owe their origin almost as exclusively to incomplete sexual relations or to enforced continence under temptation.

Many years ago Beard mentioned rather casually that in a few cases he had noticed a connection of this special kind.

These views, although highly important and interesting, are by no means universally accepted even in Europe, although several inquirers have gone over the ground carefully with confirmatory results.

Whether the much greater richness of Continental literature on these subjects has anything to do with the relative frequency of these vices and abnormalities in the Latin and Teutonic peoples would be a very interesting question if facts were obtainable to answer it.

These "phobias" "névrose d'angoisse," a general condition of timidity and fear developing into special and definite forms, sometimes approaching the distinctly insane delusion of persecution or *folie du doute*, are separated off from neurasthenia into a group by themselves as wanting in its most characteristic symptoms and as having this peculair and different etiology.

The coincidence of neurasthenia and sexual abnormality of any kind cannot be considered proof that the former is the result of the latter without further inquiry. The causation may be in the other direction. Abnormalities of all kinds are well-known accompaniments and symptoms in many neuropathic conditions as well as in actual insanity.

Symptoms of difficult and imperfect digestion are among the most frequent among what may be called the secondary ones of neurasthenia, that is, not secondary in point of importance, not much so in point of time, but simply as being less closely connected with the essential disorder. They aggravate it and are caused by it and, by supplying a new source of irritation and by interfering in the nutrition of the nervous centers, establish a vicious circle of a very obstinate kind. There are, however, theories of dyspepsia, using this term to cover the whole group, which make it the essential and important condition, either of neurasthenia itself, or of the earlier symptoms which point in that direction, and, upon the addition of some other irritant, run into it. Glenard sees but little distinction between the aggravated dyspepsia dependent upon enteroptosis and what he calls neurasthenia as he defines it in the paragraph already quoted. The influence of floating kidney or nephroptosis was long ago suggested as one cause of dyspepsia upon purely mechanical grounds from a pulling of the pedicle around the duodenum.

Important and accurate as Glenard's observations were as applied to the patients upon whose cases he based his work, yet looking at his definition and admitting that it does correspond to a good many of the diagnoses made, it is evident that his cases at Vichy were of a special class and selected not by himself indeed, but probably largely by fashion and tradition, and that a bath-physician is likely to see chiefly one special division of the class.

Others who recognize Glenard's correctness in associating dyspepsia with enteroptosis take almost exactly the opposite ground as regards the relation of causation with the nervous condition. Thus Stiller thinks that " if we divide nervous dyspepsia [a term which Glenard gives as one of the synonyms of neurasthenia] into three, the first or idiopathic is very rare even if there really is such a thing; the second or reflex has a real clinical significance, as when the stomach nerves are affected from the genital organs, but by far the greater number of cases are of that form which rests on a general neurosis, as neurasthenia where the dyspepsia is only a part of the more comprehensive functional disease." " This most common form is almost always accompanied by enteroptosis of greater or lesser grade; it represents the real congenital enteroptotic dyspepsia, so far congenital as that the splanchnoptosis as well as the dyspepsia develops itself in youth on the basis of congenital neurasthenia and the atonic bodily condition which belongs to it." He thinks that the type of case described by Glenard has been long recognized, not on the basis of a minute abdominal mapping out of location, but of the general appearance, " the pale, lean, delicately built young men and women, with dyspeptic and nervous complaints or even nervous expression of face, thin, soft belly, a flaccid, splashing stomach and the right, or both, kidneys movable."

One of the most interesting points of this paper is that in a large number of pale, lean, nervous dyspeptics he finds the tenth rib usually

mobile, *i. e.*, not attached by cartilage, and this he calls a " stigma neurasthenicum," thus making of the whole an inverse order to that of Glenard.

Some recent observations at the Boston City Hospital by Larrabee with reference to the movable kidney, care being taken to get the patient's account of the symptoms before being informed of the presence of anything abnormal, show by no means an intimate connection between the displacement and general nervous symptoms. Neurasthenia was found in not far from equal frequency among those who had and those who had not the movable kidney. Ptosis of the kidney, alone or with other organs, was considered to be the cause of the symptoms complained of in but 14% of the patients presenting this lesion.

Dyspepsia not associated with enteroptosis, or perhaps it would be safer to say not known to be associated with it, is well known as perhaps an accompaniment, but by many considered a cause. The all-embracing "lithemia" has been assigned a very important share in the production of nervous headache, such as would be considered by many physicians as close upon neurasthenia. Dana, for instance, remarks," A chronic headache not due to tumor or meningitis or syphilis is almost invariably of neurasthenic origin." The paroxysmal or sick headache or migraine is by many given the same etiology.

In a considerable number of quantitative determinations of uric acid in the urine I was unable to trace any correspondence of any form of headache with either excess or diminution of the amount eliminated daily, and it is fair to conclude that if the headache is not due to uric acid the disease of which it is a very common symptom is not of lithemic character, unless the word is used to signify a condition of poisoning by some as yet unknown product of imperfect digestion. Of such a theory we can only remark that, although it seems very plausible, there is as yet no chemical proof to incriminate any special substance.

Anemia is perhaps even less to be considered of importance as a sole cause. Although of course the nervous centers must have their supply of nourishment in order to work, and hence must suffer from a deprivation, yet the mental affection of starvation is a delirium which does not result in permanent nervous breakdown. I have not been able to find a case of permanent or chronic breakdown among the professional fasters and a few others who for some reason have denied themselves food.

The nervous system seems to have the last claim upon such little nourishment as may be circulating and is kept going in as near an approach to the normal form as any other. The inanition of animals experimented on has been found to bear less hardly on the nervous centers than elsewhere.

Certainly no local draft of energy could be more ingeniously adapted to bring out the earlier symptoms of neurasthenia and to develop them to the full in cases of lesser resistance than a pair of eyes incapaole of perfect function separately or together, and yet not so thoroughly unfit as to completely prohibit their use for near vision. The constant and constantly unsuccessful attempt, from which there is no natural relief but disuse, and with necessity or ambition constantly pushing the imperfect organ to its never satisfactorily accomplished function, and then, too, this organ, the one upon which so much of useful activity in the higher walks of life depends, together with the psychic strain under feelings of failure and disappointment, make the ideal combination to develop nervous exhaustion under the highest tension possible. To this pitiable condition all mankind (or all civilized mankind), according to Dr. Gould, approach more or less nearly.

There is not even optically a perfect pair of eyes. " The one pair that had been pronounced mathematically perfect by the most expert testimony I demonstrated had myopic astigmatism, and this defect caused repeated and severe subconjunctival hemorrhages." This statement, which practically agrees with many other authorities, might at first be taken as not very important and merely one of those utterances of the hypercritical to whom nothing that nature makes is quite right, such as the symmetry of the two sides of the body, the arch of the palate, the shape of the ear, the color of the eyes, the position of the uterus, the length of the legs, the activity of the reflexes and so on; but it is really quite a different matter, for Dr. Gould states that " the evil reflexes are the worst in the low defects, — those that the eye can overcome by intense effort, but only for a short time."

He does not claim that all or nearly all of these become neurasthenia, but that a constant strain manifesting itself at first by constantly recurring headaches and by more remote symptoms, among which dyspepsia holds a very prominent place, goes on to neurasthenia only in those cases where resistance is congenitally or by training or by other causes of depression diminished below the point where it can easily be restored by a short rest.

Indeed he denies in the cases of many of the distinguished persons whose cases he has so carefully studied, and who suffered almost exclusively (according to his diagnosis) from eyestrain, that any condition of neurasthenia existed. A proof that a great majority of those who suffer in this way do not go on to a complete development is to be found in the relief, not only complete but immediate, which they experience from getting the properly fitting glasses. They are rather to be regarded as fatigue, extreme indeed and constantly recurring, but restored often enough by daily rest or by a longer abstinence from study to prevent their going on to exhaustion. Dr. Gould's contention, as understood from his various publications on the subject,[1] including the study of the ill health of a number of distinguished literary persons, is that a very large part of the chronic ill health, including dyspepsia, of men and

[1] Biologic Clinics, 2 vols.

women, distinguished and undistinguished, literary, artistic, as well as all handworkers who must use their eyes for near work, is due to eyestrain. That this eyestrain is largely unrecognized, although better known to the laity than to the rank and file of the medical profession and even to many oculists, is owing, firstly, to the fact that the strain does not make itself felt in the eyes, but is reflected to more distant organs and, secondly, to the neglect and indifference not only of general practitioners and other specialists, but of many oculists as well.

This arraignment of his confreres, which he makes to bear especially upon the European oculists, seems a very strange one to affect men brought up in the very birthplace of scientific ophthalmology, but it is really not without its justification in the literature at least, however it may be in practice. It is certainly to be wondered at that such indifference should exist, since the knowledge of the relationship of many cases of headache to defective or painful vision and consequent eyestrain was pointed out very carefully by Weir Mitchell so long ago as 1874, 1875 and 1876, having been hinted at previously by others, as he himself points out.

There has certainly been time enough for such important knowledge to have crossed the ocean and to have become generally known even among those who are not in the habit of looking to this side for valuable suggestions. Of seventy-four persons whose writings are catalogued under " eyestrain " in the supplement volume from the Surgeon-General's library, one only is a German, who wrote a thesis " De copiopia," and one Austrian, who wrote, not of the effect of eyestrain upon the general health, but of the effect of school life on the eyes. Nearly all of the remainder were Americans.

Dr. Gould's explanation of the fact that in many cases the eyes themselves give but little sign of local trouble, but that the symptoms are so distant as to throw not even a suspicion on the organ which has been at the bottom of the whole mischief, unsuspected for years, is an ingenious but hardly adequate one. He says that the eye is such a precious organ that it must be preserved at all costs from any organic disease by throwing the irritation arising from its defective function as far away as possible, and therefore beside the headache, which seems very rarely, until a few years ago, to have made any one think of the eyes, we have nausea, vomiting and all the accompaniments of nervous dyspepsia. It certainly seems as if the good dame would have acted more wisely and more mercifully if she had been a little less careful and allowed a symptom or two to have pointed the way to relief instead of allowing all this mischief to go on unsuspected for so many years. Final causes are double-edged tools in natural history. The decision as to the numerical proportion of cases of defective eyes which cause headaches, which are cured and which get only that relief which comes with the establishment of presbyopia and which go on to neurasthenia can only be made by the oculists or those practitioners who keep closely in touch with them so as to know what happens to their patients after they have been properly corrected.

One who is not a specialist can only take opinions. There are many sets of observations which show a very large percentage of cases of headaches cured or relieved by proper glasses. There are many neurologists who are perfectly aware of the importance of this origin, and it is difficult to understand how any American neurologist, at least, can help being aware of it, even those who do not accept the theory in the wholesale way that it is laid down by Dr. Gould. If the general practitioner should be inclined to criticize the extremest views in the light of the cases he has seen who have come to him for the relief of headaches after they have used glasses prescribed by presumably competent oculists, he would be headed off by Dr. Gould's "Sixty-eight Reasons why Glasses did not give Relief."[2] He finds, indeed, as the first one "that the patient's complaint may not be caused by eyestrain," and that may be just what he was thinking himself; but he cannot get much satisfaction out of it unless he can ascertain that the man who fitted the glasses lived up to a standard of competency and ethics which is very carefully described, but which will be hard to find fulfilled in every particular; that this man should have used the right mydriatic, in the right way, the best trial glasses and the best frames, and has seen that the patient and optician always kept them in order; and that he did not have " some prized fad or method, as retinoscopy, a peculiar drug, a mechanical device, optometers, refracting machines, etc., in the use of which facts must accommodate themselves to the fancy instead of the facts fashioning the diagnosis."

Certainly if these machines, which the non-refractionist looks upon with admiring awe and has been led to suppose have reached the acme of mathematical precision, and to be free from the least taint of the personal equation, do produce such effects upon the mind, even the general practitioner can understand that their use is greatly to be deprecated.

The cases of the several distinguished persons so carefully studied and so graphically described by Dr. Gould are not so conclusive to the non-oculist as they seem to be to him. There is too much which is perfectly clear to him which does not compel the assent of others and which seems susceptible of other explanations, or at least indicates that other factors may have been present and may have been the more important. It is surely within the limits of possibility that dyspepsia may have had other causes than eyestrain and that outdoor life and relief from anxiety might have benefited it even if not due to this one cause. Some of these people may have had enteroptosis, and it is even possible that other reasons which one does not publish in an autobiography may have come into play.

It would, perhaps, be unfair to argue that the

[2] Amer. Med., July 4, 1903, p. 20.

neglect and indifference to this important subject which obtains among so large a part of the profession even here, but which is even more marked on the other side of the Atlantic, prove that it is a less common cause than Dr. Gould supposes, but yet one cannot help feeling that a highly educated class of men, quite as anxious to be abreast of the times as any Yankees, could not willfully shut their eyes to so easily tested and so practical facts.

The eyestrain heretofore spoken of is that of the ciliary muscle due to errors of refraction. This was the first brought forward, and now it seems again to occupy the first place, but in the meantime there has been an episode.

The want of balance of the extrinsic muscles has had as many and as disastrous consequences attributed to it as the ciliary. This, to which Dr. Gould assigns only a secondary and accidental importance and proposes to correct when present by prisms, strongly disapproving of muscle cutting, Stevens and Ranney treat exclusively by the latter method and speak contemptuously of glasses.

As regards severity of cases and completeness of relief the claims are far in advance of any of the refractionists. "Esophoria, hyperphoria and hypermetropia are the most common abnormal conditions encountered in cases of neuralgia, headache, epilepsy, chorea, insanity, nervous prostration and other severe types of chronic nervous disturbance."

Wilton and Carter say: "It is perhaps the extreme character of these views which has defeated their adoption, but is probably nearer the truth than the view that this factor need not be mentioned in the etiology of migraine or considered in its treatment." Ranney, however, claimed far more than headache.

It is in reference to this form of eyestrain that St. John remarks after the examination of a series of cases with this point in view: "For every eyestrain headache there are twenty from disordered stomach or liver, improper food, want of exercise or other irregularity in the domain of the general practitioner." Dr. Gould would probably claim this twenty as due to strain of the ciliary.

It has been remarked that no instance has yet been brought forward in which headaches have followed the use of other than the ocular muscles, but the principle upon which these ocular headaches depend has probably a wider application.

Hancock, referring to this remark, says: "While I fully admit that continual muscular exertion in general does not cause headache, I think it probable that excessive and continued contraction of any muscle supplied by cranial nerves would do so."

It seems to me that it would be more philosophical, instead of limiting the exception anatomically, to have put it that continued use of muscles at a high grade of tension and attention was the cause of the headache. The ciliary is the purest type of such a muscle and undoubtedly its overaction, and especially its action which accomplishes its object for a time and with much difficulty, is the cause of more headaches than that of any other one, but there is no reason why there cannot be an ear headache of the same character, although it is, of course, easier and safer to give up any attempt whatever at hearing than of seeing.

Blake has called attention — although not having his paper at hand I am not sure that he mentions headache as amongst the symptoms — to the fatigue which arises from a person with somewhat defective hearing trying to hear distinctly. It depends on three distinct efforts, of which only the first, the effort to hear, is referable to the ear. The second is the effort to supplement this failure by lip reading and the third the mental effort to fill the gaps left by the two senses.

The case of a neurasthenic girl who used to have headaches after reading, just as eyestrain cases do, is interesting. She had lost many years before not only her eyesight but nearly the whole of her eyes, and her reading was accomplished with her fingers, thus showing that nerves below the cranial may under some circumstances attain the same bad privilege.

It is, of course, conceivable that any one of these important conditions, if brought to bear upon a system which is by birth or by education of impaired resistance, should by itself be applicable to all cases of neurasthenia as the sole cause; and it is, of course, equally possible that all should be present in only one case, but the probabilities are immensely against either of these extreme alternatives.

The unquestioning acceptance of any one of these or its overwhelming prominence in the mind of the practitioner tends to relieve him of the responsibility of making the decision as to which is operative in the case before him, but his knowledge of the possible presence of any one or any two or three of them places it upon him rather than upon the specialist. The general practitioner or the neurologist is the center toward which all the lines converge, and although it is more than should be asked of any man in these days that he should be familiar with the details of all the specialties, he should be able to follow the most important clues far enough to decide when to call in his brothers whose knowledge is more restricted and consequently more precise, and whose treatment can be more accurately adapted to each individual patient.

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# THE INTRA-ABDOMINAL RUPTURE OF OVARIAN CYSTS. WITH REPORT OF A CASE.*

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ALTHOUGH intraperitoneal rupture of the smaller ovarian cysts must happen quite frequently, rupture of the larger cysts is more often read of in textbooks than seen in medical or surgical experience; so that the occurrence of such an accident in the Boston City Hospital seems worthy of more than passing mention, especially as there is but one other of its kind to be found in the records.

For many years, and in fact until the third decade of the century just past, the diagnosis between the ovarian cysts and encysted collections of ascitic fluid seems to have been seldom made during life. This is not to be wondered at when we stop to consider that the abdomen was practically unknown to surgery and the only relief for either lay in tapping with the trocar.

Early operation, practiced to-day upon all ovarian tumors, has no doubt materially lessened the chances of such unfortunate accidents, and the instances which appear in the medical journals seem comparatively farther apart as we approach the present time.

In looking over the works of the older writers, the first report of the rupture of an ovarian cyst is that by Fabricius Hildanus [1] (1560–1634), who described the rupture of a dermoid cyst through the abdominal wall.

Wepfer [2] (1620–1695) described what was probably an intra-abdominal rupture, which is cited by Morgagni [3] (1682–1772), who in his turn gives us the history of one in his own experience. In both instances the exact diagnosis was not made.

Mauriceau † (1637–1709) evidently saw a case of this nature, but it is uncertain whether he recognized the condition, considering it apparently, like many of the older writers, an encysted ascites.

Bacher,[4] in 1705, described a rupture and Monro,[5] in 1770, cited the case of Haller (1707–1777).

Camus,[6] in 1844, wrote the first scientific paper on this subject, collecting some cases from literature and adding his own; while Chereau, in 1847, published a few statistics.

Next Tilt,[7] in 1848, collected 71 cases where the tumor discharged into the peritoneum, including 5 ruptures of the tubes, and Palm,[8] in 1868, published 25 cases in connection with his thesis, in all of which rupture was due to stretching or thinning of the cyst wall, or to outside trauma.

Kroker,[9] in 1869, took the etiology of the perforation of ovarian cysts as the subject of his thesis, and Spiegelberg,[10] in 1870, had an article in the *Archiv. fur Gynakologie* on rupture into the peritoneum.

Nepveu,[11] in 1875, was able to gather 128 cases for his article, which is probably the most complete list prior to our more modern surgical methods.

Olshausen's [12] section on " Die Krankheiten der Ovarien," in Billroth's " Handbuch der Frauenkrankheiten," contains a good summary of the information upon this subject, a certain amount of bibliography and references to illustrative cases.

Aaronson,[13] in 1883, worked up an exhaustive list for his thesis, which numbered 181 cases; and in the same year Waite [14] published a very complete study of the rupture of cysts of the ovary.

In the theses of Hue [15] (1883), Poupinel [16] (1886), Remy [17] (1886) and Sebileau [18] (1889) will be found material of interest in this connection.

To the thesis of Lair [19] (1892) I have not had access, but it is highly commended by Duffner,[20] who in 1893 put forth the most elaborate work upon the subject which I have found, containing a very complete bibliography and 221 cases of intraperitoneal rupture.

Storer's [21] article of 1897 is the best in this country and apparently in the English language, although both English and American journals contain many meager reports of such cases, with either very slight references to literature or more often none at all.

The foregoing brief synopsis of the bibliography of this subject will be found to contain the principal articles, and any one who takes the trouble to peruse them will possess a good knowledge of the subject.

CASE. S., female, single, forty-two years of age, was admitted to the gynecological service of the Boston City Hospital on Feb. 24, 1903, having been referred by me from the Out-Patient Department a few days previous.

On entrance she complained of pain in the right lower quadrant of the abdomen and said she thought she could feel a " lump " growing. For three months previous to entrance she had vomited occasionally and suffered from constipation, although formerly quite the reverse had been true and on two occasions, eight and ten years before, she had been treated for diarrhea at the Massachusetts General Hospital. During the last ten years she had been a constant sufferer from indigestion. There had been no menstrual flow since the previous November.

*Physical examination.* — Well developed, poorly nourished; pulse 104, of fair volume and tension.

* Read at a meeting of the Obstetrical Society of Boston.
† Observ. 289. Quoted by Camus.

Heart and lungs negative. Abdomen distended by a hard symmetrical tumor rising from the pelvis and extending to the umbilicus. Fluctuation wave present. Dulness over the tumor and in the right flank; tympany above the tumor and in the left flank. No alteration of percussion note with change of position. No edema; apparently no ascites; urine negative.

Owing to the rather poor condition of the patient it was considered best to wait for a few days and attempt to build up her general health. During her stay in the ward the temperature was slightly elevated, while the pulse kept falling, although there was at times some complaint of pain in the right lower abdomen. On March 1, in the early afternoon, vomiting commenced, and at the same time she suffered from abdominal pain. About 6 P.M. there came a marked deterioration in the pulse and the patient suddenly collapsed, the pulse being imperceptible at the wrist. At this time she complained of general abdominal discomfort, but no localized pain. A little later I saw her in consultation with Dr. George Haven, and at that time there were signs of free fluid in the general cavity and a diminution in the size of the cyst. The condition of the patient made operation at the time inadvisable; but although freely stimulated and given subcutaneous injections of salt solution, she failed to react and died about half-past five the next morning.

PARTIAL REPORT OF AUTOPSY BY DR. E. E. SOUTHARD.

Autopsy eighteen and three-quarters hours post-mortem. Slender white woman with delicate musculature and nutrition slightly lowered; body still warm; traces of lividity; breasts ill-developed; abdomen prominent.

*Peritoneal cavity.* — Upon incision a great quantity of yellowish fluid containing leucocytes, possibly three liters (two liters caught in graduate and measured) flows out, at first under some tension. The omentum is glued both to anterior wall of abdomen and to coils of bowel by tolerably firm, fibrous adhesions, as well as by fibrinous bands and bears upon both surfaces a considerable quantity of pus containing many leucocytes. (Organisms not demonstrated in smear.) Upon laying back the omentum the bowel is exposed, containing only a moderate amount of gas; there is minute injection, especially at the apposed edges which are sticky and covered with a thin, slightly greenish layer of fibrin; the fluid in the iliac fossæ and in the lesser peritoneal cavity is a little thick with fibrin; the lower third of the abdomen is filled with a multilobate tumor mass, to which the appendix, cecum, some folds of the small intestine and focal areas of the parietal serosa are united by adhesions. Upon lifting out the purulent fluid from the pelvis the rather small uterus is exposed, veered somewhat posteriorly and superiorly by the firm attachment of the right tube to the tumor mass. The various adhesions of the tumor mass are rather easily separable. Upon removal the mass weighs 570 gm. Its various lobes range in diameter from 1 to 4 cm. and are variously colored from clear porcelain white to diffuse pink; many of the folds and loci of adhesions show minute arborescent injection. The mass as a whole is fairly firm; many of the lobules are elastic and contain purulent fluid under tension. The smaller excrescences and some of the larger lobules are solid, but nowhere so firm as the normal ovary. One of the cysts presents a round aperture 5 cm. in diameter, which at autopsy goes upon and is adherent to a reddened fold of the ileum. Upon separation of the fold of ileum a great quantity of purulent fluid can be expressed from the cystic cavity within. The mesenteric lymph nodes of normal size and appearance. Diaphragm fifth rib left; sixth rib right.

*Pleural cavity.* — Normal.

*Pericardial cavity.* — Visceral serosa shows whitish thickening along anterior coronary.

*Heart.* — Weight 210 gms.

Measurements: Tricuspid valve, 11 cm.; pulmonary valve, 8 cm.; mitral valve, 6.5 cm.; aortic valve, 7 cm.; left ventricle, 1.5 cm.; right ventricle, .3 cm.

*Spleen.* — Weight 75 gms. Capsule bluish gray, lax, covered with fibrin; substance soft, reddish gray; slightly pulpy.

*Gastro-intestinal tract.* — Not notable.

*Pancreas.* — Not notable.

*Liver.* — Weight 1,140 gms. Brownish gray; somewhat soft and takes the thumb nail readily; lobules scarcely evident; lobule centers a little red.

*Gall bladder.* — Normal.

*Ureters.* — Normal.

*Left ovary, uterus and tubes.* — Normal.

Uterus contains glairy mucus. Right ovary replaced by tumor above described. Tumor on section consists of an association of geode-like masses with thick injected walls whose papillary structure can sometimes be made out; the fibrous columns which run out from the capsule are surrounded by grumous white material which may be teased into multitudes of gray knobs and threads. The cavities are occupied with cell detritus and leucocytes, in which no organisms are demonstrated in smear.

*Anatomical diagnosis.* — Epidermoid carcinoma, infection of lobules of tumor, rupture in the peritoneal cavity with acute fibro-purulent peritonitis, chronic adhesive peritonitis, sclerosis of mitral valve.

The autopsy showed in addition general arteriosclerosis, but nothing especially important concerning our subject.

*Etiology.* — Unfortunately it is impossible to ascertain the exact cause of rupture in many instances, as when recovery takes place this matter must very often remain unsettled and even after autopsy the reason is not always clear.

Duffner found a cause mentioned in only 38% of his 221 cases, while Storer in 108 was able to assign a cause for only 30% and " in many of these the assigned cause was at least questionable." In 46 cases which I have found in literature since 1893, a cause is given in only 16, and among the whole number were no autopsies of any worth, and 3 reports of the condition of the abdomen at the time of operation, which render it possible to make a diagnosis as to the malignancy of the tumor.

Cysts of the ovaries are formed at all periods of life from infancy to old age, and consequently the frequency of rupture at any given period corresponds to their prevalence at that time. According to the figures of Duffner, the decades from twenty to fifty years seem to present about the same number, while from fifty to sixty years the proportion is diminished. Before twenty and after sixty years the number is notably decreased. Jenkins [22] reported one in a child of between three and four months; while somewhere, the reference to which I am unable to give, I have seen an account of a rupture at seventy-nine years. The size of the tumor seems to have little significance, except that increased bulk must make it more liable to trauma. It suffices to say that all sizes have ruptured, that the attendant results have often been as widespread with the small

as with the greater, and that apparently multilocular cysts rupture most often, owing, no doubt, to the many degenerative changes to which they are subject as well as their greater liability to external violence. The escape of cyst contents into the abdominal cavity is generally spoken of as "rupture," a name which it seems best to accept, but on inquiring into the etiology of these unfortunate events we find that the appellation is not strictly correct for all.

Rupture implies a sudden solution of continuity, while we know that certain of the changes which allow of the discharge are of gradual origin and partake of the nature of a perforation, although the final escape may be hastened by violence of muscular action or external traumatism. This difference is perhaps rather fine for clinical use, but it is just as well to recognize the distinction.

Broadly speaking, the factors concerned may be classed under three great headings:

I. — Predisposing causes.
II. — Alterations in the cyst walls.
III. — Trauma.
(*a*) External.
(*b*) Internal.

Naturally various combinations of the above may contribute to the collapse of these new growths.

*Predisposing causes.* — It is now generally recognized that the difference between unilocular and multilocular cysts is one of degree and not of kind, for in the walls of those clinically monolocular we find small cysts or upon their walls the remains of partitions which have disappeared, showing that the monolocular cysts were once multilocular. The nature of the cyst walls and their contents have clinically an important bearing, for multilocular and parovarian cysts with thin or friable walls are more liable to rupture than the thick, monolocular or dermoid cysts, and again those with viscid, jelly-like contents burst more often than those with the thin, serous contents. Rapid rise of internal pressure may affect the integrity of the wall, as it becomes unable to accommodate itself to the increased strain. Formerly this was said to be brought about by increased secretion, although the more modern view is that cells cannot secrete under extreme pressure.

In addition, we find as causes of increased pressure, rapid growth of large papillary vegetations and hemorrhage into the cavity, while torsion of the pedicle by inducing a passive congestion tends toward the same end. Thornton [23] reports 9 ruptures among 57 cases of torsion. Adhesions, when numerous and firm, hold the tumor in one position and prevent its escaping violence by slipping to one side or accommodating itself more or less to the varying movements of the body. Even a single strong adhesion may be as dangerous as many, for a strain brought upon it by a sudden movement of the cyst may end in tearing the walls.

*Changes in the cyst walls.* — These play an important part in the rupture of the larger cysts, especially the papillary cystomata. Here the growth often invades the wall, weakens and finally destroys it, producing what was referred to above as a "perforation." Interference with the circulation by thrombosis, as described by Sir Spencer Wells and Mayne,[24] may end in fatty degeneration, calcareous deposits and gangrene with perforation.‡ Hemorrhage into the cyst walls may lead to the same result. Infections easily pave the way for rupture, but this happens proportionately less often as the inflammatory disturbances cause adhesion between the tumor and surrounding structures. But in spite of the safeguards by which nature attempts to prevent fatality, the wall, softened by the inflammatory processes, becomes unable to withstand the internal pressure and gives way before adhesions have made a general peritoneal infection impossible. As dermoids are most liable to these changes, we naturally find them predominating in this class if we exclude other cysts infected by aspiration. Lair [25] considers that the healed scars of old ruptures are weak points, as they contain few if any vessels and are endowed with poor vitality. For this reason they may be the common cause of repeated rupture. Torsion of the pedicle, mentioned above in another connection, may induce changes by shutting off the blood supply, or rendering the wall more frail as it becomes softened by the edema. Finally, perforations may be simple or multiple. Spiegelberg mentions one with thirty openings from the size of the palm of the hand to that of a pea.

*Trauma.* — Under this heading come many peculiar accidents: Falls on the head, missteps, blows, kicks, jolting of vehicles, straining at stool, vomiting, sneezing, coughing, coitus, compression by bending forward and lastly those which have ruptured under examination, obstetric operations or as the result of tapping with trocars. Pregnancy and parturition seem responsible for a certain number of traumatic cases, either from pressure upon the tumor by the gravid uterus, by torsion of the pedicle or by muscular effort during labor.

Storer in his series found 70 cases of traumatic rupture: Falls, 34 (12 stated to be upon the abdomen); external violence, 36 (kicks, blows, etc.). Tapping, 1; version, 2; examination, 10; forceps, 3; coitus, 1; masturbation, 1,— the rest from various causes.

In quite numerous instances cysts have disappeared under the examining hand, twice in the city of Boston (Chadwick,[26] Storer), and in tapping, the pressure upon the abdomen has been sufficient to rupture a thin or diseased wall.

*Symptoms.* — In connection with impending rupture certain symptoms of an uncertain nature are present in many instances. Chief among these is pain, extending often over many months and of varying intensity, which according to Hue, Huges Bennet considers due to ulcerations of the walls. Another quite common symptom is rapid increase in the size of the cyst. Both of

‡ See Meredith: Trans. Path. Soc. of Lond., Dec. 16, 1869.

these seem to be present in a sufficient number of cases to warrant being on our guard when they appear in a patient known to have an ovarian tumor.

Nearly all writers agree upon the general symptoms of intra-abdominal rupture at the time of its occurrence, although in a given instance any or all symptoms may be absent. Hofmeier,[27] on the other hand, says that subjective symptoms are rarely present, and Schroeder [28] remarks that rupture of the cystic pockets is of daily occurrence, and generally unperceived. In spite of the opinion of the two previous observers, the cases which we see clinically generally present a certain number of a definite train of symptoms:

(1) A feeling of something giving away and the outpouring of fluid into the abdomen.

(2) Pain: Severe, mild or none at all, but usually considerable with the larger cysts. The character of the fluid seems to have little connection with the causation of pain except in the case of purulent collections and in certain cystomata with gelatinous contents.

(3) Tenderness of the abdomen.

(4) Collapse: Either from intense pain, hemorrhage or what is apparently an irritation of the peritoneum, due to the sudden influx of fluid or to an irritant quality in the fluid itself.

(5) Nausea and vomiting: Probably a sympathetic phenomenon from peritoneal irritation. Palm found it to be present in 4 out of 25 cases.

(6) Fever: Present in most cases after a certain time (Palm).

(7) Disappearance of tumor and change in form of abdomen.

(8) Free fluid in the abdomen, if the quantity is large enough to give signs of physical examination.

(9) Palpation of the remains of the tumor. This is often possible, especially in multilocular cysts, as usually some part remains intact.

(10) Increased urinary excretion. Disse's [29] case passed 25 liters in two days and in some this has been the only symptom, recurring with each rupture.

(11) Tendency to sweat (Simpson [30]).

(12) Loss of friction of tumor upon abdominal wall.

(13) Presence of peptones in the urine. For further consideration of this subject the reader is referred to the theses of Wassermann [31] and Isaackides.[32]

*Prognosis.* — The mortality of the older writers was based upon non-interference; so that their figures are not suited to the present state of surgery, but they do give us an insight into what happened with no surgical interference.

Looking over the literature for the past twenty-five years, it is amazing how many articles have no reports as to malignancy, the cysts being classed as monolocular, multilocular, etc. Another drawback is the fact that the subsequent history of those who did not die within a short time is wanting, and undoubtedly if we could know this we should find many reported as cured dying later of malignant disease. We are also justified in believing that many more recoveries (both spontaneous and after operation) are reported than the less fortunate results, which are perhaps, in the long run, quite as useful to the clinician as those of favorable outcome with no pathological report. It is for these reasons that the present case has been reported.

The immediate results of rupture are very variable. Small cysts, as we have previously said, often rupture without symptoms and there are numerous instances in which the repeated rupture of larger cysts has had no deleterious effect upon the health of the individual and has eventually brought about an apparently lasting cure. However, for the complete recovery of the patient three essential factors are necessary: First, that the cyst be unilocular; second, benign; third, that its cavity become obliterated. This last may be brought about by retraction and shrinking of its walls, or by the effects of peritonitis (Olshausen). Continued contact may produce agglutination of the cyst walls and ultimately end in its obliteration (Simpson). Olshausen says that the contents of the anatomically unilocular cysts are innocuous whether they spring from the Graafian follicles or from the Wolffian ducts. Spiegelberg and Olshausen also consider the fluid of the colloid tumors, when not contaminated by blood or pus, as generally harmless, but not so readily absorbed by the peritoneum. Still this cannot be considered an absolute rule, as Olshausen cites a case of his own where there were marked signs of peritonitis at the time of operation. The size of the cyst may have a bearing, as the sudden gush of a large quantity of fluid into the peritoneum, even if quite unirritating, may produce shock, and the emptying of the contents of a small cyst has caused fatal peritonitis. Chrobak [33] reports a death from the bursting of one the size of a hazelnut. Nearly all writers agree that the most favorable outlook is in ruptures of the parovarian cysts; but indeed these are not without danger, as Goodell [34] has seen two terminate fatally. The unilocular ovarian cysts are also accorded a favorable prognosis by some, while others like Matthew Duncan, quoted by Tait,[35] reserve spontaneous recovery for the parovarian alone. Certain tumors after numerous ruptures seem to give no further trouble. Palm reports two and Aaronson seven such cases; but it seems probable that in most of these the rent was so large as to give constant drainage to the cavity, the fluid being absorbed by the peritoneum.

It is needless to say that recovery from the papillary cystomata practically never takes place, and unfortunately the rupture of dermoid cysts is almost invariably fatal. Certain individuals survive repeated ruptures, although others recover from some only to die from the results of later ones. Palm reports six deaths after the first rupture and one each after the second and fourth. This difference in the results of rupture in the same case may be explained in several ways: Possibly the first rupture from traumatism and the second from twisted pedicle, in which the prognosis

would naturally be much more grave (Duffner). Hüss [36] considers that different pockets may contain fluids of different character, while Duffner advances the theory that in the interval between two ruptures the contents may change their character. In certain instances, following the gush of fluid into the peritoneum, death takes place from shock before peritonitis has time to develop (see Hue), and in much the same category belong the sudden deaths from the rupture of hemorrhagic cysts (Scanzoni [37]). Storer's case throws some light on the reason for lack of hemorrhage in some instances and the cause of it in others; for the blood vessels with their surrounding connective tissue form the strongest part of the walls, and rupture naturally takes place at the points of least resistance. If, however, as in Storer's case, the tear runs toward the main vessel through the junction of two trunks it is easy to see how laceration of the vessels could occur, while starting in the opposite direction it would probably leave the vessels intact. In the papillomatous cysts decrease of pressure upon the walls may lead to hemorrhage from the veins of the intracystic growths as a result of the loss of support (Greig Smith [38]), and as in the case of Wertheim,[39] may persist for days after the original injury. The duration of life after the accident is very variable, as will be readily seen from what has preceded.

The 22 cases of Nepveu which succumbed were classified: Sudden deaths, 6; death after three to ten days, 10; death after twelve to fifty-five hours, 6.

Duffner found the following length of life in 16 fatal cases: Eleven months, 1; two to fourteen days, 10; seven to twenty-nine hours, 5.

Peaslee has seen 5 cases of rupture of multilocular cysts, 4 of which died within five days.

Storer in an average of the mortal statistics of five writers, containing traumatic and spontaneous ruptures, found a mortality of 41%. In his own series, of which about half were said to be unilocular, 26.8% recovered after varying grades of peritonitis, 44% recovered without peritonitis, and of these 90% were unilocular and "possibly many parovarian."

Aaronson, in 130 intraperitoneal ruptures without operation: Full recovery, 42; death after acute or subacute course, 55; healing after repeated rupture, 7; death after repeated rupture, 14; unknown results, 12.

He also reports 5 ruptures of dermoid cysts with fatal results, and among 121 infected ovarian cysts found 5 intraperitoneal ruptures — all fatal.

The mortality of rupture in the various stages of pregnancy is given by Remy.

During the whole periods of pregnancy and the puerperium 52 ruptures took place in 49 women with the following results: Recoveries, 23; deaths, 24; results unknown, 2. During pregnancy — 19 women with 21 ruptures: Recoveries, 10; deaths, 8; result unknown, 1. During labor — 15 women with 16 ruptures: Recoveries, 7; deaths, 8; During the puerperium — 12 women with 12 ruptures: Recoveries, 4; deaths, 7; result unknown, 1.

The figures of Duffner, based on a series of 31 cases, are much less favorable, as 77% of all cases ended fatally. During pregnancy — total 9: Recoveries, 3; deaths, 6. During labor — total 14: Recoveries, 3; deaths, 11. During puerperium — total 8: Recovery, 1; deaths, 7.

We see that the results in pregnancy grow steadily worse from beginning to close. The trauma and changes in the relations of the pelvic structures which occur during the period of pregnancy, labor and the puerperium, together with the increased facility for infection at such times, render the outlook exceedingly grave.

*Treatment.* — With the surgeon called to assume the responsibility of such a case lies the question of operation, and though decision is often simple, yet after the rupture of a small cyst with indefinite symptoms it may become a very delicate matter to decide. Unfortunately the size of the cyst gives us no special clue as to its nature, for small cysts, as well as large, have often been the cause of fatal peritonitis. If there is a history of previous ruptures with no untoward results, I think we may reasonably expect a favorable outcome and unless under most favorable surroundings would be justified in waiting. If, however, hemorrhage is taking place or the cyst is supposed to be a dermoid or papillomatous, operation should not be delayed. The dangers of operation in the first two are certainly no greater than those of expectant treatment; and in the last, while the patient may recover for the time being, there is the constant menace of a general invasion of the peritoneum by the cells of the cyst fluid. Indeed monolocular cysts, even with the large number of temporary and apparent final recoveries, seem to me to merit the same treatment if of any size or seen within a few hours after rupture, for their nature is necessarily uncertain and broadly speaking I should consider operation indicated in every case where the surroundings permit.

Spencer Wells had one death in 12 which ruptured before operation, and Knowsley Thornton [40] 3 in 40 cases. Aaronson among 25 operative cases in his series had 4 deaths and 14 recoveries, and Duffner among 70 operative cases figured a mortality of 21%, though many of the deaths were due, as he says, to the enfeebled condition of the patients and to generalization of the growth in the peritoneum.

Soller [41] has proposed paracentesis and, in event of benign fluid, expectant treatment. This proceeding is open to the objection that it is quite as dangerous as an exploratory incision and much less satisfactory. Cysts have been removed during pregnancy without producing miscarriage, but in numerous operations of this nature which it has been my fortune to see, miscarriage has never been avoided. However, considering the high mortality (77%) it hardly seems worth while to take this fact into consideration. If near the end of term and the woman shows signs of labor, Duffner has proposed Cesarean

section and at the same time ablation of the cyst.

As to the question of drainage, there is the usual difference of opinion, Spencer Wells, Hue, Sebileau and Lair favoring its employment in certain cases, while Schroeder, Terrillon and Gross among others consider it unnecessary. Generally speaking, drainage may be said to be indicated in cases with active peritonitis, when the fluid is mixed with blood or is purulent in character and after the rupture of dermoids. Even in some of these there may seem to be no need to resort to its use. When the entire cyst cannot be removed a gauze drain may be used with the hope that peritonitis will eventually destroy the secreting surface. The most important thing is so remove the cyst contents.

In closing I think we may say that the general concensus of opinion is in favor of an early operative treatment and surely the statistics of mortality will bear out such a decision.

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## Clinical Department.

### A CASE OF TRAUMATIC HEMOPERICARDIUM.

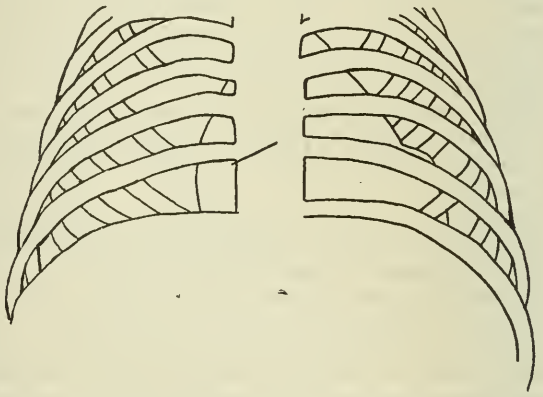

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ANTONINA P., two and one-half years old, was referred to me by Dr. Galbenewetz, July 10. She had always been well and strong. A month before, while looking out of the window, she had fallen forward on a needle which was on the window-sill. The needle entered the chest near the right edge of the sternum and broke off. The mother thought about half the needle remained inside. She was immediately taken to the Relief Station, where a small incision was made over the point of entrance. Nothing was found. The incision healed in a few days.

She was apparently perfectly well for nearly two weeks after the accident. She then began to appear sick and gradually grew worse. Her symptoms were rather indefinite, however. Her appetite was poor, but she did not vomit. Her bowels moved regularly. She had no cough. She frequently put her hand to her side and said that it hurt. She had ceased to run and play but still walked about a little. She breathed hard almost constantly, the respiration often being grunting in character. She slept very poorly but was able to lie down.

*Physical examination.* — She was well developed and nourished but rather pale. There was very slight cyanosis of the lips and cheeks. When not disturbed her breathing was fairly quiet, but when she was at all excited or moved about, respiration became difficult and was accompanied by grunting. She was not able to lie flat, but was comfortable when reclining. The alæ nasi moved at times. There was slight retrac-



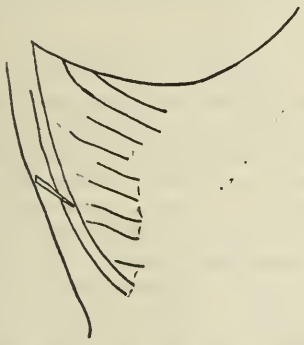
tion of the lower chest with inspiration, but none elsewhere. The throat was normal. The tongue was fairly clean. The cervical lymph nodes were somewhat enlarged.

The thorax was symmetrical. There was no bulging of the intercostal spaces and none of the præcordia. There was no visible or palpable cardiac impulse. The heart sounds were everywhere diminished. They were heard most distinctly just inside of and below the left nipple, but were also heard feebly over the whole normal cardiac area as well as outside of this area, especially to the left. The sounds were no louder when the child was held face downward. The right border of cardiac dulness was at the right parasternal line, being the same in the third, fourth and fifth right spaces. The upper border was at the junction of the manubrium and sternum. There was dulness, continuous with the cardiac dulness, in the first left space and possibly a little higher. This dulness extended over the whole left front and axilla to the posterior axillary line. There was also dulness in the upper part of Traube's space. The character of the heart sounds was normal and no murmurs were heard. The second pulmonic sound was not proportionally louder than is normal at that age. There was a scar of an incision about one-half inch long at the junction of the sternum and the third right space.

Percussion of the right chest showed nothing abnormal except that the upper border of the liver dulness was in the sixth space. The respiration was normal in character but slightly exaggerated. There was slight tympany in the middle left back; otherwise the resonance was normal. There was no area of dulness in either the right or left back. Respiration was a good deal diminished in the left front and axilla but not changed in character. In the back the respiration was slightly diminished but not changed in character. The vocal resonance and fremitus were not obtained. No rales were heard.

The abdomen was somewhat distended but not tense. There were no evidences of fluid and there was no spasm. The upper border of the liver dulness was in the sixth space. The lower border could not be definitely made out, but there was resistance extending nearly to the umbilicus. There was tenderness on the right side from the costal border nearly to the umbilicus. The area of splenic dulness was not determined. The spleen was not palpable. The extremities showed nothing abnormal. The temperature was 100.6° F., the pulse 130, the respiration 50.

Fluoroscopic examination on July 11 showed the cardiac area of darkness beginning on both sides at the first rib, and extending 2½ cm. to the right and 3 cm. to the left of the median line. On the right side the border ran diagonally downward and outward just inside the right nipple to the junction with the liver



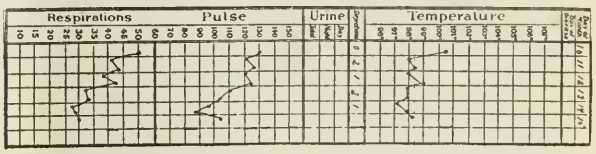
shadow in the sixth space 5½ cm. to the right of the median line. The cardio-hepatic angle was obtuse. On the left the line of darkness ran diagonally downward and outward just outside the left of the nipple and joined the abdominal shadow in the sixth space, 8½ cm. to the left of the median line. The border was less distinct on the left than on the right, but clear lung could be seen on both sides. The cardiac shadow did not change with position, being the same whether the child was lying or sitting. No needle was seen. A dark area, continuous with the liver shadow and probably caused by the liver, extended downward to just above the umbilicus and on the right nearly to the anterior superior spine.

While the physical examination pointed strongly to fluid in the pericardium, the signs were not as characteristic as were those given by the fluoroscopic examination. These were absolutely characteristic of effusion in the pericardium.

A needle was introduced into the fifth right space just at the edge of the sternum. A bloody fluid came out under considerable pressure. As a serous or purulent fluid had been expected, it was thought for the moment that the heart had been tapped. The needle was therefore immediately withdrawn. It soon became evident, however, that the heart had not been wounded, as its action continued regular and there were no signs of collapse. The needle was then introduced again into the sixth left space, 9½ cm. to the left of the median line. Dark, bloody fluid came out under great pressure. A little more than 100 cc. escaped without aspiration; 400 cc. more were then withdrawn by aspiration. Cultures from this fluid remained sterile. The general condition was not at all affected by the operation. The heart sounds became much louder and a friction rub appeared over the lower portion of the pericardium. The child was much relieved by the operation and seemed very much more comfortable. She was able to sleep lying down and take her food well.

Examination on the 13th showed a feeble impulse, visible and palpable in the fifth space. The upper border of cardiac dulness was at the upper border of the third rib, the right border 2½ cm. to the right of the median line in the third and fourth spaces and 2 cm. to the right in the sixth space. The cardio-hepatic angle was acute. The left border of cardiac dulness extended 7½ cm. to the left of the median line in the sixth space, and in the fourth space about 2 cm. outside the nipple line. The left front was still slightly dull. There was no dulness in Traube's space. The heart sounds were loud and normal in character. The pericardial friction rub had disappeared. Air entered both lungs equally. The upper border of liver dulness was still in the sixth space. The lower border was palpable about 4 cm. below the costal border, extending a little more than half way from the costal border to the umbilicus.

Fluoroscopic examination the next day showed the upper border of the cardiac shadow at the lower border of the second rib and the right border about 1¼ cm. to the right of the median line in the fourth and fifth




spaces. The cardiac apex was under the sixth rib, 6½ cm. to the left of the median line and ½ cm. to the left of the left nipple. The left side was not quite as clear as the right. The diaphragm in expiration was at the sixth rib on both sides.

The cardiac area shown by the fluoroscope was therefore within normal limits. That given by physical examination was larger than normal. It is difficult to explain this discrepancy, but of course the area shown by the fluoroscope must be accepted rather than that obtained by percussion.

The child's general condition improved very rapidly. She was up and running about on July 14 and was discharged well July 15. The temperature was normal after the 10th. The pulse and respiration continued rapid for two days, then became much slower. Just before the child left the hospital radiographs of the chest were taken which showed that half the needle still remained in the body. The needle evidently entered the body just at the right edge of the sternum in the third space, going diagonally upward behind the sternum, the greater part of the needle being behind the sternum, only the end protruding. Operation was advised but refused.

This case presents many points of interest, among which may be mentioned the unusual cause, the peculiar onset, the comparatively slight degree of the symptoms, the absence of many of the characteristic signs of pericardial effusion and the situation in which tapping was done.

The hemorrhage must, of course, have been due to a lesion of the pericardium caused by the needle. In such a case the symptoms would naturally be expected to come on immediately. The fact that they did not can only be explained on the supposition that the needle did not at first reach the pericardium, but later worked its way to it. It would be expected, moreover, that if the needle scratched the pericardium at one time it would continue to do so and that bleeding would recur after the removal of the fluid. That it did not can best be explained on the supposition that the needle had in the meantime become encapsulated. It would seem possible, however, that the needle might in the future cause a recurrence of the hemorrhage.

It is rather difficult to explain the comparative mildness of the symptoms with such a large effusion. The most plausible explanation seems to be that the greater part of the pressure of the fluid was exerted on the liver and diaphragm, pressing them down, and thus relieving to a certain extent the pressure on the lungs and heart. This explanation seems justified by the position of the liver and diaphragm as shown by the fluoroscopic examination.

When there is a pericardial effusion change of position causes, as a rule, a change in the area of dulness; as a rule, too, bending forward restores or increases the strength of the impulse of the heart sounds. This does not always happen, however, as is shown by this case. No explanation as to why it did not occur seems possible, however. An area of dulness in the left back, and possibly in the right back also, would naturally be expected with such a large effusion. Its absence may possibly be explained on the supposition that the fluid all gravitated downward rather than backward.

While the practicability of tapping the pericardium in the fifth right space close to the sternum has been demonstrated experimentally by Dr. Rotch and a number of other observers, the operation has seldom, if ever, been successfully performed during life. The results in this case show that the pericardium can be safely and successfully reached in this situation. The fluid came out under great pressure, and there is every reason to suppose that it could have been withdrawn as successfully here as it was when the needle was introduced into the sixth left space.

## Medical Progress.

### REPORT ON OBSTETRICS.

BY FRANK A. HIGGINS, M.D., BOSTON.

#### PUERPERAL INFECTION.

IN a valuable paper on Obstetrical Therapeutics,[1] Dr. C. M. Green again emphasizes the fact that the treatment of puerperal infection primarily rests with intelligent, painstaking prophylaxis, and that the most effective therapeusis against infection is prevention. He says that in teaching the lesson of obstetrical asepsis, too much emphasis cannot be given to the fact that obstetrics is specialized surgery, that there is no essential difference between surgical and obstetrical asepsis; that in obstetrics as well as in surgery, not alone hands and instruments, but the field of operation, must receive adequate antiseptic preparation. The perfect sterilization of instruments is now possible, reasonable care may give suitable preparation to the vulva and to the contiguous parts which need be touched, but the asepsis of the naked hand is still a matter of uncertainty. The use of the sterilized rubber glove removes all uncertainty in this particular, and the time has come when this addition to our aseptic preparation must be accepted and adopted. He has made careful trial of the sterile glove in all phases of obstetric work from simple examinations to difficult operations, and he is fully convinced that the glove in no way inconveniences or interferes with the operator's work. He says it must be admitted that the teacher and clinician are doing all they can to spread abroad the lessons of puerperal asepsis, but the duty yet devolves upon the profession at large, not only to practice but to preach them.

[1] Med. News, Oct. 10, 1903, p. 692.

#### OBSTETRICAL ANESTHESIA.

In the same paper Dr. Green says that modern civilization seems to have developed a type of woman who is incapable of bearing the pain of physiological labor. Ether and chloroform often produce uterine inertia, necessitate operative intervention and also predispose to post-partum bleeding. Medullary narcosis he does not regard as a safe and effectual method of relieving the pain of labor. With a mixture of scopolamine hydrobromate and morphia nitrate combined so that ten minims contain $\frac{1}{200}$ gr. of the former and $\frac{1}{8}$ gr. of the latter, administered by subcutaneous injection, he has had experience in sixteen primiparous cases and three multiparous. The cases are reported in detail. As a result of his observations, he says it would seem as if we have a valuable addition to obstetrical therapeusis, the good effects being very marked in primiparæ, but there was no apparent benefit in the few multiparous cases. The mixture was especially serviceable in nervous, excitable and hyperesthetic primiparæ, and the best results are obtained when the drugs are given early in the first stage, as soon as symptoms of nervous irritability manifest themselves.

#### ECLAMPSIA.

In respect to the treatment of eclampsia, Dr. Green makes no attempt to review the many therapeutic measures that have been found of more or less value, but he speaks briefly of the value of hyoscine (scopolamine) combined with morphine as a means of controlling convulsions, and the extreme nervous excitability observed in certain cases.

He says that ether and chloroform have proved

efficacious in controlling convulsions when promptly administered before the seizure actually occurs; chloral alone or combined with bromides is serviceable in mild cases and as an adjuvant to other sedative measures; Stroganoff's combined use of morphia and chloral has been successful in the experience of some observers. From his recent experience he believes that in hyoscine and morphia in heroic doses we have a potent agent for the control of extreme restlessness and maniacal excitement. He reports three successful cases which have recently been under his care in primiparæ. He begins by giving scopolamine $\frac{1}{100}$ of a gr. and morphia $\frac{1}{4}$ of a gr., repeated in a short time if necessary. These three cases all recovered, and for further details in the treatment the reader is referred to the original article.

### TREATMENT OF PUERPERAL FEVER.

Fehling [2] of Strassburg says he believes that collargolum, in intravenous injection, is of value. He has used a sterile 2% solution without ill effects; amounts $2\frac{1}{2}$ to 5 dr. being injected with a fine needle into a vein in the arm. The results varied; some charts showed an immediate fall in pulse and temperature, sometimes a very considerable one, and it is especially noteworthy that this was also accompanied by an improvement in the patient's condition. When the temperature rose again, fresh injections were made, these being often administered daily for eight or ten consecutive days. A permanent fall of temperature occurred once after one injection.

There were some fatal cases even with the injection. In other cases the fatal termination was postponed, as in a case of pyemia with numerous pulmonary abscesses. The remedy seems to lower the temperature and the pulse, and it has a certain value in diagnosis in addition to its good effect upon the patient.

### TREATMENT OF PLACENTA PREVIA.

Hammer [3] reports 107 cases from the Wurtzburg Clinic, 19 cases of central insertion, 70 of lateral insertion and 18 of deep-seated placenta. The total mortality among the mothers was 8, or 7.47%, while the fetal mortality was 58, or 54.2%. In cases of placenta previa centralis, Hicks' method of combined version was performed in 14 instances, with 13 maternal recoveries, and with 3 living children. In lateral placenta previa, combined version was performed 40 times with 34 maternal and 13 fetal recoveries. In breech presentations, slow extraction was followed 8 times, with 7 fetal deaths. Artificial rupture of the membranes was practiced 11 times, with 10 fetal deaths. Perforation was necessary but once. In 2 cases metreurysis was done, saving both mother and child. The mortality for both mother and child is lower in cases of deep-seated placenta when rupture of the membranes was the treatment followed. The author calls attention to the impossibility of always being able to perform combined external and internal version without the aid of anesthesia.

[2] Muench. med. Wochenschrift, Aug. 18, 1903.
[3] N. Y. Med. Journ., Oct. 17, 1903, p. 769. Muench. med. Wochenschrift, Sept. 1, 1903.

### TUBAL PREGNANCY.

Chase [4] especially dwells on the importance of the general practitioner examining a woman liable to pregnancy bearing in mind the possibility of tubal pregnancy. He says the time has come when such cases will be reported with increasing frequency until the diagnosis in suitable cases becomes recognized as an essential duty of the well-qualified physician. In case it occurs and rupture has not taken place, the sooner the pregnant tube can be recognized and removed the better. In the cases in which the condition points to recent rupture of the intraperitoneal variety and evidences of hemorrhage are present, immediate operation should be done. If evidence is present that the rupture is extraperitoneal — into the broad ligament — and the resulting hematoma is moderate in size, waiting for developments may be justified, as nature may possibly take care of the mass. Finally, while it will continue to happen that ectopic pregnancy will show a very high mortality where no accurate diagnosis has been made until too late, it is true that with a proper appreciation of the grounds on which at least a presumptive diagnosis can be made by the practitioner, an increasing number of lives can be saved.

### COMPARISON OF THE SIZE OF THE FETUS AND THE MATERNAL PELVIS.

Lane [5] has made in a considerable number of cases measurements of the maternal pelvis and compared them with measurements of the fetal head and with the fetal weight. The children were weighed and measured at birth, while the maternal pelvis was measured about ten days after labor, as he says owing to relaxation of the soft parts, this appears to be the most favorable time.

He comes to the conclusion that, except in the case of small pelves, there is a parallelism between the size of the child's head (and in particular of the biparietal diameter) and the conjugate diameter of the mother's pelvis, and is the result of natural growth, and is not a pressure phenomenon. The weight of the child, and therefore the size at birth, bears a definite relationship to the size of the mother's pelvis, and this relationship is carried so far that the biparietal diameter of the child increases correspondingly with the conjugate diameter of the pelvis through which it will ordinarily pass at birth. This, he states, may be summed up in the form of a law stated thus: "The child grows in utero in such a manner and at such a rate that at full term his size is proportioned to that of the mother's pelvis through which he has to pass in order to be born."

He also says that hereditary influence appears to have a far greater influence in determining

[4] Brookline Med. Journ., July, 1903, p. 312.
[5] Lancet, Sept. 26, 1903, p. 885.

the size of the child than any of the causes commonly recognized and mentioned, such as the sex, the age of the mother, the number of the pregnancy, or the stature, constitution and health of parents, or even the prolongation of pregnancy.

He further says it is to be noted that the application of this law of proportion receives a tacit acknowledgment in the case of the progeny of different races, but it is the application to individuals which is new.

### MATERNAL CIRCULATION IN PREGNANCY.

Nicholson [6] says that there are certain normal changes which occur in the quantity and quality of the blood in pregnancy, and that under normal conditions arterial tone is regulated by the vasomotor center. But there is abundant clinical and experimental evidence to prove that the arterial caliber is influenced in a most profound manner by the internal secretions of the suprarenal and thyroid glands. Suprarenal extract contracts the arterioles very greatly, while the thyroid secretion has been proved to act in the opposite way.

These two internal secretions have opposing and contradictory effects upon the circulation, and in health a balance is struck between them. In normal pregnancy, on the other hand, there are frequent periods during which one or the other gains the upper hand. In general, at the beginning of pregnancy, the functional activity of the thyroid is increased, with resulting dilatation of blood vessels, rapid pulse, palpitation and stimulation of the metabolic processes of the body. If albuminuria is present, it has no grave significance. Other women, usually primiparæ late in pregnancy, will show too pronounced signs of suprarenal influence, as contraction of arteries, diminished metabolism, elevation of blood pressure, decreased urea excretion, etc. These patients are liable to develop eclampsia, and it is of the greatest pratical importance to recognize the high-pressure pulse as an early clinical symptom of impending danger. There should be no doubt as to treatment, the arterioles must be relaxed. In emergency, morphine, aconite and veratrum viride or infusion of saline solution will bring it about. For the pre-eclamptic symptoms, as persistent headache, vomiting and diminished secretion of urine, he has administered thyroid extract to a sufficient number of patients to be convinced of its value.

### TREATMENT OF HEMATOCELE FORMED AFTER EXTRA-UTERINE PREGNANCY.

Zweifel [7] remarks that in a pregnant woman a sudden peritonitic attack — great abdominal pain, syncope, vomiting and a very small pulse, without fever, a rupture of a pregnant tube must be at once suspected and immediate operation must be performed. If, however, a hematocele is formed, expectant treatment is to be followed, for in the greater majority of instances the hemorrhage will cease and with rest in bed and with symptomatic attention to the pain and to constipation, the transudate will eventually be absorbed. Should it become infected, it is to be opened and drained from below. In the case of women who are obliged to work and who cannot remain in bed for some time, the hematocele may be opened through the vagina, but Zweifel says he always explains to them that they can be cured without operation.

[6] Brit. Med. Journ., Oct. 3, 1903, p. 807.
[7] N. Y. Med. Journ., Oct. 10, 1903, p. 719. Muench. med. Wochenschrift, Aug. 25, 1903.

### THE CONDITION OF THE PELVIS IN WOMEN AFTER SYMPHYSIOTOMY.

Tissier [8] reports the after-histories of twenty women who had been delivered by symphysiotomy, during the period of five years. These cases were operated on at seven different hospitals. Only four out of the twenty escaped without some undesirable sequelæ, the remaining sixteen being all more or less damaged by the operation. One patient has been a chronic invalid for five years. Eight have suffered from phlebitis. Ten have had urinary troubles during months or years, incontinence of urine being the most common urinary affection. As a rule, this condition improves with time, but reappears on exertion or with a coughing effort. A number of women have difficulty in efforts of lifting, or in going up stairs.

### ARTIFICIAL ABSCESSES IN THE TREATMENT OF PUERPERAL SEPSIS.

Since the method proposed of producing artificial abscesses by the subcutaneous injection of turpentine in septic cases, reports have from time to time appeared of cases successfully treated in this way. Hoff [9] adds two more to the list. The first was a primipara, with fever on the second day after a normal delivery. She grew worse, and on the ninth day he injected 2 cc. turpentine in the thigh. Abscess development showed in two days, and there was slight improvement both in temperature and general condition. The injection was repeated twice, when the improvement became continuous.

The second case was also a primipara with a dry operative labor. Turpentine injections were made on the eighth and eleventh days, and the patient improved steadily till the twenty-fourth day, when the temperature again rose, and two days later she had again a severe rigor. She had bloody urine, but a third injection of turpentine was made. The improvement was resumed and continued. It is stated that it is not very safe to reason from two cases as to the efficacy of any mode of treating puerperal sepsis, but both of these cases were fairly severe with temperatures up to 106° F., and they are enough to attract attention. It is suggested that the abscesses may be local producers of antitoxins or of leucocytes. The method is rather painful and a preliminary injection of morphia is advisable.

*(To be continued.)*

[8] Journ. of Obstet. & Cyn. of the Brit. Emp. Vol. iii, No. 5, 1903. Bull. de la Soc. d'Obstet. de Par., Feb. 19, 1903.
[9] Scot. Med. & Surg. Journ., Vol. vii, 1903, p. 356.

# Reports of Societies.

## MEDICAL SOCIETY OF THE STATE OF NEW YORK.

Ninety-Eighth Annual Meeting, Held in Albany, Jan. 26, 27 and 28, 1904.

(Concluded from No. 8, p. 217.)

(Second Day — *concluded.*)

Algernon T. Bristow, M.D., of Brooklyn, president.

### DIAGNOSIS AND TREATMENT OF GLAUCOMA.

Dr. D. B. St. John Roosa of New York said that the physician should be on the alert for glaucoma when a person of middle age, or older, came complaining of neuralgia of the eye and dimness of vision, and examination showed a weeping conjunctiva and an area of redness around the cornea without adhesions of the eyelids. The diagnosis became positive if the tension of the eyeball were increased and the use of eserin solution relieved the pain. Aside from the use of eserin, the treatment rested with the specialist.

### A STUDY OF THE CLIMATE OF LONG ISLAND.

Dr. W. H. Ross of Brentwood, L. I., read a paper with this title. In it he gave the results of his studies of the meteorological conditions for a period of ten years. The mean summer temperature was 70° F., and the annual range 39°. The relative humidity was low, the yearly average being 72.75. The average number of clear or partly clear days in the year was 300. In addition to these manifest advantages, there was on Long Island a tract of pine forest, six miles wide and sixty miles long. The island was essentially a pier extending a hundred miles into the Atlantic Ocean.

### THE TREATMENT OF CANCER BY ITS OWN TOXIN.

Dr. P. J. McCourt of New York said that this paper was supplementary to one which he had written in 1899. He laid stress on the necessity for avoiding all alcoholic stimulants and partaking of meat very sparingly, and asserted that in 90% of the cases in which this treatment had been tried (the number of cases not being stated) the administration of the toxin was followed by general improvement and decided prolongation of life; also that in 14% indurated glands had become normal, ulcers had healed, and the patients appeared to have been cured, both objectively and subjectively.

### ELECTRIC GRAFTING.

Dr. J. S. Wight of Brooklyn read a paper, in which he referred to certain facts regarding radioactivity and radiotherapy, and, among other things, described what he called "electrical grafting." The method consists in making the surface to be grafted sterile, and then curetting it. While still oozing the grafts are applied, and then, by means of the high-frequency discharge from a pointed electrode, clotting is induced, and the grafts are thereby firmly fixed upon a dry surface. After sponging away the exuded serum the area is dressed with 3% carbolized vaseline.

### TUBERCULOUS MYOSITIS.

Dr. William B. Brinsmade of Brooklyn reported a case of this very rare disease. The patient, an apparently healthy woman, had been struck, five months before, on the outer aspect of the leg. The examination pointed to a probable diagnosis of sarcoma, but a microscopical examination of a section showed typical tuberculous inflammation. Incision into the affected area revealed soft and pale muscular tissue studded with grayish areas, which, on section, were found to contain the typical caseous material of tuberculosis. This operation was done four months ago, and the patient at the present time continued to enjoy good health.

### THE NON-OPERATIVE TREATMENT OF TRACHOMA.

Dr. Frank J. Parker of New York believed that the operative treatment of trachoma should only be employed in the soft follicular variety, and then chiefly as a means of abridging the period of treatment. The non-operative treatment recommended by him consisted in the vigorous rubbing of the lids three times a week, under cocaine, with a 1 to 500 solution of bichloride and the use at home, twice daily, of a 10% solution of protargol or, preferably, of a solution of argyrol.

### APHASIA AND AGRAPHIA.

Dr. Edward D. Fisher of New York differentiated the various form of aphasia and agraphia, and expressed some doubt as to the correctness of the view that the writing center was located in the second frontal convolution, for the reason that cases were on record in which a lesion of this region did not cause agraphia. There was no doubt, however, about the close relationship between the speaking and writing centers, as shown clinically by the fact that agraphia and aphasia usually coexist.

### SYMPOSIUM ON ABDOMINAL PAIN. ABDOMINAL PAIN IN GENERAL.

Dr. John H. Musser of Philadelphia, Pa., presented this paper. He pointed out that one might not find rigidity of the abdominal muscles in persons with relaxed abdominal walls, even though abdominal pain were present, and that, on the other hand, there might be exaggerated muscular spasm in very muscular individuals though the intra-abdominal condition were a trifling one. Sometimes in pregnant women the occurrence of pain in the upper half of the abdomen ushered in an attack of uremia. In diagnosing abdominal pain, one must remember diaphragmatic pleurisy and diaphragmatic rheumatism; also that in some cases of pneumonia, particularly in children, the signs might point very strongly to an appendicitis. Pyloric spasm might be confounded with gall-bladder disease. In his experience, nearly every case of supposed gastralgia had turned out to be cholelithiasis. The sudden disappearance of pain was often of grave significance, as pointing to profound toxemia.

### ABDOMINAL PAIN REFERRED TO THE ABDOMINAL WALL.

Dr. Joseph D. Bryant of New York dwelt upon the importance of a knowledge of the nervous supply of the abdominal walls as an aid in diagnosticating pain referable to these parts. For instance, he said, involvement of that portion of the pleura supplied by the dorsal nerves would sometimes give rise to hyperesthesia and rigidity of the abdominal walls. Of course, a lesion confined to the abdominal wall might be mistaken for an intra-abdominal one.

### ABDOMINAL PAIN OF INTESTINAL ORIGIN.

Dr. Frederick Holme Wiggin of New York said that, generally speaking, a sharp persistent pain in the abdomen suggested peritoneal inflammation,

while a dull aching pain pointed rather to involvement of the connective tissue. Tenesmus indicated a lesion of the lower third of the intestinal tract. A diagnosis of appendicitis should never be made until after a careful exploration had excluded disease of the lungs and pleura. When a patient complained of severe pain about the umbilicus, associated with constipation and collapse, one should search the various hernial openings, not forgetting to look for a tumor in the linea alba.

Dr. R. F. Weir of New York directed attention to the new method of examination brought forward by Dr. Ellsworth Eliot of New York, *i. e.*, the determination of the comparative resistance offered by the costal arches on the two sides. With the thumbs directed toward the sternum, the fingers should crowd the costal arches inward toward the vertebral column. An abnormal resistance was often encountered in lesions of the liver, pancreas, duodenum and pylorus. It was now well known that McBurney's point did not accurately represent the location of the vermiform appendix; nevertheless we owed much to McBurney for having pointed out the value of "finger pressure" in eliciting the peculiar tenderness found with appendicitis. When difficulty was experienced in palpating the appendix, the examination could sometimes be facilitated by directing the patient, while in the recumbent posture, to raise the leg and abduct it a little, thus putting the psoas muscle on the stretch, and bringing the appendix nearer the palpating finger.

## Third Day, Thursday, Jan. 28.

### OFFICERS.

The following were elected: President, Dr. Hamilton D. Wey of Elmira; Vice-President, Dr. Joseph D. Bryant of New York; Secretary, Dr. F. C. Curtis of Albany; Treasurer, Dr. O. D. Ball of Albany.

### A CASE OF RECURRING MEMBRANOUS STOMATITIS ASSOCIATED WITH ERYTHEMA EXUDATIVUM MULTIFORME (HEBRA).

Dr. Louis E. Blair of Albany reported this remarkable case. The skin affection did not appear until a week after the stomatitis. It remained for a month and left copper-colored spots that were visible for a long time, and were finally succeeded by white contracted scars. The membranous exudation in the mouth was firmly adherent, and a similar deposit appeared coincidentally on the mucous membrane about the anus and glans penis.

### THE HOSPITAL CAR; ITS EQUIPMENT, USE AND IMPORTANCE.

Dr. W. W. Sanford of New York described the modern hospital car. The one taken as an example was sixty feet long, was practically dust-proof and was finished entirely in white. The car was divided into two compartments, — a smaller, or accident ward, and an ordinary hospital ward. He urged the importance of the medical advisers of railroad companies using their influence to secure the more general introduction of such cars.

### SYMPOSIUM ON NEPHRITIS. RENAL DECAPSULATION FROM THE PATHOLOGIST'S POINT OF VIEW.

Dr. J. M. Vancott of Brooklyn was the author of this paper. He said that the blood supply of the kidney was an end-artery system, and that, with the exception of a few interlobular arteries and a few arteries entering the cortex, the only communication was through the capillaries. From this it followed that decapsulation subjected the parenchyma of the kidney to loss of nutrition, alteration of pressure and even reversal of the blood current — in other words, a condition usually found in connection with renal infarction. Litten's experiments had demonstrated that the collateral circulation was not capable of restoring the equilibrium of the circulation after decapsulation. It should not be forgotten that when the capsule was torn away, the vessels which usually restore the circulation were destroyed, and that only the capillaries were left. Again, there must be death of considerable portions of the renal parenchyma, because the renal epithelia die in two hours after being deprived of their blood supply, and it required at least four days for the formation of new capillaries. No amount of restoration of the renal circulation could restore the integrity of the cortex. From these facts it followed that decapsulation was positively injurious to the normal kidney and of no benefit to the large white kidney.

### SURGICAL TREATMENT OF NEPHRITIS.

Dr. Willis G. MacDonald of Albany spoke extemporaneously on this topic. He was inclined to believe that in infectious nephritis, due to local infection with such germs as the gonococcus and the streptococcus, surgery should be of some benefit. In those cases in which suppression of urine followed within thirty-six hours after an operation on the genito-urinary tract, and which almost always terminated fatally under medical treatment, surgery could hold out more hope. By way of illustration, he reported a recent case of this kind in which, after forty-eight hours of suppression of urine, incision of the capsule of the kidney quickly re-established the flow of urine.

### GENERAL TREATMENT OF NEPHRITIS.

Dr. Beverley Robinson of New York said that, in the treatment of acute diffuse nephritis, two cardinal principles of treatment were physiological rest of the diseased part and the removal of some of the strain on its functional capacity by invoking the action of the skin and bowel. At first the patient should have an exclusively milk diet, but after a few days, gruels, jellies and amylaceous articles might be added and the patient should be encouraged to drink freely of spring water. When there was much edema or dyspnea, a saline purge should be given and the skin excited to activity by a hot wet pack. This he very much preferred to the hot-water bath or, in private practice at least, to the hot-air bath, because of its simplicity, effectiveness and freedom from risk. When the urine was scanty and highly albuminous and there was pain over the kidneys, congestion of the kidneys might often be diminished by the application of mustard poultices. High rectal irrigations with Kemp's tube were also useful in promoting diuresis. He had known pilocarpin to cause fatal bronchitis, and considered it too dangerous a drug to use. To avert an attack of uremia he would give nitroglycerin and sweet spirits of niter and, if the case were sufficiently urgent, would resort to wet-cupping or to venesection. For the control of convulsions, chloroform might be required, and occasionally morphine, but he was reluctant to use the latter, particularly in chronic nephritis. For the severe anemia following nephritis, tincture of the chloride of iron, or the tonic diuretic compound known as Basham's mixture, was useful. If the albuminuria should persist, the physician should endeavor to improve the general health, and should carefully regulate the diet and bowels and restrict the amount

of physical effort. The diarrhea of Bright's disease could often be well controlled by prolonged irrigation of the bowel. When the anasarca was extreme it might be necessary to puncture the skin in several places, or even insert a small capillary drainage tube. Incisions should be made and the parts dressed under aseptic precautions. Severe dyspnea might, of course, call for paracentesis of the thorax or of the abdomen. In persons past middle life, digitalis could rarely be safely given unless guarded by nitroglycerin. In chronic cases the importance of even slight subacute attacks of nephritis must not be lost sight of. When the nephritis was due to some underlying constitutional taint, such as syphilis, it was tempting to give iodide of potassium, but although there was high authority for such treatment he had always felt disposed to use this drug rather charily because of its irritating action on the kidney. In the medicinal treatment of persons suffering from nephritis it was well to remember that drugs like the salicylates and the phenol derivatives were usually out of place, because of their known irritant action upon the kidneys. These patients were, as a general rule, better off without alcohol in any form, but in persons who had been accustomed to take alcoholic drinks in moderate quantities for many years he would not adhere too closely to this rule, but would insist that only small quantities be taken, and always with the meals and well diluted. For sleeplessness he preferred the bromides to chloral. With regard to morphine in uremia, he would again insist that while it appeared to be useful in cases characterized by a dilatation of the pupil, it was decidedly dangerous to use it where the contrary state of the pupil prevailed.

Dr. DeLancey Rochester of Buffalo said that in cases of acute suppression of urine he was sure just as good results could be obtained from cupping and leeching of the loin and venesection as from any surgical treatment. He was a firm believer in the efficacy of the hot-air bath, and he had often given it easily and effectively in the humblest homes by making use of two barrel hoops, an "elbow" of stovepipe and an alcohol lamp. If diaphoresis were not easily excited, he gave minute doses of pilocarpin hypodermically, always following this immediately by the hot-air bath. When convulsions threatened, he would give a moderate dose of morphin and follow this by the hot-air bath. In subacute nephritis, the daily washing out of the bowel with saline solution and allowing some of the solution to be retained was a useful measure.

Dr. S. B. Ward of Albany spoke of the great benefit to be derived from the use of arsenic in overcoming the severe and obstinate anemia of nephritis.

## THE OBSTETRICAL SOCIETY OF BOSTON.

BY MALCOLM STORER, M.D., SECRETARY.

Meeting of Nov. 17, 1903, the President, Dr. J. B. Swift, in the chair.

Dr. E. B. Young, by invitation, read a paper entitled

### THE RUPTURE OF OVARIAN CYSTS.[1]

Dr. W. F. Whitney: At the autopsy table I frequently see cysts, the walls of which contain scars of old ruptures where there were evidently no bad consequences. I remember one case in which there were two large papillary masses entirely uncovered by cyst wall. The wonder is that rupture does not take place more often. Any large cyst has many thin places in its wall apparently ripe for rupture.

[1] See page 235 of the Journal.

Dr. T. M. Rotch: As an example of the possible bad effect of the rupture of very small cysts I can recall a case of death from septic peritonitis following the rupture of a cyst no larger than a pea.

Dr. L. V. Friedman: I remember the rupture of a cyst the size of an egg with no symptoms. As regards the strength of the cyst wall in the preparation of some specimens for the museum I found that cysts would stand much greater tension without rupture than they were probably ever subjected to during life.

Dr. M. Storer: The case which I reported to this society some years ago was briefly that of a young woman whom I allowed some graduate students to examine under ether, in whom I had found an ovarian tumor the size of a man's head. The third examiner ruptured it. Within ten minutes it had been removed, yet during that time the abdomen was pretty well filled with blood from a large vessel torn across at the point of bifurcation. Oddly enough only the other day I was speaking to my students at the dispensary about that case, and the very next case I examined, a very thin-walled woman, had an ovarian tumor the size of two fists, which collapsed under my fingers with only very gentle pressure. She was not conscious of anything happening and the only symptom that followed was menstruation coming on next day, ten days ahead of time, the first time that it had ever happened with her.

I remember being very much perplexed over my first dissecting-room subject, an immensely large woman. On operating the peritoneal cavity I came upon a soft white membrane that proved to be the collapsed wall of a cyst that when full must have weighed fifty pounds at least. I am somewhat surprised at the views Dr. Young has expressed about the results of operating upon ovarian tumors during pregnancy. I have only happened to operate on two cases during pregnancy, once with torsion at six months and once at three months. The pregnancy was not affected in either case. My reading has rather inclined me to feel that pregnancy is an indication for operation rather than otherwise.

Dr. C. H. Hare: I have seen two cases of rupture. The first was a case of Dr. Burrage, in which the cyst was probably ruptured by the nurse preparing the patient for operation the night before. An acute peritonitis was found and the patient died. The second case I operated upon a week ago, twelve hours or so after rupture. A double torsion was present and probably was the cause of rupture. This patient has done well thus far.

Dr. F. A. Higgins: Dr. Green will remember a case seen by several students some years ago. Under the hands of one of them the cyst suddenly disappeared. There were no symptoms.

Dr. J. C. Hubbard read upon the

### ETIOLOGICAL IMPORTANCE OF INTESTINAL PARASITES IN APPENDICITIS.

Dr. Whitney: Intestinal parasites in the appendix must be very rare in this part of the world. I have found pin worms only twice and ascaris once, — in this case.

Dr. A. Worcester questioned the value of a vermifuge having any influence on parasites that were hidden away in the appendix.

Dr. Rotch: There is no question but that vermifuges are of great value in many cases when the parasite is in the upper intestine where enamata are of no effect. The giving of vermifuges by the mouth might accordingly have some use in preventing parasites from getting into the appendix.

THE BOSTON

# Medical and Surgical Journal.

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## BACILLUS PRODIGIOSUS.

During the last fifty years, the Bacillus prodigiosus has been the subject of many investigations, made from different points of view. The results have been accepted, often without confirmation, and used as a basis for argument or put down in textbooks as facts. Recent investigations, carried on in Turin by Dr. E. Bertarelli,[1] suggest that some of our ideas regarding this micro-organism will have to be modified.

Dr. Bertarelli gives his earlier experiments in detail, summarizing as follows: The prodigiosus causes a fatal toxico-septicemia when inoculated in moderately high doses into animals, especially the guinea pig, rat and mouse. The postmortem appearance of an animal thus treated shows an overwhelming intoxication. By means of the microscope and cultures one observes the undoubted presence and multiplication of prodigiosus in the blood and organs, including those of the embryo. Furthermore, in the passage through an animal, the prodigiosus reacquires, if unpigmented, its red pigment, and this even when one is unable to bring back the characteristic pigment by cultivation on potato. If already pigmented, the culture may even acquire the power of remaining pigmented at 37° C. He uses an intraperitoneal inoculation into a guinea pig of about 2 cu. cm. of a bouillon culture five days old to demonstrate to students a typical septicemia. The virulence of the culture can be increased by passing it through a series of animals in a collodion sac in the abdominal cavity.

[1] Archiv. per le Scienze Mediche, 1903, xxxvii, 1, pp. 1–31.

Further experiments to show how the toxic effects are produced prove that the toxicity of the prodigiosus is specially bound to the bacterial cell; that the soluble products are only slightly toxic, but have hemolytic and chemiotactic properties; that the protein extracted by the method of Koch possesses a toxic power analogous to that of the dead bacilli; and, finally, that the nucleo-proteid, even deprived of the nucleo-istone, is capable of moderate toxic action. The results of the intoxication by prodigiosus ought not, therefore, to be attributed in a special manner, as some authors wish, to trimethylamin or other product of the metabolism of the germ, but are intimately connected with the bacterial cell itself. The prodigiosus will resist a temperature of 80° C. for an hour before being killed.

Coming now to the association of prodigiosus with some other organism, especially streptococcus and the bacillus of anthrax, Bertarelli gives details of further interesting experiments. Inoculation of a mixture of streptococci and staphylococci does not kill an animal except in very large doses. When, however, the mixture is followed by inoculation of sufficient prodigiosus culture (.8 cu. cm. for a guinea pig) the animal dies in twelve to twenty-four hours, and cultures from the blood show abundant prodigiosus and much smaller quantities of staphylococcus and streptococcus. Only when the streptococcus previously possesses a distinct virulence does one secure a very slight exaltation of its virulence by mixing it with prodigiosus — in such a case death is due to septicemia from streptococcus, with presence of this organism in the circulation, while the prodigiosus is very scarce or wanting.

Equal parts of anthrax and prodigiosus culture in dose of 1 cu. cm. of mixture caused death of the guinea pig in eighteen hours with presence of prodigiosus in circulation and very few colonies of anthrax. Another mixture of 1 cu. cm. anthrax and $\frac{1}{5}$ cu. cm. prodigiosus was followed by death of the guinea pig in forty-eight hours due to anthrax. In nearly all those inoculations where prodigiosus was added to anthrax the animals died later than controls inoculated with anthrax alone. There is a distinct antagonism between anthrax and prodigiosus, which can be demonstrated even better in the test tube. These experiments included attempts to immunize animals against prodigiosus (not an easy matter) and subsequent inoculation with anthrax. One such

animal survived thirty hours longer than the control. Further experiments along this line will probably show that so-called "non-specific" immunity is of less importance than previously supposed.

It is certain, therefore, that in the association of attenuated pathogenic organisms with prodigiosus, one ought to speak with great caution of the increase of virulence given by the prodigiosus, since in some cases such increase is absolutely wanting or is problematical, while on the contrary, as follows with anthrax, one can have a diminution of the effect of the infection even in animals so typically receptive as guinea pigs. It follows besides, from the results shown, that in the test tube the antagonism beween prodigiosus and anthrax is very marked.

He does not believe that by these observations he has modified the more essential data that many investigators have recorded on the biology of prodigiosus, and on the significance of the association of microbes; especially since the greater part of the experiments recorded (Roger, Klein, etc.) were done under special conditions. The result that has chief biological interest is the concept that prodigiosus, without being a pathogenic micro-organism, elaborates and possesses toxic substances in truly appreciable amount, and these introduced in distinct but not very great quantities into an animal can give rise to a true septicemia. On this account concepts generally set forth in treatises on prodigiosus ought to be modified in this respect — that the organism should be classed as harmless with regard to accidental infection, but distinctly toxic even without recourse to the very high doses which some authors record.

It is a great mistake to suppose from this, even for a moment, that prodigiosus can have any pathogenic importance for man. Not only is there no record of a fatal case, but it is sufficient to recall its enormous diffusion and the ease with which it comes in contact with us to remove every doubt. Bertarelli has inhaled and swallowed little masses of living bacilli without any effect. He could never produce symptoms by feeding a culture to animals or rubbing it into surface lesions.

Although the prodigiosus is harmless under ordinary conditions, nevertheless its biological properties, its toxicity, its peculiar behavior with other organisms, the pigmentation that it acquires in passing through an animal, are interesting facts which seem to be worth recording.

This addition to our knowledge has a practical application in connection with the mixture of prodigiosus and erysipelas toxins used more or less successfully by Dr. W. B. Coley for the treatment of inoperable sarcoma.

## POLITICS AND PUBLIC HEALTH.

It is with much regret that we note in the *Wisconsin Medical Journal* of February last the retirement of Dr. U. O. B. Wingate from the position of secretary of the State Board of Health of Wisconsin. Dr. Wingate had been recognized for several years as a thorough sanitarian and an acknowledged authority upon subjects relating to public health. The *Wisconsin Medical Journal* alludes to the matter as follows: "Dr. Wingate's retirement is not in the interest of the people nor of the public health, nor is it due to any lack of fitness; political reasons only have dictated it. In the language of one of the political members of the State Board of Health, 'this plum should be passed around.'

"We know whereof we speak, when we say that the method of this retirement is discreditable to those members of the State Board of Health who manipulated the deal, discreditable to the state administration and unwarranted by Dr. Wingate's long and efficient conduct of the office. The public health is too vital a matter to be subjected to the vicissitudes of politics."

Instances of successful or of unsuccessful interference by politicians with the work of boards of health are unfortunately of too common occurrence in this country. Political bossism, Addicksism and the selfish greed of office-seeking too often result in the removal of competent officials at the period of their greatest usefulness. It is not necessary to turn backward many pages in the history of public sanitation to witness the practical abolition of the National Board of Health by the withdrawal of its appropriation in 1883; the ill-assorted union of health, lunacy and charity in Massachusetts in 1879, under the panicky fear of Butlerism; the recent overthrow of the health administration of Pittsburg; the unsuccessful attempt to depose a public sanitary official in Michigan. These were all illustrations of such unwise and harmful interference. "If," says the *Wisconsin Medical Journal*, "the politicians of this state were to grasp the force of these facts, and were to consult the best interests of the people, we should not again be treated to the spectacle of the underhanded removal of a thoroughly competent medical official at the

period of his greatest usefulness and for the stupid reason that the 'plum should be passed around.' "

## HEALTH OF IMPERIAL JAPANESE NAVY.

We are in receipt of the annual report of the Health of the Imperial Japanese Navy for the year 1901, published, however, in December, 1903. We call attention to this document, not so much because it contains information of great general value as for the reason that it shows the extraordinary care and devotion to detail which is characteristic of this nation, and some of the results of which have recently been seen. The report shows that the mean daily force in the service for the year under consideration was 26,469 persons, being an increase of upwards of 3,000 over the preceding year. Owing to this expansion of the navy there was a slight increase in the number of cases of disease as compared with the preceding years, and it also shows that the general ratio of men sick gives a certain decrease. The total number of cases of disease or injury was nearly 25,000, with an increase of day's sickness, as compared with previous years, due to the increase of the navy since the Japan-China war, and also to a revision of the regulations which has led to an inclusion of milder cases on the sick list than was before the custom. The statistics on this subject of illness in the navy are worked over with very great detail and should prove of interest to the statistician, if not to the general reader.

Following this general statement a summary of disease and injury is appended which covers a very wide range of conditions. This section of the report might be taken as a model for such work anywhere. It is evident that each disease is studied most carefully in all its relations, and therefore it becomes possible to prevent in a measure its occurrence, and thereby keep the navy in a state of high physical efficiency. It is of interest to note that cases of pulmonary tuberculosis occur with great frequency, and tend to increase in spite of preventive measures.

The report consists essentially of statistics, which it is not our purpose to reproduce. We merely desire to call attention at this time to the careful system for the tabulation of disease prevailing in the Japanese navy, which serves also to illustrate the general attitude of preparedness which has characterized all the acts of the Japanese during the events of the past few weeks.

## MICROBES IN BOOKS.

A valuable article on microbes in books was recently contributed to the *New York Times Saturday Review of Books* by Dr. Andrew F. Currier, who, although practicing as a gynecological specialist in New York, resides in the neighboring town of Mount Vernon and is president of the board of trustees of the public library there. He states that a great many more cases of the transmission of infectious disease through the medium of books in libraries have probably occurred than have been recorded, and that tuberculosis and scarlet fever have been thus acquired to his own knowledge. Having mentioned that in 1896 Dr. John S. Billings determined that infectious germs in books could be destroyed by the vapor of formalin, and referred to the experiments of other investigators, he said that it was only comparatively recently that a disinfecting apparatus had been devised which could be utilized by public libraries. This, which originated with himself, he describes as follows: To a steel cabinet with heavy plate-glass doors, as nearly airtight as possible, with a capacity for about 250 duodecimo volumes, is attached a generator by means of which formalin vapor is introduced, also another generator for the introduction of ammonia. As the books will not absorb all the formalin introduced, the ammonia is injected to combine with the residue of formalin. While formalin alone is an irritant to the mucous membranes, it is non-irritant when combined with ammonia. The apparatus is not complicated, and can be operated by any one with ordinary intelligence. Having stated that it was thoroughly tested last year under the supervision of the New York Board of Health, Dr. Currier says that it has now been in use for nearly two years at the Mount Vernon Public Library, and has worked satisfactorily, one of the most important results being the establishment of confidence on the part of the public in the innocuousness of the books which are circulated.

## MEDICAL NOTES.

Loss of the Johns Hopkins Hospital and Medical School. — As a result of the recent Baltimore fire the resources of the Johns Hopkins Hospital and Medical School are temporarily somewhat seriously curtailed. It is said that the annual income will be diminished about $60,000, owing to the loss of rentals from buildings destroyed by the fire.

Perils of Hand Shaking. — According to

*American Medicine* a Belgian savant has just published a treatise on shaking hands, which he states is most dangerous, a mutual pressure of the hand being nothing more than an exchange of undesirable microbes, 80,000 of which inhabit every half-inch of the hand. The most dangerous people to shake hands with, it appears, are doctors, surgeons, nurses, hairdressers, butchers, sausage-makers, tripe merchants, tanners and leather-dressers, while the least dangerous person seems to be a worker in metal, because the metal sets up an oxidation which acts as an antiseptic. The safe course is to salute only with our heads and our hats, or always wear gloves.

A Centenarian. — Noah Raby, who claimed to be the oldest man in the world, died on March 1 in the poorhouse of the Piscataway Township, N. J., of which he had been an inmate for nearly forty years. According to his own statement, had he lived to April 1 he would have been one hundred and thirty-two years old, but as there are no records to substantiate this claim, it is probably much exaggerated. He gave the place of his birth as Eastontown, N. C., and said his father was an Indian, while his mother was a white woman. It was his proud boast that he had used tobacco for over one hundred and twenty years. Some two or three years ago he had an attack of measles, and since then he has been totally blind.

Result of Two Lorenz Operations. — Dr. Harry M. Sherman, Professor of Surgery in the University of California, reports in a recent number of the *Journal of the American Medical Association* the results of two cases operated upon by Dr. Lorenz in San Francisco in November, 1902. In the first case the ultimate result did not lead to stable support of the pelvis on the femur, and could not from any point of view be regarded as a success. In the second case examination and radiographs showed conditions which likewise could not be regarded as an improvement. The careful observation of the cases operated upon by Dr. Lorenz, studied by the x-ray and otherwise, will no doubt give important, if not final, information regarding the efficacy of the so-called "bloodless operation."

The Twenty-Fifth Anniversary of the Cystoscope. — On March 9 was the twenty-fifth anniversary of the first demonstration of the cystoscope by Prof. Max Nitze. A committee consisting of Prof. Carl Posner, Dr. Hans R. Wossidlo and Dr. H. Goldschmidt of Berlin had been charged to arrange a celebration of the occasion. A part thereof was the presentation of an address, to which it was proposed to attach the signatures of those who have a general or special interest in genito-urinary diseases. The committee had asked Dr. Ferdinand Valentine of New York to obtain the signatures of those American colleagues who might desire to be thus represented in the address. A congratulatory cablegram preceded them, to the following effect: "Your colleagues and pupils congratulate themselves and the profession on the twenty-fifth anniversary of the demonstration of the cystoscope. Vivat Magister!"

Free Diphtheria Antitoxin in Chicago. — The Chicago Health Department is again prepared to furnish standard diphtheria antitoxin — from the bacteriologic laboratories of the New York Department of Health — to every physician of Chicago in the following manner:

(1) Physicians may obtain antitoxin free from the antitoxin stations of the department for the gratis treatment of their charity cases.

(2) Physicians may have their prescriptions for antitoxin to use in their paid practice filled by any antitoxin station at the following (present) prices:

| | |
|---|---|
| No. 1 (1,000 units) | $0.75 |
| No. 2 (2,000 units) | 1.25 |
| No. 3 (3,000 units) | 2.25 |

Free antitoxin is furnished by the stations on the application of any physician who gives a receipt for the amount of antitoxin supplied, which receipt contains the following certificate:

"I hereby certify that the family of this patient is unaole to pay for the antitoxin; that the case is urgent; that I am attending without fee and that I will report the termination of the case on the postal-card form of the health department furnished by the druggist."

In the body of the receipt is given the name of the patient and the exact residence address. This in order to refer what is, presumably, a case of destitution to the Bureau of Charities for such further assistance as, upon investigation, may be found necessary.

It is the object of the department to establish antitoxin stations so located as that there will be one within half a mile of every physician's office or residence, and so prevent unnecessary delay.

## BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, March 2, 1904, there were reported to the Board of Health of Boston

the following cases of acute infectious diseases: Diphtheria 50, scarlatina 26, typhoid fever 8, measles 146, smallpox 0.

Lynn, Mass., Hospital. — The twenty-first annual report of the Lynn Hospital for the year 1903 indicates the increasing usefulness of the institution in every department. The average number of patients in the hospital daily was 59, and during the year 136 more were treated than in the preceding year. A similar increase occurred in the maternity department, where instead of 61 patients 81 were admitted during the year. The whole number of patients admitted during the year was 1,253, with 4,651 new patients treated in the out-patient department. This development of the hospital work has entailed increasing expenses, so that the expenditures have far exceeded the receipts. The need of still further enlargement of the hospital buildings is imperative, and a new ward building, begun in April, it is hoped will soon be completed.

## NEW YORK.

New Building for Nurses. — The managers of the New York Training School for Nurses, in connection with Bellevue Hospital, have purchased a lot 125 by 100 feet on East 25th Street for the erection of a new building. This is directly back of the present quarters of the school on 26th Street, opposite the hospital, and the new building will probably be extended eventually over the entire premises.

New Building for St. Francis Hospital. — The Sisters of the Poor of St. Francis, who for thirty-eight years have conducted St. Francis Hospital in East 5th Street, are erecting a new hospital building in the Bronx. The location is at 143d Street and St. Ann's Avenue, directly opposite St. Joseph's Hospital for Consumptives. There will be nineteen large wards, with 304 beds, and forty small wards, a number of which are to be used for private patients.

Complimentary Dinner to Dr. Roosa. — On March 1 a complimentary dinner was given at Delmonico's to Dr. D. B. St. John Roosa, in honor of the twenty-first anniversary of the founding of the New York Post-Graduate Medical School, of which Dr. Roosa has been the president since the beginning. It was attended by more than three hundred physicians and distinguished laymen, and a large loving cup of silver was presented to him on behalf of the faculty of the Post-Graduate School. Dr. William Osler of the Johns Hopkins University acted as toastmaster, and among the other prominent men from a distance were Drs. Clarence J. Blake and Maurice H. Richardson of Boston, Wm. W. Keen and John H. Musser of Philadelphia, and Wm. H. Welch and Howard Kelly of Baltimore. The Rev. Dr. Marvin R. Vincent made the loving cup presentation speech, and the other speakers, besides Dr. Roosa himself, were Drs. Osler, Keen, Blake, Polk of New York; and Mayo of Rochester, Minn.; and Mr. William Potter, a trustee of Jefferson Medical College, Philadelphia.

Public Tuberculosis Clinic. — The Health Department is now opening a public tuberculosis clinic, having had constructed for the purpose a convenient building adjoining the headquarters of the department at Sixth Avenue and 55th Street. The clinic includes a registration office, two waiting rooms, two rooms for general examinations, a throat room and an x-ray room. The examinations will be conducted by experts, and the first object aimed at is early recognition and correct diagnosis of cases of pulmonary tuberculosis. Patients will be supplied with circulars containing exact and intelligible instructions, and those in indigent circumstances will be given treatment and furnished with sputum cups, etc., free of charge. In addition, poor patients and those discharged from the public institutions of the city will be cared for at their homes and places of occupation by a special corps of trained nurses, and the cooperation of charitable organizations has been secured to supply food, fuel, ice and other articles where needed. One of the chief duties of these nurses will be to look after the children in the homes of consumptives, with a view to preventing their becoming infected. Suitable cases will be provided for in hospitals and many of those promising recovery sent to out-of-town sanatoria.

Mortality in February. — The weekly reports of the Health Department show that the mortality in the city during the month of February represented an annual death-rate of 22.59, as against 21.22 in January and 20.81 in February, 1903. The corrected death-rate, excluding non-residents and infants under one week old, was 21.68. Among the diseases which showed an increased mortality were the following: The weekly average of deaths from diphtheria and croup increased from 51 in January to 54.75 in February; of deaths from

whooping-cough, from 1.5 to 3.25; from influenza, from 15 to 24.25; from pneumonia, from 226.5 to 263.25; from pulmonary tuberculosis, from 157.75 to 172.25; from diarrheal diseases, from 36.25 to 48.5; from diarrheals under two years of age, from 28 to 38.5; from Bright's disease and nephritis, from 137.25 to 139.5; and from organic heart diseases, from 108.25 to 118. Among the diseases which showed a decline in mortality were the following: The weekly average of deaths from bronchopneumonia decreased from 122.25 to 118.5; from acute bronchitis, from 56 to 49; and from cancer, from 56.5 to 49. The rise in the death-rate is due to a considerable extent to the increased mortality from influenza and pneumonia, and in the week ending Feb. 27 the deaths from the latter disease, exclusive of bronchopneumonia, numbered 328, as against 202 in the corresponding week of 1903. In this week the general death-rate reached 24.43. The total number of deaths in the city was 1,797, and in the boroughs of Manhattan and the Bronx (comprising the city before the consolidation of 1899), 110. This is a higher mortality than for any week of the winter season since the notable influenza epidemic of 1892–3. During the month of February there was one death from smallpox, as was the case in January.

Apartments for Physicians. — The statement has been published that the old Madison Avenue Hotel, at the corner of 58th Street and Madison Avenue, which has been unoccupied for several years, is to be remodeled and fitted up with apartments exclusively for physicians. The building is six stories high and covers a plot of ground one hundred by ninety-five feet.

## Miscellany.

### FOURTH OF JULY TETANUS.

At a meeting of the Berkshire District Medical Society, held Feb. 26, 1904, the following preamble and resolution was passed: *Whereas*, 406 deaths from tetanus were reported as occurring in the United States in July, 1903, as a result of the Fourth of July celebration, 363 of these deaths having been caused by toy pistols loaded with blank cartridges, and 17 by cannon crackers.

*Resolved*, that the Berkshire District Medical Society is in favor of any legislation and municipal ordinances which will effectively stop the sale and use of toy pistols, blank cartridges and cannon crackers.

L. C. Swift, M.D., Secretary.

### RECORD OF MORTALITY

For the Week ending Saturday, Feb. 20, 1904.

| Cities. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseasee. | Typhoid fever. |
| New York . . | 3,908,644 | 1,682 | 455 | 21.43 | 26.56 | 2.60 | 2.60 | .30 |
| Chicago . . . | 2,021,086 | 651 | 177 | 21.04 | 31.54 | 1.84 | 4.45 | 1.23 |
| Philadelphia | 1,407,968 | 605 | 161 | 19.89 | 24.53 | — | 2.82 | — |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 231 | 49 | 20.34 | 22.08 | .86 | 1.30 | .43 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,045 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 159 | — | 22.00 | 21.38 | 1.88 | 1.88 | 7.54 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 78 | 23 | 21.79 | 21.79 | 2.56 | 3.84 | 1.28 |
| Boston . . . | 617,950 | 224 | 55 | 20.53 | 22.32 | 1.78 | 2.23 | — |
| Worcester . . | 136,925 | 38 | 14 | 5.26 | 18.41 | 2.63 | — | — |
| Fall River . . | 119,349 | 46 | 19 | 35.09 | 19.56 | 2.17 | 8.70 | 2.17 |
| Lowell . . . | 104,402 | 29 | 8 | 17.24 | 24.13 | — | — | — |
| Cambridge . | 100,998 | 23 | 4 | 17.39 | 17.39 | 4.35 | — | — |
| Lynn . . . . | 73,875 | 35 | 12 | 8.67 | — | 2.85 | — | — |
| Lawrence . . | 72,348 | 20 | 5 | 25.00 | 30.00 | — | 10.00 | — |
| Springfield . | 72,020 | 24 | 4 | 8.33 | — | — | — | 4.16 |
| Somerville . | 70,413 | 15 | 4 | 13.33 | 20.00 | 6.67 | — | — |
| New Bedford | 68,863 | 32 | 11 | 15.62 | 25.00 | — | 3.12 | — |
| Holyoke . . . | 50,538 | — | — | — | — | — | — | — |
| Brockton . . | 46,601 | 7 | 1 | 14.30 | — | — | — | — |
| Newton . . . | 39,310 | 11 | 2 | 9.09 | 9.09 | — | — | — |
| Haverhill . . | 39,061 | 13 | 4 | 7.70 | — | 7.70 | — | — |
| Malden . . . | 37,205 | 10 | 2 | 20.00 | 30.00 | — | — | — |
| Salem . . . . | 37,188 | 12 | 3 | — | 41.65 | — | — | — |
| Chelsea . . . | 36,499 | 11 | 6 | 9.09 | 18.18 | — | — | — |
| Fitchburg . . | 36,335 | 8 | 1 | 12.50 | 12.50 | — | — | 12.50 |
| Taunton . . . | 34,577 | 14 | 3 | 21.42 | — | 7.14 | — | — |
| Everett . . . | 30,209 | 9 | 1 | 33.33 | — | — | — | — |
| North Adams | 29,201 | 11 | 3 | 22.22 | 22.22 | 22.22 | — | — |
| Quincy . . . | 26,798 | 10 | 6 | 40.00 | 20.00 | 20.00 | 10.00 | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 5 | — | 20.00 | 40.00 | — | — | — |
| Brookline . . | 23,576 | 6 | 1 | — | 16.67 | — | — | — |
| Pittsfield . . | 22,870 | 14 | 3 | 21.42 | 28.56 | 7.14 | — | 7.14 |
| Medford . . | 21,956 | 4 | 2 | — | 50.00 | — | — | — |
| Chicopee . . | 21,692 | 4 | 0 | 50.00 | — | — | — | — |
| Northampton | 20,314 | 3 | 1 | — | — | — | — | — |
| Beverly . . . | 15,807 | 3 | 1 | — | 33.33 | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 6 | 0 | — | — | — | — | — |
| Adams . . . | 14,745 | 3 | 2 | — | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 5 | 1 | 20.00 | — | — | — | — |
| Newburyport | 14,478 | 5 | 1 | — | — | — | — | — |
| Woburn . . . | 14,315 | 4 | 1 | 50.00 | 25.00 | — | — | — |
| Melrose . . . | 13,819 | 5 | 1 | 20.00 | — | 20.00 | — | — |
| Westfield . . | 13,809 | 5 | 3 | 20.00 | 20.00 | 20.00 | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 4 | 2 | 25.00 | — | — | — | — |
| Revere . . . | 13,609 | 1 | 1 | — | — | — | — | — |
| Framingham | 12,974 | 7 | 2 | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | — | — | — | — | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 2 | — | — | 50.00 | — | — | — |
| Weymouth . | 11,350 | 5 | 1 | — | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 4,099; under five years of age, 1,056; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 836, acute lung diseases 1,028, consumption 440, scarlet fever 53, whooping cough, cerebrospinal meningitis 9, smallpox 15, erysipelas 15, puerperal fever 20, measles 38, typhoid fever 31, diarrheal diseases 112, diphtheria and croup 81.

From whooping cough, New York 4, Pittsburg 2, Providence 1. From smallpox, New York 1, Philadelphia 13, Pittsburg 1. From cerebrospinal meningitis, New York 3, Pittsburg 1, Boston 1, Lynn 1, New Bedford 2, Marlborough 1. From erysipelas, New York 5, Chicago 2, Philadelphia 3, Pittsburg 1, Boston 3, Pittsfield 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,475, for the week ending Feb. 6, the death-rate was 17.2. Deaths reported, 5,049; acute diseases of the respiratory organs (London) 190, whooping cough 173, diphtheria 48, measles 80, smallpox 1, scarlet fever 39.

The death-rate ranged from 6.0 in Smethwick to 26.6 in Wigan; London 17.4, West Ham 16.5, Brighton 17.8, Southampton 15.8, Plymouth 16.5, Bristol 14.4, Birmingham 16.1, Leicester 13.7, Nottingham 19.7, Liverpool 23.1, Bolton 19.9, Manchester 19.4, Salford 16.6, Bradford 14.6, Leeds 19.5, Hull 14.6, Cardiff 16.9, Rhondda 22.2, Hornsey 6.4, Merthyr Tydfil 22.2.

## METEOROLOGICAL RECORD.

For the week ending Feb. 20, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in Inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S..14 | 30.16 | 22 | 27 | 16 | 77 | 94 | 86 | N W | S E | 7 | 10 | C. | N. | T. |
| M..15 | 29.64 | 22 | 29 | 15 | 100 | 84 | 92 | N | W | 12 | 22 | N. | N. | .74 |
| T..16 | 29.74 | 8 | 15 | 1 | 64 | 64 | 64 | W | W | 20 | 26 | C. | O. | T. |
| W..17 | 30.04 | 13 | 22 | 4 | 66 | 56 | 61 | W | N.W | 12 | 22 | C. | C. | 0 |
| T..18 | 30.36 | 19 | 30 | 8 | 59 | 63 | 61 | N W | W | 15 | 7 | C. | O. | 0 |
| F..19 | 30.20 | 22 | 26 | 17 | 74 | 93 | 84 | S | N | 5 | 13 | N. | N. | .17 |
| S..20 | 30.51 | 25 | 36 | 14 | 73 | 58 | 66 | N W | N W | 15 | 6 | C. | C. | T. |
| ☞ | 30.09 | | 26 | 11 | | | 73 | | | | | | | .91 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

DELAYED PUBLICATION.—The strike among printers and pressmen is responsible for delays in issuing the JOURNAL.

## SOCIETY NOTICES.

THE AMERICAN SOCIETY OF CLINICAL SURGERY.—This society, with a membership of about thirty-six, will meet in New York, March 18, at the College of Physicians and Surgeons, Columbia University, 437 West 59th Street, and will subsequently visit various laboratories and hospitals, March 18 and March 19.

SUFFOLK DISTRICT MEDICAL SOCIETY.—There will be a meeting of the Section for Obstetrics and Diseases of Women in Sprague Hall, Boston Medical Library Building, 8 The Fenway, Wednesday, March 23, 1904, at 8 P.M., for the election of a chairman for this section, to hear the report on the mail-vote recommended at the last meeting and for the presentation of the following papers:

(1) Dr. G. S. Whiteside.—"Demonstrations of the Casper-Hirschmann Cystoscope."

(2) Dr. Annie Lee Hamilton.—"A Case of Labor in an Epileptic."

(3) Dr. E. W. Cushing.—"Repair of Lacerations of the Perineum occurring during Childbirth."

W. H. GRANT, M.D., Secretary.

## THE HENRY PHIPPS INSTITUTE INTERNATIONAL COURSE OF LECTURES.

THE fifth lecture in the International Course given under the auspices of the Phipps Institute will be delivered by Prof. C. Maragliano of Genoa, Italy, on Monday evening, March 28, at the Witherspoon Building, Philadelphia, the subject being "The Specific Therapy of Tuberculosis and Vaccination against the Disease."

MAZYCK P. RAVENEL, M.D.,
Assistant Medical Director.

## RECENT DEATHS.

JONATHAN HENRY ROBINSON, M.D., M.M.S.S., died in Southboro, Mass., March 11, 1904, aged seventy-three years. He was born in Surrey, N. H., in 1831, and has been a resident of Southboro since 1857. In 1888 and 1896 he was a representative in the General Court, and was at one time medical examiner of the Southboro District.

EDWARD A. WALTER, M.D., of the Borough of the Bronx, New York City, died on Feb. 27, from pneumonia. He was graduated from the University and Bellevue Hospital Medical College, New York, in 1899.

OGDEN CURTIS LUDLOW, M.D., of New York, for a number of years past recording secretary of the New York County Medical Association, died on March 2. He was graduated from the medical department of the University of the City of New York in 1883, and afterwards served as an interne of St. Luke's Hospital. Dr. Ludlow had been a reporter of various important medical society meetings for many years, and in this work had always used excellent judgment and discrimination. He was an attending physician at St. Joseph's Hospital at the time of his death. It is said that he contracted typhoid fever in Albany last January, while attending the meeting of the New York State Medical Society.

HOWARD C. RUSSELL, M.D., of the United States Marine Hospital Service, died on March 1, at Stapleton, Staten Island, N. Y., from pneumonia. He was a native of Washington, D. C., and received his academic and medical education at the University of Pennsylvania. He was appointed to the Marine Hospital Service July 1, 1897, and had been stationed at the hospital on Staten Island since 1902.

DAVID L. WALLACE, M.D., of Newark, N. J., died on March 1, at the age of forty-eight years. He was graduated from Bellevue Hospital Medical College in 1875, and for twelve years was a member of the Newark Board of Health, during a considerable portion of that time serving as its secretary.

FRANK E. BAKER, M.D., of Newark, N. J., until recently superintendent of the Newark City Hospital, died on March 1, in consequence of injuries received in a fall upon the ice on the night of Feb. 8. He was forty-eight years of age and was graduated from the College of Physicians and Surgeons, New York, in 1882.

## BOOKS AND PAMPHLETS RECEIVED.

The Nutrition of the Infant. By Ralph Vincent, M.D. New York: William Wood & Co. 1904.

Social Diseases and Marriage. Social Prophylaxis. By Prince A. Morrow, A.M., M.D. New York and Philadelphia: Lea Brothers & Co. 1904.

The Practical Medicine Series of Year Books, comprising ten volumes on the Year's Progress in Medicine and Surgery. Issued monthly. Under the general editorial charge of Gustavus P. Head, M.D. Vol. III. Chicago: The Year Book Publishers. December, 1903.

A Manual of Operative Surgery. By Sir Frederick Treves, Bart., K.C.V.O., C.B., LL.D., F.R.C.S. New Edition, revised by the author and Jonathan Hutchinson, Jun., F.R.C.S. Vol. II. Illustrated. Philadelphia and New York: Lea Brothers & Co.

Diseases of the Nervous System. A Text-book for Students and Practitioners of Medicine. By H. Oppenheim, M.D. Translated and edited by Edward E. Mayer, A.M., M.D. Second American Edition. Revised and Enlarged. Illustrated. Philadelphia and London: J. B. Lippincott Co. 1904.

Fatigue. By A. Mosso, Professor of Physiology in the University of Turin. Translated by Margaret Drummond, M.A., and W. B. Drummond, M.B., C.M., F.R.C.P.E. Illustrated. New York: G. P. Putnam's Sons. London: Swan Sonnenschein & Co., Ltd. 1904.

Eleventh Annual Report of the State Charities Aid Association to the State Commission in Lunacy. New York. Nov. 1, 1903.

Army Inefficiency. Its Greatest Cause. By A. C. Profeit, M.B. Philadelphia: P. Blakiston's Son & Co. London: J. & A. Churchill. 1903.

A Short Practice of Gynæcology. By Henry Jellett, B.A., M.D., B.Ch., B.A.O. (Dublin University), F.R.C.P.I., L.M. Second Edition. Revised and Enlarged. Illustrated. Philadelphia: P. Blakiston's Son & Co. London: J. & A. Churchill. 1903.

Thirty-fourth Annual Report of the State Board of Health of Massachusetts. Boston. 1903.

A New Electro-Medicamental Treatment for Uterine Fibroids. By Samuel H. Linn, M.D. Reprint.

On Movable, or Dropped, Kidney: Its Relation to Diseases of the Nervous System. By C. W. Suckling, M.D. (Lond.), M.R.C.P. London. 1903.

The American Year-Book of Medicine and Surgery. Being a Yearly Digest of Scientific Progress and Authoritative Opinion in all Branches of Medicine and Surgery drawn from Journals, Monographs and Textbooks of the Leading American and Foreign Authors and Investigators. Collected and arranged with Critical Editorial Comments by eminent American specialists under the general editorial charge of George M. Gould, M.D. 2 volumes. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

Eighteenth Annual Report of the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania. Transmitted to the Governor, Nov. 28, 1902.

# Original Articles.

## BLOOD-PRESSURE OBSERVATIONS IN SURGICAL CASES. REPORT OF THE COMMITTEE ON RESEARCH FOR THE DIVISION OF SURGERY, HARVARD MEDICAL SCHOOL, JANUARY, 1904.

### Introduction.

On Feb. 1, 1903, the following letter was sent out by the Committee on Surgical Research of the Division of Surgery of the Harvard Medical School to the surgeons of the Massachusetts General Hospital, the Boston City Hospital and the Children's Hospital.

Department of Surgery,
Harvard Medical School, Feb. 1, 1903.

*Dear Sir:* The recent work by Dr. Crile on surgical shock and the representation by Dr. Cushing of the importance of blood-pressure observations in surgical diagnosis and treatment have produced a widespread interest in these methods of investigation of surgical problems, and one which the Surgical Department of the Harvard Medical School desires to encourage in every way within its power.

To this end the Committee on Surgical Research has organized an investigation, in order to determine, so far as the opportunities in this community will allow, the extent to which blood-pressure observations in surgical cases may be of value from a clinical point of view.

The committee will be glad to receive the suggestions of all surgeons who may be interested in the subject, and they cordially invite your criticism of the following plan:

(1) It is proposed that a representative of the committee be appointed for each of the hospitals here concerned, the Massachusetts General, Boston City and Children's. This representative of the committee will provide the apparatus necessary for the estimation of blood pressure in clinical cases, and will give such instruction to house officers and nurses as may be needed to obtain a general use of the apparatus. He will, when desired, make observations himself and record results. He will then collect and classify the results for each hospital and assemble them for incorporation in a general report.

(2) No surgical case will be reported except so far as its bearing upon the value of blood-pressure observations is concerned, and no case will be reported without the special consent of the surgeon in charge nor without due credit being given to him in the report.

(3) It is hoped that surgeons will avail themselves of this opportunity to procure blood-pressure observations upon their patients, and that by July 1, 1903, so large a number of clinical observations may be available as to permit the publication of reports which will be of value to the profession.

(4) The co-operation of the Department of Physiology has been secured, in order that a rigid criticism may be brought to bear upon these investigations from a scientific point of view.

(5) The points which have appeared to the committee to be of most importance in this investigation are as follows:

(*a*) Does the Riva-Rocci apparatus indicate the true blood pressure with sufficient accuracy for clinical purposes?

(*b*) In what cases and under what circumstances are the errors due to the apparatus so great as to invalidate its advantageous use?

(*c*) What is the value of blood-pressure observations,
(1) As an indication for or against operation?
(2) During the course of an operation?
(3) In after-treatment of surgical cases?

It is the hope and desire of the committee that general co-operation may be secured in this investigation from all the surgeons on duty in the above-mentioned hospitals, and that a large number of observations may be recorded, in order that a just estimate of their value may be obtained.

Should this investigation, as proposed by the committee, appeal to you as worthy of your support, will you kindly sign and post the enclosed postal card before Feb. 7? A representative of the committee will then call upon you, to ascertain more particularly the extent to which you desire to avail yourself of the committee's assistance and to arrange the details of the undertaking.

Very truly yours,
Herbert L. Burrell,
Edward H. Nichols,
Robert B. Greenough,
*Committee of the Surgical Department on Research Work.*

The response to this letter was practically unanimous, and the committee desires here to express its thanks to the following surgeons who gave permission for the use of their wards for the purposes of this investigation:

Dr. F. G. Balch, Dr. H. H. A. Beach, Dr. J. B. Blake, Dr. W. P. Bolles, Dr. J. T. Bottomley, Dr. E. G. Brackett, Dr. G. W. W. Brewster, Dr. H. L. Burrell, Dr. A. T Cabot, Dr. Farrar Cobb, Dr. E. A. Codman, Dr. W. M. Conant, Dr. H. W. Cushing, Dr. John Dane, Dr. J. W. Elliot, Dr. W. E. Faulkner, Dr. F. B. Harrington, Dr. J. C. Hubbard, Dr. R. W. Lovett, Dr. F. B. Lund, Dr. S. J. Mixter, Dr. G. H. Monks, Dr. J. G. Mumford, Dr. J. C. Munro, Dr. C. A. Porter, Dr. C. B. Porter, Dr. Abner Post, Dr. M. H. Richardson, Dr. C. L. Scudder, Dr. J. S. Stone, Dr. Augustus Thorndike, Dr. Paul Thorndike, Dr. J. C. Warren, Dr. F. S. Watson.

Dr. W. E. Faulkner, for the Boston City Hospital; Dr. J. S. Stone, for the Children's Hospital; and Dr. F. T. Murphy, for the Massachusetts General Hospital, were invited to exercise a general supervision of the work, and to report upon the value of the results. The Riva-Rocci sphygmomanometer was employed as introduced in his country by Dr. Harvey Cushing, and the apparatus was supplied from various sources. Five instruments were provided for use in the different hospitals. In order that the results might bear comparison, although obtained by different observers, a description of the apparatus was issued and general directions for its use were given substantially as follows:

*Description of apparatus.* — The apparatus consists of a dilatable rubber armlet, 5 cm. in width, encased in a covering of canvas, which can be adjusted to various sizes by means of hooks and eyes. This armlet is connected by rubber tubing to a rubber syringe-bulb with a dilatable reservoir such as is used with the thermocautery. Inserted between the armlet and the bulb, and connecting with the other tube by means of a Y-shaped joint, is another piece of tubing leading to a mercury manometer, to which

is attached a scale graded in millimeters, with the zero point at the level of the mercury. At the distal side of the manometer there is placed an escape-valve closed by a stop-cock, by means of which the pressure in the armlet can be released. The armlet is adjusted loosely to the arm just above the bend of the elbow, with the forearm flexed 30° to 45° and thus held on the same level with the body during the experiment. The armlet is dilated by forcing air from the rubber bulb until the radial pulse is obliterated by the pressure exerted on the brachial artery. At that degree of pressure which just obliterates the radial pulse the height of the column of mercury on the manometer scale is noted and regarded as the systolic blood pressure measured in millimeters of mercury. The reservoir of the manometer should be on the same level as the heart of the patient under examination, and, unless otherwise stated, all pressures are taken with the patient in the prone position. The pulse-rate is counted after the recording of the pressure. After each record the escape-valve should be opened to relieve the constriction before attempting a second reading. In palpating the radial pulse the amplitude of the beat will be noticeably increased during slight compression. With increasing compression it will gradually diminish until lost. Respiratory disturbances and physiological variations may cause some difficulty in getting an accurate reading at the first rise of the mercury column, but by maintaining the level for a few seconds or by the comparison of several readings, this is usually readily obviated. The point at which the pulse can be again palpated after it has been cut off is usually uniformly about 5 or 10 mm. lower than the point at which it disappeared.

The papers presented by Drs. Faulkner, Stone and Murphy represent the conclusions obtained in three different hospitals by different observers. No influence is exerted by the committee on the interpretation of the results, nor upon the manner of their communication. It was only stipulated that the observations be made with the same or similiar apparatus and uniform method of application. The general conclusions of each of these observers are recorded in his report, and a brief summary of the conclusions which appear to the committee to be justified by a consideration of the three series of observations is provided at the end of the communication. In this final summary an attempt is made to answer as correctly as possible the questions propounded in the original circular of the committee.

It is assumed in this communication that the Riva-Rocci sphygmomanometer registers more or less accurately the systolic blood pressure. Proof of this assumpt on, however, so far as is known to this committee, has not yet been produced. Attempts to obtain control observati ns by the use of an actual arterial manometer in man have not been recorded, and the different conditions in animals are not such as to ensure accurate results. It is the opinion of this committee that a series of such observations upon the human subject, or upon monkeys, is greatly to be desired as a test of the Riva-Rocci instrument. Until this is done, however, a clinical estimate of its value, such as is provided in the following report, is all that can be offered.

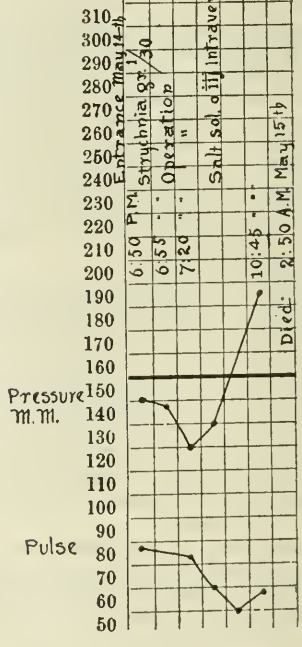
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## Report on Blood-Pressure Observations at the Boston City Hospital. By William E. Faulkner, M.D.

The following cases of blood-pressure observations were made at the Boston City Hospital. The apparatus used was the modified Riva-Rocci sphygmomanometer. The conclusion of the writer is that in the general run of surgical cases blood-pressure observations do not point out dangers that could not be foreseen by observations of the patient's pulse, respiration and general condition, but that in head injuries a high blood tension may be an indication of brain compression when the pulse would not lead us to suspect such a condition.

I. J. M., compound fracture of skull. Service of Dr. Watson. Thrown from horse twenty minutes before entrance. Comatose. Responds to pain and stimulus. No paralysis. Knee jerks and plantar reflexes lively. Ankle clonus. Pupils dilated, right the more. Eyes rotated to right. Comminuted fracture left upper mid-parietal region. Brain substance visible.

*Operation.* — Ether. Loose bits of bone removed. Brain found much lacerated. Considerable hemorrhage from middle meningeal region controlled by packing. Condition poor at end of operation. Died eight hours after injury.

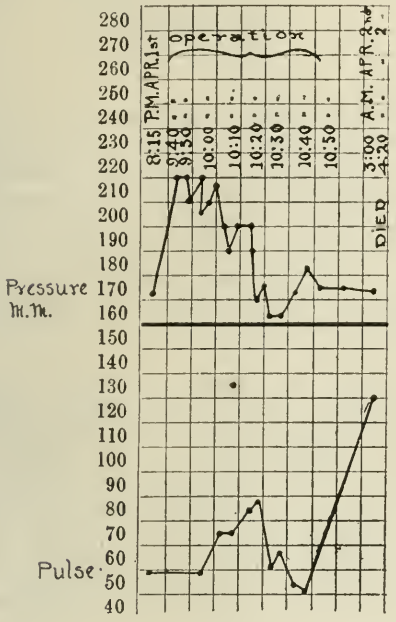



*Remarks.* — In this case the drop in the pulse-rate is suggestive of compression from a hemorrhage other than that from the middle meningeal, which was controlled by operation. With this was a concomitant rise in blood

pressure which may be attributed to the same cause.

II. A. M., twenty-four years. Service of Dr. Watson. Diagnosis, fractured skull. History not obtained. Unconscious, stertorous breathing. Pupils widely dilated, not reacting to light. Laceration and ecchymosis about left eye; blood clot in nose. Pulse 48, full and regular.

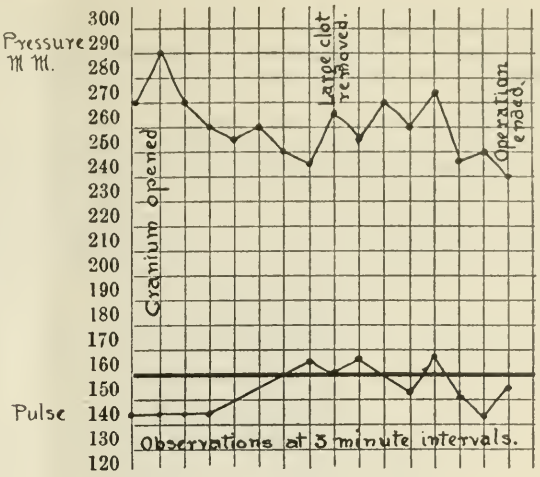
*Operation.* — Without ether trephined on left side over middle meningeal artery. Dura bulging, not pulsating, incised. ʒ iv black clot removed. Some red oozing. Drainage. No return to consciousness or response to stimulation. Pupils remain dilated. Breathing stertorous. Died twelve hours after accident.




*Remarks.* — This case showed on entrance a pulse which suggested compression. The blood pressure was not remarkable. During the operation at first the pulse increased in rate and blood pressure in degree. Later both subsided to about the same point as at entrance. Following the operation the pulse took on a rapid increase in frequency until the end came, while the blood pressure remained about the same. Here the pulse told the story.

III. J. B., thirty-nine, fracture base of skull. Service of Dr. Bolles. At 9 A.M. thrown from team by collision with electric car, landing on back of head. Unable to get up, but did not lose consciousness until 1 P.M. Entered hospital 7.30 P.M. Well developed and nourished. Flushed face. Stertorous respiration. Left pupil larger than right and does not react. General spasticity of extremities, more marked on right. Knee jerks and plantar reflexes equal. Kernig's symptom left side. Small hematoma in left occipital region.

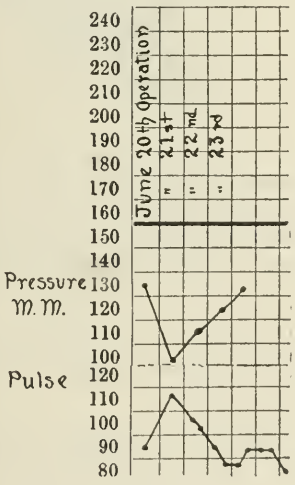
*Operation.* — Dr. Hubbard. Trephined over right motor area. No epidural clot. No pulsation of dura. Subdural clot extending toward base removed. No return to consciousness. Less stertorous respiration. Edema of lungs. Died twenty-four hours after accident.




*Remarks.* — This chart shows a high blood pressure, which can be interpreted as indicative of increased intracranial pressure due to hemorrhage, the drop in the early part of the operation being due to removal of a certain amount of this pressure. The pulse, on the other hand, is that of shock and not at all a "pressure pulse." It would seem that in this case the blood-pressure observations were of distinct value in diagnosticating a cerebral condition.

IV. J. K., ten years, depressed fracture of skull. Service of Dr. Cushing. June 20. Hit by ball one hour before entrance. In left frontal region circular depression of skull without external wound. Right pupil larger than left; both react. Involuntary defecation. Vomited once. Somewhat dull.

*Operation.* — Depression elevated. Small fragments removed. Dura found perforated. Good recovery. June 26. Entirely free from symptoms. Discharged.

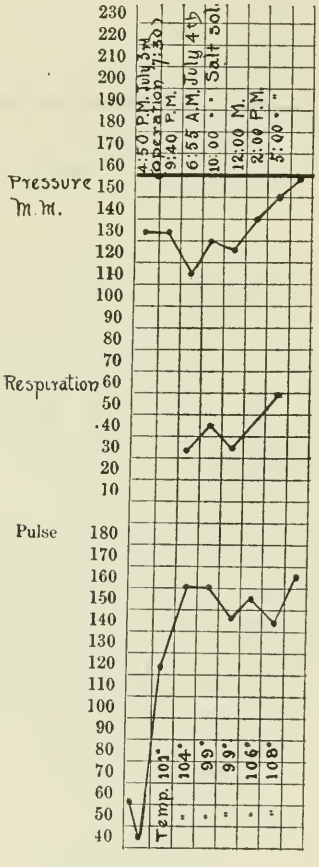



*Remarks.* — In this case of fractured skull the lesion was apparently limited to bone and dura accompanied by slight concussion, and as one would expect neither pulse nor blood tension shows anything remarkable.

V. Unknown man. Service of Dr. Watson. Found in street. Said to have fallen on sidewalk. Unconscious. Bathed in perspiration. Pupils

equally small, not reacting to light at entrance. Later left pupil widely dilated. Slight spasticity of limbs both sides. Ankle clonus right. Abrasion left frontal region. Drop in pulse from 75 to 45 one hour after entrance.

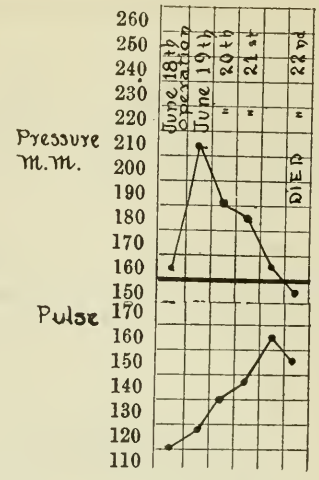
*Operation.* — Dr. Lund. Trephined over middle meningeal left side. Large extradural clot turned out. Hemorrhage from middle meningeal artery near its entrance into middle fossa controlled by forceps left *in situ*. No return to consciousness. Moved right arm reflexly. Died sixty hours after injury.




*Remarks.* — In this case the slow pulse of 45 pointed to compression, which was verified by operation. Apparently there was also a serious basal lesion, which manifested itself by the subsequent increase in the pulse-rate and rise in temperature to 108° which came on the next day before the patient succumbed. One might have expected here a high blood pressure to correspond to the "pressure pulse," which, however, was not the case.

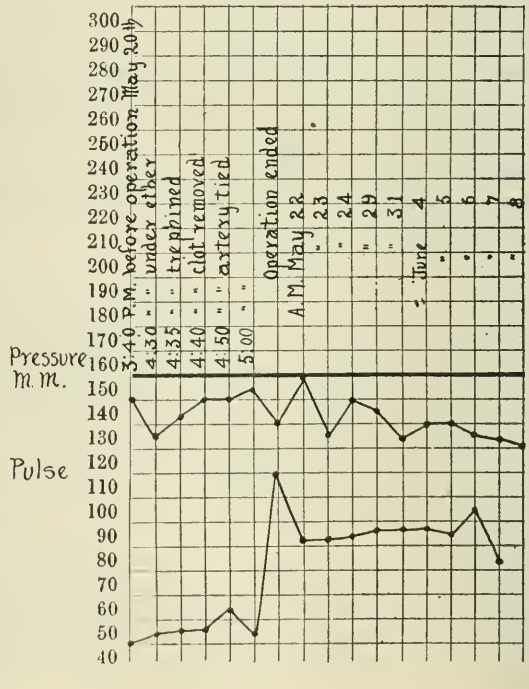
VI. J. T., sixty years, fractured skull. Service of Dr. Cushing. June 18, 1903. Fell down stairs previous night. Unconscious. Supraorbital pressure causes drawing up of right side of face and some movement of all extremities. Spasticity of left arm. Knee jerks exaggerated. Plantar reflex normal. In left parieto-occipital region scalp wound down to bone. Bleeding from left ear.

*Operation.* — Dr. Lund. Fissured fracture found at seat of scalp wound. Skull trephined. No extradural hemorrhage. Dura slightly pulsating opened, with discharge of 3 oz. of serum. Patient died on fifth day without return to consciousness.




*Remarks.* — In this case we have a patient with blood tension increasing in first twelve hours of observation, indicating possibly increased intracranial pressure. Operation seemed to act favorably in regard to this one symptom. The pulse, which was rapid at the start and which increased in rate as the case progressed, gave a true indication of the alarming condition of the patient.

VII. W. K. B., twenty-seven years, compound fracture of skull. Service of Dr. Watson. May 20. Fell on attempting to get on car, striking head on pavement. Stunned but got up and walked three-quarters of a mile; became dizzy, entered drugstore, where he was given something; sat down in park, became drowsy, vomited and later became unconscious. Well developed and nourished. Unconscious. Responds to pain and stimulus. Pupils equal and react to light. Knee jerks lively and in-



creased on right. Ankle clonus increased on right. Babinsky on right. Pulse slow and full to the tactile sense. Hematoma over left parietal region. There was a rumor that the patient was an epileptic, which afterwards proved without foundation.

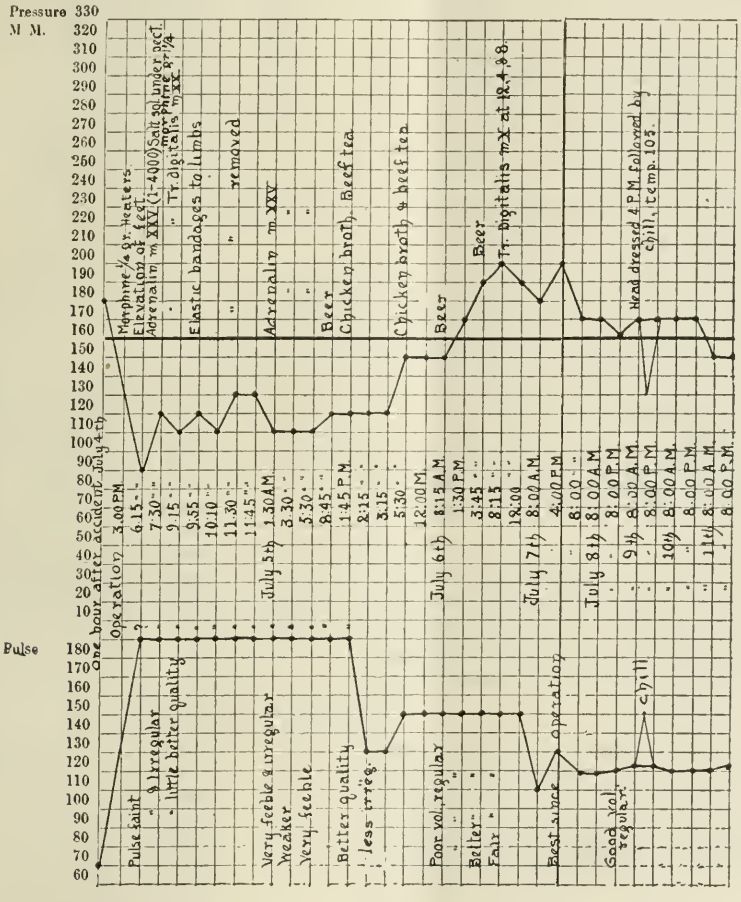
*Operation.* — Trephined over hematoma. Fissure fracture with slight depression found. Large epidural clot removed. Hemorrhage from middle meningeal controlled by sutures. Some oozing. Dura uninjured. Wound packed. Patient rational on coming out of ether. Drowsiness on second day (May 22). Small secondary hemorrhage. Considerable clot turned out; wound packed. Wound healed by granulation. Complete recovery.

*Remarks.* — In this case there was a typical "pressure pulse," which disappeared on removal of clot by operative procedure. The drop in the pulse on the second day, with symptoms of drowsiness, led to suspicion of secondary hemorrhage, which was verified on inspection of wound. The blood-pressure observations were not found to be of any value in this case.

VIII. J. H., twenty-three, compound fracture of skull; compound fracture of left humerus; compound dislocation of left astragalus. Service of Dr. Watson. Team on which patient was riding smashed into by express train. Well developed and nourished. Some shock. Conscious and rational. Multiple scalp wounds. Small opening in skin at lower third of upper arm, with fracture of bone at this point. Astragalus dislocated on to dorsum of foot and skin broken through. No paralysis or abnormal reflexes.

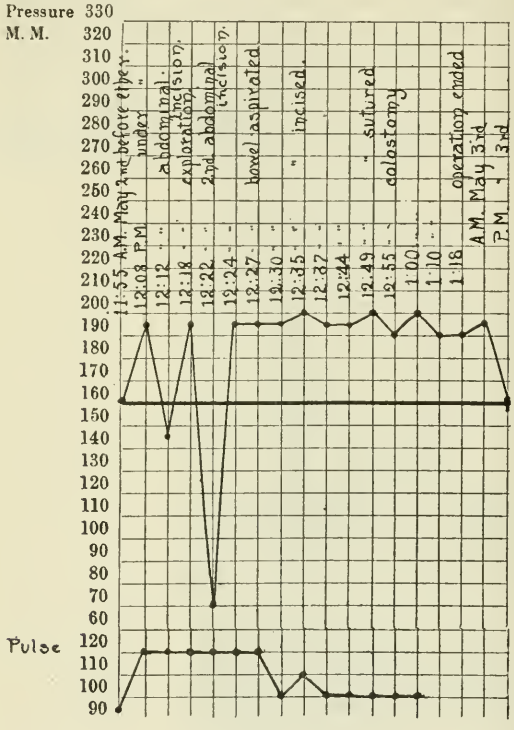
*Operation.* — Ether. Wounds of arm and ankle cleaned up, deformities reduced and put in plaster. Examination of head revealed fracture with slight depression in parietal region. Skull trephined, large epidural clot turned out. Oozing controlled by packing. Pulse rapid and of poor quality at end of operation.

*Remarks.* — At entrance the patient's pulse and blood pressure were not remarkable except that the former was slow for a man in moderate shock. Very likely brain compression from blood clot which was subsequently removed had something to do with this. Following operation the patient's condition was that of marked shock for twenty-four hours, as was evidenced by the rapid, feeble, fluttering pulse and low blood pressure. At the end of twenty-four hours the pulse dropped in rate, became better in quality and blood pressure rose. From this time on the patient's condition improved, although the pulse remained rapid for some days. An interesting thing in this case is the lack of reaction on the part of the patient to attempts at stimulation with adrenalin and digitalis, unless the drop in the patient's pulse on July 7 was in part due to the latter drug. The pulse and pressure charts are, roughly speaking, reflections of each other. Both register the patient's condition fairly well.



IX. A. G., fifty-three years, obstruction of bowel. Service of Dr. Watson. Bowels not moved for one week. Some vomiting last few days. No loss of weight. No cachexia. Abdomen slightly tender, much swollen. Tympanites. Temperature 100.

*Operation.* — By Dr. Watson. Abdomen explored by median incision. Transverse colon opened to let out gas. No tumor found. Left inguinal colostomy. Good recovery.



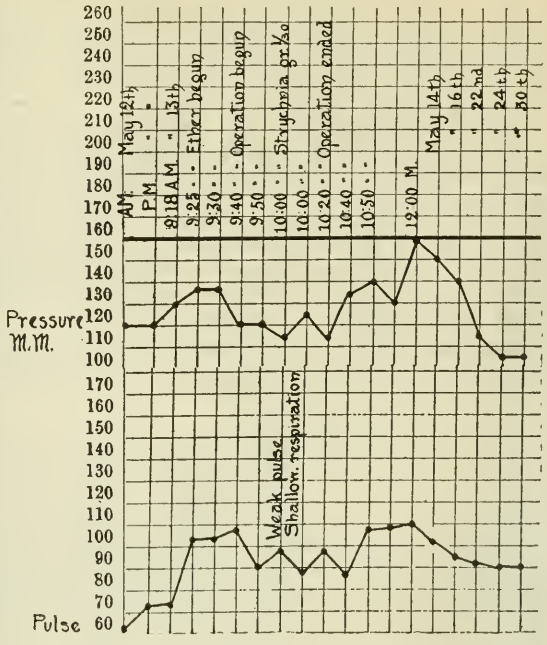

*Remarks.* — The patient's condition throughout the operation was excellent, as indicated by the character of his pulse and general appearance. The two drops in blood pressure occurred at points in the operation when the peritoneum was exposed.

X. C. S., fifteen years, tuberculosis of post-cecal glands. Service of Dr. Watson. Abdominal pain at times sharp and crampy. Vomiting. Diarrhea. Abatement of symptoms last three days. Pale, poorly developed and nourished. Chest negative. Abdomen lax and tympanitic. No rigidity. Tumor at McBurney's point.

*Operation.* — Cecum exposed. Enlarged glands alongside; some broken down. Enucleation of glands. Normal appendix removed. Drainage. Pulse feeble in character toward end of operation. Prolonged convalescence. Discharged with granulating sinus.

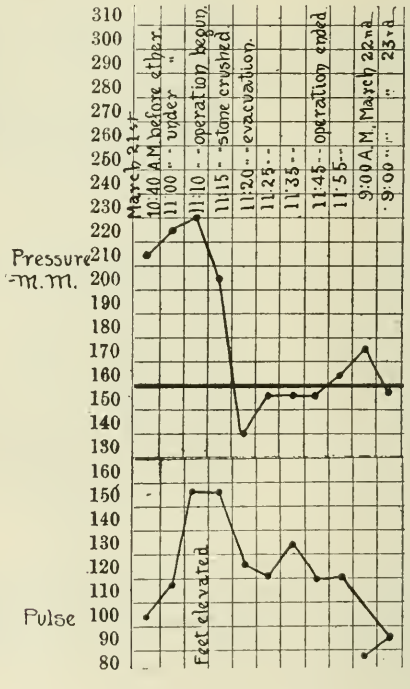
*Remarks.* — The condition of the patient during the operation, while not alarming, called for stimulation. This was indicated by the feeble character of the pulse and shallow respiration. The blood pressure showed no marked change. It was rather low, as one would expect in an anemic, listless subject.

XI. W. H. P., sixty years, urinary calculus. Service of Dr. Post. Symptoms of calculus for




twenty years. Several previous operations. Well developed and nourished. Some arteriosclerosis.

*Operation.* — March 21. Dr. Post. Stone crushed. Good recovery.

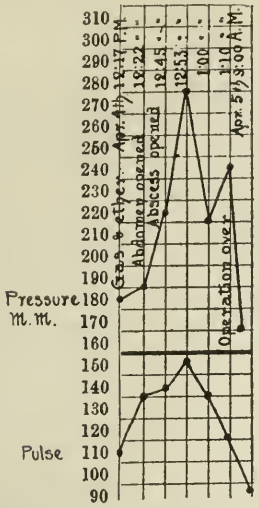



*Remarks.* — The patient's condition during the operation was excellent. The temporary increase in pulse-rate may well have been due to change in patient's position. The drop in blood pressure to the "normal" corresponds to an improvement in pulse.

XII. H. P., thirty-two years, abscess in abdominal cavity of supposed appendicular origin. Service

of Dr. Watson. Pain in left lower quadrant of abdomen one week. Distinct tumor. Chills.

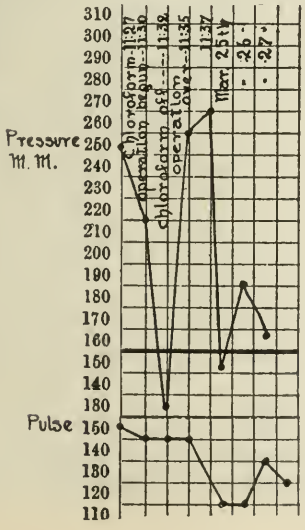
*Operation.* — Dr. Watson. Abdominal cavity opened and walled off from indurated mass. The latter incised and drained. Appendix not found. Patient in poor condition at end of operation. Good recovery next day. Fecal fistula; otherwise uneventful recovery.




*Remarks.* — During the operation the pulse increased in rate and to the tactile sense was of poor quality. The patient's condition was such that prolonged search for the appendix seemed inadvisable. The cause of the rapid rise in the blood pressure in this case is not obvious.

XIII. M. C., forty-two years, empyema. Service of Dr. Post. Present illness followed a pneumonia. Patient running a septic temperature. Somewhat delirious. Right side of chest full of fluid. Pulse rapid, but of good quality.

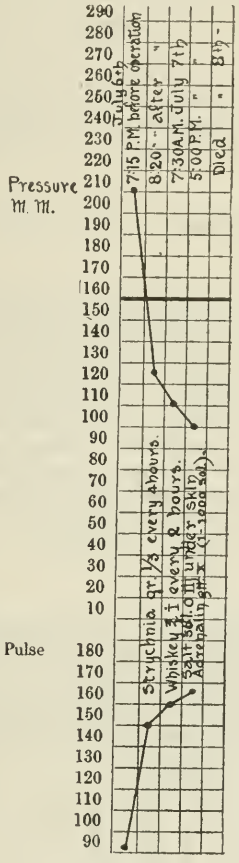
*Operation.* — Dr. Post. Slight chloroform narcosis. Rib resected. Pus escaped. Salt solution irrigation. Good recovery from operation. Uneventful convalescence. Discharged with slight sinus.




*Remarks.* — This case shows a marked drop in blood pressure under chloroform anesthesia. The pulse, though rapid, was of good quality throughout.

XIV. O. K., twenty years. Diagnosis, crushed shoulder. Shock. Service of Dr. Watson. Arm run over by steam car one hour before entrance. Well developed and nourished. Pulse slow, fair quality. Marked pallor. Compound fracture of left humerus above middle, with much laceration of soft parts.

*Operation.* — Dr. Nichols. Under light ether disarticulation at shoulder. Very little hemorrhage. Patient stood operation badly. No reaction to stimulation. Died thirty-six hours after accident.

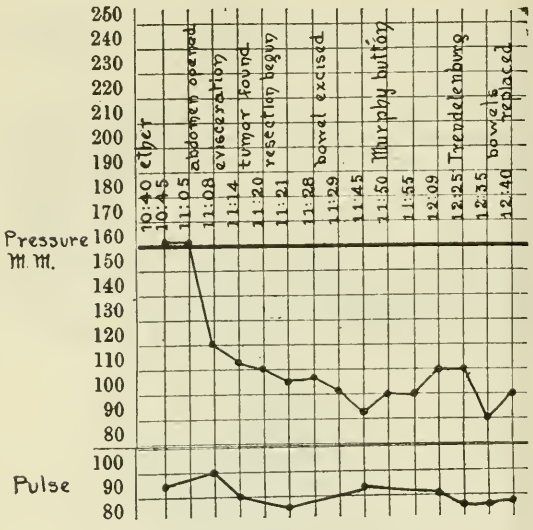



*Remarks.* — This case shows shock following severe injury, uninfluenced by stimulation. This is quite evident from the pulse curve as well as the drop in blood pressure.

XV. N. P. L., fifty-nine years, carcinoma of intestine. Service of Dr. Cushing. Crampy pains in abdomen for one year. Loss of appetite; troubled with flatus. Slight loss of weight. Fairly well developed and nourished. Skin of grayish hue. Chest negative. Abdomen somewhat distended. Visible peristalsis. Borborygmus.

*Operation.* — Dr. Cushing. Resection of ileum; Murphy button. "Patient in as good condition after as before operation." Died sixty hours later with onset of sharp abdominal pain and collapse.

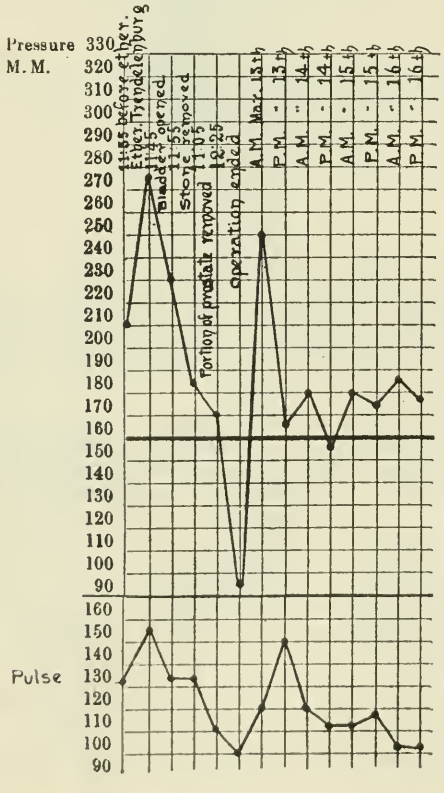
*Remarks.* — This patient's condition throughout the operation was excellent, although the blood-pressure registration was low except at beginning, where the relatively high registra-




tion was very likely due to excitement in first stage of ether.

XVI. P. M., hypertrophy of prostate. Calculus. Service of Dr. Post. March 12, 1903. Three attacks of hematuria in three years with suprapubic pain. Discomfort in riding over rough road. Lately frequency of micturition. Well developed and nourished. Chest negative. Dulness over bladder region. Prostate enlarged. Urine bloody.

*Operation.* — Dr. Post. Suprapubic cystotomy. Removal of large amount of clot and stone 1½ inches in diameter. Hypertrophied lobe of prostate removed. Good recovery from ether.




*Remarks.* — The chart shows a rather variable pulse and pressure curve. The elevation of both during the early part of the operation was likely due to position of patient. The drop in pressure at the end of the operation was without significance as far as could be seen.

## Report on Blood-Pressure Determinations made at the Boston Children's Hospital.

By James S. Stone, M.D.

This report deals with the results of blood-pressure determinations made at the Children's Hospital with the Riva-Rocci manometer. It deals exclusively with surgical patients, and exclusively with children.

A large number of readings were taken with a view to establishing certain absolute determinations. Age was found to play a very important part in the blood pressure. Sixty to 70 mm. is an ordinary reading in infants under six months; 80 to 90 in a child of two or three years; 100 in a child of five or six years; 110 in a child of nine or ten years.

Sex did not seem to make any material difference.

The general health of the child made a very considerable difference in the pressure. Thus, in a child sick with chronic hip disease the pressure might be 20 to 40 mm. lower than it would be expected to be in a well child of the same age. More acute diseases which profoundly affect the general health, as, for example, tubercular peritonitis, did not, as a rule, cause as marked a change in the blood pressure as did the more chronic wasting diseases. In general, the blood pressure fell in proportion to the duration of the disease and the degree of emaciation and weakness which it had produced. In the very acute diseases, such, for example, as appendicitis, where there had not been time to affect the general health, the blood pressure was not materially altered unless by other circumstances. The emaciation of the wasting diseases makes the pulse more easily felt, but at the same time exposes the brachial artery to more ready compression. These two factors tend to balance each other, although probably the latter is more important and tends to lead one to overestimate somewhat the actual fall in pressure.

Certain conditions entirely independent of the health of the child cause very wide variations in the pressure. Crying often raises the pressure from 20 to 60 or more mm. In order to verify this, readings were made on a number of children before and after the visiting hour of the parents. There was no variation in the pressure in the children whose parents had not come to see them, while in those whose mothers had just gone away, the blood pressure was raised often 40, in one case nearly 70 mm. When the children stopped crying the pressure usually fell to the previous level again within ten minutes or often less, but if the child continued to cry slightly and sob, the pressure returned to its former level very much more slowly.

Struggling, coughing, vomiting and retching likewise increase the blood pressure, so that even before etherization is begun in a patient preparatory to operation, the blood pressure may be materially altered from what might be termed normal for the individual. And during the course of an operation under light anesthesia the readings may be similarly changed. Thus the charts must be read with a knowledge of the condition of the patient while undergoing an operation as well as with a knowledge of the steps of the operation. The crying or struggling which accompanies the recovery from full anesthesia at once very materially raises the blood pressure. This change can be appreciated by the eye, independently of any observation of the pulse. It is not uncommon for an operator to become anxious because of the appearance of a child, especially if considerable blood has been lost. The ether is removed, consciousness of pain returns, the child cries, the color at once improves. These changes can be observed most readily in hare-lip or other operations on the face.

Posture likewise has a very decided influence on the blood pressure, owing to mechanical interference with respiration or with the action of the heart and to the amount of blood supplied to the head. Turning the patient on to the side during an operation may cause a fall in pressure of 10 to 25 mm. — a fall which is promptly overcome when the patient is turned on to the back again. The changes in the relative elevation of the head and trunk, such as occur in the use of the Trendelenburg table, have probably less influence on the pressure in children than in adults, but no definite observations on this matter have been made.

Before speaking of the influence of hemorrhage operative procedures and shock on the blood pressure in children, I must state that the Children's Hospital is without an ambulance service and that since these observations were begun in March I know of no child admitted in a condition of profound shock or after severe hemorrhage — conditions met with every day in the Massachusetts General and Boston City Hospitals. In the Children's Hospital, likewise, severe abdominal or cerebral operations are extremely rare, so that there are but few data from which to judge in those cases in which pressure readings promise to be of most value.

Ether causes practically always a rise in the pressure from 5 to 20 mm., averaging perhaps 10 mm. This rise occurs very promptly and lasts for some time. That it is not a result of the struggle against taking ether is, I think, wholly proved by the fact that it continues so long and that it occurs where there has been no struggle. Occasionally there is a slight fall instead of a rise, apparently due almost always to confusing circumstances.

This primary rise due to the ether was ordinarily followed by a much slower drop in pressure in cases in which the operation itself was so slight that it could exert but little influence in this particular. The operation, if one in which the shock was insignificant, seemed sometimes to cause a slight rise in pressure in addition to the rise caused by the ether, but if the operation were prolonged and the operative procedures were severe, the fall in the pressure seemed a little more marked than it would have been had the child been simply kept under ether during an operation which was prolonged but in which the operative procedures were not such as to cause shock. In ordinary operations this secondary fall did not often bring the pressure down to the starting point before etherization; it practically never brought it lower.

In some operations in which marked changes might be expected for purely mechanical reasons, the blood-pressure readings showed nothing of value. For example, in several operations for empyema the blood pressure showed no marked or definite changes. Probably the coughing and struggling under the light anesthesia counterbalanced any variations due to the changes in the lung and pleural cavity.

Ordinary abdominal operations, such, for example, as the drainage of an abscess and the removal of the appendix, showed little variation in the blood pressure. Sometimes there was a very slight rise, followed by a fall equally slight, and never to the starting point. In the other severe and prolonged operations the blood-pressure readings failed to indicate the onset of shock.

Thus, for example, during an operation for the removal of sarcomatous lymphatic glands from the pelvis, the blood pressure, which before the ether was started was 105 and which rose during the first part of the operation about 15 mm., at the end of the operation, which lasted an hour and a quarter, had not quite fallen back to the starting point. During this operation the pulse-rate seemed a more accurate guide to the child's condition than the blood pressure. Thus, at the end of three-quarters of an hour, in which glands had been dissected out from along the internal iliac vein and high up along the common iliac vessels, the lips had become pale, the color poor, the skin had become cold, the child had begun to sweat profusely, the respirations had become feeble, the pulse-rate had increased 30 beats, and yet the blood pressure had dropped but 5 mm. from what it was during the earliest part of the operation at the time of the primary rise due to the ether and still remained higher than it had been before the ether was begun.

On the other hand, during the two days following the operation the pulse-rate gradually came down, while the blood pressure also became lower, averaging 10 mm. lower than before the operation began and 20 points lower than during the last part of the operation, when the shock seemed greatest.

In one case a laparotomy was performed on a child with a pulse so poor that no reading could be made.

In another case, an operation for empyema, the radial pulse was so poor that the readings had no value whatever.

In the only head case observed, one of concus-

sion due to a fall from a third-story window, the blood pressure showed nothing.

The effect of the fracture of large bones upon the pulse-rate has often been noticed. The respiration is also often affected. The observations made during osteoclasis of the tibia and fibula and osteotomy of the femur showed that the blood pressure was also affected in varying amount. Thus, the pulse-rate immediately after the break increased from 10 to 30 beats, while the pressure, which in one case for the few seconds before the snap came and while the bone was withstanding the tremendous strain put upon it seemed to drop a little, rose from 5 to 30 mm. just after the snap. Comparing the pulse-rate and blood pressure after osteoclasis with what existed before the ether was started, we find the same conditions as exist in any simple operation, namely, a slight increase in the pulse-rate and a slight rise in the blood pressure. The slight amount of shock caused by the fracture of both legs is not indicated by any fall in the blood pressure either immediately or after the preliminary rise.

In the same way during forcible manipulations about the large joints, such as the reduction of congenital dislocation of the hip by the Lorenz method or by the Bartlett machine, which exerts tremendous traction, the blood pressure rose slightly, 5 to 10 mm., while the force was being exerted, but dropped afterward to, but not below, the point at which it had been at first.

Operations involving profound stimulation of the cutaneous nerves, as, for example, the removal of Thiersch skin grafts, caused a slight rise in the pressure, about 5 mm., but the fall in the blood pressure afterward was insignificant at first and later did not correspond with the shock incident to the prolonged operation.

In spite of the failures of the Riva-Rocci manometer to indicate the onset of shock, blood-pressure observations may be of value in preventing the unnecessary use of cardiac stimulants. The observations made at the Children's Hospital suggest that the readings indicate as much the strength of the cardiac systole as they do the general blood pressure. If this is true, the observations bear out the contention of Crile that in shock the heart, at first at all events, performs its work adequately. The Riva-Rocci readings may hasten the abandonment of cardiac stimulation when the heart is performing its work adequately, a stimulation which, if it has an effect at all, tends to fatigue the heart. The readings show nothing which ordinary clinical observation has not shown before, but because they can be recorded graphically they may have a more marked influence. Likewise, the recognition of the fact that stimulation is useless in chronic wasting diseases, such as the forms of surgical tuberculosis, may be hastened.

### Conclusions as to the Blood Pressure in the Surgical Diseases of Children.

Ether causes a rapid rise in the blood pressure as indicated by the Riva-Rocci apparatus.

This rise is followed by a very much slower fall in the pressure.

Ordinary operative procedures seem sometimes to increase the pressure slightly.

With the establishment of shock the pressure is lowered, but —

Other signs of shock, the more rapid pulse, the more feeble respiration, the cold, clammy skin, are noted earlier during operations than is a drop in blood pressure.

Conversely, patients practically pulseless at the wrist can withstand operations.

Crying, vomiting, retching, struggling or changes in position affect the blood pressure so much more than ordinary operative procedures as often to render pressure charts practically valueless, unless all these circumstances are noted.[1]

September, 1903.

## Report on Blood-Pressure Observations at the Massachusetts General Hospital. By Fred T. Murphy, M.D.

Observations were made in the wards of the Massachusetts General Hospital on 100 surgical cases. These cases were to a certain extent selected as being those which promised to give valuable and characteristic data. In these the pressure was taken for as long a time as there seemed to be any hope of a change and at four-hour intervals, or twice a day, though in a few it was possible to obtain only a daily reading. During the operations the pressure was practically watched constantly, and in conditions where sudden changes were probable the readings were taken at intervals varying from one to fifteen minutes. The observations were made in accordance with the instructions detailed in the circular and with the Riva-Rocci apparatus therein described, except that a broad (10 cm.) band with a metal armlet was used in the latter half of the cases examined. The broad and narrow bands were not used on the same case, or, if so, a control observation was made so that the different levels should not be confused. Of necessity, many of the readings were taken by the nurses and house officers, to whom I wish to express my thanks, but in all instances their observations were controlled by mine. Numerous other isolated readings were taken which were considered too scattered and irregular to warrant consideration.

The figures in the following report represent the systolic blood pressure expressed in millimeters of mercury.

There were 28 cases of head injury of varying types, of which 18 recovered and 10 died. These "head cases" are reported with considerable detail, as in injuries of this nature the blood pressure promises to give the most definite conclusions. The 18 cases which recovered will be first considered.

Two typical pressure cases with localized

[1] Many of the blood-pressure observations here reported were made by the house officers of the Children's Hospital, to whom the writer would here express his thanks.

paralysis from middle meningeal hemorrhage were seen only after operation and, as might be expected, the charts are not remarkable, one showing a level at 100 to 80 and the second running along at 120 to 140.

Five cases, all with low-frequency pulses, diagnosticated as concussion, the degree varying from a mild shake-up to complete unconsciousness, gave readings for the first twenty-four hours at levels between 85 and 180.

Five cases of fracture of the base without operation, the diagnosis resting on bleeding from the ears or sub-conjunctival hemorrhage with slow pulse and stertorous respiration and loss of consciousness, showed levels of from 110 to 190 without marked variation, except in one case, where the chart might be misleading as indicating a pressure which demanded interference (see Fig. 1). The abrupt rise of 35 mm. may be interpreted as the result of compression or reaction from the shock of injury. (Service of Dr. Elliot.)

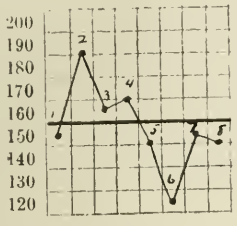



Fig. 1. — 1. In accident room late in P.M. 2. 10 P.M. 3. Midnight. 4. 3 A.M. 5. 6 A.M. 6. 11 A.M. 7 & 8. Succeeding days. Pulse 70 to 80.

Three cases of compound fracture of skull are interesting only from the low level of one, 85 to 70, which was maintained during the afternoon following operation.

A case of probable fracture of the base, which had been operated upon about one year previously for an extensive compound fracture, deserves special mention. Since operation the man had been subject to epileptic attacks, and in one of these he had fallen down stairs, striking on his head. For the first forty-eight hours after the injury he had been at home in a semi-conscious state. During the second twenty-four hours before entering he had complained of pain in the head and had vomited several times. Also it was noticed that the scar, which had formerly been depressed, was bulging. On entrance, the patient was semi-conscious, pulse about 50 and temperature 101. No paralysis. The bulging area in the frontal region pulsated synchronously with the radial, and pressure upon this area caused extreme pain. During the next forty-eight hours there was no change. On the third day a lumbar puncture was done, two test tubes of clear fluid being withdrawn, with the disappearance of the tumor and relief of pain for twelve hours. Unfortunately, no blood pressure was taken at the actual withdrawal of the fluid, but the level of the afternoon reading was not altered. On the fourth day there was a marked facial paralysis and involuntary movements of the bowels. Leeches were applied over the tumor without change to size or in the blood-pressure reading. On the fifth day the clinical condition was the same, but the blood pressure had fallen practically to the level maintained during convalescence. During the next twenty-four hours the improvement was marked. Here the blood pressure seemed to indicate a change before the usual clinical signs (see Fig. 2). (Service of Dr. Warren.)

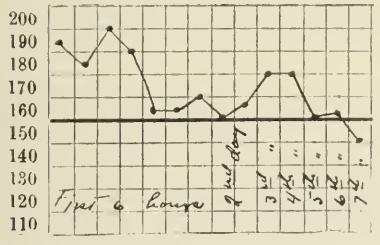



Fig. 2.

A case of tic douloureux was followed during a primary operation for the exposure of the Gasserian ganglion, and six days later during the operation for its removal. Excepting a rise to 180 before taking the anesthetic, the blood pressure did not vary over 10 mm. from the level of 150 in the first operation and 140 in the second, though the hemorrhage was severe and the manipulation of the brain at times extreme. Nor was there any change when the ganglion was divulsed. A second case of operation on the ganglion, with the exception of the rise in pressure due to the ether, held a level of 120 without greater variation than the first. (Both cases on service of Dr. Mixter.)

Of the 10 cases which died, 3 fractures of the base dying within the first twenty-four hours kept a level of 130, 150 and 190 respectively until the moribund drop. This final decline in the blood pressure was constant in all types of cases, the time of its onset varying between wide extremes and with the degree of the general collapse. The temperature, pulse or general appearance of all these cases indicated a hopeless condition.

A case of concussion, so called from negative symptoms, showed a four-hourly chart with a rise from 80 to 110 during the first sixteen hours, though the temperature had gone from 101.8 to 107.

A hopeless fracture of the skull gave a pressure after the operation of 120, with a pulse-rate of 140, and in a case of intracranial hemorrhage on both sides, as proved at autopsy, which had been operated upon with removal of the clot only from one side, the blood pressure was negative, as indicative of local or general condition.

Another case classed as concussion gave the following chart, which had been reduced from a four-hourly to a 2 i. d. Lumbar puncture, with withdrawal of two test tubes of fluid, caused no permanent or immediate change in the pressure. The pulse went to 140 on the eighth day and the

temperature to 104.5, forty-eight hours before death. Died in the afternoon following the last record (see Fig. 3). (Service of Dr. Richardson.)

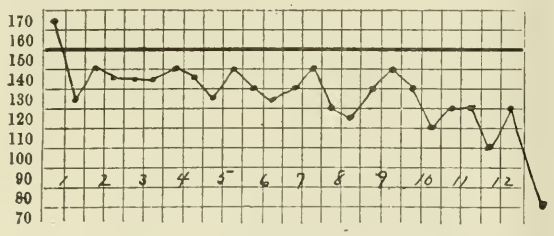


FIG. 3.

The chart of a case in which a blasting accident blew off the whole frontal region, with laceration of the brain and the face, is given because of the low pressure on entrance, on April 6, the failure to show any change at the section of the optic nerve in the operation for the enucleation of the eye and the clearing up of the lacerations and the marked rise which antedated by three days any suggestive change in the pulse or temperature. The nature of the wound was such that an infection was inevitable and at autopsy a pneumococcus meningitis was found. Sepsis rather than compression would seem to have been the cause of the abrupt rise in the blood pressure (see Fig. 4). (Service of Dr. Richardson.)

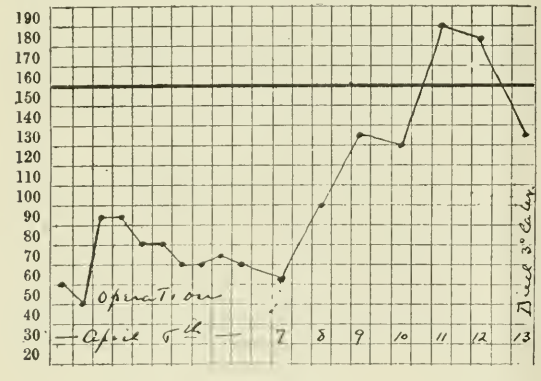


FIG. 4.

A second case of compound fracture of the skull, which from clinical signs died of meningitis, is included for comparison with the preceding. Here the temperature shot to 105 on the 25th and the pulse began its final rise on the 28th. Irregular four-hour chart reduced to a 2 i. d. (see Fig. 5). (Service of Dr. Elliot.)

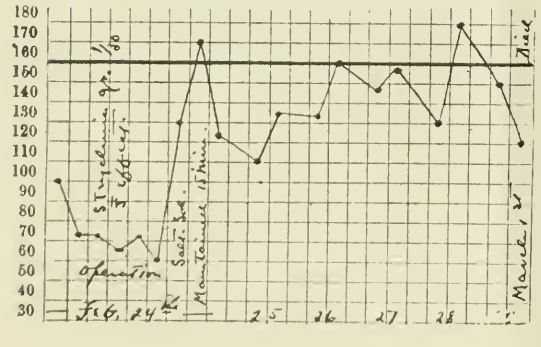


FIG. 5.

The final head case, a fracture of the base with laceration of the brain, as shown at autopsy, gave the following chart, which was reduced from a four-hourly to a 2 i. d. At operation the dura was very tense and cerebrospinal fluid escaped as if under great pressure, but, as can be seen, excluding the elevation at the beginning of the operation, which was probably due to the ether, there was no marked change, the afternoon reading being 10 mm. higher than the morning. On the 28th the temperature went to 105, where it remained and the pulse shot up on the 27th, but until the final drop on the 29th the pressure record is not remarkable (see Fig. 6). (Service of Dr. Elliot.)

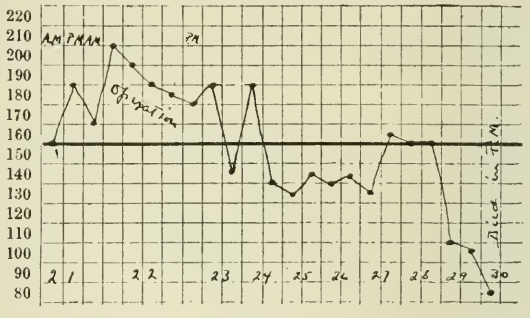


FIG. 6.

The negative charts of the 18 cases which recovered may be considered as confirmatory of the other clinical signs. The failure of the 10 fatal cases to show more diagrammatically any increase in the intracranial pressure or to indicate more clearly the general condition emphasizes the influence of diverse factors in such injuries. That cerebral compression of sufficient degree does, up to a certain point, increase the tension of the pulse, is an accepted fact based on clinical experience. The Riva-Rocci or other apparatus simply records this graphically. The influence of shock, hemorrhage and dyspnea is not, however, to be disregarded. Only by considering their influence on the blood pressure, together with the previous as well as the present general condition of each individual case, does it seem that a safe balance could be struck. The blood pressure here, perhaps, more than in any other type of injury, is the sum total of such varying influences that it must fail to be typical in many instances. Judged from this series, the blood pressures as isolated data are disappointing. They failed to assist materially in determining the surgical condition. No level or curve, excepting the final decline, was constant. The definite, graphic record, however, of a quantity which is accepted as being influenced by variations in the degree of intracranial compression should give valuable data in certain cases when combined with the other symptoms.

Routine cases as seen in the accident room

and wards will be considered under one general group.

The extremes, as taken on accident-room cases, were 65 and 235. The former, a case of railroad accident with a compound fracture of both bones of the right arm and leg, a fracture of the ribs and questionable fracture of the pelvis, made a good recovery. The blood pressure confirmed the clinical diagnosis of extreme shock. The latter, an acute retention, was relieved and walked out. This high tension doubtless went with the arteriosclerosis and probable kidney complication.

Shock in varying degrees is illustrated by the following cases: A superficial and not extensive burn entered with a pressure of 235, which within an hour dropped to 190 to 200, where it remained. A fatal general burn gave, on an half-hourly chart, a pressure of 120 to 105 during the first day, with two drops to 90, which were held for one hour. In the night the radial pulse was too weak to give a reading, but the next day a pressure of about 70 existed. Again at night the pulse was lost and the patient died the next day. Here strychnia, atropin and subcutaneous infusion of salt solution caused no rise. (Service of Dr. Beach.) A case of fracture of the thigh, color good, pulse at 70, had a pressure of 170; another fracture of the thigh, mild shock, pulse of 100, had a pressure of 190; a compound fracture of the thigh, general condition poor, dying that afternoon, gave a pulse of 140 and a pressure of 165; a bad crush of the shoulder with ultimate recovery, but too weak to allow immediate operation, showed the pulse at 110 and pressure 110; a crush of arm and leg, hopeless, dying in a few hours, had a pulse of 110 and pressure of 125, and so on.

Judged by the immediate reaction and the subsequent course with varying degrees of shock, the blood pressure generally confirmed the other clinical signs, but in many instances the height of the level maintained was misleading. Here again the moribund fall appeared to be the one constant feature. The general appearance, respiration and pulse-rate gave in all instances a better idea of the condition than could be obtained by judging from the blood-pressure readings.

The acute abdominal cases observed before operation were only a few, but there was no suggestive level, rise or fall in the blood pressure. No case was observed before and during the onset of acute abdominal infection.

Anesthesia is commonly given at the Massachusetts General Hospital as follows: Nitrous oxide gas is administered with a Bennett inhaler and ether is substituted when the gas anesthesia is complete. The pressure under these conditions is quite typically shown in the following chart; that is, a preliminary rise with the gas, then a fall of 10 to 20, followed by a sudden elevation of 30 to 40 at the first of the pure ether, and then a gradual drop to a level 10 to 20 above the original base line. While this scheme held in general, exceptional elevations of as much as 100 mm. were noted under the early ether (see Fig. 7). (Service of Dr. C. B. Porter.)

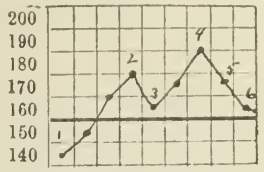



Fig. 7. — 1. Before starting gas. 2. Straining under gas. 3. Under gas. 4. Straining under ether. 5. Easy breathing. 6. Ready for the table.

Charts of different operations are given to illustrate the effect as shown by the blood pressures.

Operations of the type clinically supposed to produce no shock, such as interval appendectomy, hernia, etc., may be exemplified by a chart of simple drainage of the gall bladder (see Fig. 8). (Service of Dr. Beach.)

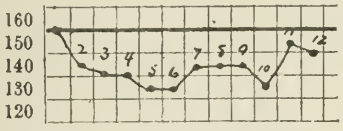



Fig. 8. — 1. Partially etherized. 2. Beginning operation. 3. Opening belly. 4. Digital exploration. 5. Walling off. 6. Aspirating gall bladder. 7. Probing for stones. 8 & 9. Tying in Mixter tube. 10. Moving gauze. 11. Manipulation of the common duct. 12. End of operation.

In a case of rupture of the spleen in which there was, of necessity, rough manipulation of the intestines and parietes and where a counter-opening was made in the loin, the variations are not striking (see Fig. 9). (Service of Dr. Elliot.)

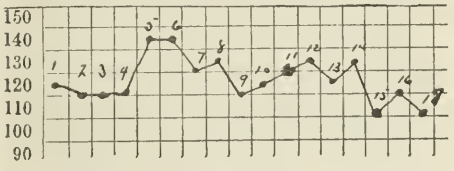



Fig. 9. — 1. Belly wall. 2. Opening belly. 3. Handling intestines. 4. Salt solution washout. 5. Walling off. 6. Salt solution washout. 7 & 8. Rough handling of intestines. 9 & 10. Packing on spleen. 11, 12 & 13. Sewing up. 14. Opening in loin. 15. Packing on spleen. 16. Sewing up. 17. End of operation. Pulse 80 to 120.

The following chart of a case of high amputa-

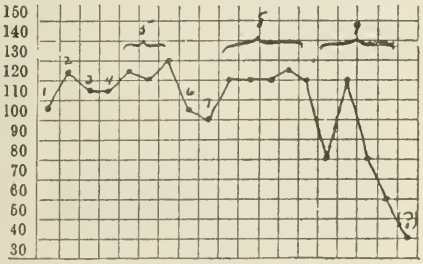



Fig. 10. — 1. Before operation. 2. Primary ether. 3. Circular incision down to bone. 4. Sawing bone. 5. Tying off and applying dressing. 6. End of operation. 7. In ward immediately after operation. 8. Salt solution intravenously, 1½ pints, level maintained eleven minutes. 9. Following at five-minute intervals. Pulse 90 to 140. Patient died a few minutes after the last record.

tion of the arm, which was all but in extremis from sepsis, is remarkable only from the graphic fall in the blood pressure when the patient was dying (see Fig. 10). (Service of Dr. Warren.)

An omentopexy gave the following record (see Fig. 11): (Service of Dr. Conant.)

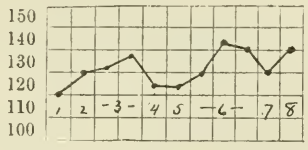



FIG. 11. — 1. Belly wall. 2. Opening belly. 3. Exploration. 4. Rubbing peritoneum. 5. Rubbing liver. 6. Sewing up omentum. 7. Sewing up. 8. End of operation. Pulse 110 to 100.

A fatal strangulated hernia in an old man who seemed to be in a very bad condition, color poor, pulse 120 and respiration labored, gave this chart (see Fig. 12): (Service of Dr. Beach.)

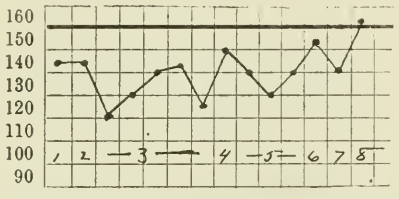



FIG. 12. — 1. Sac opened. 2. Manipulation of bowels. 3. Resecting gut and putting in Murphy button. 4. Two minutes after atropin gr. $\frac{1}{80}$ subcutaneously. 5. Sewing up mesentery and closing abdominal wall. 6. Straining under light ether. 7. End of operation. 8. One hour later in ward. Pulse 95 to 120.

A general peritonitis in a child of seven, in an extremely bad condition, gave this record (see Fig. 13): (Service of Dr. Warren.)

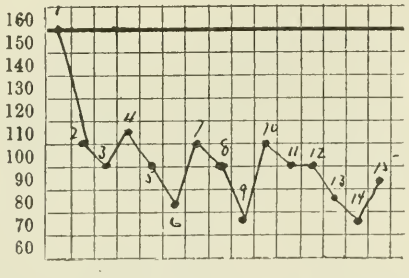



FIG. 13. — 1. In accident room. 2. Just on table. 3. Belly wall. 4. Straining under light ether. 5. Exploration. 6. Salt solution washout. 7 & 8. Removing appendix. 9. Washout. 10. Three minutes after strychnia gr. $\frac{1}{30}$ subcutaneously. 11 & 12. Wicks. 13 & 14. Sewing up. 15. Close of operation. Pulse 140 to uncountable.

A case similar to the above in an adult showed the following chart (see Fig. 14): (Service of Dr. C. B. Porter.)

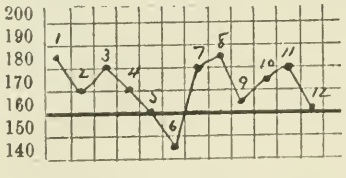



FIG. 14. — 1. Under ether. 2. Belly wall. 3. Peritoneum opened. 4. Exploration. 5. Exploration of pelvis. 6. Salt solution washout. 7 & 8. Wicks. 9. Further exploration. 10. Sewing up. 11. End of operation. 12. In ward one hour later. Pulse 106 to 120.

A case of extra-uterine pregnancy with rupture and intraperitoneal hemorrhage reacted in this diagrammatic manner (see Fig. 15): (Service of Dr. Warren.)

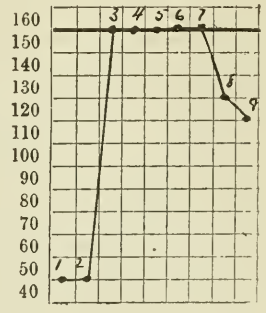



FIG. 15. — 1. Opening belly. 2. Straining under ether. 3. After one pint salt solution intravenously. 4. Right tube removed; salt solution up to 1½ pints. 5. Salt solution up to 2 pints. 6. Intestines washed out of belly. 7. Sewing up. 8. End of operation. 9. Thirty minutes after operation. Pulse of 130 to 150.

The blood-pressure curve during the operations did not give so accurate an idea of the general condition as the routine clinical signs, — pulse, respiration and general appearance. Changes were noted earlier by judging from the composite picture, and as substantiated by subsequent course the blood pressure alone might be most misleading. This was true both as indicating a good as well as a poor condition.

Operations on the pelvis, necessitating the Trendelenburg position with its changing levels, so confused the readings that they were useless.

Isolated cases of possible interest were: An adrenal tumor with metastasis in the brain, with sufficient pressure to press forward through the vault, ran along at 105 to 115; a kidney decapsulation ten days after operation showed a level at about 140; a case of nephrectomy, which later died, gave some months after the operation a pulse of 80 and a pressure of 210 to 280; two cases of tetanus had, as might be expected, high pressures of from 210 to 240; a case of septicemia, which was running a temperature of from 100 to 107, and which was being treated by intravenous injections of formalin, ran an irregular daily chart of from 90 to 120 until the final drop, the temperature seeming to have no close relation to the pressure; a fatal case of hemorrhagic jaundice held a level of 140 to 120, with a pulse at 150 to 160 without noticeable change from strychnia, atropin or gelatin subcutaneously; a polyp of the uterus, which had caused such hemorrhage as to reduce the hemoglobin to 40% gave a pressure of 205 and a pulse of 125. This last case might be interpreted either as showing the pulse to be much stronger than was estimated by digital compression or as giving a high blood pressure which was due to the size of the arm and other conditions, and which did not estimate accurately the pulse force. The case went on to final recovery, but, on the day when the pressure of 205 was recorded, she was in such poor condition that the prognosis was decidedly doubtful. Dr. Torbert very kindly took observations for me on six cases of eclampsia at

the Boston Lying-In Hospital. During the convulsions the blood pressure ran along between 225 and 240. After the acute stage the pressure fell gradually to levels varying between 140 and 160, the changes taking place in accordance with the clinical symptoms.

The chart of a moribund septic case, in which 350 cc. of adrenalin — 1–10,000 — was used, is also of interest (see Fig. 16). (Service of Dr. Elliot.)

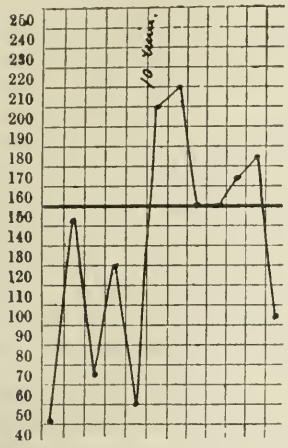



Fig. 16. — Five-minute intervals except where marked. Died thirty minutes after last reading. Pulse 150 to 160.

The peritonitis and other cases after operation showed nothing remarkable. The levels ran along without marked variation at 90 to 160. Changes in the condition were noted earlier and with greater accuracy by the usual clinical observations than from the blood pressure. The moribund fall was the one change which was universally found. In no case did the blood pressure give information regarding the patient's surgical condition which was not obtainable from the pulse, respiration, temperature and general appearance.

Strychnia and atropin subcutaneously did at times, as seen in some of the foregoing charts, cause a slight change in the level of the blood pressure, but, as a rule, in sick cases no marked variation in the curve was noted.

Salt solution in favorable cases, as in the extra-uterine before mentioned, raised the level materially, and this gain was usually held for about 25 or 30 minutes. In some instances, however, the infusion failed to check the fall, or, if there was a rise in blood pressure, it was maintained only momentarily. Where so large an amount as two pints of salt solution was given intravenously, the maximum elevation of the blood pressure was reached during the first pint.

The following chart will serve to illustrate the reaction after intravenous salt solution in favorable cases (see Fig. 17). (Service of Dr. A. T. Cabot.)

These statements are based on the results of blood-pressure observations which were made on 100 surgical cases, including 28 cases of head injury, and may be summarized as follows:

The Riva-Rocci manometer was employed in every case. A 10 cm. armlet and metal cuff

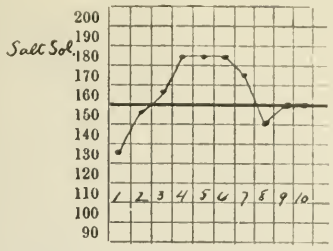



Fig. 17. — 1. Ordinary level. 2. Preparing arm. 3. One half pint. 4. One pint. 5. One and three-fourths pints. 6. Two pints. 7. Two minutes after infusion, level maintained twenty-five minutes. 8. Thirty-five minutes after infusion. 9. Forty-five minutes after infusion. 10. One hour after infusion.

was used in approximately one-half of these observations, and gave more satisfactory results than did the narrow armlet.

The blood pressure in the majority of cases confirmed the estimate of the clinical condition of the patient obtained from the pulse, temperature and other physical signs.

Deductions regarding the clinical condition drawn from the blood-pressure observations did not agree in a certain number of instances with the conclusions based upon the results of the routine clinical observations. The subsequent course of the cases proved the blood-pressure readings to have been misleading.

The blood-pressure observations did not in any case show facts that proved to be of importance in determining the diagnosis, treatment or prognosis which could not be obtained in the routine methods of clinical examination.

The effect of the common subcutaneous stimulants was not marked.

Normal salt solution, as a rule, raised the blood pressure, the maximum rise being reached with the administration of the first pint. The increased pressure was maintained for a variable period, usually about thirty minutes.

Cases of head injury, while not always typical and uniform in the reaction, as shown by the blood-pressure readings, seem to offer a field in which blood-pressure observations may prove to be of material assistance to the observer.

## Summary of the Results of the Investigation. By the Committee on Surgical Research.

The questions which appeared to the committee to be worthy of investigation were as follows:

(1) Does the Riva-Rocci apparatus indicate the true blood pressure with sufficient accuracy for clinical purposes?

(2) In what cases and under what circumstances are the errors due to the apparatus so great as to invalidate its advantageous use?

(3) What is the value of blood-pressure observations —

(*a*) As an indication for or against operation?

(*b*) During the course of an operation?

(*c*) In after-treatment of surgical cases?

*Question* (1) — Does the Riva-Rocci apparatus

indicate the true blood pressure with sufficient accuracy for clinical purposes? — and *Question* (2) — In what cases and under what circumstances are the errors due to the apparatus so great as to invalidate its advantageous use? — cannot be authoritatively answered by the data in the hands of the committee. In the report from each hospital a certain number of facts appear which have a bearing upon these questions. A special series of observations was also made by Dr. F. T. Murphy with different forms of apparatus, and under normal as well as under pathological conditions. The results of these observations, which were made by Dr. Murphy at the request of the committee, are embodied in this summary. A laboratory test of the Riva-Rocci apparatus to determine the extent of its errors and imperfections was not contemplated by the committee, but rather a test of its practical value at the bedside. So far as the observations of Drs. Faulkner, Stone and Murphy go, the result of this clinical test is as follows:

It is apparent that the blood pressure is not recorded accurately under certain well-defined conditions. Arteriosclerosis and excessive development of fatty subcutaneous tissue and of muscle appear to cause an overestimate of the true blood pressure by the use of the Riva-Rocci narrow band apparatus. Repeated observations on the same normal individual, and with the same technique of application, gave practically constant readings. Variations were found with different observers under the above conditions, but with those who were accustomed to taking the pulse the error was so slight as to be negligible.

The rapid variation of the force of the heart beat in cases of dyspnea caused difficulty in the accurate estimate of the exact pressure necessary to obliterate the pulse. Maintenance of the pressure in the armlet at a point sufficient to obliterate all but an occasional pulse-wave of more than average force appeared to give the most accurate results under these conditions.

Emotional and psychic causes produced extreme fluctuations in the blood-pressure readings. In children greater variations were found to be produced by these conditions than by grave alterations in the physical condition. This observation, however, does not appear to be due to the apparatus in any way, but merely interferes with accurate deductions being made from a given observation.

Change of posture appears to alter the peripheral blood pressure to a marked degree. Four normal individuals were observed by Dr. Murphy both in the prone position and in extreme Trendelenburg position. The results were as follows:

| *No.* | *Prone.* | *Trendelenburg.* |
|---|---|---|
| 1 | 189 | 155 |
| 2 | 143 | 145 |
| 3 | 163 | 150 |
| 4 | 155 | 180 |

It will be noticed that the alteration in the blood pressure is not constant either in direction or degree. The pulse in all four cases was lowered four to six beats a minute by the change to the Trendelenburg position.

No difference was apparent between the blood pressure in the two brachials in a case of hemiplegia.

Observations were made by Dr. Murphy upon a number of normal individuals and the majority fell within the limits of 120 to 160 mm. of mercury which was given by Gumprecht [1] as the result of a series of observations on normal individuals. Many apparently normal cases, however, gave readings beyond these limits, and estimates of the blood pressure as low as 100 and as high as 200 mm. were occasionally noted in normal individuals.

The modification of the Riva-Rocci apparatus introduced by von Recklinghausen,[2] in which an armlet of 15 cm. width is used in place of the 5 cm. armlet of the original apparatus, was adopted by Dr. Murphy, and a series of observations was made by him with this form of apparatus, which seemed to give lower and more accurate readings than with the narrow band.

A number of different widths of armlet were then obtained and comparative observations were made in a large number of cases. An armlet of 10 cm. width was found to give readings of practically the same degree as those which were wider and more cumbersome. The metal cuff, outside of the rubber armlet, as recommended by von Recklinghausen, was found to exert far less influence than the width of the armlet in every case.

An article by W. B. Stanton, *University of Pennsylvania Medical Bulletin*, 1903, Vol. xv, gives an excellent description of the comparative merits of broad and narrow armlets with the Riva-Rocci apparatus. Dr. Stanton recommends for ordinary use an armlet 3¼ inches in width, with canvas or leather cuff.

A series of observations made with the 5 cm. and 10 cm. armlets was as follows:

| *Circumference of Arm.* | *Reading with* 5 cm. *Band.* | 10 cm. *Band.* | *Circumference of Thigh.* | *Reading with* 5 cm. *Band.* | 10 cm. *Band.* |
|---|---|---|---|---|---|
| 21.5 cm. | 125 | 105 | 35.5 cm. | 205 | 120 |
| 23. ,, | 175 | 165 | 33. ,, | 220 | 175 |
| 19. ,, | 123 | 115 | 29. ,, | 235 | 115 |
| 20. ,, | 118 | 100 | 33. ,, | 235 | 125 |
| 20. ,, | 135 | 115 | 32.5 ,, | 190 | 115 |

It is to be noted that the blood-pressure readings are, as a rule, lower with the broad armlet by from 8 to 20 mm. and that the individual variation is diminished. That the influence of the soft parts is, to a certain extent, obviated by the use of the broader armlet may be deduced from a comparison of the pressures obtained in the brachial and in the femoral arteries in this series of observations.

When a manometer has been directly connected with an artery in man, as in the instances related by Albert and by Faivre (Masing [3]), pressures of 100 to 160 mm. have been recorded. The use of the 10 cm. armlet gives results which

[1] Gumprecht: Munchener Med. Woch., No. 40, 1899.
[2] von Recklinghausen: Archiv. f. Exper. Pathol. und Pharmac., Bd. 46, p. 78.
[3] Masing: Deut. Archiv. f. klin. Med., Bd. 74, Hft. 3 and 4.

more closely approach these actual experiments. The broad armlet, moreover, gives more definite compression of the artery, and the point at which pulsation ceases is more readily determined. For a discussion upon the physiology of this matter the reader is referred to papers by von Recklinghausen [4] and by Masing.[3] In actual clinical work these theoretical considerations appear to be justified by the results.

To sum up briefly:

(1) The inaccurate readings obtained in cases of arteriosclerosis and excessive muscular development are partially obviated by the use of a 10 cm. armlet with the Riva-Rocci apparatus.

(2) The presence of dyspnea causes inaccuracy in the blood-pressure determinations with either a broader or narrow band.

(3) Change of posture invalidates the readings obtained with either form of apparatus.

(4) Emotional individuals and children show fluctuations of the blood pressure out of all relation to the actual condition of the patient.

(5) Under other circumstances than those above recorded, the accuracy of the determinations with the Riva-Rocci apparatus appears to be sufficient for clinical purposes.

*Question* (3) — What is the value of blood-pressure observations (*a*) as an indication for or against operation? It is in this field that the value of the systematic determination of the blood pressure appears to the committee to be of the greatest promise. It is to be noted, however, that with the present knowledge which we have of the conditions which cause changes in the blood pressure, deductions can be made only when the conditions of the individual case are thoroughly understood. In emotional individuals and children, in cases of arteriosclerosis and of excessive muscular development and in patients suffering with dyspnea, the readings of the Riva-Rocci manometer, for reasons above recorded, are inaccurate. In injuries and diseases of the head, blood-pressure readings have promised to be of the greatest significance. The part played by the blood pressure in the symptoms of cerebral compression has been worked out by Cushing.[5] It is generally accepted that increased cerebral pressure causes an elevation of the blood pressure to overcome the anemia of the medullary centers. For this reason, increase of the blood pressure, as determined by the Riva-Rocci instrument, would, it was hoped, provide a definite indication for interference in cerebral injuries and diseases. In injuries of the head, however, the presence of shock to a greater or lesser degree must be considered, and its effects upon the blood pressure in an individual case eliminated before deductions of value can be made. It is owing to this fact especially, so far as the committee is able to judge, that the observations reported on cases of head injury have given so little general satisfaction.

In cases of surgical shock the low blood-pressure observations serve, as a rule, only to confirm a diagnosis already made by the physical examination of the patient. It can be stated that a low blood pressure is to be expected in the presence of surgical shock. The actual estimate of the patient's condition and the prognosis as to life or the ability to withstand surgical interference were, as a rule, more accurately estimated by the other methods of physical examination.

In a few cases the evidence, as obtained from the blood-pressure observations, appeared even to be misleading. In hemorrhage the condition of the patient, as estimated by the pulse, respiration, temperature and general appearance, seemed to be more valuable than the blood-pressure observations. In acute abdominal conditions and in sepsis the number of observations was comparatively few, but no data of importance were obtained.

To sum up the entire matter it may be stated that graphic determination of the blood pressure by means of the Riva-Rocci instrument may be judged as an indication for or against operation only after a consideration of all of the conditions which enter into a determination of the blood pressure in the individual case. It cannot be said that a blood-pressure reading of a given degree is indicative of a given condition, but like the symptom of leucocytosis an estimate of the blood pressure may help to determine for or against operation in an individual case when taken into consideration with all of the other symptoms. The cases in which blood-pressure determinations appear to offer the greatest promise are those in which the element of shock and the element of cerebral compression are present.

*Question* (3) — (*b*) During the course of an operation? A change in the position of the patient is liable to cause a change in the blood-pressure reading so great as to negative its value. During the early stages of anesthesia by gas or ether, elevation of the blood pressure is to be expected. Recovery from anesthesia may also cause an elevation. The results of salt solution infusion and of subcutaneous stimulation may be determined in some cases by means of the apparatus. As a general rule, however, the condition of the patient, as judged by the ordinary physical signs, gave more satisfactory data on which to base an estimate of his physical condition than the blood-pressure reading taken by itself. The value of blood-pressure observations during the course of an operation was not apparent as a result of this series of observations.

*Question* (3) — (*c*) In after-treatment of surgical cases? In the after-treatment of surgical cases the number of observations made was comparatively few. The results of stimulation have been recorded above. At a period shortly before death a marked and rapid drop in the blood pressure was repeatedly observed. This drop in the blood pressure occurred with equal regularity in cases of shock, fractures of the base, general peritonitis and sepsis. This " moribund drop " made its appearance at varying intervals before death ensued, but in no case was there any doubt

[4] von Recklinghausen: Op. cit.
[5] Cushing: Kocher's Hirnerschutterung, etc. Nothnagel's Spec. Path. and Ther., 1901, Bd. 9, Theil 3, Abt. 2, p. 186.

from the general physical condition of the patient at this time that death was imminent. When recovery ensued after operations, except for the results of stimulation above recorded, no data of value in the after-treatment of the cases were obtained.

To summarize the results of this series of observations it may be said that the value of the Riva-Rocci apparatus in determining the blood pressure in surgical patients is limited to a comparatively small number of cases. The conditions of cerebral compression and of surgical shock produce the most marked and definite alterations in the blood pressure. When these conditions are present and other confusing causes of alteration in the blood pressure are eliminated, the value of the blood-pressure determinations, as an indication for or against operation, is increased. Under other circumstances the value of these observations is at present not apparent. The adoption of blood-pressure observations in surgical patients does not at present appear to be necessary as a routine measure.[6]

## Medical Progress.

### REPORT ON OBSTETRICS.

BY FRANK A. HIGGINS, M.D., BOSTON.

(Concluded from No. 9, p. 244.)

#### THE JUSTIFIABILITY OF PERFORATION OF THE LIVING CHILD.

Hoffmeier[10] says that this question cannot be considered as entirely settled, even with the great improvement in the results of Cesarean and symphysiotomy operations, but that it has become necessary to reconsider the indications for the operation. Some men are of the opinion that a recognition of the child's right to live gives the obstetrician alone the right to decide by what means the woman shall be delivered, whether by symphysiotomy or by Cesarean section. He speaks of the difficulty of arriving at correct measurements of the pelvis in the living subject, and on the importance of estimating the size and hardness of the fetal skull, and its proportion to the size of the pelvis. In determining the justifiability of perforation of the living child at term, he believes that this cannot be decided by statistics alone, but only by considering the principles which are derived from an experience of individual cases.

In the first place, the external conditions are of importance; in women with marked pelvic contraction in whom the child is still of full vitality, if the patient can be placed in a well-appointed hospital or, generally speaking, under the most favorable hygienic conditions, it is not only the right but the duty of the medical attendant to deliver by Cesarean section in the interests of the child; but in cases where the contraction is somewhat less marked, and where the other conditions are not present, the chances for the mother are much more doubtful, and it is impossible to recommend to her to submit to the increased risk of Cesarean section as compared with perforation of the living child.

But even in the obstetric clinic, cases occasionally occur in which the only proper treatment consists in perforation of the living child, at least for those physicians whose practice it is. In the medium degrees of pelvic contraction, especially in primiparæ, it is best to wait and watch the action of the natural forces. In these cases it is difficult to know how long to wait, and in primiparæ the time for turning is sometimes over while yet delivery by the forceps is very dangerous to mother and child. Here symphysiotomy or Cesarean section entail too great a risk for the mother, and there only remains perforation. Neither the law nor our own conscience will justify us in performing symphysiotomy or Cesarean section in any case against the will or without the consent of the patient. The question is no doubt simplified when during a long, expectant treatment of labor the child dies, but it is clear that when the condition of the mother urgently calls for delivery it is immaterial whether the child dies spontaneously or as a result of perforation.

He concludes that even in the present advanced state of surgical midwifery, perforation of the living child in certain cases is still the most favorable method of delivery, both in private practice and in lying-in hospitals, and that we are not justified in replacing it by symphysiotomy or Cesarean section merely because of ethical and theoretical considerations of the child's right to live. It is, however, to be desired that an exact and correct application of these two operations may reduce the necessity for perforation of the living child to a minimum, at least in lying-in hospitals.

#### ECLAMPSIA.

Dr. Lapthorn Smith,[11] in reply to the question as to what is the best treatment of eclampsia, says one that will in the quickest possible manner and with the least possible danger put an end to the fearful vasomotor spasm and allow the blood to rush into the brain and kidneys so that the woman may regain consciousness and so that her kidneys may at once begin to eliminate the toxin which causes the spasm.

[6] The experimental and clinical research entitled "Blood Pressure in Surgery," by George W. Crile (published by Lippincott, Philadelphia and London, 1903), has come into the hands of the committee only after the completion of this report. Dr. Crile has made many observations upon the blood pressure in surgical cases, and his reports are of great interest. It is to be noted that Dr. Crile found somewhat the same conflicting elements in the blood-pressure observations in individual cases which have been noted in this series of reports. In cases of head injury or operation, Dr. Crile found the element of shock to modify the expected elevation when intra-cranial pressure was increased.

The conclusions drawn by Dr. Crile are as follows: "During important operations and in the after-care of certain cases, blood-pressure determinations were frequently of vital importance. . . . The blood pressure of individuals varies within a wide range; for a number of causes blood pressure in the same individual varies greatly. It is particularly difficult to eliminate the psychical factor. It is frequently difficult to interpret the blood-pressure readings when their indications are most needed. The methods of determining the pressure thus far devised are only relatively accurate. In surgical practice blood-pressure determinations have added a new resource of a fair amount of practical value. The observations during surgical operations correspond very closely with those previously published as observed in experiments on animals."

[10] Journ. of Obstet. & Gyn. of the Brit. Emp., Vol. iii, No. 5, 1903. Zeit. fur Geburts u. Gyn., Bd. 48, H. 2.

[11] Annals of Gyn. and Ped., January, 1904, p. 18.

He administers first a large dose of morphine, and follows it shortly by tincture of veratrum viride hypodermically. He says this method has been used in over forty cases without a death in the largest lying-in hospital in Canada, and since its administration has been instituted no death from eclampsia has occurred in the institution. He first administers morphine subcutaneously, a half or three-quarters of a grain, followed in five minutes by a hypodermic of ten minims of tincture of veratrum viride, which is repeated every ten minutes until the convulsions stop or the pulse comes down to forty. Then he gives a quart of salt solution by enema, which is quickly absorbed by the rectum, and as the spasm in the arterioles of the kidneys relaxes, the water rushes into them, and in half an hour there will be a copious secretion of urine. He says no chloroform, no chloral and no accouchement forcé are needed, but the woman falls into a quiet slumber, and later there is a normal labor and probably a dead fetus. He says there is some fright when the pulse comes down to forty, but there is nothing to fear.

### MANAGEMENT OF PREGNANCY COMPLICATED WITH UTERINE FIBROIDS.

Routh [12] says that danger arises from cases being improperly treated, or not treated at all, but when complications are treated efficiently by modern surgical and antiseptic methods, the mortality is enormously reduced, the chief dangers being:

(1) *During pregnancy,* — rapid enlargement of the fibroids, degeneration of fibroids, abortion with hemorrhage and sepsis.

(2) *During parturition,* — fetal malpresentations, obstruction, hemorrhage.

(3) *During the puerperium,* — degeneration or extrusion of a submucous fibroid, sepsis and secondary infection of the fibroids.

The effect of pregnancy upon fibroids is discussed under the following:

(*a*) Growth of fibroids during pregnancy. He is not at all certain that fibroids as a rule do increase much in size in pregnancy.

(*b*) Atrophy of fibroids during involution of uterus. They may atrophy and entirely disappear during involution of the uterus.

(*c*) Degeneration and extrusion of submucous fibroids after labor. Occasionally after labor a submucous fibroid will degenerate and be extruded without harm. Usually, however, necrosis of the fibroid occurs during the somewhat prolonged period of extrusion, and sapremia or septicemia may result.

(*d*) Secondary infection of fibroids during the puerperium. Infection of fibroids during the puerperium may occur, and fatal peritonitis may result, as the softening during pregnancy renders them very liable to infection.

The effect of fibroids upon a coexisting pregnancy are discussed under the following heads:

(*a*) Do fibroids cause sterility? It is generally believed they do, but he says it seems probable that fibroids are not by any means a frequent cause of sterility, but that it is possibly more true that sterility is a cause of fibroids.

(*b*) Probably fibroids do not predispose to abortion or premature labor, as statistics seem to prove that the proportion of abortions with fibroids is very little greater than the normal average.

(*c*) Fibroids undoubtedly cause fetal malpositions.

(*d*) Fibroids lead to uterine inertia and delayed labor. Also post-partum hemorrhage and adherent placenta are more frequent than in normal labor.

(*e*) Existing fibroids may cause obstruction during labor, but spontaneous elevation of the fibroid out of the pelvis is more likely to take place late in pregnancy or even in labor. Cervical and intraligamentous fibroids are incapable of being elevated.

(*f*) Involution in the puerperium is retarded but not impaired. The lochia is increased and persists longer.

In treatment before fetal viability, attempts should be made to elevate the fibroid by digital or hydrostatic pressure in the Sims or knee-chest posture. Forcible reposition is to be avoided. Induction of abortion has been abandoned. Myomectomy is now the ideal indication for treatment when pressure symptoms develop before fetal viability, but it can only be hopefully undertaken in a small number of cases. Hysterectomy is the procedure where there is real danger in allowing the patient to go to term, or where pressure symptoms are serious and the fibroids are multiple and too deeply imbedded, also, for intractable hemorrhage.

In treatment after fetal viability the indication is to leave things alone so long as the mother's life is not endangered. Reposition may be tried. No attempt should be made to drag a child, living or mutilated, past an obstructing fibroid of any size by forceps or by version. If the patient is in labor, and the obstructing fibroid shows no tendency to rise, or if it is fixed in the pelvis, an operation is inevitable, and except in the case of a cervical fibroid abdominal section is necessary, for symphysiotomy is condemned by all in these cases. Cervical fibroids cannot be elevated, but in some cases they may be enucleated from below.

In treatment after labor hysterectomy may be required in cases where labor has already taken place in fibroid uteri, for post-partum hemorrhage or uterine sepsis with infected fibroids with retained placenta.

### TREATMENT IN MEDIUM DEGREES OF PELVIC DEFORMITY.

Kerr [13] says that while it is not difficult to recognize a deformity of the pelvis, it is a matter of very great difficulty to appreciate the exact degree and nature of the malformation, as the means for measuring and estimating the pelvic cavity are so defective. A careful measure-

[12] Brit. Med. Journ., Oct. 3, 1903, p. 798.

[13] Amer. Journ. Obstet., July, 1903.

ment of the pelvis both by hand and by pelvimeter should be made, and an estimate of the size of the child's head attempted, but in certain cases, however, a conclusion as regards treatment cannot be come to until labor has progressed, especially in primiparæ. With a conjugate vera of less than three and one-half inches, he has never seen a woman deliver herself of a normal full-term live child. The lowest limit for forceps he considers as three and one-quarter inches, and forceps should not be applied if the fetal head, after having had time to engage and mold is still movable at the brim. His results with regard to fetal mortality are very much worse with version than with forceps, and his conclusion as regards version is that it is a treatment more dangerous to the mother and with an infinitely higher fetal mortality than forceps.

BIRTH PARALYSES.

Kennedy [14] reports three cases in which he practiced suture of the brachial plexus in birth paralyses of the upper extremity. This procedure is based on the principle that such cases should be dealt with as similar injuries are usually treated If there is no spontaneous improvement, the seat of injury should be exposed and the condition dealt with on general principles. In one of the author's cases complete restoration of function ensued; in the other two voluntary motion was not restored.

ABNORMAL SITE OF THE AFTER-BIRTH.

Bayer [15] calls attention anew to the fact that the cervix does not behave the same in all pregnancies. In some it develops by unfolding irregularly, and the physiologic stricture becomes spastic in labor accompanied by spasmodic contractions. The after-birth in placenta previa is inserted in the lower pole of the uterus, but not in a correctly regular segment, and hence it develops abnormally. He says a woman who has had considerable hemorrhage during the pregnancy but who arrives at term without much loss of strength stands a better chance of recovery (from placenta previa) with a living child than one whose labor commences at term without any hemorrhage during the pregnancy. The same conditions prevail when the placenta is located in the tubal angle. The uterus forms a "tubal segment" as the walls of the tube expand under the placenta. In case of placenta previa it becomes more or less detached and hemorrhages occur, simulating the phenomena of premature detachment of a normally located placenta. The various conditions are shown in cuts. With a placenta located in the tubal angle the uterus becomes saddle-shaped. No special treatment is required for it, except that the possibility of a pathologic process must be borne in mind.

INDICATIONS FOR FORCEPS OPERATION.

Fehling [16] thinks that injury of the soft parts would not occur if students were trained in forceps operations and repair of injuries by careful suture under the eye of the professor. He adds that no "practicant" is allowed to leave his clinic without having sutured a perineum once or several times. He thinks that there is nothing to prove that the application of forceps leads to hemorrhage from atony. Hemorrhage from lacerations can be easily controlled. Slight lacerations of the cervix occur in nearly every normal birth, and Emmet's operation is usually superfluous. He states that in 815 forceps operations he has held the forceps himself in only ten. He regards feeble contractions as an indication for their use and advocates resorting to them when all the conditions are favorable and the deilvery stage lasts more than three hours.

[14] R. Kennedy: Brit. Med. Journ., Feb. 7, 1903.
[15] Journ. Amer. Med. Assoc., Dec. 5, 1903, p. 1441.
[16] Beit. z. Geb. und Gyn. (Hegar's), Leipsic. Journ. Amer. Med. Assoc., Dec. 5, 1903, p. 1441.

HYPEREMESIS GRAVIDARUM.

The author [17] reports a case of hyperemesis which became grave during the third month of pregnancy. The induction of abortion was contemplated, but the employment of copious rectal injections of normal saline solution was followed by rapid improvement, and after fourteen days of treatment by this method the patient could retain all kinds of food. The cessation of injections was followed by a return of vomiting, which again disappeared when the treatment was recommenced. A second case is also reported. The writer orders each morning rectal lavage for cleansing purposes, followed by the injection every two hours of about half a liter of warm saline solution, which is retained and absorbed. Four less severe cases were treated in the same way. The symptoms occurred between the second and fourth months of gestation. The pelvic organs were normal in each instance, and there were no manifestations of hysteria. In each case the rectal injections were followed by the cessation of vomiting.

[17] Behm: Archiv. fur Gyn., 1903, Bd. lxix, H. 2, p. 410 Journ. of Obstet. & Gyn. Brit. Emp., October, 1903, p. 393.

## Reports of Societies.

### THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

STATED meeting, Dec. 14, 1903. The President, ANDREW H. SMITH, M.D., in the chair.

DR. SAMUEL G. GANT read a paper on

WATER ANESTHESIA IN OPERATIONS ABOUT THE RECTUM, ANUS AND BUTTOCKS.

A local anesthetic which would prove effective in operations about the ano-rectal region, and at the same time be devoid of toxic properties, would, he said, enable the surgeon to perform most of these operations in his office, and he had accordingly been experimenting for many years in order to find one possessing these advantages. It was thought for a time that Beta-eucaine met these requirements, but even this preparation had not proved entirely satisfactory. His more recent experience, in more than 150 cases of rectal affections radically operated upon,

had shown that sterile water, properly injected, is a reliable local anesthetic, — and he was convinced that this is the most desirable agent for these operations, for the reason that it produces an adequate degree of anesthesia, while in no instance has its employment been accompanied or followed by any of the annoying and dangerous complications frequently encountered under the use of cocaine or similar drugs.

Dr. Gant was induced to try distention of the tissues with water to produce local anesthesia in consequence of the following observations: (1) Cocaine, eucaine and other similar solutions were practically inert when distention was not obtained, because of the escape of the fluid through an ulcer, fissure or sinus. (2) Very weak solutions of the same drugs were apparently as effective as strong solutions in all cases where complete distention of the tissues was possible. While experiments with sterile water anesthesia were begun in September, 1901, it is only recently that the technique has been so improved that he has been enabled to use it in a very large majority of his operations, to the exclusion of general and medicinal local anesthetics. Among the cases in which he has successfully employed it are included radical operations for protruding and non-protruding internal hemorrhoids, cutaneous and thrombotic external hemorrhoids, polypi, prolapsus ani, fistulæ of various kinds and marginal and follicular abscesses; excision of perineal cysts, sacral dermoids and lipomata of the buttocks; removal of foreign bodies beneath the skin and mucosa; division of the sphincter ani in cases of constipation where divulsion proved ineffective; fixation of an elongated sigmoid to the anterior abdominal wall; colostomy and exploratory laparotomy.

*Technique.* — The only requirements for the practice of the procedure are sterile water and a hypodermic syringe fitted with a long, fine, sharp-pointed needle, which, with the syringe itself, should be carefully sterilized. The temperature of the water is unimportant, but warm water is preferable, as causing the least discomfort. Sterile saline solution does not appear to possess any advantage over simple water. The manner of injecting the water varies according to the nature of the operation to be performed. When an incision through the skin is required, a fold of the integument at one extremity of the line of incision is compressed for a few seconds between the thumb and forefinger; this diminishes and often prevents the momentary pain which may be caused by the first injection. The needle is then inserted between the layers of the skin and a few drops of water are slowly injected; this should produce a small, localized distention not unlike a blister, and immediately on its appearance cutaneous anesthesia should occur at this point. Next, the needle is slowly introduced further and further along the line of the cut to be made, care being taken not to go entirely through the skin, and the water is gradually injected as before. When the syringe has been emptied, it is refilled and the needle re-introduced within the anesthetized area, the injections being repeated, as before, until the distention extends the entire length of the line of incision. The needle is then plunged through this distended line and subcutaneous injections are rapidly made until a firm, whitish, ridge-like swelling, about as wide and thick as the index finger, is produced. These deep injections may cause a temporary sense of discomfort, owing to the rapid distention of the subcutaneous tissues. If the procedure has been properly carried out, the skin and underlying tissues can now be incised without pain in almost every instance.

Dr. Gant then gave some details of the methods he employed in various operations, and stated that he did not advocate water anesthetization for deep ischio-rectal, peri-rectal or pelvi-rectal abscesses where extensive cutting and curettage are essential. For external thrombotic hemorrhoids it is requisite to make the injection of sterile water only between the layers of the skin overlying the clot to be removed, while in excising external cutaneous hemorrhoids both the skin and tumors should be distended tightly in order to obtain effective anesthesia. Large internal venous or capillary hemorrhoids can be completely anesthetized within thirty seconds by injecting directly into the center of each tumor sufficient water to distend it tightly and cause it to turn white. Any affection which requires operative procedure to increase the lumen of the anal outlet, or which necessitates incision of the sphincter muscle, may be operated upon under water anesthesia. After the skin and mucous structures up to the margin of the anus have been distended, injections are made into the mucosa, the submucosa, the external sphincter and, if necessary, the internal sphincter muscle. They should be made slowly, as rapid distention of this sensitive region may give rise to considerable discomfort.

*Advantages.* — Among the advantages of water anesthesia are the following: (1) In the majority of rectal operations there is no necessity of requiring the patient to submit to the annoyance and expense of entering a hospital and undergoing general anesthesia. (2) The rapid distention of the tissues to be incised or removed enables the operator to work quickly, and as the patient is not confined to bed during the after-treatment, but can come to the office to have the dressings made, it economizes the surgeon's time and labor. (3) No annoying or dangerous complications or sequelæ have been observed. (4) Experience has shown that the pain and bleeding following this method are less than when medicinal local anesthetics are used. (5) It eliminates the danger to life from the heart, lung and kidney complications which may result from the use of ether or chloroform, and it avoids the increased pain and hemorrhage due to straining and vomiting after general anesthesia. (6) The only requirements are a hypodermic syringe, a suitable needle and boiled water. (7) The radical treatment of hemorrhoids can be so easily carried out in the physician's office, and with so little danger and inconvenience to the patient, that it should relegate to oblivion the much-vaunted injection treatment, which is always dangerous and uncertain.

*Modus operandi.* — As the anesthetization of the part occurs almost instantly upon complete distention of the tissues, it would seem probable that the anesthesia is produced by the pressure upon the nerves and their terminations caused by the distention. If the pressure is too quickly induced, however, by too rapidly injecting the water, it may cause considerable temporary discomfort, amounting to pain in extremely sensitive persons.

*Limitations.* — This method of anesthetization is not practicable for extensive operations, such as are required for excision of the coccyx, the removal of large tumors by excision, or resection of the bowel, or for the relief of complete prolapsus recti, complex horseshoe, recto-vesical, recto-urethral and recto-vaginal fistulæ, very extensive abscesses, or strictures, congenital malformations or other affections located in the upper rectum; neither is it applicable for opening the abdomen in cases where there is a thick layer of fat and the tissues are so loose and flabby that a proper degree of distention cannot be secured.

THE BOSTON

# Medical and Surgical Journal.

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## THE MASSACHUSETTS SCHOOL FOR FEEBLE-MINDED.

THE fifty-sixth annual report of this institution is before us, a report which we always read with peculiar interest. The work of the institution is done so quietly and unostentatiously that the public at large is little aware of the difficulties which must be met and the admirable results which are accomplished in the care and treatment of this difficult class of patients.

At the time of the issue of the report there were 668 feeble-minded persons at the school at Waltham and 132 at the newly instituted farm colony at Templeton, making a total of 800. Of this number 47 are private pupils supported in whole or in part by parents or guardians. The increasing demands made upon the institution are necessitating further accommodations. To this end, under an appropriation granted in 1902, a new dormitory is in process of construction for the accommodation of the older girls. The health of the inmates has in general been good, and the mortality compares most favorably with the death-rate in the community at large. It can no longer be said that the life of the feeble-minded person is short. Possibly this lengthening of the life of these unfortunate persons may be regarded as not wholly a blessing, nevertheless it serves as an excellent demonstration of the faithful care which this most helpless class is receiving.

The school department, about which the other branches of the institution center, is an outgrowth, as is now generally known, of the first organized attempt in this country to educate the idiot as far as may be. This conception and its consummation was due to the persistence of Dr. Howe. Naturally his ideas have been modified, particularly on the religious side, but the fundamental principles which he inaugurated are still active and fruitful. The colony at Templeton, to which we have before alluded editorially, has proved a complete success. It accommodates feeble-minded boys and men and provides for them active and at the same time useful employment.

The superintendent, Dr. W. E. Fernald, calls attention in his report to many facts of interest. It is encouraging, in the first place, to observe that of 97 admissions 51 were young, teachable pupils capable of much improvement. There were 269 applications for admission during the year, many of whom have been promised accommodation as soon as the new dormitories are completed. Attention is also called to the fact that one of the functions of a school for the feeble-minded is to afford clinical instruction for students of medicine and others interested in the psychological problems which the idiot class presents.

The hospitality of the management has been appreciated by the medical schools of the city as well as by classes from Wellesley, Harvard College and the state normal schools, whose purpose is rather psychological and pedagogical than medical. We have long felt that most valuable opportunities for instruction near at hand are too much neglected, both by teachers and students. The amount of information which may be obtained by several visits to the Waverley School, or to allied institutions, is very much greater than can be had by ordinary methods of instruction. Not only are many patients of a similar sort gathered together in one place, but the mental impression which such visits make upon the student's mind is often incalculably great. If the institutions are willing to offer this hospitality to students, it should be accepted far more completely than is at present the case. The Waverley School has subserved a further and wide-reaching function in providing information on methods of teaching this type of children, and in serving as a source of information for physicians or parents who seek advice as to the diagnosis and home treatment of feeble-minded or otherwise abnormal children.

Each year sees a widening of the scope of this admirable institution. It is not only caring for an outcast portion of the community, but is actually making the persons who comprise it use-

ful in varying degrees to themselves and to the state. Such a work deserves the warmest commendation.

## THE ISLANDS OF LANGERHANS.

The recent work of Opie on the Islands of Langerhans has attracted much attention to these previously little understood structures. Opie showed that certain cases of pancreatic diabetes have a definite relation to lesions of the islands. This observation has been confirmed by other investigators and is based upon the assumption that these structures have a physiological function distinct from that of the rest of the pancreas, and are concerned particularly with carbohydrate metabolism, hence their importance in relation to diabetes. It has been shown by Ssobolew and Schulze that after ligation of the pancreatic duct in animals the glandular portion of the pancreas atrophies and is replaced by fibrous tissue, but that the islands are unchanged and no sugar is excreted. Under similar conditions produced by disease in man Opie has observed the same result.

Dr. R. M. Pearce, in a recent number of the *Albany Medical Annals*, takes up again the study of the Islands of Langerhans in relation to congenital syphilitic pancreatitis. Dr. Pearce finds in the study of the pancreas in congenital syphilis that the same picture of chronic inflammation is produced described by Opie as the result of obstruction of the duct with similar persistence of the islands. This persistence of the islands has not been generally recognized in young children, owing to the rarity of post-mortem examinations, and also that attention has not been hitherto particularly directed to these structures. Dr. Pearce has filled a gap in our knowledge by studying the development of the islands in human embryos and has by this study brought out certain interesting considerations with relation to the syphilitic organ.

The first study of syphilitic pancreatitis was made in 1875 by Birch-Hirschfeld. Since then a considerable number of cases has been reported. The lesion is characterized by an increase of connective tissue compressing and causing atrophy of the glandular elements. Schlesinger regards the increase of connective tissue as of perivascular origin. Dr. Pearce, through the courtesy of various physicians, has been able to examine a number of cases of pancreatitis of the syphilitic form in infants. He finds as a most striking feature of the alterations a persistence of the Islands of Langerhans in spite of a general destruction of the glandular acini. The islands apparently show no evidence of degeneration or atrophy or an ingrowth of connective tissue, from which it is assumed that they are anatomically independent. Certain histological evidence goes to show that in their early development they are in connection with the acini, and that their development is interrupted in the case of syphilis by an ingrowth of connective tissue leading to the atrophy of the glandular tissue and sparing the more resistant islands. Dr. Pearce, in his embryological work, has substantiated this point of view, before reached by Opie.

From a comparison of the pancreas under normal conditions and as affected by the presence of syphilis, it appears that syphilitic infections occur in the third or fourth month while the islands are still connected with gland tubules. In general the microscopic picture of the normal pancreas at the end of the third month is similar to that of the syphilitic organ at the end of the sixth or seventh month, particularly with regard to the stage of development of the islands. The ultimate factor in the resistance of the islands to disease is supposed to be their abundant blood supply. Dr. Pearce's careful study, although, as he says, adding nothing essentially new to our conception of the structures under consideration, nevertheless is a further link in the chain of evidence which has been accumulating during the past few years, and will tend to establish upon a still firmer basis the significance of the hitherto little understood Islands of Langerhans.

## MEDICAL NOTES.

A Bequest to Consumptives' Home. — By the will of the late Miss Sarah Schermerhorn the Denver, Col., Home for Consumptives receives $50,000.

Pneumonia and Consumption in Chicago.— For the week ending March 12, the deaths from pneumonia in Chicago had decreased and those from consumption had increased quite sharply.

German Congress of Internal Medicine. — The twenty-first annual German Congress of Internal Medicine will be held at Leipsic, April 18 to 21, under the presidency of Dr. Merkel of Nuremberg. The main topic of discussion will be arteriosclerosis.

Address on Dr. Joseph O'Dwyer. — W. P. Northrup, M.D., addressed the J. C. Wilson Medical Society of Philadelphia on Feb. 19. Subject:

" Joseph O'Dwyer, M.D. The method of his work on Intubation; The measure of his success; The interest of both to young practitioners."

Centenarians. — Mrs. Sarah Coover, said to have been born in 1798, died March 1, at Mechanicsburg, Pa. Her extreme age, nearly one hundred and six years, is said to be well attested.

Mrs. Sarah B. Chapman has also recently died at the reputed age of one hundred and one years in Bethel, Vt.

The Butler Typhoid Epidemic. — The emergency hospital for the purpose of treating typhoid patients at Butler, Pa., has been closed. In upwards of 1,300 cases 115 deaths occurred. It is reported also that nearly 10% of the number of nurses employed were infected during the course of their service.

Medical Practice by Foreigners in Spain. — The question of medical practice in Spain by holders of foreign diplomas has recently formed the subject of animated debates in the Spanish senate. The discussion has so far led to no definite conclusion, but from the reports that have been published it may be gathered that a foreign doctor can at present practice his profession in Spain without the necessity of submitting to any further examination.

French Congress of Climatotherapy and Hygiene of Towns.— As previously announced, the first session of this Congress of Climatotherapy and Hygiene of Towns will be held at Nice the 4th to the 9th of April, under the presidency of Professor Chantemesse of Paris. It is officially announced that members of the congress will be allowed large reductions over many of the railway lines of France and Corsica, and also on certain of the steamship lines. Italy has also granted reductions in railway fares, and many hotels have adopted similar reduced prices. The members of the congress will officially visit Monaco, Mentone, Cannes and Grasse. The Prince of Monaco will hold a reception at the palace, and there will be a gala performance at the casino. Other excursions and festivities will likewise take place. In order to take part in the congress it will be necessary to remit to the treasurer, Dr. Bonnal, 19, Boulevard Victor-Hugo, Nice, the amount of twenty francs, accompanied by the subscriber's visiting card, titles, etc.

Further information will be supplied by Dr. Hérard de Bessé, General Secretary, Beaulieu s. m. (Alp.-Marit.).

Death of Dr. Peter Dettweiler. — Dr. Peter Dettweiler died Jan. 13, 1904, after an active life devoted largely to the advancement of the treatment of tuberculosis. He was born in Hesse, Aug. 4, 1837, and took his medical degree in 1863. While serving as surgeon in the Franco-Prussian war, he contracted tuberculosis, underwent sanatorium treatment, recovered his health and became assistant of Dr. Brehmer at Goerbersdorf, where he had formerly been a patient. After a service of six years at this institution, he founded the sanatorium at Falkenstein, which has since attained a very wide reputation as a pioneer in sanatorium treatment. Dr. Dettweiler was the first to advocate rest in the open air, to establish the first sanatorium for consumptive poor and in general to supply the stimulus which has since resulted in the development of this line of treatment.

He has written several works on the general subject of the treatment of tuberculosis, and has long been looked upon as the leader in the rational treatment of the disease. He was personally attractive, had an unusual influence over his patients and was always cordial in his treatment of visitors to his sanatorium.

Adirondack Cottage Sanitarium. —Among many statements of interest in the nineteenth annual report of the Adirondack Cottage Sanitarium, the following are worthy of quotation:

" Of 1,500 cases which have been discharged from two to seventeen years ago, 334 could not be traced, leaving 1,166 which have been traced. Of these, 46.7% are still living — 31% are known to be well at present, in 6.5% the disease is still arrested, 4% have relapsed, 5.2% are chronic invalids — and 53.3% are dead. Thus we learn that 31% of all cases discharged from two to seventeen years ago have remained well."

. . . . .

" The work done by the Sanitarium during the past year may be summed up briefly as follows: Two hundred and ninety-eight patients have been treated. To 257 of these the institution has furnished the best possible means of restoration to health at a nominal cost, and to 41 entirely free of cost to them.

" As a further means of increasing the beneficent work of this institution a plan has been devised, deserving of general sympathy and cooperation, whereby persons partially recovered, who yet are not able to do the work of persons perfectly well, may still be provided with remunerative employment in proportion to their

strength and capacity. To meet this need a co-operative employment bureau has been established, and persons interested are requested to indicate to this bureau possible positions for tuberculous persons capable of working, but who are in no way a menace to others."

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon March 9, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 47, scarlatina 33, typhoid fever 12, measles 186, smallpox 0.

Bequests to Hospitals. — Through the will of the late Mr. George B. Upham of Milton, Mass., the Massachusetts General Hospital receives $10,000.

Mr. Nathaniel A. Moody, who recently died at his home in Waltham, Mass., makes the Waltham Hospital the sole ultimate beneficiary of his estate, valued at about $20,000.

Sharon Sanatorium. — On recommendation of the directors, it was voted at the annual business meeting to change the name of the Sharon Sanitarium to that of Sharon Sanatorium.

The president, Prof. William T. Sedgwick, presided, and the following-named directors and officials were elected: President, William T. Sedgwick; treasurer, Nathaniel H. Stone; secretary, Mrs. Charles A. Porter; directors, Augustus Hemenway, Rev. Edmund F. Merriam, Arthur Dehon Hill, Mrs. Henry P. King, Mrs. W. T. Sedgwick, Vincent Y. Bowditch, M.D., Robert W. Lovett, M.D., L. Vernon Briggs, M.D.; medical director, Vincent Y. Bowditch, M.D.; consulting physician, Frederick I. Knight, M.D.; resident physician, Walter A. Griffin, M.D.; matron and superintendent, Miss Alice R. Hodges.

It was stated at the meeting that the percentage of patients — women of limited means with early symptoms of consumption — who have regained their health since entering the institution from the opening in February, 1891, and up to two years ago has been large. Generous public support is solicited to supply the large yearly deficit.

NEW YORK.

Gift of a Park to Utica. — By the will of William G. Helligan, late president of the Herkimer County Bank, the city of Utica, N. Y., comes into possession of a beautiful park of forty-five acres and a fund of $12,000 to maintain the property.

Resignation of Dr. Peterson. — Dr. Frederick Peterson of New York, President of the State Commission in Lunacy, has presented to Governor Odell his resignation as a member of that body. The reason assigned is that the duties of the position interfere to too great an extent with his private professional work.

Appointments in Medical Department, Columbia University. — At a meeting of the trustees of Columbia University held March 7, the following appointments in the medical department were announced: Dr. Edwin B. Cragin, Professor of Obstetrics, to fill the chair of Gynecology (made vacant by the resignation of Dr. George M. Tuttle) until further action by the trustees; Dr. Henry McMahon Painter, Clinical Professor of Obstetrics; Dr. Gorham Bacon, Clinical Professor of Otology, vice Dr. Albert H. Buck, resigned; Dr. William K. Simpson, Clinical Professor of Laryngology, vice Dr. George M. Lefferts, resigned. The trustees have established eight scholarships in the College of Physicians and Surgeons, each of the money value of $250 annually. Four of them will be known as William N. Vanderbilt scholarships, in memory of Mr. Vanderbilt's gifts to the school, and the remaining four will be faculty scholarships.

Crowded Hospitals. — All the hospitals in the city are crowded this winter to an almost unprecedented extent, principally owing to the prevalence of pneumonia and other chest diseases. Dr. John W. Brannan, President of the Board of Trustees of Bellevue and Allied Hospitals, has made the following statement in reference to the existing conditions: "This overwhelming demand upon the hospitals is very largely the result of the extremely severe weather we have been having. Persons physically strong and able-bodied, who scarcely knew what it meant to be sick a day since they were born, have yielded to the trying weather of the past few weeks. There is, however, another cause which has had a good deal to do with the situation. The poorer people find times so hard that they are unable to get work and to provide for their families as they used to do. Consequently, when any member of the household becomes ill, he is at once sent to a hospital, as a matter of necessity." In order to relieve the present congestion, Dr. Brannan announced that a number of tents, similar to those at the Metropolitan Hospital tuberculosis infirmary, would be put up without delay. These tents, so-called, will be partly of wood and partly

of canvas, and will be heated either by stoves or steam pipes. "The only permanent relief for Bellevue, however," he said, "will come when it gets its new building, but, of course, that will not be for some time yet. We are enlarging the other three hospitals, and this work will be pushed with all possible dispatch."

## Miscellany.

### A CONTRAST.

A correspondent sends us the following extracts from the second volume of Viscount Wolseley's *Story of a Soldier's Life* published recently. They deserve to be put side by side:

No one ever fell sick [on the Red River expedition]. I was asked to have our senior doctor promoted when the expedition came to an end, but refused, because he had had nothing to do, there never having been any sick for him to cure (p. 208).

So ended the Red River expedition. . . . As far as fighting was concerned it was a bloodless campaign, and although great physical difficulties were encountered and manfully overcome by the troops employed, not a life had been lost (p. 223).

Lord Wolseley does not go on to say that the honors which came to him as the leader of this bloodless expedition were undeserved, yet the analogy is perfect. If the senior doctor had nothing to do because nobody was sick, the senior fighter can have had nothing to do because nobody fought. How long will it be before military commandants and reconstitution committees begin to take a rational view of hygiene as an integral part of military administration, without which the most beautiful scheme with family trees and new offices and new titles for old offices must come to the ground when put to the actual test of war? — *British Medical Journal.*

### REPORT OF THE BUTLER, R. I., HOSPITAL.

The annual report of the Butler Hospital shows that there were in the hospital Jan. 1, 175 patients, of whom 90 were women and 85 men. During the year 56 women and 40 men were admitted, making the entire number of patients under treatment 271. Dr. Blumer, the superintendent, makes a vigorous plea for a more rational point of view regarding the popular attitude toward mental disorders, and draws attention to the fact that the Butler hospital is more and more fulfilling the function of an institution for the care of persons not to be regarded as insane.

Dr. Blumer says in part:

It cannot be too often protested that there is no stigma of insanity. Indeed, in these New England communities of ours, where brains are more apt to be highly organized than in less favored parts of the country, it may even be a mark of distinction to possess a mind of sufficient delicacy to invite damage under the stresses of life, while the stolid and exceedingly commonplace Philistine who calls his brother Raca conserves unscathed his modicum of gray matter and is serenely unmindful of the scriptural consequences of his somewhat absurd detraction. Year by year and little by little the patient champion of the claims of the insane to respectful consideration as invalids makes headway against ignorant or loose conceptions of the kind of which complaint is here made. Slowly the idea that insanity is a symptom of disease, no less than toothache, and no more disgraceful, is gaining ground. People are becoming familiar with forms of mental derangement other than those which have extreme outward manifestations and know that nowadays the patient goes to a hospital because he is sick and in need of treatment, and not because his conduct has made him a menace to himself or the community. A favored few now apprehend that there is no essential difference between nervous and mental diseases, the latter merely showing a greater prominence of the mental symptoms. This growing perception of essential unity marks a welcome advance, because the neurosis was wont always to bear herself with a strut, and even looked down upon her bigger sister, the psychosis, as of a different and lower order.

### THE VALUE OF EXERCISE.

Jay W. Seaver, M.D., of Yale University, President of the Chautauqua School of Physical Education and of the American Institute of Physical Culture, spoke informally before the physicians of Boston and vicinity, at the rooms of the institute, 29 Beacon Street, Boston, Saturday afternoon, March 12.

Dr. Seaver has the unique distinction of having personally made a physical examination of over 30,000 persons, and he has in his possession complete records of their measurements. He referred to exercise as a necessity of life, just the same as sunlight, fresh air and food, because no healthy animal grows into vigorous maturity without performing many movements that are in themselves useless and unnecessary so far as accomplishing work is concerned, but the movements are taken from an innate restlessness that makes the young child play instead of rest. All play is founded on physical activity, and this activity becomes recreative, restful and helpful, according to the needs of the body. Again, exercise is a therapeutic means that cannot be ignored. For over a hundred years attention has been given to what has been called medical gymnastics in the treatment of various forms of disease, and the method has gradually grown in the estimation of medical men until it is the chief agent used in treating many cases of deformity, malnutrition and nervous conditions. Again, exercise may be looked upon from the esthetic standpoint, as a means of producing a more symmetrical and artistic physical development, but more especially in producing a graceful carriage and a control of the body. Emphasis, however, was laid upon exercise as a developmental and therapeutic measure, a means of securing such strength and activity as is characteristic of health and ability to do the work of life. This is accomplished largely through the influence that exercise has upon the nervous system, in giving it a normal outlet for the force that is generated in the brain; as it were, putting an implement in the hands of the brain for the accomplishing of its purpose; and, in the second place, it improves the circulation, so that each part of the body has its due amount of nutrition, and its waste material is swept away, so that the tissues are not poisoned by the products of ordinary wear and tear. The problem of nutrition to-day is not so largely a matter of abundance of food as it is an economic use of food by the system, and this economy is carried out by adequate circulation that eliminates waste and overcomes local stagnation. Modern life has its decided tendency to limit the physical activities, and many of the ills that require the attention of physicians are due to the physical restraints that encumber life. The modern business man does not get his

morning walk to his place of business; his communications with other business men are carried on over the telephone, and the brain in general attends to a multitude of details that in previous generations would have been mixed in with a large number of physical activities that would have reacted favorably upon his general nutrition. Now, he must secure exercise of his muscles in some artificial way. He cannot even spend the time to attend a gymnasium, and it becomes necessary for him to have a routine of movements prescribed by some one who has made a study of physical conditions and the exercises that will be most helpful for each particular case, in exactly the same way that a physician selects from a large number of medicines the ones that his judgment decides will be beneficial to the patient, or he prescribes a diet suitable for his physical needs.

To acquire a ripened judgment as to suitable exercises several things are necessary:

*First*, there must be a thorough training in the knowledge of the anatomy and physiology of the human body.

*Second*, there must be a practical knowledge of exercise and its various reactions upon the body.

*Third*, there must be a knowledge of the pathological conditions involved in any abnormal state, and an appreciation of how these abnormal conditions may be modified by the various forms of exercise.

*Fourth*, there must be experience in the prescription of exercise, so that a careful estimate may be made of the personal idiosyncracy of each pupil, and such exercises given as shall produce the desired result. The body must be made not only strong muscularly, but it must be trained to work smoothly. The excellence of any machine does not depend upon the great strength of some few of its parts, but its excellence will depend largely upon the smooth and coordinate movement of each part. So in the human body the mere possession of great muscular strength is of no special value, but a fine co-ordinate action of all the parts constitutes perfect health, and this should be the aim of every individual, as it certainly is the aim of the American Institute of Physical Culture.

## THE BALTIMORE TUBERCULOSIS CONFERENCE.

At a conference held in McCoy Hall on the evening of Jan. 28, presided over by Prof. William H. Welch of Baltimore, at which a number of representative physicians interested in the study of tuberculosis from various parts of the country were present, the following motion by Dr. H. M. Bracken of St. Paul, Minn., and amended by Dr. William S. Thayer of Baltimore, was unanimously adopted: "Moved that the chair be authorized to appoint a committee, with power to act, to consider the conditions existing with regard to the proposed tuberculosis congress and other national antituberculosis associations in the United States; also to consider the formation of a national committee to represent this country at the International Congress at Paris, and that the members of this conference will abide by the action of the committee — also that this committee have power to add to its membership."

In accordance with this motion Prof. William H. Welch appointed the following gentlemen on this committee: Prof. William Osler, Baltimore, Md.; Dr. Edward L. Trudeau, Saranac Lake, N. Y.; Dr. Theobald Smith, Boston, Mass.; Dr. J. G. Adami, Montreal, Canada; Dr. Vincent Y. Bowditch, Boston, Mass.; Dr. S. A. Knopf, New York City; Dr. Mazyck P. Ravenal, Philadelphia, Pa.; Dr. Arnold C. Klebs, Chicago, Ill.; Dr. Edward G. Janeway, New York City; Dr. Henry Barton Jacobs, Baltimore, Md.; Dr. H. M. Bracken, St. Paul, Minn.; Dr. Lawrence F. Flick, Philadelphia, Pa.; Dr. Herman M. Biggs, New York City.

A meeting of this committee was held in New York on the evening of Feb. 27, and various plans were discussed, but it was voted to take no definite action till another meeting, to be held probably in New York early in April, when it is hoped that some final action will be taken towards forming a national committee to represent this country at the International Congress at Paris.

## Correspondence.

### ALCOHOL AND ALCOHOLISM.

Boston, Feb. 21, 1904.

Mr. Editor: I should like to call the attention of your readers to a bibliography of the scientific literature of the world upon the subject of "Alcohol and Alcoholism" just published at Berlin under the editorship of E. Abderhalden with the collaboration of thirty or forty physicians on both sides of the Atlantic. It is a book of 500 pages and contains about 12,500 titles so admirably systematized that any one who wishes to lay his hand upon more important references on any branch of this subject can easily do so. In the selection of articles for this work the collaborators have aimed to exclude all that was not of definite scientific value. In one section of the work out of upwards of 200 articles examined, only fourteen were chosen on account of the ephemeral character of the remainder. What we have in this bibliography, therefore, is a list not of all that has been written on the subject, but only of all that is worth while.

The work is divided into two main sections, the first dealing with the scientific and medical aspects of alcohol; the second with its sociological bearings. In the first section we have about 1,500 titles referring to the *chemistry* of alcohol and alcoholic beverages, more especially the process of the preparation and fermentation of liquors and the organisms used in this process. One of the subordinate chapter headings in this section bears this interesting title: "Spontaneous Changes and Diseases of Alcoholic Liquids. Pathology of the Organisms used for the Preparation of Alcoholic Drinks."

The next subdivision includes the psychological and toxicological effects of alcohol and alcoholic beverages, the absorption, metabolism and excretion of the drug and its influence upon the functions of the nervous, muscular, respiratory and circulatory apparatus (about 750 titles in this section). Later divisions are concerned with the therapeutical effects of alcohol (about 700 articles), its pathological effects (something over 2,000 references) and its psychological effects (also about 2,000 references). The concluding section of the first part of the book is concerned with the therapeutics of alcoholism and the diseases resulting therefrom (about 1,500 references).

In the sociological chapters of the work the spread of alcoholism in different countries, the work done to combat it both by the state and by private associations and the statistics of its production and consumption are represented.

The work is excellently arranged, full use being made of different varieties of type as an aid to classification and arrangement. Paper and print are excellent. Altogether a very useful work.

Very truly yours,
Richard C. Cabot, M.D.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, FEB. 27, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseases. | Typhoid fever. |
| New York . . | 3,908,644 | 1,797 | 432 | 20.70 | 28.54 | 3.17 | 3.15 | .27 |
| Chicago . . . | 2,021,086 | 674 | 173 | 18.02 | 20.15 | .67 | 3.73 | 1.33 |
| Philadelphia | 1,407,968 | 693 | 184 | 26.40 | 22.22 | 1.58 | 3.75 | 3.31 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 250 | 61 | 20.08 | 20.00 | 1.56 | .52 | .52 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 158 | — | 25.31 | 28.48 | .63 | 5.69 | 12.02 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 74 | 28 | 16.21 | 33.77 | 5.40 | 2.70 | 1.35 |
| Boston . . . | 617,950 | 216 | 59 | 20.83 | 25.00 | 1.38 | .92 | .46 |
| Worcester . . | 136,925 | 36 | 12 | 2.78 | 8.33 | — | — | — |
| Fall River . . | 119,349 | 42 | 20 | 23.81 | 30.95 | — | 9.52 | — |
| Lowell . . . | 104,402 | 37 | 14 | 18.91 | 32.42 | — | — | 5.40 |
| Cambridge . | 100,998 | 23 | 3 | 17.39 | 13.04 | — | — | — |
| Lynn . . . . | 73,875 | 28 | 5 | 10.71 | — | 3.57 | — | — |
| Lawrence . . | 72,348 | 29 | 12 | 27.58 | 27.58 | — | 10.34 | — |
| Springfield . | 72,020 | 24 | 4 | 8.33 | 8.33 | — | — | — |
| Somerville . | 70,413 | 27 | 6 | 3.70 | 7.40 | — | — | — |
| New Bedford | 68,863 | 26 | 7 | 11.55 | 15.40 | — | — | — |
| Holyoke . . . | 50,538 | 11 | 7 | 9.09 | 36.36 | — | — | — |
| Brockton . . | 46,601 | 11 | 2 | 18.18 | — | 9.09 | — | — |
| Newton . . . | 39,310 | 5 | — | — | 20.00 | — | — | — |
| Haverhill . . | 39,061 | 10 | 2 | 20.00 | 20.00 | — | — | — |
| Malden . . . | 37,205 | 11 | 4 | — | 18.18 | — | — | — |
| Salem . . . . | 37,188 | 13 | 2 | — | — | — | — | — |
| Chelsea . . . | 36,499 | 16 | 5 | 12.50 | 6.25 | — | 6.25 | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 13 | 3 | 30.80 | 7.70 | — | — | — |
| Everett . . . | 30,209 | 3 | — | — | — | — | — | — |
| North Adams | 29,201 | 5 | 3 | 80.00 | 20.00 | 40.00 | — | — |
| Quincy . . . | 26,798 | 5 | 1 | — | — | — | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 8 | 2 | 12.50 | 25.00 | — | — | — |
| Brookline . . | 23,576 | 6 | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | 8 | — | 12.50 | 37.50 | 12.50 | — | — |
| Medford . . | 21,956 | 5 | 1 | — | 40.00 | — | — | — |
| Chicopee . . | 21,692 | 10 | 4 | 30.00 | 10.00 | — | — | — |
| Northampton | 20,314 | 10 | 2 | 10.00 | — | — | — | — |
| Beverly . . . | 15,807 | 4 | — | 25.00 | 25.00 | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 2 | 0 | — | 50.00 | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 5 | 2 | — | 40.00 | — | — | — |
| Newburyport | 14,478 | 7 | 0 | 42.90 | — | — | — | — |
| Woburn . . . | 14,815 | — | — | — | — | — | — | — |
| Melrose . . . | 13,819 | — | — | — | — | — | — | — |
| Westfield . . | 13,809 | 4 | — | — | 25.00 | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 2 | — | — | — | — | — | — |
| Revere . . . | 13,609 | 4 | 1 | — | — | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 8 | 2 | 25.00 | 12.50 | — | — | 12.50 |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 1 | — | — | 100.00 | — | — | — |
| Weymouth . | 11,350 | 4 | — | 25.00 | 50.00 | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 4,325; under five years of age, 1,123; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 906, acute lung diseases 1,068, consumption 429, scarlet fever 55, whooping cough 8, cerebrospinal meningitis 8, smallpox 12, erysipelas 17, puerperal fever 20, measles 31, typhoid fever 60, diarrheal diseases 132, diphtheria and croup 89.

From whooping cough, New York 2, Philadelphia 2, Baltimore 1, Pittsburg 1, Lawrence 1, Holyoke 1. From smallpox, Philadelphia 12. From cerebrospinal meningitis, New York 5, Baltimore 1, Somerville 1, Chelsea 1. From erysipelas, New York 8, Chicago 3, Baltimore 2, Boston 3, New Bedford 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,425, for the week ending Feb. 13, the death-rate was 18.4. Deaths reported, 5,396; acute diseases of the respiratory organs (London) 165, whooping cough 182, diphtheria 61, measles 93, smallpox 7, scarlet fever 31.

The death-rate ranged from 6.0 in Smethwick to 29.2 in Newport (Mon.); London 17.7, West Ham 18.6, Brighton 16.9, Southampton 16.2, Plymouth 17.4, Bristol 16.9, Birmingham 22.8, Leicester 18.8, Nottingham 19.1, Liverpool 20.9, Bolton 21.7, Manchester 23.0, Salford 20.7, Bradford 17.7, Leeds 21.2, Hull 16.4, Cardiff 17.2, Rhondda 27.7, Wigan 19.9.

## METEOROLOGICAL RECORD.

For the week ending Feb. 27, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. . 21 | 30.44 | 30 | 42 | 18 | 69 | 63 | 66 | W | S | 5 | 15 | C. | O. | 0 |
| M . 22 | 29.64 | 40 | 49 | 30 | 100 | 86 | 91 | S W | W | 20 | 30 | R. | C. | .75 |
| T. . 23 | 29.82 | 36 | 44 | 27 | 64 | 48 | 56 | S W | S W | 16 | 20 | C. | F. | 0 |
| W . 24 | 29.58 | 33 | 40 | 26 | 100 | 94 | 97 | S | W | 3 | 7 | N. | N. | .23 |
| T. . 25 | 29.88 | 19 | 26 | 12 | 41 | 53 | 47 | W | N W | 24 | 20 | C. | C. | .02 |
| F. . 26 | 30.32 | 18 | 26 | 10 | 53 | 42 | 48 | N W | N | 15 | 7 | C. | C. | 0 |
| S. . 27 | 30.54 | 22 | 29 | 14 | 66 | 77 | 72 | N | S E | 16 | 6 | N. | N. | .01 |
| ☞ | 30.03 | | 37 | 20 | | | 68 | | | | | | | 1.01 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

DELAYED PUBLICATION. — The strike, now happily at an end, among printers and pressmen is responsible for continued delay in issuing the JOURNAL.

## RECENT DEATHS.

HENRY ALBERT RUNDLETT, M.D., of Brooklyn, N. Y., died from pneumonia on March 8. He was graduated from the Harvard Medical School in 1887, and was in the forty-eighth year of his age.

VERRANUS MORSE, M.D., of Brooklyn, N. Y., died on March 9. He was born in Springfield, N. H., in 1818, and was graduated from Dartmouth College in 1845, and from the Medical Department of the University of the City of New York in 1849. Dr. Morse was one of the founders of the Young Men's Christian Association in New York City, and for many years was prominently identified with the work of the society.

MOSES D. KNIGHT, M.D., of Clinton, Hunterdon County, N. J., died on March 6 at the age of seventy years.

CHARLES T. WHYBREW, M.D., of New York, a graduate of the College of Physicians and Surgeons in the year 1870, died on March 8.

## BOOKS AND PAMPHLETS RECEIVED.

Annual Reports of the President and the Treasurer of Harvard College, 1902–3.

Seventy-eighth Annual Report of the Massachusetts Charitable Eye and Ear Infirmary for the year 1903.

Aseptic and Antiseptic Preparations and Treatment of Emergencies after Abdominal Surgical Operations. By George Wackerhagen, M.D. New York: E. R. Pelton. 1904.

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# Original Articles.

## FORCIBLE CORRECTION IN LATERAL CURVATURE OF THE SPINE.[1]

### Fourth Paper.

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The problem to be met in the treatment of severe lateral curvature with fixed bony changes is a perfectly definite one. A clear understanding of the obstacles to be met and of the means at our disposal for meeting them is essential to successful treatment.

The spinal column having curved to one side has in the course of years become fixed in the deformed position. In addition to the side curve, a rotation or twist in the length of the column has occurred at the seat of the main and compensatory lateral curves. As the result of the maintenance of the vicious position over a long period of time, covering part of the period of growth, changes in bones, muscles, ligaments and intervertebral discs have occurred. The individual vertebræ have become compressed on one side and twisted by the rotation. The ligaments and muscles have become adaptively shortened on one side and stretched on the other and the intervertebral discs to a greater or less extent have become compressed on one side. The region of the vertebral column involved by the curve has lost its normal mobility and is partly or wholly stiff. There are secondary changes in the thorax and its contained organs but these are secondary also in importance.

It is obvious that in the upright position gravity works to increase the deformity by exerting pressure upon the concavity of the curves already atrophied by an abnormal weight-bearing. Of the twenty-four hours in each day only some eight or ten at most are spent in recumbency. During the remaining fourteen or sixteen hours the vertical position is assumed and gravity is at work.

In formulating the relative value of the treatments proposed for the rectification of these severe structural changes in scoliosis it may not be unfair to consider the question on general grounds by comparing the condition, so far as the resultant deformity is concerned, to the common condition known as knock-knee. The bodies of the vertebræ in the curved part of the spine have become affected in their growth so that they are smaller on the side of the concavity of the curve and have become wedge-shaped and the planes of their articulation with each other have become oblique to the horizon; that is, a condition mechanically to be compared to knock-knee exists between each two of the deformed vertebræ.

It may be permissible to consider for a moment the means of correction at our disposal in knock-knee to see what analogous methods may be useful in correcting an analogous mechanical condition in the spine.

[1] Read before the Boston Society for Medical Improvement, Dec. 21, 1903.

The means to be used in knock-knee are: (1) Massage, gymnastics and manual manipulation; (2) braces; (3) prolonged recumbency in a corrected position; (4) operation.

(1) Gymnastics, etc. If one took a girl of twelve with bony deformity sufficient to cause knock-knee and for an hour daily massaged, manipulated and exercised the legs one would expect but slight if any improvement. Even a treatment extending over several hours a day with the use of apparatus to localize and make more effective the exercises would hardly seem likely to prove efficient in the long run.

*Gymnastics.* The purely gymnastic treatment of severe structural scoliosis is to-day being largely pursued by two classes of persons. First by irresponsible masseurs and medical gymnasts who hold as a tradition that gymnastic exercises are curative or at least helpful in scoliosis, and, second, by competent surgeons who do not believe in corsets or supports.[2] The former class serves only to bring the legitimate use of gymnastics for scoliosis into disrepute; the latter class use the gymnastics understandingly and on the whole take a pessimistic view of the results to be obtained in severe scoliosis. The exercises of course are helpful so far as they go. They improve the muscular condition and by the development of the muscles of the back and sides they obscure the curve of the spinous processes and equalize the contours of the body. Occasionally such gymnastics produce marked improvement in the patient's attitude.[3]

But to expect free muscular exercises to straighten, to any extent, curves caused by deformity of the vertebral bodies seems unreasonable.

Gymnastic treatment after forcible correction and in connection with effective support is, however, of the greatest value and may well be reckoned one of the essentials of successful treatment.[4]

*Intermittent force and gymnastics.* The use of intermittent corrective force in the treatment of the severer forms of lateral curvature remains to be spoken of. In connection with the use of gymnastics the combination forms to-day probably the most common treatment in use here and in Europe in the hands of competent specialists.

There are two aims of treatment to be kept in mind in this as in every form of treatment. The spine must be made more flexible and muscles must be developed to hold the improved position made possible by this increased flexibility. The treatment may be therefore divided into two heads: (1) Flexibility; (2) correction.

Flexibility is obtained by hanging and head suspension, active bendings and passive stretchings to one side; by the application of side force during suspension by the appliances of Hoffa,[5] Weigel,[6] Wullstein[7] and Schede,[8] and by the appliances of Schulthess.[9] All these measures strive by their daily use to loosen up

muscles and ligaments to enable the patient to assume a more correct position. They are of course useless without supporting and corrective muscular development, for flexibility gained without means of retaining it does more harm than good.

The correction or other part of the treatment is to be obtained by general and special muscular exercises, including the raising of heavy weights, etc. But free standing exercises are with difficulty accurately localized where they are needed and compensatory curves are likely to be increased.

The best development of such corrective work is to be found in the forms of apparatus devised by Schulthess, where resistive and active exercises are given in appliances which accurately localize the movement and control and regulate its force. They are described in detail by him.

(2) *Braces and corsets.* It is pretty generally admitted that the corrective effect of braces in straightening the curves in severe scoliosis is a very slight one. For the most part they are now used for this purpose by instrument makers who sell appliances which are largely worthless and by physicians unfamiliar with the problem of treatment who refer their patients to the instrument shops.

To compare the condition again with knock-knee one would expect but slow gain from the use of braces in a case of knock-knee in a child twelve years old. Yet here the femur and tibia furnish excellent levers for the use of corrective force and the force can be applied directly to the inner surface of the knee.

In severe scoliosis no such direct application of force is possible, as side pressure must be transmitted through the ribs and on account of the mobility of the column a long or accurate leverage is impossible as far as corrective force is concerned.

Braces and corsets are, however, of the greatest use in maintaining the correction obtained by the use of force or by other means. The matter of their best form and construction is discussed at length in other places and many admirable forms exist.[10]

(3) *Prolonged recumbency* in the treatment of scoliosis is the relic of a bygone tradition and need not be discussed, being rarely advocated at present.

(4) *Operation.* The question of the operative relief of scoliosis is still subjudice. An operation was proposed by Volkmann in 1889, consisting of resection of the ribs on the convex side of the curve, and this operation was also performed by Hoffa[11] with fair result. A similar operation was thought out by N. M. Shaffer of New York about fifteen years ago and spoken of to the writer at that time but never put on record, as the general surgeons to whom it was referred refused to sanction it.[12]

The latest and best operative correction has been obtained by Hoke[13] of Atlanta, Ga., who resected the ribs on the convex side of a girl of nineteen and lengthened those of the concave side in a severe dorsal curve. By the application of a corrective jacket great improvement was obtained.

These forms of treatment excepting the operative are not, however, new and have been tested by years of use, and the best comment on their value is to be found in the divided opinion of writers as to which is the best, and in the frequent expressions from competent persons of skepticism as to any great improvement to be expected in severe scoliosis under any therapeutic measures.[14]

It remains, therefore, to look the ground over once more to see if in the application of general surgical principles there is not some more rapid, rational and effective way of attacking the deformity than the methods described.

Of factors making for spontaneous improvement there are none so soon as a certain stage of the deformity is reached. Of conditions to be utilized for the improvement there are two; one, of great significance, was elucidated by the experiments of Wullstein.[15] Some young dogs were kept for months with the spines laterally flexed by means of bandages and springs. At the end of this time true lateral curvature with marked bony deformity of the type described above was present. It would seem fair to state from this that growth in a distorted position of the spine tended to produce deformity of the vertebræ at the points of greatest pressure and that Wullstein's experiment needed only to be reversed to produce improvement in the severer cases of curvature in children still growing.

The second consideration bearing on the treatment is to be found in certain procedures in the manipulation for club foot, in which by forcible manipulation with the hands[16] or a lever[17] a distorted foot with abnormally shaped and improperly developed bones is made by a few minutes' forcible stretching to assume an approximately correct position. If it is held long enough in the improved position, diminution of the deformity is secured. Two conclusions from the above-mentioned facts seem to me to bear upon the question under discussion: (1) Forcible manipulation can immediately stretch muscles and ligaments where the bones are avowedly deformed and seriously misshapen and can secure a temporary change in bony relations; (2) abnormal pressure from abnormal position during the period of growth will modify the shape of bones and stretch muscles and ligaments.

To put it still more simply the best chance of improvement in cases of severe scoliosis would seem to be (1) to use severe force to secure an improved and if possible an overcorrected position temporarily; (2) to retain as much as possible of the position thus secured during some part of the growing period. It is perfectly obvious that for this purpose a high degree of force will be necessary, especially in the case of adolescents. This force must be accurately localized during its application and the retention apparatus must be accurate and capable also of exerting retentive force of rather high degree.



CASE I. Aug., 1900.
13 years old. Brace Treatment.



CASE I. Jan., 1903.
Brace Treatment.



CASE I. Feb., 1903.
After three Corrective Jackets.



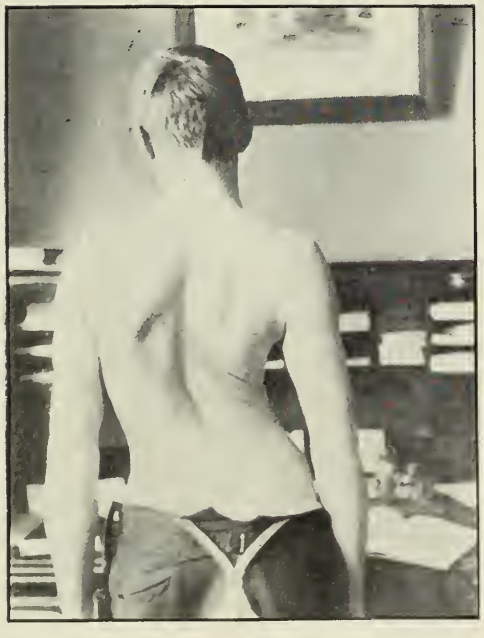
CASE I. Oct., 1903.
Retentive Jacket and Exercises.



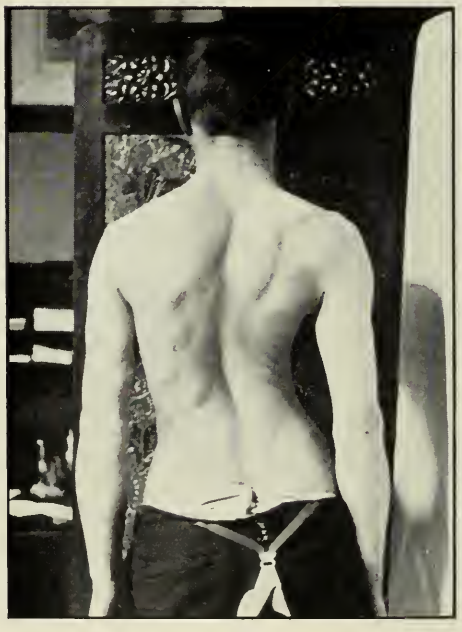
CASE I. Dec., 1903.
Position Obtainable by Self-correction with Hands.



CASE II. Aug., 1901.
18 years old. Before Corrective Jackets, after many years of Brace Treatment.



CASE II. Dec., 1901.
Some Months after Corrective Jackets, under Treatment by Retentive Jacket and Exercises.



CASE II. Dec., 1902.



CASE II. Nov., 1903.



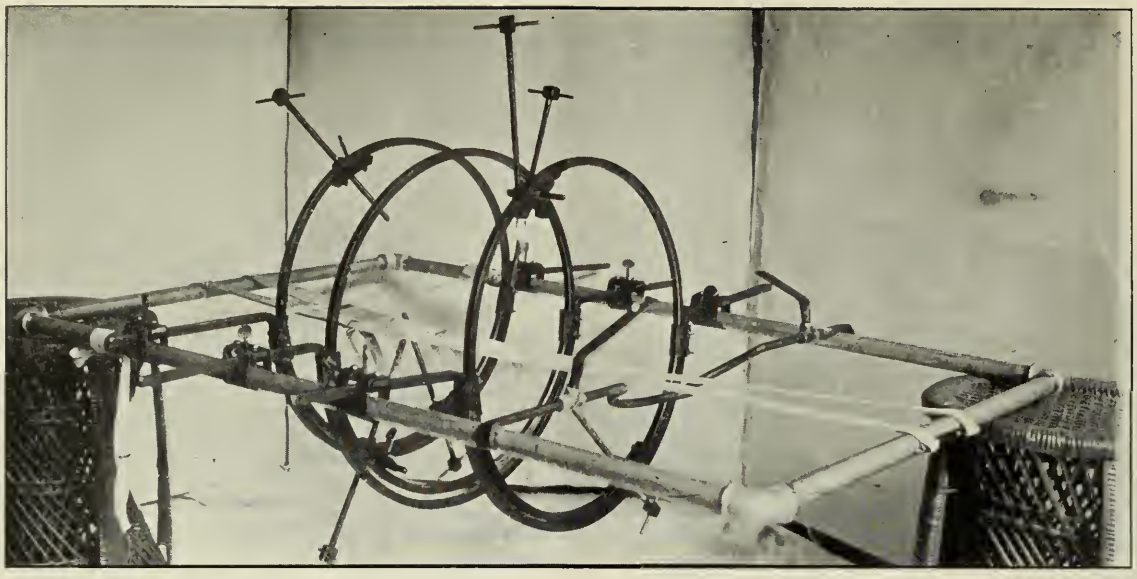
CASE III. July 7, 1903.
18 years old. Before any Treatment.

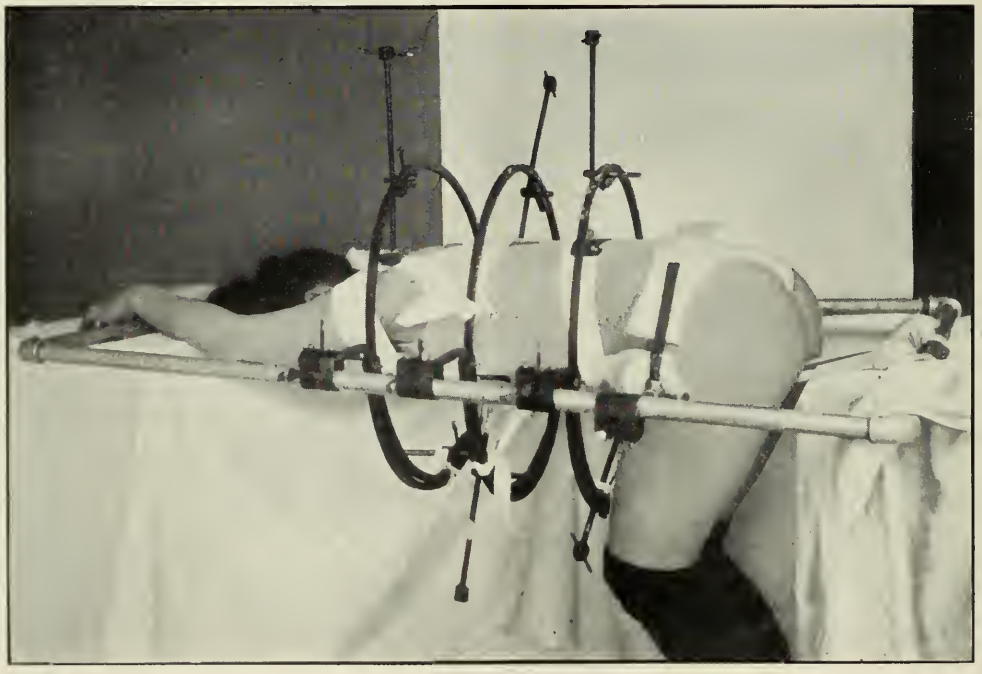


CASE III. July 14, 1903.
After one Jacket.



CASE III. Oct., 1903.
Under Treatment by Retentive Corset and Exercises.





As to how such force can best be used two mechanical conditions bear upon the application of force to the deformed and curved spine.

The least economical use of force in straightening, for example, a bent stick is to pull the two ends away from each other, *i.e.*, to straighten it by a pull in its length. The most economical use of force to straighten it is to take it by the two ends and press the point of greatest convexity against some resisting point which shall push it straight. The relative force exerted will be recognized if one is reminded how easy it is to break a bent stick by striking it on the knee while one hand holds each end and how very difficult it would be to break the same stick by a pull in its length.

Again if one wishes to secure the greatest side displacement in a flexible rod, such displacement is more easily secured when the rod is not stretched in its length. If a rubber tube, for example, is fastened to a table by two pins, one at each end, and is not put on the stretch the middle of it can easily be pulled an inch to one side by the forefinger. If, however, it is pinned to the table by two pins separated enough to hold it on the stretch it will require much more force to displace it one inch to the side. The same is true of a strip of sponge rubber or a piece of rattan.

To be sure that this theoretical consideration applied to the human spine the following experiment was made at the Harvard Medical School by the courtesy of Prof. Thomas Dwight.

A young male cadaver was laid on the face and straps passed around the body at the level of the right shoulder and the right hip. These straps were then fastened to the left side of the table holding the shoulder and hip against pressure from the left. A strap was then passed around the left side of the thorax and by means of a spring balance pulled to the right. The side deviation of the spine was then measured at four levels, the measurements being taken from a base line connecting the cervical spine and the sacrum. The measurements were all made from pins driven into the spinous processes. Three experiments were made with a side pull of 25 lbs. and the results were recorded.

A Sayre head sling was then put around the head of the cadaver still lying on the face and a traction force of 75 lbs. was made, the feet of the cadaver being fastened to the table. While the traction on the head was thus in force the same side pull of 25 lbs. was made as before and the results noted. Two experiments of this sort were made. It was found that the spine without traction was displaced to the side nearly twice as far by a definite side pull as by the same amount of side pull when traction was being made.

A confirmatory experiment was made on a boy of fifteen, using 75 lbs. of head traction and 15 lbs. of side pull. The result was the same.

The conclusion is that extension of the spine by an upward pull on the head is a corrective force in scoliosis but that much more force is required to accomplish a certain amount of side correction than is the case if the force is applied from the side.

The other conclusion is that to secure the maximum of side displacement from a given amount of side pressure the spine must be slack and not stretched in its length.

Finally, it may be said that to obtain growth in a desirable position, *overcorrection* of the existing deformity should be obtained where possible. It is obvious that to obtain this the use of great force will be necessary.

The treatment of severe scoliosis by plaster jackets applied in a corrected position is not new. But the force used has been on the whole mild and generally applied to the spine during suspension. Bradford and Brackett [18] described a frame in which the jacket was applied as the patient lay prone, but even here head traction was used. Hebel, Calot, Redard and others have also used the horizontal position.[19] Yet in 1898 Hoffa, the well-known German authority, wrote in his textbook, "Bei den Skoliosen dritten Stadiums lasst sich eine Besserung in der Contour des Rumpfes erzwingen, man kann ein weiteres Fortschreiten der Verkrummung bis zum Aeussersten verlusten und die Interkostal Neuralgien beseitigen." [20]

The whole question was given a new impetus by Calot's work on the forcible correction of the deformity in Pott's disease published in 1896, and a few articles dealing with the subject have appeared since then.[21] The later tendency has been toward the use of much greater force than was previously employed.

The most noteworthy advance in the forcible corrective treatment of scoliosis has been made by Wullstein, who has applied the above-mentioned principles with force and precision and who publishes photographs showing marked improvement in patients. His method is to forcibly extend the head while the patient's pelvis is strapped to a seat which can be tilted to make the pelvis oblique and which also can be rotated to change the relation of the pelvis to the spine. Lateral pressure is made by pads running in horizontally from the sides of the apparatus. By a combined motion of the seat and adjustable pads any degree of twist of the spine upon the pelvis may be produced. Wullstein uses an appalling amount of force in his traction, applying up to 250 lbs. of pull, and he applies a plaster jacket while the patient is thus stretched and pushed into a corrected position. This jacket embraces, as must all such jackets to be wholly efficient, the chest, shoulders and head.

I do not personally believe that Wullstein's attempt to correct rotation by a torsion of the whole spine is based upon correct principles nor that torsion can be so corrected (for reasons given in another paper),[22] but with this unimportant exception the method is progressive, rational and effective.

The amount of force required, however, is excessive, as must be the case where force is not

economically applied. He is attempting to straighten the bent stick by pulling the two ends apart, and when a great amount of force has thus been expended in stretching the spine, lateral pressure is applied, when it also must be pushed to an extreme on account of the stretching of the spine in its length.

I had been working at the same problem in the attempt to utilize the force in its most efficient way by making side pressure, that is, attempting to straighten the bent stick by bending it over something instead of trying to pull apart its ends, and published my first results in 1901.[23]

More extended experience has confirmed me in the belief that even in adults much correction may be accomplished by the use of properly directed side force and that, at least in growing persons, retention in the corrected position causes diminution of the bony deformity.

The criticism that such correction is not likely to be permanent at once presents itself. The method in its later application is too new to enable one to make the statement that such results have proved to be permanent in cases observed, consequently one must consider the probabilities on general grounds. The grounds that lead one to suppose that retention of the corrected spine in a corrected position over a sufficient period will lead to a change in the shape of the bones of the vertebral column and to a permanently improved position are as follows:

(1) Clubfoot may be cured by a similar proceeding.

(2) The bones of the feet of Chinese women of rank are seriously misshapen by retention in an unnatural position.[24]

(3) Wullstein produced bony changes in dogs by a few months of abnormal position.

(4) W. Arbuthnot Lane has demonstrated that the carrying of heavy loads by laborers will produce changes in the bony skeleton and that the changes vary according to the habitual position of the load,[25] the bones subject to the greatest pressure undergoing changes in shape.

(5) The fact that bone under pressure changes shape after growth has been reached is shown in the fact that scar tissue pressing on bone will cause a change in shape,[26] *e. g.*, on the chin.

(6) Pressure of tumors or aneurism will cause absorption of bone.

These facts all point to the conclusion that bone alters its shape under changed conditions of pressure, and that although this would be more marked during growth, the phenomenon is not unknown in adult life.

For a permanent cure, therefore, retention for some time in the corrected position is essential.

My attempt, therefore, has been to exercise as much side pressure as can be borne upon the slack spine (that is, the spine not stretched in its length). I have done this in the hope of stretching muscles and ligaments and thus in time changing the relation of vertebræ misshapen by pressure. Having thus secured an improved position I have endeavored to retain it by portative apparatus and gymnastic exercises.

No preliminary treatment in the way of stretching and forcibly manipulating the spine has been used in preparing patients for the application of the jacket. Both Wullstein and Schauz use the corrective apparatus finally to be used for the application of the jacket for several days to loosen up the spine and secure an improved position when the final application of force is made.

To secure the slack condition of the spine correction has been applied in the prone position. To diminish as far as possible the physiological curves (especially the lumbar) during the correction the legs have been flexed and allowed to hang down. In the earlier corrections the patient lay face downward on two straps of webbing tightly stretched from one end of a gas-pipe frame to the other, the legs hanging down and the feet resting on the floor or on a box. Side pressure was then made by bandages running from the side of the frame around the convexity of the lateral curves and back to the side of the frame. In this way satisfactory results were obtained, which will be shown later in the article.

But there are obvious objections to this method which aims only at correction of the lateral deformity and which does not attack the rotation.

It has been long recognized[27] that corrective retention jackets often increase the rotation by diminishing the lateral curve. It has been pointed out by the writer that in fixed curves corrective side pressure results in increase of the rotation and corrective forward pressure to diminish the rotation results in increase of the lateral deformity. The method of the writer was therefore open to the objection that it might increase the rotation permanently while improving the lateral deviation. Such would not seem to be the case in the photographs shown, but the method was obviously incomplete, theoretically in any event.

The writer's aim in devising a corrective apparatus was to keep the two corrective elements separate, that is, to correct the side curve and then by a forward or back pressure to correct the rotation while the side correction was maintained. In this way neither of the two need be corrected at the expense of the other, but the maximum of one having been obtained and held the maximum of the other was added. Either could be used alone and the relative amounts of each regulated.

Oblique pressure, which aims at securing correction of both side deviation and rotation by the same force, is less accurate and can be better used when split into its two components. Most if not all of previous apparatus has aimed at oblique corrective pressure.

The problem of the application of plaster jackets on this plan having thus presented itself was worked out mechanically by Dr. Z. B. Adams of the Boston City Hospital, at the time

assistant in the lateral curvature clinic at the Children's Hospital.

The apparatus constructed by him consisted of a heavy gas-pipe frame three by four feet. The patient lies face downward on two webbing strips running from end to end of the frame with the legs flexed. Near the bottom of the frame is an adjustable crossbar bent to fit into the flexure between the thigh and the pelvis on which the patient rests the lower part of the body. Sliding on this bar are two arms, which slide in and clamp down on the buttocks, holding the pelvis steady on the crossbar. This bar is movable from side to side in order to induce or correct curvature in the lumbar region when necessary. There are three vertical transverse rings two feet in diameter fastened to pieces on the sides of the frame so that they can be moved to any desired point along the frame. These rings are also movable from side to side and by an independent movement they can also be rotated through a half circle. Any one of these movements can be checked at any point by turning a screw. The shoulders are held by a pair of axillary straps fastened together by a strap across the chest in front. These straps are suspended from the ring nearest to the top of the frame and can be made to hold the shoulders in any desired degree of twist by a rotation of the ring.

Each ring is provided with two long screws at the two poles of the ring. These screws are adjustable upon the ring and can be set at any desired angle to it. By rotating the ring and adjusting the angle of the screws they can be made to screw down or up upon any part of the back or chest.

For the application of the jacket the patient lies on the face on the two webbing strips, the lower part of the trunk resting on the cross rod and the bars clamping the buttocks; the feet rest on the floor and the arms are extended above the head. The rings are then adjusted at the two levels where it is desired to make correction, generally in the dorso-lumbar and the dorsal regions. For side correction a bandage is fastened to one side of the ring, carried around the patient's side over a heavy pad of felt and back to the ring. The same is done to the other ring at the other level where side correction is desired, while the top ring controls the shoulders. The rings are then pulled to one side, the bandages around the patient tighten and any endurable degree of side correction obtained.

When the side correction is made the ring is rotated till the screws are opposite the points where it is desired to correct rotation. They are then screwed down on to the patient, their points being protected by sheet-iron pads two by three inches, which are covered with heavy felt. These pads are incorporated in the jacket.

The shoulders are controlled by the axillary pads attached to the upper ring along with screw pressure up or down as desired. In the correction each level is separately attacked.

The pelvis is always held firmly and cannot rotate. If two curves exist, correction of the lower curve is first made — first, side correction, then rotation correction. Next, the dorsal curve is attacked and corrected to square with the pelvis. The shoulders are finally inspected, pulled to one side if necessary and twisted into a parallel position to the pelvis. A plaster jacket is applied to the patient held in this way. It is easy to see that the method is perfectly definite and that the amount of force at the operator's disposal is very great.

Separate correction in two planes may be made at any level while the pelvis is firmly held and correction at one place may be made independently of correction at any other place and either side deviation or rotation or both may be corrected at each level.

In the third case in which the apparatus was used a child six years old with a very severe curve from infantile paralysis was corrected. The deformity yielded readily without much pain and almost wholly disappeared; a jacket was applied; ether was not used. The child showed signs of collapse in the night and the next morning was somewhat cyanotic and stupid although conscious, radial pulse was absent, the extremities were cold and bluish and the condition generally alarming. The jacket was split and the alarming signs disappeared.

In the cases in which this frame has been used it has seemed to have very great corrective power, and great power is needed if overcorrection is to be obtained, which, just as in club-foot is the desideratum.

Such corrective jackets are worn for a period of two or three weeks and changed once or twice, just so long as further correction seems obtainable by another jacket. In the earlier jackets good correction seemed to have been obtained in a week and that period was adopted, but that time seems on general grounds to be too short and the longer period has been substituted. The last corrective jacket when removed is used as a mold for a plaster torso and a leather or celluloid or other retentive corset constructed from it. This is worn day and night and only removed once a day for heavy corrective gymnastic work, which is pushed to the limit of the patient's capacity.

Such retentive apparatus, whatever it is, should aim at holding the patient in an overcorrected position or as near it as possible from the pelvis to the base of the skull.

It is not intended here to dwell on braces or corsets, but rather on the essentials of the method. A useful brace, however, for outpatient work is found in a leather corset stiffened by bayberry tallow with a window for pressure from a leather pad on the convexity, the point of counterpressure being offered by an iron bar and two pads, one over the pelvis and one in the axilla, on the other side of the jacket. It is essential that room be given on the side away from the pressure for the patient to be pulled over and this is arranged by cutting out part of the side of the jacket on the side of the concavity of the curve and pulling by straps on the

pad set in the window over the convexity. In my experience jackets may be gradually discontinued in all but the extreme paralytic cases after a period of perhaps two years.

With regard to the relative merits of the suspended and the prone position it may be said —

That suspension works on the whole spine and distributes itself and untwists the rotation while it straightens the lateral curve, but it is obviously not corrective enough by itself when pushed to its limit or Wullstein would not have to add to it side pressure. The chief objection to it is that it is an uneconomical application of corrective force and that pushed to the point of obtaining overcorrection it must reach an almost unendurable grade of pull.

In the prone position fainting is less likely, there is less discomfort, and far less force is required to obtain a definite amount of correction, because the force is more economically applied and the back can be inspected through the early part of the process.

Personally, I think it a great advantage to have the lumbar curve held by the jacket as flat as possible, as thereby I believe that a corrective extending force is exerted upon the dorsal curve.[28]

The claims of efficiency to be made for the apparatus may be repeated:

(1) The most economical use possible is made of the corrective force by applying it sideways and thus less force is required or the same amount of force will do more than in extension of the spine.

(2) The force is applied to the spine while slack and not made tense by extension.

(3) Side correction is made by one part of the appliance.

(4) Correction of rotation is made by another part of the appliance.

(5) The pelvis is held in a position which ensures some flattening of the lumbar curve, which in the upright position tends on account of the balance of the patient to bring about straightening of the dorsal curve.

(6) Finally, it may be said that general pathological considerations would seem to indicate that retention in the corrected position should induce changes in the shape and relations of the misshapen bones.

CASE I. Boy, thirteen years old in 1900. Severe infantile paralysis of one side of back and one leg, shortening of one leg of one and a half inches. Treatment for some years by braces and gymnastics. Forcible correction by four jackets in January, 1903. Since then retention in celluloid jacket, daily stretching in the prone position and hanging, with a few gymnastic exercises to develop the remaining muscles. A doctor who had given exercises in 1901 and previously and who examined the boy in December, 1903, wrote, "I found that he had gained considerably in muscular power. The back muscles were much stronger and the abdominal muscles had gained also."

CASE II. Eighteen years old in 1901. Severe infantile paralysis of one side of back and of leg; very rigid. Brace treatment for many years. Plaster correction jackets applied in 1901. Retention jacket and exercises since then. Gain in height since 1901, seven-eighths of an inch.

CASE III. Girl, eighteen years old, no previous treatment. Rigid scoliosis; no paralysis; four corrective jackets in July, 1903; since then exercises and retention corset.

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## HYDROTHERAPEUTIC PRESCRIPTIONS.


BY JOSEPH H. PRATT, A.M., M.D., BOSTON.

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DURING the past decade rational hydrotherapy has made great advances, particularly in Germany and Austria. The position hydrotherapy occupies to-day in the treatment of disease is largely due to the physiological and clinical investigations of Winternitz of Vienna, which placed the empirical water treatments on a scientific foundation. We are now able to predict, as von Hoesslin [1] says, the action of a definite hydrotherapeutic procedure in a given case with as much certainty as we can that of morphine and digitalis.

Dr. S. Solis Cohen, in his "System of Physiologic Therapeutics," suggests that "there should be maintained in every city an establishment to which any physician might refer his patients with a definite hydriatic prescription, just as he can now send them to the apothecary with a definite pharmaceutic prescription." A number of Boston physicians, feeling the need of such an establishment, met together at the suggestion of Dr. J. J. Putnam on Oct. 13, 1903, to consider the advisability of maintaining an institution for physical therapeutics "where pri-

[1] v. Hoesslin. Penzoldt u. Stintzing Handbuch der Therapie innerer Krankheiten, Jena, 1903, v, p. 110.

vate patients could be carefully treated and suitable researches carried on, and which should be under the supervision of a competent physician."

It was realized that unless such an institution was established facilities would be lacking in Boston for giving patients the benefit of the best methods of physiological therapeutics.

On motion of Dr. F. C. Shattuck it was voted to ask a committee composed of Drs. J. J. Putnam, E. G. Cutler and R. W. Lovett to propose a plan for organizing and maintaining a hydrotherapeutic establishment. The report of the committee was accepted and through its labors and the generosity of physicians and laymen a hydrotherapeutic institution owned and controlled by the medical profession was rendered possible.

Any surplus income is to be devoted to improving the establishment or adding new apparatus. The "Medical Baths," as it is called, was opened early in December, occupying quarters in the Farragut Building at the corner of Massachusetts Avenue and Boylston Street. There is a reception room, five small treatment and dressing rooms, a large treatment room and a douche room with a Baruch douche apparatus. The treatments are given by graduate male and female nurses well trained in hydrotherapeutic methods.

Many valuable hydriatic procedures can be carried out in the homes of patients very simply if a trained attendant is available, but of all forms of water treatment, the douche is the most powerful and the most varied in its action. The douche treatment requires elaborate apparatus and skilled operators. It differs from other hydrotherapeutic measures in its mechanical effect, which promotes reaction and increases stimulation. Pressure and temperature can be perfectly controlled by means of Baruch's table, and hydriatic prescriptions exactly followed.

In hydrotherapy precision of method is essential to success. The effort has been made in the following pages to present the modes of treatment which experience and experiment have shown to be the best. Only the institution-treatment of chronic disease is considered. It is of course understood that these prescriptions must frequently be modified to meet individual needs. The reaction of the patient is the usual guide to such modification.

In all chronic diseases, but especially in diabetes, chlorosis and neurasthenia, the hydriatic treatment should be considered only as a part of the whole management of the case. If this is remembered the treatment will succeed in cases where it would otherwise fail.

*Chlorosis and other forms of anemia.* The value of hydrotherapy in chlorosis has only recently been recognized. The treatment should begin with mild measures. In debilitated individuals and all unaccustomed to cold bathing it is well to begin with the hot pack followed by the wet mitt friction (Prescription 1). When cutaneous lesions are present the cold towel rub should be used (Prescription 2).

As soon as the patient's skin becomes accustomed to cold water the wet sheet rub may be substituted for the wet mitt friction. This is the "*Abreibungen und Abklatschungen*" of the Germans (Prescription 3). And when this is well borne, the half-bath may be used (Prescription 4). As soon as the feeble patient by these moderate graduated measures has been trained to react well the stronger and more effective douche treatment is indicated (Prescriptions 5, 7). More robust patients and those accustomed to cold water can dispense with the milder applications and begin with the tonic douche.

v. Noorden makes use of the carbon dioxide bath in chlorosis (Prescription 6). In fact, he thinks it indicated in almost all cases. Sweat baths have been employed recently in chlorosis by Hegglin, Paul Schmidt, Dehio and Romberg in Curschmann's private practice (Prescription 8).

*Chronic arthritis.* Sweating procedures when there is no cardiac complication (Prescription 9). Unless there is a tendency to acute exacerbations it is well to follow the hot bath with a stimulating douche (Prescription 10). Local hot-air or electric-light baths are frequently beneficial (Prescriptions 11, 12).

Bier begins the course of treatment with the hot-air bath and later employs congestion-hyperemia (Bier's "*Stauungs-hyperæmie*," Prescription 13). Schuller and many others recommend the Scotch and the alternating douche (Prescription 14).

Douche-massage has been much used at Aix-les-Bains for a long time, and the method has quite recently been recommended by v. Leyden, Beissel and Machzun (Prescription 15).

*Chronic muscular rheumatism.* The procedures enumerated above under chronic arthritis are useful, especially short hot-air baths and the Scotch douche.

*Sciatica and other forms of neuralgia.* Vapor bath followed by hot pack (Prescription 16). Scotch or alternate douche to painful areas (Prescription 14).

*Organic disease of the spinal cord, especially tabes.* Hydriatic procedures are recommended by Erb, Senator, v. Strumpell, Stintzing, Matthes and others. Cold douches as a rule are poorly borne. The carbon dioxide baths hold the first place, especially in tabes, except when irritation phenomena exist (Prescription 6).

*Exophthalmic goiter.* Carbon dioxide baths (Prescription 6).

*Chronic pleurisy.* Wet sheet rubs, half baths and douches to the affected side are recommended by Fodor and Matthes (Prescriptions, 3, 4, 14).

*Pulmonary tuberculosis.* Hydrotherapy is a valuable adjunct to fresh air, good food and rest. With debilitated, poorly nourished individuals the hot pack followed by the wet mitt friction is recommended (Prescription 1). Other tonic procedures can be used to advantage (Prescriptions 3, 4, 5, 19).

*Cardiac insufficiency.* Hot baths weaken the heart, cold baths strengthen it. Carbon dioxide baths are of the greatest service. Benecke and August Schott were the first to show their specific action on the heart. They are indicated in cases with slight disturbances of compensation. Severe angina pectoris and advanced arteriosclerosis are contraindications. The baths should be administered by a physician or experienced nurse only. If the bath is of proper strength elevation of blood pressure occurs, associated usually with slowing of the pulse. Repeatedly we have demonstrated that the left border of the heart was 1 cm. nearer the midsternum after a bath. It is our custom to measure the blood pressure with the Riva-Rocci sphygmomanometer before and after each bath. Baths too strong for the heart overtax and injure it. If too weak there is no elevation in blood pressure and no diminution in the width of cardiac dulness (Prescription 18). A treatment consists usually of 25 to 30 baths, but the duration depends naturally upon the patient's condition. A course of less than 20 baths will not effect permanent good (Romberg).

The value of the baths is enhanced by combining with them the therapeutic exercises. As T. Schott has well said, "Movements without design weaken the heart; movements with design, on the contrary, strengthen the heart."

*Cardiac neuroses.* See neurasthenia.

*Chronic gastritis, nervous dyspepsia, enteroptosis* and *motor insufficiency of the stomach.* The wet sheet rub, cool half-baths and tonic douches have an invigorating influence and improve the appetite. Begin with a mild treatment such as indicated in Prescription 3. After a few days the skin will become used to the cold applications and then the douche should be employed (Prescriptions 5, 9). When there is epigastric pain or distress the Scotch or alternate douche to the abdomen is helpful (Prescriptions 14, 21). For enteroptosis, Boas recommends strong jet douches for the tonic influence they exert on the abdominal muscles (Prescription 20).

*Constipation.* Nothnagel advocates cold douches, but most authorities prefer the alternate douche (Prescription 22).

*Diarrhea.* General hydriatic procedures are used to improve the general condition (Prescriptions 1, 3, 4, 5, 19). v. Jaksch has recently highly lauded the cold sitz bath in chronic diarrhea, even when the condition is the result of serious disease of the intestine. Winternitz recommends that the cold sitz bath should be preceded by a wet sheet rub (Prescription 23).

*Hemorrhoids.* The cold ascending douche is of service. Its use can be combined with a general tonic treatment (Prescription 24).

*Hypertrophy of the prostate.* Prescription 24.

*Neurasthenia.* A stimulating treatment with the cold douche is of great value in many cases. If the patient is weak mild measures should be used at first, until by graduated procedures the skin becomes accustomed to cold water. Begin with the hot pack and wet mitt friction (Prescription 1) and then after a few days the wet sheet rub can be used instead (Prescription 3). Later the half bath (Prescription 4). In most cases by the end of ten days the douche can be used with advantage. At first the pressure should be low and the douche of very short duration. The skin should be well heated before any cold application. Well nourished individuals, especially men, will react well to the circular and jet douche at the beginning of the treatment and with them some or all the milder procedures may be omitted (Prescriptions 5, 25). The procedure indicated in Prescription 5 is the milder treatment, and is used chiefly with women. The best results with any given number of treatments are obtained when the treatment is repeated daily. Baruch advocates the following mode of procedure: Prescription 26 one week; Prescription 27 for the second week, Prescription 28 for the third week. For the type of neurasthenia with excitation, Beni-Bardi recommends the neutral douche. This has a sedative effect (Prescription 29). The Scotch douche to the back is indicated in neurasthenic spine (Prescription 14). The Scotch or alternate douche applied to localized painful areas may be helpful. The Scotch douche to the legs is useful in some forms of persistent headache (Prescription 30).

*Hysteria.* Excitable type (Prescription 31). Depressed type (Prescriptions 30, 32).

*Chorsa.* To improve the general condition v. Strumpell recommends the wet sheet rub and short cool douches (Prescriptions 3, 19). Gowers uses sweating procedures (Prescriptions 8, 9, 10).

*Chronic nephritis.* Moderate sweating baths are of great service in keeping the skin active and healthy, and are also used for reducing edema and combating the milder symptoms of chronic uremia,—headache, mental torpor and bodily lassitude, anorexia, etc. They should be repeated two or three times a week. After a hot bath a salt glow followed by a hot douche is refreshing. Cold baths or douches are harmful in nephritis (Prescription 3). v. Leube and more recently Strauss have sounded a warning against too energetic sweating procedures in nephritis. The hot full bath is now used quite extensively in place of the sweat bath in the treatment of nephritis (Prescription 34).

In treating chronic interstitial nephritis with signs of cardiac failure the carbon-dioxide baths have been used with success by Baur and Matthes. The temperature of the bath should not be lower than 86 (Prescription 18).

*Obesity.* As F. A. Hoffmann says, no obesity treatment is complete without hydriatic procedures (Prescription 35).

*Diabetes.* Naunyn, v. Mering and v. Noorden recognize the importance of hydrotherapeutic aids in the diatetic treatment of this disease. Tonic measures increase metabolism, invigorate the patient and improve the condition of the skin (Prescriptions 1, 3, 4, 5, 25). v. Leyden. Handbuch der Ernahrungstherapie, I, p. 554. Leipsic, 1897.

PRESCRIPTIONS.

(1) Hot pack until skin is warm and cutaneous vessels dilated. Wet mitt friction, using water at 60° F. Repeat daily, reducing temperature of water 2° each treatment until 40° is reached. — *Kellogg.*

(2) Hot pack until skin is warm. Cold towel rub; temperature of water 60°. Repeat daily, lowering temperature of water 1° each treatment till 40° is reached. — *Kellogg.*

(3) Hot-air bath nearly to point of perspiration. Wet sheet rub; temperature of water 70°. Repeat daily, lowering temperature of water 1° each day until 60° is reached.

(4) Hot-air bath to point of perspiration. Half bath; temperature of water 70°; duration 1 minute. Repeat daily, lowering temperature gradually to 60° and increasing length of bath to 3 minutes.

(5) Hot-air bath to point of perspiration. Circular douche 105°–110°–90°, 2 minutes. Fan and jet douche to entire body 90°–80°, pressure 10 lbs., 1 minute. Lower minimum temperature 2°, and increase pressure 2 lbs. each treatment until a temperature of 60° and a pressure of 30 lbs. are used.

(6) Carbon-dioxide bath, 300 gm. HCl, 300 gm. $Na_2 CO_3$; duration 10 minutes. Repeat three to six times weekly. Increase strength gradually to 500 gm. of acid and salt and duration to 15 minutes.

(7) Hot-air bath to perspiration. Circular douche 95°–80°, 30 seconds. Spray douche, 70°, 30 lbs., 5 seconds. General massage 10 minutes. Reduce temperature of spray douche 1° daily. — *Baruch.*

(8) Vapor bath; temperature 120°; ½ hour. Friction with warm dry towels. Rest in bed 1 hour. — *Nonne-Dehio.*

(9) Hot-air or vapor bath, 15–25 minutes, followed by dry pack 30 minutes. Rest in bed 1 hour. — *Matthes.*

(10) Hot-air or vapor bath, 15–25 minutes. Circular douche, 105°–110°–90°, 2 minutes. Jet and fan douche, 90°–85°, 1 minute, pressure 10 lbs. Repeat two or three times weekly, increasing pressure 2 lbs. and reducing terminal temperature 2° each treatment until pressure of 30 lbs. and temperature of 60° are reached.

(11) Local hot-air bath to affected joint, temperature 90° C., 1 hour. Spray douche 70°, 15 lbs. pressure, 10 seconds. Repeat daily, increasing temperature of bath 2° daily until temperature of 130° is reached.

(12) Local electric light bath, 15 minutes. Spray douche 70°, 15 lbs. pressure, 10 seconds. Repeat daily, increasing duration of electric light bath 2 minutes until length of bath is 40 minutes.

(13) Congestion hyperemia to affected joints, 1 hour. Repeat daily. — *Bier.*

(14) General hot-air bath to point of perspiration. Circular douche 105°–110°–90°, 2 minutes. Scotch or alternate jet douche to affected part or painful areas. Repeat daily.

(15) Massage and douche to affected joints, temperature of douche 92°–100°, duration 10 minutes. Circular douche 98°–110°, 2 minutes. Fan and jet douche to entire body, temperature 70°, pressure 15 lbs., duration 10 seconds.

(16) Vapor bath, 120°, 10 minutes. Scotch or alternating douche to painful parts. Hot pack 30 minutes. Rest in bed 1 hour. Repeat thrice weekly.

(17) Hot-air bath to point of perspiration. Circular douche 105°–90°, 2 minutes. Rain douche 86°–80°, 40 seconds, pressure 10 lbs. Oil rub. Reduce final temperature of rain douche 1° and increase pressure 1 lb. until temperature of 60° and pressure of 20 lbs. are reached.

(18) Carbon-dioxide bath, $Na_2 CO_3$, 100 gm., HCl, 100 gm.; temperature 95°; duration 7 minutes. Content of $CO_2$ and duration to be increased and temperature lowered until duration of 20 minutes, temperature of 80° are reached and 1000 gm. of acid and salt employed. For first two weeks take baths three times a week, later every day. — *Rombery.*

(19) Hot-air bath to point of perspiration. Circular douche 105°–110°–100°, 2 minutes. Spray and jet douche to entire body, pressure 15 lbs., 70°, 20 seconds. Repeat daily, raising pressure 2 lbs., and reducing temperature of cold douche 2° each treatment until pressure of 35 lbs. and temperature of 60° are reached.

(20) Hot-air bath to perspiration. Circular douche 105°–95°, 2 minutes. Jet douche to abdomen 75°, 30 seconds. Spray douche to entire body, 75°, 10 seconds, pressure 12 lbs. Abdominal massage. Repeat daily, increasing pressure 1 lb. and lowering temperature 1° each application until 25 lbs. and 60° are reached.

(21) Hot-air bath to perspiration. Circular douche 105°–95°, 1 minute. Jet douche to abdomen, 10 lbs., 86° raised gradually to 120°, 15–10 minutes. Fan douche to abdomen, then to dorsal region, 13 lbs., 60°, 15 seconds. General jet douche, 70°, 5 seconds. Repeat daily for gastralgia. — *Beni-Barde.*

(22) Hot-air bath almost to perspiration. Circular douche 105°–95°, 1 minute. Small jet douche to course of colon, alternate 60° and 115°, 15 seconds each, pressure 15 lbs., 1–2 minutes. Fan douche to chest and back 75°, 10 seconds. Repeat daily for constipation, increasing pressure 2 lbs. each treatment until 30 lbs. are used.

(23) Hot-air bath until cutaneous vessels are dilated. Wet sheet rub. Sitz bath, temperature 70°, 10 minutes. Simultaneous hot foot bath, temperature 110°. Repeat daily, increasing duration gradually to 20 minutes and lowering temperature to 50°.

(24) Hot-air bath to perspiration. Circular douche 105°–95°, 1 minute. Ascending douche 60°–70°, 2–3 minutes, 5–10 lbs. pressure. Rain douche 105°, 30 seconds. Fan douche to entire body, 10 seconds, 15 lbs., 70°.

(25) Hot-air bath to point of perspiration. Circular douche 105°–90°, 2 minutes. Jet and fan douche 90°–80°, 15 lbs., 1 minute. Jet douche to spine 75°, 15 seconds. Lower minimum temperature 2° and increase pressure 1 lb. each application until pressure of 35 lbs. and temperature of 50° are reached.

(26) Hot-air bath until cutaneous vessels are dilated. Remove before perspiration begins. Circular douche 95°–85°, ½–1 minute. General fan douche 80°, 20 lbs., 10–20 seconds. Dry rapidly. Walk in open air, until somewhat fatigued. Repeat daily, reducing minimum temperature 1° each treatment. Once during week allow patient to perspire 5 minutes in cabinet. — *Baruch.*

(27) Hot-air bath almost to point of perspiration. Circular douche 95°–85°, ½–1 minute. Fan douche to back, 75°, 20 lbs., 5 seconds. General fan douche 78°, 30 lbs., 15 seconds. After several days substitute jet douche for fan douche to back, lower temperature of general fan douche 1° daily. — *Baruch.*

(28) Hot-air bath to beginning perspiration. Circular douche 25 lbs., 95°–80°, 1 minute. Jet douche to back, 30 lbs., 75°, 5 seconds, daily reduced 1°. Friction. Walk in open air. — *Baruch.*

(29) Hot-air bath to beginning perspiration. Circular douche 10 lbs., 105°–92°, 3 minutes. General fan douche 10 lbs., 85°, 15 seconds. Walk slowly in open air. Repeat daily, increasing pressure and lowering temperature until 15 lbs. and 80° are reached.

(30) Hot-air bath to point of perspiration. Change

cold compresses to head frequently. Circular douche 100°–90°, 2 minutes. Scotch or alternate jet douche to legs and feet, 15 lbs. Repeat daily, increasing pressure 1 lb. each application until 30 lbs. are borne.

(31) Wet pack; temperature of water 60°–70°, 1 hour. Circular douche 85°, 20 lbs. pressure, 15 seconds. Repeat daily; once or twice weekly initial temperature of circular douche 90°, reduce quickly to 75°, followed by fan douche, 85°–65°, 20 lbs. pressure, 5 seconds. — *M. P. Jacobi and Baruch.*

(32) Hot-air bath to perspiration. Circular douche 25 lbs. pressure at 85°, 30 seconds. Spray douche 65°, 5 seconds. After a few applications, use jet douche to spine at end of treatment for 3 seconds, temperature 65°. Lower temperature of jet 2° daily until 50° is reached. If this is well borne pressure may be increased 2 lbs. daily until 30 lbs. are reached. — *Baruch.*

(33) Vapor bath 120°, 15 minutes. Ice bag to praecordia. Salt glow. Jet douche to entire body, 10 lbs., 110°, 30 seconds. Rub dry. Rest in bed 1–2 hours. Repeat two to four times weekly, increasing pressure until 30 lbs. are employed and gradually increasing length of vapor bath to 30 minutes.

(34) Hot full bath, 100° raised to 106°, 5 to 10 minutes. Salt glow. Fan or jet douche to entire body, 110°, 30 seconds. Massage to edematous portions. Rest 1–2 hours before dressing. Repeat two to four times weekly, increasing pressure until 30 lbs. are used.

(35) Hot-air bath, 40–60 minutes. Soap shampoo. Half bath; temperature 70°, 3–5 minutes. General jet douche, pressure 25 lbs., temperature 70°, 20 seconds. Dress quickly and walk until fatigued. Repeat daily, increasing duration of hot-air bath and lowering temperature of douche as condition of patient indicates.

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## AN ACCOUNT OF THE WORK, INCLUDING OBSTETRICAL TECHNIQUE, AT THE LYING-IN HOSPITAL OF THE CITY OF NEW YORK.[1]

BY CHARLES H. BRADLEY, M.D.

I HAVE been requested to outline for you the work done at the Lying-In Hospital of the City of New York. Understanding that this society is especially interested in medical education, I shall speak more of the obstetrical education of the student at this hospital, and for this reason will deal at length with the Outdoor Service.

*History.* — In 1799 a number of public-spirited citizens of New York petitioned the governor that they be incorporated as "The Society of the Lying-In Hospital of the City of New York," with the express purpose of finding homes and giving medical assistance to women in child-bed. To this worthy purpose the society owes its birth.

Thirteen years ago the Broome Street Dispensary and the society joined forces; an indoor service was added in 1895, the hospital standing on the site of the present one, which was opened Jan. 1, 1902. The building of this new hospital was made possible through the generosity of Mr. J. Pierpont Morgan and other citizens of New York. This description would be incomplete without recording the indomitable energy shown by Dr. James Markoe and other directors in supervising the construction and adding the many details that make this hospital a leading exponent of the science and art of obstetrics.

*The Student.* — The Lying-In Hospital is an institution the purpose of which is to teach obstetrics, quite as much as to conduct a work of charity. This purpose being fully recognized one cannot but believe that the student benefits thereby. The student resides in the main hospital during his term of service, — a restaurant being provided where he may obtain food at cost.

The service is three weeks in duration, and divided into two parts, that obtained in the hospital and that in the outdoor service. The first seven days are spent in the hospital, where he has demonstrated all normal and abnormal cases, makes rounds with the visiting physicians and house staff and receives instruction in the diagnosis and treatment of those abnormalities incident to the anti-, inter- and post-partum periods. Each afternoon he goes to the antipartum rooms, where all cases are examined applying for care in their homes during the labor. The house staff teach him the symptoms and signs of pregnancy, their importance and the treatment of any abnormality arising. Here he has an opportunity to practice the methods of sterilization of his hands for a vaginal examination. Thus by the end of seven days he has become familiar with the technique, incident to the care of a normal case of labor.

Before going to the outdoor service he receives instruction in the use of the contents of the "labor" and postpartum bags, the correct method of keeping the outdoor histories, of making postpartum calls and the asepsis and antisepsis employed.

*Outdoor Service.* — For the next seven days he is a junior on the outdoor service, the junior of the week before becoming a senior. He now accompanies one or other of the eight seniors on the labor cases, acting as assistant and being given abundant opportunity to examine all cases. In addition, he makes four to six postpartum calls daily; these, on account of the large area covered by the department, are assigned according to locality. Before being entrusted to make calls alone, he is taken by the

[1] Read at the Section for Obstetrics and Diseases of Women of the Suffolk District Medical Society, Nov. 25, 1903.

outdoor staff and taught the method of making postpartum examinations, the points to be noted and the treatment of any abnormality.

On his return to the hospital he reports any abnormality, which is entered opposite the patient's name, on a slate. He then writes the result of his examination on each patient's history, and signs it.

During the last seven days of his service he is a senior and rotates with eight other seniors in the care of the cases applying for treatment in the outdoor department.

To each case of labor he takes a full antipartum record of the case, covering:

*Past History*, special attention being paid to the gynecological and obstetrical portions.

*External Examination*, including heart, lungs, breasts, abdomen, uterus, child, external pelvimetry, height, weight, varicosities and edema.

*Internal Examination*, including measurements of outlet, diagonal conjugate, depth of symphysis, and calculation of true conjugate; the condition of perineum, vagina, cervix and uterus (bimanual).

While on a case of labor he is required to send to the hospital or its branch a report every two hours, stating the progress of the labor. Throughout the labor he keeps a miniature labor sheet, so that he has only to copy this on to a larger sheet on his return to the hospital. While he is attending a labor, he is visited by one of the staff on duty, the external and internal examination and any abnormality investigated. In all primiparæ he is further required to send a report when the os uteri is fully dilated, in order that one of the staff may reach the case, to instruct him regarding the perineal stage, and the methods used to prevent laceration. Thus the hospital holds the student responsible for his work: (*a*) By requiring his signature to each history, and postpartum visit. (*b*) By a report every two hours during a case of labor. (*c*) By having each labor case visited by the staff. (*d*) By noting the receipt of the call, departure and return of student by means of a time clock.

*Outdoor History Room.* — A room is set aside for the writing of the outdoor histories. Here each student has a clip containing the cases he visits. This room is in charge of one of the outdoor staff, who serve in turn, and are responsible for the accuracy of the records. Each labor case is examined, and all postpartum calls are investigated, so that any mistakes may be pointed out to the student while the case is fresh in his mind.

During his period of residence the student keeps the application number of each case he has demonstrated to him or delivers. This report is verified and signed before he leaves the hospital. At the termination of his service, if his work has proved satisfactory, he is awarded a certificate.

*The Outdoor Staff.* — The outdoor department attends about twenty-five hundred cases annually, and for their care the hospital employs one chief of staff (the house surgeon), nine staff men, a head nurse and about twelve nurses.

The staff are on duty twenty-four hours, the time being divided into two calls, 9 A.M. to 12 P.M., and 12 P.M. to 9 A.M. During each call the care of a certain portion of the service is assigned to him, as: Discharging of patients, antipartum examinations, ambulance work, visiting students on labor cases, care of abortions and those abnormalities noted by the student on his postpartum visits. Each abnormality is visited, treated, and a record of the case written in the "Abnormality Book," from which it is copied by the medical clerks into the patient's history.

The length of staff service is four months, ten weeks on the outdoor and six weeks on the indoor service, the appointments being made by competitive examination.

*The Outdoor Department.* — The outdoor department has a branch on Broome Street in the heart of the East Side where reports and labor calls are received and antipartum examinations made.

This office is open day and night, — duplicates of all student reports are kept both at the branch and the hospital (which is connected by private wire) so that the staff may follow the progress of the labor cases as he makes his rounds.

To give some idea of the population surrounding the Broome Street branch, I can do no better than to quote a few statistics from the New York state census of several years ago.

In the seven adjoining blocks there is a population of over twenty thousand, or nearly three thousand to the block, or five hundred thousand to the square mile. In New York the foreign born number 43% of the total population, but in the East Side 62.5%. Persons of foreign parentage in the whole city 80% and in the East Side 95%. Of these 54% are males, and 46% females. The percentage of families living in one room is 5.6% as compared with 12% in Philadelphia, or 13% in the tenement district of Baltimore.

*Care of Postpartum Cases.* — The care of the cases during the first three days postpartum devolves on the outdoor nurses.

When a nurse comes to the outdoor department she has been trained in the wards, nursery and operating room, where she acts as assistant to the indoor staff during the delivery of cases. Hence she is experienced in making postpartum calls, and her accuracy of observation can be relied on. The first two days the cases are visited twice daily, the third day once, a record of the visit being written in the history. On the fourth day the cases go to the students and are visited once daily, save on the sixth and eighth days, if normal, being discharged on the ninth day by the staff, and a record of the examination made on the history.

The work of the department is aided by the Ladies' Auxiliary, who keep a large supply of

materials to be sent to patients, and furnish scrubwomen to clean the rooms. A diet kitchen gives additional aid in assisting both patient and family during the puerperal period.

*Labor.* — The hospital depends on the patient to furnish a pail for waste water, a basin for hand washing and a supply of hot water.

The bag taken to the labor contains all the utensils necessary for the delivery of a normal case.

Two rooms are devoted as a laboratory to the outdoor department; here dressings are prepared, instruments sterilized and bags repacked. Nurses are at work day and night, so that all a student does, when called for a case of labor, is to apply at the laboratory for a bag.

*Labor Bag.* — The bags are made of leather, and lined with the same material; they are 17 inches long, 9 inches wide and 9 high, opening wide at the top, and when packed weigh 20 lbs. When a bag is returned from a case it is emptied of its contents, wiped out with a cloth soaked in corrosive and repacked with fresh materials. A list of the articles contained in the bag is herewith enumerated: 1 rubber pad, 1 douche bag, 3 agate basins, 2 vaginal douche tubes, 1 can sterile sponges, acetic acid, sterile green soap, alcohol, 1 can sterile vulva pads, 1 catheter, 1 bottle dry dressings, 1 bottle boric acid wipes, 1 nail brush and wooden point, silver nitrate 1%, comp. cathartic pills, 6 tapes for cord, 1 scissors, 1 pelvimeter, 1 eye dropper, scales, tape measure, oichloride tablets, sterile vaseline, miniature labor blank, birth certificate and reports.

*The Rubber Pad* is a modification of Kelly's pad, the seams being less numerous, and hence the durability increased. It is cleaned by scrubbing with soap and water, sterilized by scrubbing with 5% carbolic acid. By this method it lasts about a year. The pad is used in all labors, not only to protect the bed from discharges, but the patient from the infective bed clothing.

*The Douche Bag* is a four-quart fountain syringe, cleaned and sterilized in the same way, and lasts about six months.

*The Agate Basins* telescope one into the other, the larger are used for bichloride and hold about a pint. The shallow basin holds the scissors, tape, boric acid wipes and cord dressings, each in its container. The basins are sterilized by washing with sapolio and corrosive 1–1000.

*The Douche Tubes* are of glass, straight, with bulb ends. They are placed in a brass cylinder (brass having been found preferable to copper, as it can be bought as tubing and is seamless), with a perforated lid, and sterilized.

*The Sterilizer* used is the Bramhall-Deane, the contents being exposed to steam under 12½ lbs. pressure, for thirty minutes.

*The Soft Rubber Catheters* are carried in a jar with a screw cap.

*The Tape* for the cord is bobbin, one-fourth inch in width, and cut in 12 inch lengths; these are placed in a bottle with a screw cap.

*The Dressing* for the cord is dry gauze, cut in 2 inch squares, and packed in a 4 oz. salt mouth glass bottle.

*The Wipes* for mouth and eyes are of gauze, 2 inches square, and packed in a similar manner, in a saturated solution of boric acid. All the above articles are sterilized under 12½ lbs. pressure.

*The Vulva Pads* are made from cotton waste, cut in sections 4 inches square, and ½ inch thick; two of these strips rolled in gauze will make a pad 8 by 2 inches. They are packed in cylindrical copper cans, perforated at the ends, and sterilized.

*Cotton Waste* is packed in a larger can, sterilized and used for sponging during the labor.

*Nail Brushes* have wooden backs and bristles of wood fiber. They are sterilized in a small copper cylinder; with the brush is placed a wooden point for cleaning the nails.

*The Scissors* for cutting the cord are sterilized in a towel.

*Delivery.* — Normal cases are delivered on their own beds, a board being inserted under the mattress if obtainable, and the mattress covered with enamel cloth or newspapers. Over this is placed the rubber pad, the end draining into a pail.

*Position of Patient.* — The side position is insisted on during delivery, since it raises the patient's genitals from the bed, keeps the hands of the attendant from touching it and gives a better control of the head during the perineal stage, while more of the patient's legs and shoulders can be covered than in the dorsal position. The materials used during delivery are placed on a chair and used directly from their containers.

Whenever assistance is required, the hospital is notified either by telephone or report, and the staff takes a bag with him containing additional supplies.

*Contents of Staff Labor Bag.* — Perineorrhaphy set, packing set, 3 tubes gauze, sterile green soap, fluid ext. ergot, hypodermic set, 2 intrauterine douche nozzles, sterile towels, sterile brush, infusion set, chloroform and mask.

*The Perineorrhaphy Set* consists of thumb forceps, 2 volsella needle holders, uterine dressing forceps, and needles, sterilized in a towel. *The Gauze* is packed in glass tubes, each containing 12 yards, and sterilized. *The Intrauterine Nozzles* are packed, and sterilized as previously described. *Chloroform* is contained in a plain drop-bottle; the *Mask* is that of Esmarch. The suture material consists of plain, chromic and silkworm gut.

*Sterilization of Hands.* — (1) The nails must be short, all abrasions covered with collodion. (2) The hands are scrubbed for three minutes with green soap and hot water. (3) Rinsed in clean water, the nails being cleaned with the wooden point. (4) Scrubbed again with soap and hot water for two minutes. (5) Scrubbed in 1–2000 corrosive for three minutes.

The fingers are brought in contact with the

genitals wet with bichloride, no lubricant being used.

*Preparation of a Normal Case.* — A normal case receives no antipartum douche, the vaginal secretion rendering the vagina sterile, while antiseptic and mechanical treatment renders it more liable to laceration. Any case that has inflammation of vagina or bladder at time of antipartum examination receives appropriate treatment in the outdoor clinic.

For normal labor the only preparatory treatment is external. When a student reaches a case of labor his first duty is to cleanse the genitals in the following manner: (*a*) If the vulva hair is matted it is cut, otherwise not. (*b*) The external genitals, inside of thighs and abdomen, are scrubbed with soap and water, followed by corrosive 1–2000; this being repeated every six hours in prolonged labor.

The patient is delivered on her left side, as previously described, both legs being flexed, the right foot resting in the junction of left thigh and leg. The attendant having sterilized his hands passes the left in front of the patient's abdomen, between her thighs; with this hand he controls the advance of the head, leaving his right free to sponge or reinforce the left when necessary. As soon as the head is born, the patient is turned on her back, the delivery being completed in this position.

When the cord stops pulsating it is tied and cut, a vulva pad wrapped around umbilicus, and tied over the back, the child covered, and laid aside. In the meantime the eyes and mouth have been wiped with boric acid and 1% silver nitrate instilled into the eyes. Thirty minutes are allowed for the spontaneous separation of the placenta; if at the end of this time it has not done so, it is separated manually by the method of Credé.

The fundus uteri is held from the delivery of the child, until one hour following expulsion of the placenta. Following the expulsion of placenta the genitals are wiped off with corrosive, and a vaginal douche of the same antiseptic, 1–8000 administered, not so much as an antiseptic precaution as a prophylactic against uterine hemorrhage. A vulva pad is then applied, followed later by an abdominal binder.

*The Child.* — The child is thoroughly examined, both body and diameter of head measured, greased with sterile vaseline and later washed, the cord being dressed with materials before described.

Much has been written of late regarding the advisability of vaginal examinations during the progress of labor, but it seems necessary in conjunction with external palpation, in the instruction of the student. On the outdoor service 27,693 examinations were made on 5,109 patients in the first stage of labor, an average of five examinations to the patient; 22,627 in 5,843 cases, in the second stage, an average of four examinations, and in spite of this extensive use of material for instruction the mortality of all cases dying of sepsis was only 0.14%.

*Operations on the Outdoor Service.* — For a *perineorrhaphy* the patient is drawn to the edge of the bed or placed on a table; anesthetized or not as the operator prefers. The inside of the thighs and genitals are scrubbed with soap and water and washed with corrosive. Sterile towels are placed below and above each thigh, and the perineorrhaphy set laid on a chair near the bedside.

The same preparations may be used for packing, the gauze being held in glass tubes. When the cervix has been drawn down by a volsellum the gauze is introduced from its container into the uterus, the tube being held by an assistant, or in his absence between the knees of the operator.

For *intrauterine manipulations* gloves may be used, being easily carried in a glove case.

When more serious operative interference is necessary, the lightest room in the tenement is selected, a table covered with a blanket or comforter and the rubber pad placed at one end. The patient after being anesthetized is placed on the table, the legs being held by means of a canvas crutch. The vulva hair is shaved, the patient scrubbed with sterile green soap and water; then 5% lysol, followed by boiled water and 1–3000 corrosive. For curettage the vagina is scrubbed with soap, water, lysol and douched with corrosive. The legs are encased in sterile towels, abdomen and rubber pad being covered with the same materials. The preparation above described is the same for forceps, curettage or version.

In a case of curettage, if the uterus has been packed the gauze is removed, otherwise the cervix is dilated with the Godell-Ellinger dilators, a digital examination made, following which the uterus is gone over with the dull, followed by the sharp curette. A hot corrosive douche, 1–5000, usually controls the hemorrhage; if not, the uterus and vagina are packed with iodoform gauze, the vaginal portion beng removed in twenty-four and the uterine in forty-eight hours.

*Cultures* are taken from the vagina and uterus before curettage and these with the curettings are sent to the pathologist for examination, the findings being recorded on the history of the case.

*The Uterine Culture Tubes* consist of a large tube ten inches in length and one inch wide. Inside of this, and running its length, is a glass tube, the lower end of which is plugged with cotton, to which a string is attached; the upper end is contained in the cotton plugging the mouth of the test tube. Inside the inner tube is the brass wire with swab attached, the free end of wire extending outside tube about three inches, and with it the string attached to the plug.

The perineum is depressed by means of a speculum, the cervix thoroughly swabbed, and the inner glass tube and swab introduced into uterus; the plug is now drawn out by means of the string, the swab pushed up to the fundus, then redrawn into tube and out through the upper end.

Special bags are kept packed with the sterile materials and instruments necessary for forceps and curettage, and can be sent to a case on the shortest notice.

Symphysiotomy and Cæsarean section have been performed on the outdoor service, but at present cases needing these operations are sent to the hospital in the ambulance. At all severe operations a nurse and at least two of the staff are present.

I have here a pair of Tucker-McClain solid blade forceps, used almost exclusively in the Sloane Maternity, — their advantages, you doubtless know, are: Ease of application, less liability to lacerate the child and the perineum, owing to the narrowness of the shanks, while their opponents claim a greater liability to slip.

The time will only allow a mere outline of the work inside the hospital. The service is divided into three divisions, each under a director and having a separate staff. Each division occupies a floor of the hospital, which consists of two postpartum, an antipartum and septic wards, six private rooms, a reception room, examining room, crying and operating rooms. The house staff on each floor consists of a senior and junior. The clinical and pathological laboratories, solarium, amphitheater and kitchens are on the seventh floor. The hospital has its own electrical and printing plants. A statistical department consisting of a registrar, assistant registrar and clerk classify and file all labor cases, keeping a card index of the same; so that the statistics of the hospital are kept ready for publication.

*Nurses.* — The nurses come from the various hospitals of New York, Brooklyn and suburban cities, from the Massachusetts General, Boston, and Lakeside Hospital, Cleveland, Ohio. The course is three months, being a portion of their hospital training. Post-graduate courses are arranged for both physicians and nurses.

*House Staff.* — The staff come from the various medical schools of the United States and Canada, as many as ten different schools being represented at one time.

Such, gentlemen, is the Lying-In Hospital, an institution connected with no medical school, its students coming from all parts of the country.

It fills a need, having the only large outdoor service in New York City.

Its results cannot but be far reaching, and of great benefit both to the profession and the community at large.

## Clinical Department.

### TWO SIMPLE FORMULÆ FOR USE IN THE ARTIFICIAL FEEDING OF INFANTS.

BY I. STANLEY KAHN, BOSTON CITY HOSPITAL.

In the artificial feeding of infants, various formulæ have been suggested for the preparation of "home modifications" or "laboratory milks," whose constituents should be present in proportions suitable to the age and development of the child in question. I should like to offer for consideration a simple formula which will give approximately the amount of food required in twenty-four hours by the average healthy infant at various ages.

This formula reads:

$$\text{The 24 hour amount in ounces} = \frac{}{11 + 5\sqrt{\text{The age of the child in weeks}}}$$

This square root need only be approximate, and if taken by mental arithmetic gives as satisfactory a final result as if time is spent for its exact mathematical solution. In tabular form below are given some of the amounts obtained by using the formula in this manner, showing how closely they correspond with those advised by various observers.

24-HOUR AMOUNT IN OUNCES.

| Age of Child | Formula Ladd | C'd Oppenheim[1] | Starr[2] | Holt[3] |
|---|---|---|---|---|
| Up to 1 week | 10* | | | |
| 1 week | 16 | 10 | 10 | 12 | 10–15 |
| 2 weeks | 18 | 15 | 15 | | |
| 3 " | 20 | | 20 | | 15–30 |
| 4 " | 21 | 22½ | | 17 | |
| 5 " | 22 | | | | 22–32 |
| 6 " | 23 | 24 | | | |
| 8 " | 25 | 26 | 25 | | 24–36 |
| 10 " | 27 | | | | |
| 3 months | 28 | 28 | 28 | | 28–38 |
| 4 " | 31 | 31½ | 29 | | |
| 5 " | 33 | 33 | 31½ | 32 | |
| 6 " | 35 | 34½ | 33 | 36 | |
| 7 " | 37 | 37½ | 39 | | 33–42 |
| 8 " | 39 | 42 | 42 | | |
| 9 " | 41 | 42 | 42 | 40 | |
| 10 " | 43 | 42½ | 42½ | | |
| 11 " | 44 | 43¾ | 44 | | 37–45 |
| 12 " | 46 | 45 | 45 | | |

From a glance at this table, it will be noted that the formula amounts differ but little from those obtained by practical observation. When it is considered how much these observers differ amongst themselves, which is but natural when it is remembered that their results can at the best be only approximate, and that each individual case must be judged for itself, it will be seen that any errors in the case of the formula, if really actual, amounting at the most to 2 or 3 oz., do not obviate its usefulness. This is emphasized by the fact that every error of 2 or 3 oz. is distributed over a number of feedings, rendering the amount given in the individual feeding practically identical with the amounts usually assigned as correct, and may hence be disregarded without harm.

In addition to the above formula, a second gives, with sufficient accuracy, the number of feedings in twenty-four hours according to the age of the infant to be fed. This second formula reads:

$$\text{The number of feedings in twenty-four hours} = \frac{}{11 - \sqrt{\text{The age of the child in weeks.}}}$$

In making this calculation, in order to avoid fractions in the final result, the exact age in weeks should be replaced by the nearest number

* Obtained from the formula,— Amount=$11+5\sqrt{\text{o.}}$

[1] Oppenheim: "Medical Diseases of Childhood," 1900, p. 88.

[2] Starr: "American Textbook of Diseases of Children," p. 24.

[3] Holt: "Infancy and Childhood," 1901, p. 178.

with an exact radical; thus, in a child of seven months, using $\sqrt{25}$ instead of $\sqrt{28}$. Below are seen the results given by this formula compared with those prescribed by the Ladd Card.

NO. OF FEEDINGS IN 24 HOURS.

| Age of Child | Formula | Ladd Card |
|---|---|---|
| 1 week | 10 | 10 |
| 2 weeks | 10 | 10 |
| 4 ,, | 9 | 9 |
| 6 ,, | 9 | 8 |
| 2 months | 8 | 8 |
| 3 ,, | 8 | 7 |
| 4 ,, | 7 | 7 |
| 5 ,, | 7 | 6 |
| 6 ,, | 6 | 6 |
| 7 ,, | 6 | 6 |
| 8 ,, | 5 | 6 |
| 9 ,, | 5 | 6 |
| 10 ,, | 5 | 5 |
| 11 ,, | 4 | 5 |
| 12 ,, | 4 | 5 |

From the total amount and the number of feedings, the size of the individual feeding can be easily computed. These two formulæ thus give the working practitioner the means for obtaining quickly results essentially as accurate for all practical purposes as those given in the various tables and textbooks.

## New Instrument.

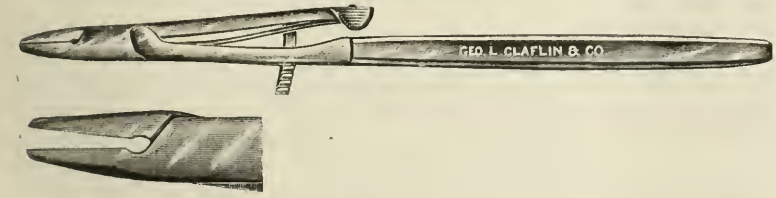
### A NEW NEEDLE HOLDER.

BY JOHN W. KEEFE, M.D., PROVIDENCE, R. I.,

*Consulting Surgeon to the St. Joseph's Hospital; Attending Surgeon to the Rhode Island Hospital, Providence, R. I.*

The number of needle holders which from time to time have been devised is an evidence that none are satisfactory to the majority of surgeons.

The holder shown in the cut I trust may meet the requirements some surgeons are seeking. The handle is one that may be firmly and easily held, thus having the instrument under complete control. The ratchet may be operated by the thumb, downward and outward pressure releasing, downward and inward pressure securing, the grasp of the needle. The last notch in the ratchet should always be used, irrespective of the size of the needle, as the elasticity of the




steel in the upper blade will accommodate it to any size needle. The jaws of the instrument being narrow and pointed permit the use of the holder in small and deep localities. A little time should be devoted to studying and practicing the methods of holding and releasing the needle, so that one may be able to use the needle holder with facility. The instrument was made for me by George L. Claflin & Co., Providence, R. I.

## Medical Progress.

### REPORT ON THORACIC DISEASE.

BY J. W. BARTOL, M.D., BOSTON.

#### INFLUENCE OF DWELLING ON SPREAD OF TUBERCULOSIS.

Romberg and Haedicke[1] report the results of a careful investigation, based on statistics and personal observation, of the morbidity and mortality record of tuberculosis in Marburg since 1890 with especial reference to localization amongst certain classes or districts of the city.

An epitome of their findings is: (1) Taking the one-fifth of the population in poorest circumstances, phthisis is present in 4.7%, while in the remaining four-fifths in better standing, it is found in only 0.2%. (2) Thirty-four per cent of reported deaths from tuberculosis occurred in 2.6% of the 1,503 dwelling houses. Amongst the poorest quarters, however, 59.2% of all tubercular disease was located in 33.6% of the dwellings existing in the given quarters. (3) Situation, construction and number of dwellers do not serve to explain relative frequency of cases in certain buildings. Although multiplication of cases does not occur in dwellings kept clean and neat, on the other hand, slovenly conditions alone do not account for occurrence of numerous cases in one household. (4) General considerations lead to the conclusion that most cases can be referred to the influence of infection. (5) Most cases are the result of not a single but of repeated infection with tubercle bacilli. Existence of conditions favoring repeated infection in the dwellings of the poorer classes leads to multiplication of cases in certain households, and in this aspect makes tuberculosis a disease influenced by the dwelling and therefore to be combated, especially in the poorer quarters of a town.

#### HEMATOGENOUS MILIARY TUBERCULOSIS OF THE LUNGS.

Several points of interest are apparently cleared up by Sawada[2] in a study of cases of miliary tuberculosis in rabbits' lungs resulting from the injection of bacilli into either the peritoneal cavity, the carotid or the anterior chamber of the eye. Investigations were also made as to the age at which the pulmonary lymph nodes develop in both infants and young rabbits. The conclusions reached are: (1) Hematogenous tuberculosis of the lungs experimentally produced in rabbits follows the statement of Ribbert for similar condition in man, in always originating in the lymph nodes. (2) Tubercle bacilli circulating in the blood, unless occurring in clumps, will not be arrested in the broader capillaries of the alveoli, but will locate within the lung if they pass into the narrow

[1] Deut. Archiv. klin. Med., Bd. lxxvi.
[2] *Ibid.*, xlvii.

branches of these capillaries which surround the lymph nodes. (3) Noteworthy differences exist in the reaction to hematogenous infection of the lungs of full-grown and of young rabbits. These differences depend on the stage of development of the pulmonary lymph nodes which do not reach completion until some time after birth. (4) In man the lymph nodes apparently do not reach full development until the fifth to seventh year. Experimental evidence indicates that it is on account of the incomplete development of the lymph nodes in the lungs of the young that children below this age contract the pulmonary form of miliary tuberculosis less frequently than adults. When they do contract it, it is probably in consequence of the presence in the circulation of large numbers of very virulent bacilli.

### TREATMENT BY TUBERCULIN.

In a delightful account by Trudeau of his thirty years' work at Saranac given as Henry Phipps Institute lecture[3] he incidentally reports the results with tuberculin from 1890 to 1901. In these years 143 cases were treated by the various forms as prepared by Koch, including TR. Of these 143 cases 58% are alive, 33% are dead and 9% are untraced. In comparison, of the 1,367 cases treated during the same time without tuberculin 38.9% are alive, 39.6% are dead and 21.4% are untraced. This leaves apparently a credit of 20% in favor of the tuberculin treatment, but since the value of such a deduction is impaired by the fact that the tuberculin cases were to a certain extent selected and possibly of somewhat more favorable type, a comparison is made of the incipient cases only, which during the same period were treated with and without tuberculin. Of such cases which received no tuberculin 61% are alive, while of the tuberculin treated cases 76.7% are still living. A small but definite balance is thus still left in favor of the treatment.

### DILATATION OF THORACIC AORTA AS CAUSE OF EMPHYSEMA.

Golubow[4] calls attention to the importance in all cases of emphysema of unexplained origin, especially in the elderly or those of syphilitic taint, of looking very carefully for aneurism or dilatation of the arch. Cases are detailed in which dilatation apparently led to a well-marked emphysematous condition and the causal relationship is explained on the basis of a reflex persistent cough set up by pressure on the vagus with emphysema as a result.

### INTERCOSTAL PHONATION AND LITTEN'S PHENOMENON.

Abrams[5] records his experience with intercostal phonation (a diagnostic phenomenon first described by Stiller and consisting in the presence or absence of transmitted vibrations in the intercostal spaces when short words are spoken by the patient) as leading to the conclusion that, while it is often useful in determining the boundary between the lung and the liver or spleen, and in recognizing the existence of a pleural effusion or differentiating the same from pulmonary infiltration or tumor, the limitations likely to interfere with its demonstration are sufficient to prevent its attaining great value.

The study of the phrenic shadows, on the other hand, he finds of constant value, and from the fact that in many cases it furnishes a reliable substitute for the x-ray it is to be commended as a routine practice. In executing the manouvre he finds it not necessary to carry out the original directions for placing patient and observer but advocates (after skill in recognizing the shadow has been gained in the conventional way) placing the patient with back to window in diffuse light with arms raised and body inclined slightly backward, while the observer sits a few steps away with his back also to the window. In this way the shadow on both sides may be seen at the same time. The picture may be intensified by coloring yellow the skin over the given area, or by drawing taut a fold of skin in the vicinity.

### CYTO-DIAGNOSIS.

The value of the different cells as indicators of the underlying process in pleuritis and other serous accumulations continues to be investigated by various observers with varying estimates. Kelty and Torday[6] give a review of reported progress of other observers and, as a result of study of 42 cases of their own, state several specific findings and the following general conclusions: Cyto-diagnosis is of great importance and practical worth in the discrimination of primary pleuritis in its early stage. A high-grade lymphocytosis in a case beginning with acute symptoms proves a tubercular origin. Lymphocytes may occur in pleural effusions of other origin in later stages, but in such cases other formed element and clinical observations serve as sufficient discriminating factors. The opinion already current that in later stages of acute cases not tubercular, lymphocytes are present in large numbers and indicate the chronic character of the process, is correct.

### AUTOLYSIS IN LOBAR AND UNRESOLVED PNEUMONIA.

Among the alterations in structure and consistence, presumably autolytic in nature, Flexner[7] would include those occurring in acute yellow atrophy, Zenker's degeneration, the softening of infarcted areas and in malignant tumors. Turning to the lung, he says that, while in croupous pneumonia autolytic action is plainly an important factor in resolution, in caseous pneumonia autolysis begins probably only when certain bacteria invade the necrotic areas. Reasoning from the probable fact that in many pathological conditions the leucocyte is the essential agent in bringing about absorption, the conclusion seems justified that an explanation of

[3] Med. News, Oct. 24.
[4] Deut. Med. Wchnschr., Oct. 1.
[5] Med. Rec., Aug. 8.
[6] Deut. Archiv. klin. Med., Bd. lxxvii.
[7] Univ. Penn. Med. Bull., July-August.

the facility of resolution in croupous pneumonia and the difficulty of the same process in caseous, lies largely in the relative absence of leucocytes in the tuberculous process and their presence in enormous numbers in the acute inflammatory condition. Based upon the assumption, broadly stated, that exudates and necrotic tissue are removed by absorption or organization (both of which processes may be included under autolysis) and the experimental fact that autolysis takes place quickly and perfectly in gray hepatization but slowly and imperfectly in red hepatization and in cases of unresolved pneumonia, the conclusion is drawn that while autolysis after death is a mark of the tendency during life for the exudate to become absorbed (abundance of leucocytes), the absence of autolysis in unresolved pneumonia is equally an indication of the fate of the exudate during life to undergo organization. The fact being that the exudate in unresolved pneumonia is fibrinous rather than cellular and many of the alveoli are filled with dense hyalin fibrinous masses, the view seems a reasonable one that unresolved pneumonia is an acute lobar pneumonia in which the inflammatory exudate, either because of some disproportion between the leucocytes and other constituents or other cause as yet unknown, failing to autolyze perfectly, cannot be absorbed, and hence undergoes organization.

## Reports of Societies.

### BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

Meeting Dec. 21, 1903, Dr. W. T. Councilman in the chair.

Dr. R. W. Lovett read a paper on

FORCIBLE CORRECTION IN LATERAL CURVATURE OF THE SPINE.

Dr. E. H. Bradford: The orthopedic surgeons of this community are indebted to Dr. Lovett for this paper and for the energetic investigation which he has been conducting on the subject of lateral curvature. As is well known this subject in surgery has been neglected much more than its importance deserves, and until comparatively recently the treatment of this common deformity has been placed largely in the hands of gymnasts and massage manipulators. Even the pathology was not well understood and methods of treatment were developed and practiced, although based upon faulty pathology, to the discomfort of many patients and with but little benefit to those who were obliged to undergo a long-continued treatment. One of the most striking instances of surgical error I had an opportunity to observe not many years ago in one of the English hospitals where a child was shown, at one of the clinics, who had been treated recumbent in bed for two years on a spinal couch for lateral curvature which, if left alone, would have been but little if at all worse than was the condition at the end of this long period robbed from the child's girlhood. Fortunately this former condition of pathological ignorance has been supplanted by more accurate knowledge of the nature of this deformity, and as the result of better knowledge of the subject more rational theories of treatment have been adopted and are now in vogue.

It is important to distinguish between cases of true scoliosis and simply faulty attitudes owing to muscular weakness. The latter can of course be left to gymnasium directors, but where an alteration in the bone or ligaments has already taken place and true scoliosis has been developed, the condition requires the attention of experts. Methods of treatment which are at present in vogue consist of, first, gymnastics thoroughly carried out. A useful adaptation of this has been brought, within a few years, to the attention of the profession in a thorough manner by Dr. Teschner of New York. Second, the method of ligamentous stretching. Where the ligamentous and muscular contractures are too great to be overcome by any gymnastic method and demand stretching, this method is necessary. This has been brought to a valuable degree of usefulness by several Continental surgeons, notably Schulthess of Zurich. The third treatment is that of forcible correction, brought prominently before the profession by several German surgeons, and lately by Wullstein. Quite recently Dr. Hoke of Atlanta has employed operative measures with osteotomy of the distorted ribs which promises to extend the possibilities of successful treatment to cases hitherto regarded as beyond benefit. It is in following in these lines and in improvement of these methods that this distressing deformity can be made curable.

Dr. Lovett's investigations will be much appreciated by his orthopedic colleagues in this community.

Dr. C. F. Painter: I am particularly interested in this apparatus of Dr. Lovett's, as we have been attempting some forcible corrections at the Carney Clinic, following the methods suggested by Wullstein. The apparatus in use there is like his in principle, differing only in the amount of force which can be used. Our cases have not been put up with the helmet attachment to the jacket, which, of course, lays our failure to secure the results which Wullstein claims open to criticism. Though we have succeeded in obtaining considerable correction in some of our cases, it has not been more than could be secured by a good deal less rigorous methods, and has not been maintained. I think the theory upon which Wullstein worked is erroneous, and that he could not reasonably expect to correct a deformity which is fixed, so far as the hardening of the bones is concerned, at the time the cases of bad scoliosis came for treatment, by the same method which he has found would produce these bony changes in a growing puppy.

There are two serious obstacles to the forcible correction of scoliosis; one is that a certain number of cases behave very badly under the fixation of the chest with plaster jackets; in the second place it is not reasonable to suppose that anything can be accomplished by simply lessening the lateral deviation of the column unless the muscles can be strengthened to hold any possible correction secured. It seems unreasonable to secure this muscular strengthening of the short muscles on the concavity of the curve or the stretched muscles on the convexity, unless opportunity is offered for their functional use immediately.

For these reasons forcible correction seems to me reasonable only when used intermittently with jackets and combined with gymnastic work from the start. I should, therefore, regard any method of correction in jackets as simply another resource which we have at our disposal for the limbering up of scoliotics. I believe that this is better accomplished by hyperextension of the spine and application of the jacket in that position than by applying the retention apparatus in a

flexed position. All methods which tend to help in the solution of some of the complicated problems of lateral curvature should be welcomed, for the more devices one is master of, the greater success must attend the treatment of these most distressing deformities.

## NEW YORK NEUROLOGICAL SOCIETY.

Stated Meeting Jan. 5, 1904.

Pearce Bailey, M.D., President.

### PTOSIS RELIEVED BY OPERATION.

Dr. B. Sachs presented a young man who had been under his observation for a number of years. He had been apparently well until about ten years ago, when he had an apoplectiform seizure, which resulted in double ptosis and palsy of all of the ocular muscles. There was some recovery, but at the present time there was almost complete paralysis of both recti externi, and the up and down motions were still considerably restricted. The rectus externus of the left side had recovered most. The lesion was evidently in the vicinity of the aqueduct of Sylvius, involving not only the third nerve but the sixth and fourth nerves. For many years this man had had a very persistent tachycardia, and it was assumed that he had had a chronic endocarditis, and that an embolus had passed into the basilar artery. Quite recently another possibility had arisen, *i.e.*, Dr. A. Wiener had found what he considered to be a specific lesion of the fundus. Possibly, therefore, the original condition was a thrombosis resulting in considerable softening. The speaker thought that after a certain length of time, when the ordinary therapeutic procedures had failed to bring about a favorable result, it was proper to resort to surgical means for relieving the ptosis.

Dr. Alfred Wiener, supplementing Dr. Sachs' report, said that before the operation, which he had done, the left eyelid hung down to the full extent. The operation done was that known as the Hess operation. An incision was made along the brow, the skin was dissected away and three deep sutures were inserted so as to practically attach the lid to the frontalis muscle. There had been no sacrifice of tissue, and the natural folds of the lid had been preserved. There were a number of pigment spots on the periphery of the retina, a condition often found in young children suffering from hereditary syphilis. It was extremely probable, therefore, that this man was suffering from hereditary syphilis.

Dr. W. M. Leszynsky said that if the man had a ptosis and a paralysis of the third nerve, and the operation were done, and there was diplopia, the resulting condition would be worse than before the operation.

Dr. Sachs said that he had intended to emphasize the point that if there were a diplopia, other ocular muscles should be cut hereafter and a proper equilibrium of the muscles restored. He had had this done in a number of stubborn syphilitic cases, at the suggestion of an ophthalmologist, and the results had been very satisfactory. He would, therefore, recommend the operation not only in ptosis, but in any ocular palsy of long standing.

### POST-DIPHTHERITIC HEMIPLEGIA, PROBABLY OF NEURAL ORIGIN.

Dr. Joseph Collins presented a boy of nine years with paralysis and contracture of the left hand and foot. He had first seen the patient at the request of a surgeon, who suspected a tumor of the cortical motor area. The history was that, two and a half years ago, the child had a severe attack of diphtheria, for which antitoxin was administered on the fourth day. A week later the child was very weak, and his hands, feet and face were swollen. About three weeks after the onset of the disease he began to walk, and then it was noticed that the left foot dragged. A day or two later the left hand was observed to be weak. A week or so after that the left angle of the mouth was seen to be drawn up. Oftentimes on attempting to swallow fluids, they regurgitated through the nose. The mother did not recall the boy's having had choking spells on swallowing. Between two and three months after the onset of the paralysis the hand and forearm began to flex and the hand to abduct, so that the elbow stood out from the body further than the shoulder. The hand became tightly clutched and gradually drew up until it was held behind the head. This condition lasted about a year. During this time the endeavor was made to overcome this position of the hand by making him carry a weight in it and by using a Whitely exerciser. About eighteen months after the onset of the paralysis the face became straight, but the condition of the foot remained such that when he attempted to put on a shoe he had to wait until the toes became extended, and if the shoe were not slipped immediately at that moment he might have to wait half an hour before the flexor contraction or spasm would again relax. He never complained of pain. He attended school during this time, and was always bright in his studies. On admission to the Hospital for Ruptured and Crippled on Oct. 23, 1902, he walked with a limp on the left side, the foot being held in position of marked equinus and slight varus; the left hand was held rigid, with the fingers extended, and the posterior muscles of the leg were in rigid contraction. The toes were flexed. The equinus could be overcome by force. There was slight atrophy of the muscles of the leg, but no paralysis. The left hand was in overextension, but there was no barrier to flexion. On Oct. 28, the astragalo-scaphoid articulation was exposed, and a wedge of bone and cartilage was taken from the adjacent surfaces. The flexor longus hallucis was exposed and cut, the proximal end was drawn down and passed through the scaphoid and sutured to itself and adjacent periosteum. The anterior tibial was cut and shortened, and a tenotomy of the tendon Achilles was made. The foot was put up in valgus position in plaster of Paris. On Nov. 15, 1902, the hand was put up in plaster in a flexed position. On Dec. 13, 1902, when the plaster was removed from the hand, there was marked flexion with slight flexion of the fingers. On Jan. 21, 1903, it was noted that the hand was in extreme flexion. At present, the boy was apparently healthy and well except for the deformity of his left extremities. His ability to walk, run and jump was limited only by the flexed position of the foot. He stood on either foot equally well. There was no paralysis of the muscles of the hip. The fingers, hand, forearm and arm were in a state of flexion, and the fingers and hand inclined to extreme flexion. This contracture could be overcome by the examiner. The knee jerks were present on both sides and equal. There was no tenderness on pressure over the nerves, nor were there any sensory disturbances. There was no atrophy. There was partial reaction of degeneration in the muscles and nerves of the extensors of the forearm and foot and of the peroneal muscles. There was none of the stigmata of hysteria unless the contracture might be considered such. The case was diagnosticated as one of post-diphtheritic neuritis resulting in contracture and faulty attitude simulating hemiplegia. That there might be an hysterical element in it the speaker did not deny.

Dr. Joseph Fraenkel called attention to the curious and irregular behavior of the symptoms, and

the absence of organic phenomena. The change in electrical reaction might be explained by the clonic state of the muscles. He was inclined to believe that this was a functional disorder.

Dr. Leszynsky said he had carefully examined this boy previously. According to the history that he had obtained, this peculiar attitude took place very rapidly. He had been impressed with the fact that, on entering the hospital, there was complete extension of the wrist and hand, and that after the hand had been placed in forcible flexion it had remained in that attitude, whereas formerly it had been in extension. He could find no evidence of involvement of the motor tract. He was inclined to look upon the case as of functional origin. According to the history, the extension took place quite early.

Dr. Sachs said that from a very large experience that he had had with infantile cerebral palsy he would not hesitate at all to say that this was a case of that kind. He pointed out that infantile cerebral palsy did occur after diphtheria. The boy had a hemiplegia which was entirely typical, and there were contractures just as in other cases of hemiplegia. There were athetoid movements of a most pronounced character. If, with the eyes closed, the boy was asked to grasp one's hand firmly with the well hand, the affected hand would at once go into the athetoid position. He could not recall having ever seen this condition in hysteria or neuritis. The leg had recovered very much more than the arm. He would not deny the possibility also of a neuritis, but the infantile palsy was a primary condition. He could not believe that any neuritis would give rise to the condition found in the leg. He would like to know if any one present had ever seen athetoid movements with peripheral neuritis. There was probably a post-diphtheritic encephalitis as the original cause.

Dr. C. L. Dana said he was very glad indeed to hear this positive opinion expressed because he had arrived at the same conclusion from a rather hasty examination of the child. To him a condition very characteristic of the cerebral hemiplegia was present in the face.

Dr. Pearce Bailey said that the history of the case did not point very distinctly to a post-diphtheritic paresis, and such a distinctly hemiplegic character would be unusual for a neuritis. The weight of evidence seemed to point to a post-diphtheritic cerebral hemiplegia.

Dr. Collins said he did not know of any hemiplegia of organic origin that entirely spared the upper part of one extremity. There was some involvement of the face and an inability to wink with the left eye, but a large number of people were unable to wink with one or the other eye who had never had hemiplegia. The fact that one hand underwent extension while the other clutched did not seem to him to have any significance, because he had frequently tried this in persons who had no hemiplegia.

### TWO CASES OF CONGENITAL CYST OF THE FOURTH VENTRICLE ASSOCIATED WITH BRAIN TUMOR.

Dr. J. Ramsay Hunt reported these cases, presenting photographs and specimens. He said that both cases were examples of brain tumor in young subjects, occupying the left optic thalamus and the right crus cerebri respectively. In addition, the fourth ventricle in both cases contained a large cyst, primarily attached to its floor, penetrating into the substance of the pons, coursing through its structures and terminating in immediate structural relation with the tumor. The clinical course of the disease in both cases was typical of brain tumor, and permitted the correct localization of the growth. Antedating the symptoms of brain tumor no certain history of central symptoms or mental defect was obtainable. In the second case the patient was said to have been subject to headaches with attacks of vertigo and nausea. The first patient was a boy of seven, who developed general symptoms of brain tumor with right hemiparesis and right hemiataxia. There was paralysis of the right side of the face with paresis of the left external rectus and with nystagmus. Hearing was impaired on the right. The second patient was a boy of seventeen who, six weeks after a fall on the occiput, developed the general and focal symptoms of brain tumor in the right crus cerebri. Weber's syndrome was present. On exposing the fourth ventricle, at the autopsy, a large cyst was found there in both cases, firmly attached to the floor of this ventricle. By serial sections he had demonstrated that in both cases the cyst dipped down in the pons, coursed forward and was in immediate structural relation with the tumor in both cases. There was nothing in the walls of these cysts to suggest a parasitic origin, while there was much to point to a congenital origin. The frequency of glioma in this locality was well known. The coexistence of a tumor formation still further supported the view already expressed. These cases were unique in his pathological experience, and he had been unable to find their counterpart in the literature.

### A CASE OF PRIMARY SCLEROSIS OF THE POSTERIOR COLUMNS FOLLOWED BY A DISSEMINATED SOFTENING OF THE OTHER WHITE COLUMNS.

Dr. Joseph Collins presented this report. The clinical picture, he said, was so typical that the diagnosis was made during life. The patient was a house-painter, forty-two years of age, whose only previous illness had been severe attacks of colic. There was no history of syphilis, gonorrhea or the excessive use of alcohol. In 1900 he began to complain of trembling and stiffness of the hands, associated with intense paresthesia. Later on, there was pain in the back. During the following year his principal complaints were manual paresthesia and general weakness. There was no desire for sexual intercourse. All this time he was under treatment for chronic lead poisoning. In January, 1902, he rapidly became paraplegic, and since then had been bedridden. He was admitted to the City Hospital in March, 1902, and when first examined by Dr. Collins, on April 11, the man appeared to be suffering from Bright's disease. He could move the lower extremities slowly; there were knee jerks present on both sides. The Babinsky reflex could also be elicited on both sides. Tactile sensibility was impaired over the lower extremities. Thermal sensibility was preserved, but was slow below the knee. Pain sensibility was preserved. Deep sensibility was lost. There was prompt response to the faradic current. The pupils were equal and responsive. Bed sores were developing over the sacrum. The blood examination showed a predominence of small mononuclear cells and there was only 65% of hemoglobin. On April 27, it was noted that there was complete flaccid paraplegia; the left lower extremity was edematous; there was incontinence of urine and feces. He refused to take food up to the time of his death. The autopsy was made twenty-four hours after death. The brain and spinal cord were prepared in the usual way, and showed two distinct sets of lesions, sclerosis and softening. The areas of softening appeared to be very recent. In general, they involved the columns of Burdock, the posterolateral portions of the crossed pyramidal tract

and the cerebellar tract. The oblongata, pons and motor cortex were normal. The sclerosis appeared to be a primary one following pretty closely the system of fibers in Goll's tract. No thrombi or pathological changes of the blood vessels were found, and the blood examination showed this fluid to be fairly normal. The genesis of the softening was still obscure.

DR. C. L. DANA said that this description followed closely those of cases of combined degeneration of the spinal cord with terminal softening. He did not quite understand whether the reporter put his case in this group, yet, to his mind, the case corresponded very closely with typical cases of that kind, a considerable number of which it had been his fortune to observe. Sometimes these cases were associated with a pernicious anemia; sometimes there was a severe primary anemia, while at other times there was no anemia at all. It was unfortunate that neurologists had not as yet agreed upon a name for this affection. The most common name was combined degeneration of the spinal cord associated with toxic states. The pathological conditions reported in this paper were very similar to those already reported. It was only in the minority of cases that there were areas of terminal softening. He was not prepared to admit that there were two distinct processes going on in the spinal cord. The disease began slowly, affecting by preference spots in the posterior columns, and subsequently the lateral columns. If the patient's condition were bad at this time, an acute process developed, but probably essentially of the same nature. The etiology of the toxic condition was as yet unfortunately involved in obscurity.

DR. COLLINS said that his case was reported as one of primary sclerosis of the columns of Goll with secondary softening in the other white columns, the paper being entitled, "A Study of Subacute Sclerosis of the Spinal Cord of Toxic Origin." His case differed materially from those reported by Drs. Dana and Putnam in that the sclerosis was sharply and completely limited to the columns of Goll. In the other cases the sclerosis predominated in the posterior columns and in the crossed pyramidal tract, and this accorded in the main with the clinical history. The fact that his patient had suffered severely from lead poisoning and had subsequently developed a cachexia seemed to throw a little light on the etiology.

LYMPHOCYTOSIS OF THE CEREBROSPINAL FLUID.

DR. JOSEPH FRAENKEL read a paper on this topic. He said that he had endeavored to study this subject in 47 cases, but in 14 of these the tappings had failed to give any cerebrospinal fluid. There were seven cases of tabes, all of long duration, and all of these cases showed marked increase of lymphocytosis. Six out of the seven cases of multiple sclerosis showed lymphocytosis. The tapping was done upon the patient in the sitting posture, preferably between the third and fourth lumbar vertebræ, or at the level of the iliac crests. From 5 to 8 cc. of the fluid were collected for each examination, and then dentrifuged. The tappings were made under chloride of ethyl spray. In some of the cases headache and nausea followed lumbar puncture, but they were usually overcome by saline injections.

DR. SACHS said that in the two cases in which lumbar puncture had been tried by him in order to distinguish between pseudotabes and tabes the examination proved entirely negative and of no diagnostic value. Hitherto the reports on this subject had been discouraging because of their contradictions. Lumbar puncture should never be attempted whenever there was a possibility of the existence of a cerebellar neoplasm, as several instances of sudden death following this procedure in such cases had been reported.

DR. DANA said he had made lumbar puncture now in 26 cases, 21 of which were successful. About 12 of these cases were cases of paresis in which it was desired to receive some diagnostic aid. In two the fluid was clear; in others there was a lymphocytosis. He had found the procedure helpful in diagnosticating certain acute cases coming into the insane pavilion. The procedure was easy after a little practice, and could be done almost painlessly by using 30 minims of ½% solution of cocaine injected ten minutes before the tapping. The procedure had proved helpful in one or two cases of spinal trouble. He believed it was not only of value in diagnosis but that it would prove useful in time in therapeutics. Lumbar puncture almost always caused headache or vertigo for a day or two, sometimes for a week, and often it was very distressing. He believed this could be avoided by removing only 4 cc. of the fluid, a quantity sufficient for diagnostic purposes.

DELIRIUM GRAVE; A CRITICAL STUDY, WITH REPORT OF A CASE WITH AUTOPSY.

DR. W. B. PRITCHARD presented this paper. He said that all authors agreed that the disease was very uncommon and most writers agreed that it was chiefly found among women. The immediate exciting causes were apparently numerous and various. Typhus and typhoid fever, or other prolonged infections, might be followed by delirium grave. The clinical picture was quite distinct and constant. Following a sudden or prolonged strain, the patient developed a maniacal condition with violence and incoherence. Hallucinations and delusions appeared, usually related to the visual sense, and the temperature was usually raised from one to five degrees above the normal. Again and again transient remissions might occur, but they became less and less complete and less frequent. Emaciation was sometimes rapid, followed by exhaustion, coma and death in a short time. At least two fundamentally different diseased conditions had been confused — one obviously organic, inflammatory and due to toxins or trauma; the other giving chiefly negative pathological findings. He would suggest the use of the term " delirium grave " for this group, and the application of the terms "pseudo-delirium grave" or "acute febrile delirium" to the first group. Many cases of meningitis and of toxic encephalitis had been reported as delirium grave. In ordinary acute mania there was not the same tendency to rapid and fatal collapse, and the hallucinations and delusions were more systematized. The disease was of extremely grave prognosis, nearly all cases terminating fatally. Death usually occurred from exhaustion; those who escaped death passed into a condition of dementia. The case reported occurred in a woman of forty-three, who had been subject to many and severe nervous strains. On Dec. 12 she suddenly developed the most violent mania. The delirium and mania were only temporarily controlled by drugs, and she died on the sixteenth day. A noticeable peculiarity was an almost continuous expectoration. Incontinence of urine and feces developed a few days before death. The autopsy was made four hours after death by Drs. McPhee and Larkin. Sections were made from all the regions of the brain. No changes in the blood vessels were noted; the chief changes were eccentricity of the nuclei with ragged cell outlines and loss of chromatic bodies. In the cerebellum, Perkins' cells were mere

shadows. These lesions had been found in a great many other conditions.

Dr. Adolf Meyer was of the opinion that acute delirium grave had, among alienists, much the same position that Landry's paralysis had among certain affections of the spinal cord. The delirium under discussion was uniform and unmistakable in that it could not be analyzed owing to the excited condition of the patient. He had not yet met with a single case in which there had been reason to doubt the diagnosis of delirium grave. In some of these meningitis had only been discovered by microscopical examination; in others, pneumonia or some other condition had spoiled the purity of the clinical picture. He thought the majority of alienists took a somewhat different position from Dr. Spitzka on this subject, believing it to be a peracute phase, but not a clinical entity.

Dr. Pritchard said that the object of his paper was to endeavor, if possible, to clear up the subject by separating the cases of meningitis, pneumonia and the like from true delirium grave, and emphasizing this differentiation by reporting a striking case coming under his own observation. He was of the opinion that the vast majority of alienists of to-day did recognize delirium grave as a clinical entity, although of obscure etiology.

## Recent Literature.

*The Medical Annals of Maryland.* 1799–1899. Prepared for the centennial of the Medical and Chirurgical Faculty. By Eugene Fauntleroy Cordell, M.D. Illustrated. Baltimore. 1903.

This volume of nearly 900 pages is the result of a plan adopted by the Medical and Chirurgical Faculty of Maryland in 1898 for the proper celebration and commemoration of the centennial of the faculty. The work is arranged in three divisions, — an historical section, a biographical section and a chronological section. The first, as its name implies, deals with the work of the society during the century of its existence; the second gives the names and a brief record, when obtainable, of about 2,400 persons who have been members of the society. In spite of every effort small information was obtainable of many of the 101 charter members, a matter, naturally, of regret. The third part, making use largely of the historical researches of the late Dr. John R. Quinan, is concerned with matters of chronological interest. The editor of the volume has been assisted in his work by the following committee: Drs. William Osler, Thomas A. Ashby, Harry Friedenwald, Henry M. Hurd and George J. Preston.

The volume is a worthy commemoration of the event it is designed to celebrate, and contains a large amount of information which should prove of vital interest to the student of the medical history of Maryland which is epitomized in the hundred years which the book covers. It is admirably printed and bears evidence of the assiduity of the editor and his collaborators. A number of half-tone reproductions of distinguished men and other illustrations of general interest embellish the volume.

*High Frequency Currents in the Treatment of Some Diseases.* By Chisholm Williams, F.R.C.S. (Edin.) 8vo. pp. xvi, 222. With 75 illustrations. London: Rebman, Limited. 1903.

The use of electrical currents of high frequency and high potential is increasing and the value of such currents in therapeutics seems to be acknowledged, especially in the treatment of tuberculosis and certain skin diseases. The volume before us gives a somewhat full account of the various forms of apparatus required, and the methods of using them, with the results of treatment in various cases. The author unfortunately presupposes a considerable knowledge of electricity on the part of the reader, so that the book is hardly adapted for one beginning the study of high-frequency currents.

*Organic Nervous Diseases.* By M. Allen Starr, M.D., Ph.D., LL.D. 8vo. pp. viii, 751. Illustrated with 275 engravings in the text and 26 plates in colors and monochrome. New York and Philadelphia: Lea Brothers & Co. 1903.

"It is now possible," says the author in his preface, "to trace any symptom presented by a patient to some disturbance of function in a definite nerve center or nerve tract." While this is certainly the goal of our diagnostic efforts, our knowledge is still far too inadequate to attain unto it, and the present volume by no means extends our knowledge far enough to warrant the claims of the preface. The very title of the book is a reversal toward doctrines that are obsolescent, since one aim of modern neurology is to remove the taint of ignorance implied by the word functional and establish a definite pathology of the "functional" disorders. The book itself is a treatise upon nervous diseases, laying somewhat particular emphasis upon localization and upon surgical treatment, and omitting any consideration of that large class of nervous diseases which were once called "functional," except the various forms of neuralgia. Within these limitations the work is of uneven merit. The author's skill in a clear and simple presentation of the essential facts of a subject is well known, and that is, of course, manifested in the present volume, his presentation being enriched with the results of his own large clinical experience and by many excellent diagrams and illustrations. Some of the chapters are clear, accurate and an excellent presentation of the latest doctrines upon the subjects of which they treat. Others are thoroughly banal, defective and far behind our present knowledge. They read as if they had been written five or six years ago and published without revision. In addition, there are many statements which are either inaccurate or far too positive, and show a lack of care and a failure to note recent investigations. In spite of these grave faults the work contains much of great value and it will in many ways prove helpful to the neurologist, although it is of too uneven merit and too incomplete to place in the hands of the student.

THE BOSTON

# Medical and Surgical Journal.

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## DUSTY STREETS.

THE complaint periodically heard in this community of the unhygienic condition of streets finds its echo in London, and we have no doubt, if investigation were carried further, it would be found that all cities exposed to wind and dirty streets would be found in a similar plight. At a recent meeting of the Sanitary Institute of Great Britain, alluded to in the *Lancet*, the evening was devoted to a discussion of the relation of streets and thoroughfares to public health in the hope that vast municipal schemes might temporarily be subordinated to the humble duty of effective scavenging.

Apparently the most important paper read at this meeting was by Dr. L. C. Parkes, medical officer of health of Chelsea, who discourses upon the compound known either as London mud or London dust according to its condition of moisture. He dwelt upon the perfectly familiar facts that such material in pulverized form is of necessity a source of irritation to the bronchial mucous membranes, and that, difficult as it may be to trace special diseases to this flying dust as a source, nevertheless, the fact cannot be doubted that such material must be capable of doing positive harm. Apart from the actual production of disease, the general discomfort and damage to property should receive consideration. Dr. Parkes, for example, notes the fact that attempts to exclude dust from cases containing the more valuable books in the Library of the British Museum have met with only partial success. Microscopic examination shows this dust to be derived directly from the streets. Street dogs he regards as an "unmitigated" nuisance, and urges that restrictions be laid upon their use of highways and foot paths. He disapproves of macadamized streets, and urges that they be superseded as soon as may be by wood or asphalt which might be effectively cleansed by daily washing.

All this sounds familiar, and is certainly, as experience has shown, as applicable to us as to London. Boston has the reputation at least of being a peculiarly windy city; its experimental pavements are of great variety; its dust under proper weather conditions is always apparent. We recall a meeting held several years ago by the Boston Society for Medical Improvement analogous to the one we have just alluded to in England. The dangers and discomforts and various means of bettering the conditions were discussed at length by specially qualified speakers. The dust of the streets was magnified by a lantern projection on the screen, and everything legitimate was done to impress upon municipal authorities the importance of the entire matter. The results, however, have not been conspicuous. We still have dirty streets and the inevitable accompaniment of dust and dirt.

The continuous covering of snow during the past winter has definitely relieved the usual conditions, and no doubt has conduced to a greater degree of health in the community than would otherwise have been the case. The problem in general is clearly one for the municipal authorities to solve. In the meantime physicians should persevere in their investigation of the actual danger which lurks in the familiar dust storm. If we could prove definitely that disease of any sort is regularly induced by these conditions, municipal action could possibly be hastened. The present situation appears to be here, as in London, much discomfort and the possibility of disease.

## REPORT OF PUBLIC HEALTH AND MARINE HOSPITAL SERVICE.

THE annual report of the Surgeon-General of the Public Health and Marine Hospital Service of the United States for the year 1902 is before us. We have previously noted the reforms and consequent increased efficiency of this branch of the public service. Surgeon-General Wyman finds much cause for the belief that the possibilities of increased usefulness under the act of July 1, 1902, will be manifest in the immediate future.

The foundation provided by Congress during the past year makes possible the development of the service in a measure hitherto impossible. He also feels that now an influence for the public welfare is offered far beyond any opportunity of a like character that has been presented in the history of the country.

At the end of the fiscal year under consideration the commissioned corps of the service numbered 105 commissioned officers, including the surgeon-general, 29 surgeons, 27 passed assistant surgeons and 48 assistant surgeons. Officers presenting themselves for examination for promotion were uniformly successful. New hospitals are being established at New York, Buffalo, Pittsburg and Savannah, and measures have been taken toward selecting sites and erecting suitable buildings.

Regarding the diseases which came under the observation of the Marine Hospital Service, it appears that no case of yellow fever occurred in the United States during the year. In San Francisco 39 cases of plague were reported with but one death. Smallpox had occurred in 44 states and territories to the number of upwards of 50,000, with nearly 2,000 deaths, the mortality being 3.31%. A commission appointed to investigate the origin and prevalence of leprosy in the United States reported as follows: That there were present in the United States 278 cases of the disease, probably an incomplete census because of the impossibility of discovering all cases. Of the cases observed 145 were born in the United States, 120 in foreign countries, and the birthplace of the remainder was unknown. Twenty-one states and territories are known to contain lepers. As a result of this investigation, the commission recommends the establishment of at least one national hospital for leprosy, to be maintained under the supervision of the general government. Under present conditions of improved hygiene and knowledge of the nature of the disease these figures cannot be regarded as in the least menacing. Isolation is, however, undoubtedly a wise precaution. On the scientific side, the various researches have been undertaken on the general question of the etiology of yellow fever and on various matters of hygienic importance.

The greater part of the report, as usual, is taken up with contributions of a clinical or laboratory character from the various division officers located in different parts of the world. Numerous illustrations of interest, illustrative of quarantine or sanatorium construction, are inserted in the text; in general, we find the report stimulating and indicative of the increasingly thorough work of scientific value which is being carried on by the Marine Hospital Service.

## INTERSCHOLASTIC SPORTS.

The Indoor Interscholastic Athletic Meeting, under the auspices of the Boston Athletic Association, took place on Saturday, March 19, at the Mechanics Building on Huntington Avenue. It served to emphasize the statements made in these columns a few weeks ago (Feb. 11) in relation to schoolboy athletics.

Before the contests a meeting of the officers of the association was held, at which many of the contestants were present. This meeting was addressed by the managers of the Harvard and Yale Track Teams, and also by Mr. Clark of the Boston School Committee. The last speaker dwelt on the possible dangers of Interscholastic Athletics as viewed from the standpoint of a practical athlete. In the main his views coincided with those already expressed in these columns.

It seems to be a fact that the large majority of schools sending teams to these contests do not have any routine medical examination, and that the boys are subject to the direct and absolute authority of a professional or semi-professional trainer. The boys are allowed to compete in several events, and at times are encouraged to do so. The amount and severity of the training depends entirely upon the judgment of the professional coach. The frequent disappointment in the performance of individuals, of whom much had been expected in certain events, expressed at times in no uncertain terms, is only too often due to overtraining which is entirely the fault of the coach. And the reputation of the coach is usually a matter of more concern than the welfare of the boys.

Another thought suggested by this school meeting is the advisability of giving up the mile run at the indoor meeting. The dust, the poor ventilation, the hard and crowded track and the sharp corners are all arguments against the indoor mile. The outdoor mile is sufficiently severe for schoolboys and it should be limited to the strongest and most mature students; but, at least, it is run in the open air and on a wide four-lap cinder track.

It is certainly time to supervise school athletics more closely. The possibilities of injury are many, and the manifestations of overwork

or overexertion may not be apparent for months or even years. If present conditions continue, they will inevitably bring discredit upon the interscholastic games.

## MEDICAL NOTES.

A Cantata Dedicated to Dr. Welch. —At a concert of the Washington Sængerbund, held March 20, a cantata, "Hymne an Hygiea," composed and orchestrated by Dr. John C. Hemmeter of Baltimore and dedicated to Dr. William H. Welch, was given.

Postponement of Henry Phipps Institute Lecture. — It is announced that a cable from Professor Maragliano states that through illness he will be unable to give his lecture under the auspices of the Phipps Institute scheduled for March 28. It has, therefore, been indefinitely postponed. The Henry Phipps Institute will entertain at dinner on Monday, the 28th inst., the delegates who have been called to meet in Philadelphia to consider the question of a National League against Tuberculosis, and the holding of an American Congress against Tuberculosis. Dr. F. L. Flick will give a luncheon to the delegates on the same day just before the meeting, which has been called for 3.30 o'clock. At this meeting an abstract from Professor Maragliano's paper will be read.

Leprosy in New South Wales. — In a report of the Board of Health of New South Wales for the year 1901, rendered the end of December, 1903, there appears the following summary in regard to leprosy: The total number of persons admitted since 1883, when patients first began to be received (though the notification of leprosy was first made compulsory and the detention of lepers provided for by law only towards the end of 1890), is 78. Distributed under nationalities, the account stands as follows: Natives of New South Wales, 21, of whom 15 have died and 1 was released; of Queensland, 1, deceased; of England, 4, of whom 2 have died; of Ireland, 2, deceased; of New Zealand, 1, deceased; of Fiji, 1, deceased; of Germany, 2, of whom 1 has died; of Belgium, 1, deceased; of the United States of America, 1; and all of these were whites, of European descent. There were also 37 natives of China, of whom 12 have died and 21 have been returned to their own country; of India, 2, deceased; of the West Indies, 1, discharged in 1885; of Java, 1; of Tanna (New Hebrides), 1, deceased; of New Caledonia, 1, deceased; of South Sea Islands, 1; and all of these were colored people.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon March 16, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 47, scarlatina 21, typhoid fever 5, measles 157, smallpox 0.

Death from Anthrax. — It is reported that a morocco workman in Lynn has recently died from anthrax, presumably contracted from the handling of South American goat skins.

Boston Mortality Report. — The number of deaths reported to the Board of Health for the week ending March 19 was 253, as against 225 the corresponding week last year, showing an increase of 28 deaths and making the death-rate for the week 21.87. The number of cases and deaths from infectious diseases was as follows: Diphtheria, 47 cases, 7 deaths; scarlatina, 25 cases, no deaths; typhoid fever, 6 cases, 3 deaths; measles, 191 cases, 9 deaths; tuberculosis, 44 cases, 30 deaths; smallpox, no cases, no deaths. The deaths from pneumonia were 48, whooping-cough 1, heart disease 18, bronchitis 5, marasmus 2. There were 4 deaths from violent causes. The number of children who died under one year was 47, under five years 67, persons more than sixty years 52, deaths in public institutions 82.

Bequests to Hospitals. — By the will of the late William Litchfield of Lexington, Mass., the following institutions in and about Boston, among many others, are beneficiaries: Kindergarten for the Blind, Jamaica Plain, $5,000; Boston Lying-in Hospital, $3,000; Home for Aged Men, $5,000; Children's Hospital, $5,000; Cullis Consumptives' Home, $5,000; New England Hospital for Women and Children, $3,000; Washingtonian Home, $5,000; Home for Aged Couples, $5,000; Massachusetts General Hospital, $5,000, income for free beds; Massachusetts Homeopathic Hospital, $5,000, income also for free beds. The Perkins Institute and Massachusetts School for the Blind receives property in Charlestown. The Kindergarten for the Blind, Jamaica Plain, is also made residuary legatee of certain property in West Somerville

### NEW YORK.

Bequests to Hospitals. — Among the charitable bequests of the late Elizabeth Y. Wright of Glen Cove, Long Island, N. Y., is $5,000 to the Nassau Hospital at Mineola, Long Island.

Elsberg Coroners' Bill. — On March 7, by a vote of 28 to 13, the State Senate passed the

Elsberg Coroners' Bill. The measure abolishes the office of coroner in the city of New York at the expiration of the terms of the present coroners and authorizes the establishment by the Board of Health of a Bureau of Medical Examiners, with a chief examiner and assistants.

Bequest to Seney Hospital. — By the will of the late Smith Lafayette Russell $5,000 is left, as a trust fund, to the Seney Methodist Episcopal Hospital in Brooklyn.

Pneumonia in Rochester. — The Health Department of Rochester, N. Y., has ordered that physicians shall report all cases of pneumonia occurring in their practice, thus placing it in the class of infectious diseases. A map of the city is to be kept at the office of the department, on which the location of the cases will be designated, and notes will be made of the sanitary conditions accompanying them.

New Buildings of Mount Sinai Hospital. — The fine new buildings of the Mount Sinai Hospital, occupying the block extending from Fifth to Madison Avenue and from 100th to 101st Street, were thrown open to inspection on March 15. They are ten in number, all of them, with the exception of an isolation house, connected by corridors on the ground floor. The institution is very completely equipped in all its departments, and will comfortably accommodate 450 patients in the wards, in addition to 52 in the private pavilion. On the Fifth Avenue side it faces the upper part of Central Park.

"Privileged Medical Testimony." — On March 15 the Court of Appeals, at Albany, handed down a decision (in which only a bare majority of the court concurred) in favor of the plaintiff in an action by Henrietta Meyer of New York against the Supreme Lodge, Knights of Pythias. This decision involves the question of "privileged testimony," and the point at issue was whether the testimony of a physician who declared that the plaintiff's husband, Emanuel Meyer, committed suicide, should be excluded. According to the terms of the benefit certificate held by Meyer, a recovery for death was not allowed in case of suicide. The Court of Appeals agrees with the lower courts in deciding that the physician's testimony could not be accepted as evidence, and this allows the plaintiff to recover. On the trial she succeeded in having such testimony excluded. The defendant raised the point that the section under which the trial court made its decision was not applicable in the case, inasmuch as the Knights of Pythias is not a New York corporation, but a Federal corporation. The courts, however, decided that the laws of the state were applicable to the contract between it and Meyer, notwithstanding the fact that the defendant's headquarters were in Illinois.

Vital Statistics for 1903. — The official vital statistics of the city for the year 1903 have just been issued by the Health Department. The total number of deaths was 67,864, and of reported births, 94,755. The number of deaths in infants under one year was 14,402, and in children under five years, 22,044. The annual death-rate in the city was 18.18. The lowest rate was in the Borough of Queens, 14.65, and in the other boroughs it was as follows: Richmond (Staten Island), 16.93; Brooklyn, 17.18; the Bronx, 17.75; Manhattan, 19.30. The diseases causing the largest number of deaths were the following: Pneumonia (6,402) and bronchopneumonia (3,312), 9,714; pulmonary tuberculosis, 8,019; Bright's disease and nephritis, 5,636; organic diseases of the heart, 4,771; diarrhea and enteritis (under two years of age), 4,439; congenital debility and malformations, 3,657; cancer and other malignant tumors, 2,609; congestion, hemorrhage and softening of the brain, 2,573; diphtheria and croup, 2,190. From other infectious diseases the mortality was as follows: Scarlet fever, 734; typhoid fever, 653; measles, 508; influenza, 418; whooping-cough, 324; smallpox, 5. The following is the number of cases of tuberculosis and of contagious diseases reported: Tuberculosis,15,214; diphtheria and croup,18,317; measles, 13,689; scarlet fever, 10,887; typhoid fever, 3,671; smallpox, 43. In addition, the following cases of contagious disease were reported from quarantine: Measles, 334; scarlet fever, 52; smallpox, 24; diphtheria and croup, 10.

Decision regarding Appropriation for Hospital Patients. — Justice Hatch, in writing the opinion of the Appellate Court, now says that the city since 1898 has appropriated 60 cents a day for each hospital patient, but the constitution provides that the money shall not be paid unless the hospital complies with the rules of the State Board of Charities. The grant, he holds, does not devote the land to the use of the corporation for its corporate purposes, but in effect gives it to be sold for the purpose of creating a fund operating as an endowment, over which neither the city nor the Board of Charities has control. "Nor does any case, so far as we

have been able to find," the opinion continues, "support such a grant. On the contrary, the expression of the courts on this subject is to the effect that all appropriations must be subject to control of the State Board of Charities, and such is the constitutional provision. To sustain these grants, therefore, would be again to open the door to the evils which arose prior to the constitutional prohibitions upon the Legislature which were passed to remedy such evil. We reach the conclusion, therefore, that these grants are in all respect gifts and endowments, and that as such they are violations of the constitutional provision of the state."

## Miscellany.

### UNUSUAL COURSES, UNIVERSITY OF CALIFORNIA.

At the next summer session of the University of California, which will be held in Berkeley for the six weeks beginning June 27 and ending Aug. 6, a number of European scientists will be on its teaching faculty. Prof. Svante A. Arrhenius, the physical chemist of the University of Stockholm, will give in English a course of lectures on the application of physical chemistry to serumtherapy, in which he will make public his most recent and hitherto unpublished conclusions. Professor Arrhenius will give another course upon the general subject of physical chemistry.

Sir William Ramsay of London is to be another member of this summer faculty, and is now preparing a course of lectures to be published later, giving his views upon the recent developments in chemical theory, dealing with the ion and the electron and illustrated experimentally by the behavior and properties of radium.

Prof. Hugo de Vries, the botanist of the University of Amsterdam, will deliver in English a course of lectures on natural plant breeding, giving his views on species and varieties and their origin by means of mutations. The lectures will be illustrated by drawings and by specimens. The following will be the sequence in which he will deal with the subject: Elementary species, constant varieties, ever-sporting varieties, mutation and fluctuation.

## Correspondence.

### ARRESTED TUBERCULOSIS: SUBSEQUENT HISTORIES OF CASES TREATED AT THE SHARON SANATORIUM.

Boston, March 17, 1904.

Mr. Editor: Will you allow me to reply to Dr. F. T. Lord's criticism[1] of my recent article entitled "Arrested Tuberculosis. Subsequent Histories of Cases Treated at the Sharon Sanatorium from 1891 to 1902?"[2]

[1] Boston Med. & Surg. Journ., Feb. 25, 1904, pp. 224, 225.
[2] Journ. Amer. Med. Assoc., Nov. 14, 1903.

Dr. Lord has shown me the unusual courtesy of referring to me the substance of his recent letter before publishing it, and was kind enough to say that inasmuch as he thoroughly approved of sanatorium treatment and was unwilling to seem to cast a slight upon the cause, he hesitated about publishing his article. I unhesitatingly requested him to say whatever he thought right, inasmuch as the truth is what we all desire in these matters, and frank discussion is the surest way of reaching that end.

In Dr. Lord's desire for scientific accuracy of all terms, he has my most sincere sympathy. No one, I think, can possibly desire that more than myself. But in his recent article, while I am impressed by his remarks, I am very far from being convinced of the correctness of his views.

In any tabulated list of cases such as I have given, I am convinced that it is well-nigh impossible to convey to the reader the clinical picture which any one case or set of cases may have presented to the medical attendant. No one will deny, I am sure, the essential importance of the previous history and the general aspect of a patient, apart from the physical signs found, when tubercular disease is suspected.

In the cases reported as tuberculosis, although not showing bacilli in the sputa and in which the tuberculin test was not given, I have distinct and vivid pictures of them all, and while not wishing to claim infallibility in my own powers of observation, I can unhesitatingly say that they all, in my opinion, showed the distinct symptoms of latent or definite tubercular disease sufficient to make me feel practically certain of the diagnosis. It is a common experience in sanatoria and elsewhere to find patients who continue for weeks, even months, with cough and expectoration which does not contain tubercle bacilli, but which finally shows the presence of the germ. It is perfectly reasonable to suppose, therefore, that in many cases under treatment the prominent symptoms are all checked before the bacillary stage has been reached.

Dr. Lord is evidently an ardent believer in the use of tuberculin as a means of diagnosis, although he frankly admits that the only reliable proof of *pulmonary* tubercular disease is the presence of tubercle bacilli in the sputa. It may be well for me to say here that I cannot put myself in the ranks of those who believe in the free use of tuberculin. To its indiscriminate use and to the sometimes careless methods of claiming reaction when the patient has not been under the strictest supervision, I am strongly opposed. A few years ago, at a meeting of the Medical Improvement Society, I stated that up to that time I had never used tuberculin for diagnostic purposes, although earlier in my practice I had experimented with it therapeutically, only to give it up; and that although I was, perhaps, foolishly conservative, I was not wholly convinced of the wisdom of its use, nor could I conquer then a repugnance to giving it. Since then, yielding somewhat to the opinions of those in whom I had faith, I have occasionally used it in doubtful cases at Sharon and Rutland, where patients could be closely watched, simply as a means, if possible, to convince others of the results in doubtful cases. I regret to state that I have frequently found myself, in consequence of its use, more in doubt than before, and have in a few instances made mistakes in discharging patients who failed to react to the maximum dose, and who in later weeks showed symptoms of disease, cough, blood-spitting, etc. In one case 10 mgm. of tuberculin given carefully failed to cause a reaction in a patient who a few days before had shown bacilli in the sputa. A small number of cases, it may be said, but sufficient to show the possibility of grave error. It should be stated, moreover, that many patients refuse flatly to take the test, a position which adds to the embarrassment and difficulties besetting those who are attempting conscientiously to do their best for the patient, and at the same time to employ what are considered scientific methods.

As to the correctness of Dr. Lord's attitude about all cases which show after repeated examinations no tubercular but numerous grippe bacilli in the sputa, I must confess to being quite unconvinced. Opposed to the fact of Koch's statement that he believes many cases of apical

catarrh to have their origin in grippe and not in tuberculosis, we have Beck's statement that in most cases in which apical catarrh was present with symptoms of grippe, he found the tuberculin reaction to be overwhelmingly positive.[3] So we have conflicting views among men of great experience.

In Dr. Lord's excellent work, "Eleven Acute and Eighteen Chronic Cases of Influenza,"[4] I find that the tuberculin test was given apparently in only three of the chronic cases and none of them came to autopsy. It would be interesting to know the subsequent histories of these cases a few years hence; but from Dr. Lord's papers, I fail to see how they can be proved to be *non-tubercular* simply from the failure to find tubercle bacilli in the sputa while under observation, and I am strengthened in this opinion from the fact that one of our eminent pathologists states that of the chronic pulmonary cases which come to autopsy in his experience, he finds only a small percentage which are non-tubercular in origin.

Lastly, I must state that Dr. Lord's attempt to classify my cases and establish any theories upon a difference in the mortality list of those who had bacilli and those who did not, is absolutely untenable. He forgets, or the tables have not made it evident to him, that the majority of the nine who had bacilli in their sputa and who died were fairly advanced cases in whom an arrest of disease was really unexpected, and one died from another cause during operation, an eminent practitioner of this city, just before her death, having failed to find in her chest evidence of the pre-existing disease. Of the three patients who failed to show bacilli while at Sharon and who died later, one, who had also a mitral lesion, was a typical case of "galloping consumption" after she had left Sharon and had returned to a damp house; the other, with signs in both apices, died of "phthisis" undoubtedly, as stated by her physician; of the third there is no record, but from the previous history there was every evidence of a tubercular tendency, to say the least.

Even in cases of undoubtedly tubercular nature with bacilli in the sputa, we find the course of the disease as different in different subjects as black is from white, an experience which I am sure Dr. Lord must have had also.

His attempt, therefore, to suggest the possibility of a difference in prognosis in the divisions which he makes of my cases on the strength of the presence or absence of bacilli is to me quite untenable.

No one can have greater respect than myself for what bacteriology and laboratory work generally have done for medicine; but I am free to confess that I think we are now apt, too often, to lay stress upon laboratory evidence at the expense of clinical experience, and by so doing are not infrequently led astray. In this opinion I know I am not alone. One thing is certain, in more than twenty years of practice and covering the examination of consumptive cases numbering well up into the thousands, I have never yet had reason to doubt the wisdom of what was dinged into my ears from my earliest medical infancy, viz.: "If you find any change in the respiration or the percussion note in one or the other apex of the lung beyond the normal change which usually exists in the right apex, if you hear a single rale in the same position, especially if accompanied by malaise, loss of flesh, slight fever, with or without cough and expectoration, *watch your patient for he is in danger*.

Whether or not the future shall absolutely prove to us that such cases are often due to some disease other than tuberculosis, I still hold now to the belief that, clinically speaking, the result is likely to be the same to the patient, and it is of vital importance to him at least that we do not split hairs in making a diagnosis.

In conclusion, let me say that I fully appreciate Dr. Lord's excellent work and his laudable desire for scientific accuracy. I can but feel, however, that to follow out his suggestion as contained in his letter would, with our present imperfect knowledge, but add to the unfortunate confusion which to a certain extent must exist in medical nomenclature.

Respectfully yours,

VINCENT Y. BOWDITCH, M.D.

[3] Deutsche med. Woch., No. 9, p. 139, 1899.
[4] Med. & Surg. Journ., pp. 659-669, Dec. 18, 1902.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MARCH 5, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseases. | Typhoid fever. |
| New York . . | 3,908,644 | 1,800 | 513 | 21.00 | 28.22 | 2.28 | 2.78 | .45 |
| Chicago . . . | 2,021,086 | 625 | 146 | 18.08 | 26.40 | .80 | 4.32 | 2.08 |
| Philadelphia | 1,407,968 | 628 | 175 | 25.00 | 23.56 | 2.07 | 3.98 | 3.02 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 302 | 69 | 25.82 | 26.81 | .99 | 1.65 | .33 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 165 | — | 21.82 | 20.60 | 1.26 | 2.40 | 8.48 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 69 | 13 | 36.22 | 20.28 | 2.90 | 5.80 | 2.90 |
| Boston . . . | 617,950 | 241 | 77 | 23.23 | 22.81 | 1.24 | .82 | 2.07 |
| Worcester . . | 136,925 | 44 | 6 | 6.81 | 13.63 | — | — | — |
| Fall River . . | 119,349 | 48 | 25 | 22.91 | 29.16 | 2.08 | 6.24 | 2.08 |
| Lowell . . . | 104,402 | 37 | 7 | 13.51 | 16.21 | 2.70 | — | — |
| Cambridge . | 100,998 | 30 | 8 | 20.00 | 3.33 | 3.33 | 3.33 | 3.33 |
| Lynn . . . . | 73,875 | 24 | 6 | 4.16 | — | 4.16 | — | — |
| Lawrence . . | 72,348 | 27 | 11 | 14.81 | 25.92 | 3.70 | 3.70 | — |
| Springfield . | 72,020 | 17 | 2 | 5.88 | 5.88 | — | — | — |
| Somerville . | 70,413 | 24 | 9 | 16.67 | 20.83 | — | — | — |
| New Bedford | 68,863 | 29 | 9 | 24.13 | 27.58 | — | — | — |
| Holyoke . . . | 50,538 | — | — | — | — | — | — | — |
| Brockton . . | 46,601 | 7 | 1 | 14.30 | — | — | — | 14.30 |
| Newton . . . | 39,310 | 9 | 1 | 11.11 | 22.22 | — | — | — |
| Haverhill . . | 39,061 | 13 | — | 15.40 | 15.40 | — | — | — |
| Malden . . . | 37,205 | 15 | 5 | 13.33 | 20.00 | 6.67 | — | — |
| Salem . . . . | 37,188 | 7 | 1 | — | — | — | — | — |
| Chelsea . . . | 36,499 | 8 | 1 | 12.50 | 25.00 | — | — | 12.50 |
| Fitchburg . . | 36,335 | 9 | 4 | 33.33 | — | 11.11 | — | — |
| Taunton . . . | 34,577 | 16 | 3 | 25.00 | 6.25 | — | — | — |
| Everett . . . | 30,209 | 9 | — | 22.22 | — | — | — | — |
| North Adams | 29,201 | 10 | 2 | 30.00 | 50.00 | — | — | — |
| Quincy . . . | 26,798 | 5 | 2 | 40.00 | 40.00 | 40.00 | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 6 | — | 16.67 | 50.00 | — | — | — |
| Brookline . . | 23,576 | 6 | 3 | — | 50.00 | — | — | — |
| Pittsfield . . | 22,870 | 5 | 1 | — | — | — | — | — |
| Medford . . | 21,956 | 4 | — | 25.00 | 50.00 | — | — | — |
| Chicopee . . | 21,692 | 8 | 2 | 37.50 | 12.50 | — | — | — |
| Northampton | 20,314 | 2 | 0 | — | — | — | — | — |
| Beverly . . . | 15,807 | 6 | — | 16.67 | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 1 | 1 | — | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 3 | — | 66.67 | — | — | — | — |
| Newburyport | 14,478 | 5 | 0 | — | 20.00 | — | — | — |
| Woburn . . . | 14,315 | — | — | — | — | — | — | — |
| Melrose . . . | 13,819 | 3 | — | 33.33 | 33.33 | — | — | 33.33 |
| Westfield . . | 13,809 | 7 | — | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | — | — | — | — | — | — | — |
| Revere . . . | 13,609 | 2 | 2 | — | — | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 6 | — | 66.67 | — | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 4 | — | — | — | — | — | — |
| Weymouth . | 11,350 | 3 | 0 | 66.67 | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 4,289; under five years of age, 1,105; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 921, acute lung diseases 1,081, consumption 454, scarlet fever 44, whooping cough 10, cerebrospinal meningitis 16, smallpox 6, erysipelas 16, puerperal fever 27, measles 55, typhoid fever 67, diarrheal diseases 122, diphtheria and croup 78.

From whooping cough, New York 3, Chicago 1, Philadelphia 2, Baltimore 2, Pittsburg 1, Fitchburg 1. From smallpox, Philadelphia 6. From cerebrospinal meningitis, New York 11, Pittsburg 2, New Bedford, North Adams and Gardner 1 each. From erysipelas, New York 5, Chicago 1, Philadelphia 2, Baltimore 1, Pittsburg 1, Boston 4, Taunton 1, North Adams 1. From measles, New York 30, Philadelphia 10, Pittsburg 1. Boston 14.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,425, for the week ending Feb. 20, the death-rate was 18.5. Deaths reported, 5,420; acute diseases of the respiratory organs (London) 195, whooping cough 191, diphtheria 70, measles 119, smallpox 7, scarlet fever 37.

The death-rate ranged from 8.3 in Tottenham to 27.9 in Bootle; London 17.8, West Ham 13.6, Brighton 13.6, Southampton 15.8, Plymouth 25.6, Bristol 16.4, Birmingham 22.6, Leicester 17.4, Nottingham 23.9, Liverpool 23.9, Bolton 23.1, Manchester 20.2, Bradford 21.9, Leeds 21.4, Hull 17.7, Cardiff 18.9, Rhondda 17.9, Merthyr Tydfil, 25.8, Smethwick 12.9, Newport (Mon.) 16.8.

## METEOROLOGICAL RECORD.

For the week ending March 5, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in Inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S.. 28 | 30.24 | 32 | 40 | 25 | 71 | 87 | 79 | S | W | 15 | 10 | O. | O. | .14 |
| M. 29 | 30.30 | 34 | 38 | 29 | 68 | 67 | 68 | N | N E | 14 | 19 | O. | O. | 0 |
| T.. 1 | 30.26 | 30 | 33 | 28 | 100 | 95 | 98 | E | N E | 20 | 8 | R. | R. | .48 |
| W. 2 | 30.27 | 32 | 38 | 26 | 82 | 81 | 82 | N W | S W | 4 | 9 | O. | C. | .01 |
| T.. 3 | 29.61 | 37 | 50 | 24 | 97 | 96 | 96 | S E | W | 5 | 28 | R. | R. | .42 |
| F.. 4 | 30.33 | 17 | 24 | 10 | 52 | 40 | 46 | N W | N W | 26 | 14 | C. | C. | .04 |
| S.. 5 | 30.87 | 14 | 21 | 8 | 44 | 68 | 56 | N | S E | 8 | 9 | C. | O. | T. |
| ☞ | 30.27 | | 35 | 21 | | | 75 | | | | | | | 1.09 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

DELAYED PUBLICATION. — The strike, now happily at an end, among printers and pressmen is responsible for continued delay in issuing the JOURNAL.

## SOCIETY NOTICE.

SUFFOLK DISTRICT MEDICAL SOCIETY, SECTION FOR SURGERY. — A meeting of this Section will be held at the Medical Library on Wednesday evening, April 6, at 8.15 P.M. The Society will discuss "The Treatment of General Peritonitis from Appendicitis." During the first half of the meeting the results of cases treated at the Massachusetts General Hospital will be presented and some brief papers will be read. The members of the Society will then discuss the subject with especial reference to the following questions:

What is your definition of general peritonitis?

Have you known cases of undoubted general peritonitis from acute appendicitis to recover without operation?

Should we operate on all cases however hopeless?

What can be done for a case in which operation is refused?

E. A. CODMAN, M.D.,
Secretary.

## RECENT DEATHS.

JOHN KNOWSLEY THORNTON, M.B., C.M., died recently in Cambridge, England. He had for many years been distinguished for his work in abdominal surgery in London up to the onset of his illness in 1896. He was an honorary member of the American Association of Obstetricians and Gynecologists.

W. J. MCDERMOTT, M.D., a surgeon in the Civil War, and a personal friend of Presidents Lincoln and Grant, died at his home in the Borough of the Bronx, New York City, on March 13. He was seventy-three years of age, and a native of Portland, Me. He was graduated from the medical department of the University of the city of New York in 1854, and after two years of study in Europe began practice in the village of Westchester, N. Y. He was elected to the Legislature in 1860, and when in the following year the first call for troops was issued he resigned his seat in the Assembly and went to the front as surgeon of the Sixth Regiment New York Volunteers. At the end of the three months' service the regiment re-enlisted as the Sixty-sixth New York Volunteers. Dr. McDermott remained in the army throughout the war, and saw much active service. He was with Colonel Ellsworth when that officer was shot at Alexandria, and he assisted in the amputation of Gen. O. O. Howard's arm at the battle of Fair Oaks. At one time he was captured, and he was confined in Libby Prison for a season before being paroled.

MOREAU MORRIS, M.D., for many years connected in various capacities with the New York City Health Department, died on March 17. He was born at Stillwater, N. Y., on June 19, 1825, and was graduated from the College of Physicians and Surgeons, New York, in 1848. In 1866 he was appointed Health Commissioner, and in 1870 Superintendent of the New York City Health Department. From 1871 to 1884 he served as surgeon of the Seventh Regiment National Guard, State of New York.

WILLIAM FREDERIC HOLCOME, M.D., of New York, at one time widely known as a specialist in diseases of the eye and ear, died in the Presbyterian Hospital, New York, on March 17 at the age of seventy-seven years. He was born in Sterling, Mass., and was graduated from the Albany Medical College in 1850. After a course of special study in Europe he was appointed lecturer on diseases of the ear at the New York University Medical School, and in the following year, 1862, he became Professor of Diseases of the Eye and Ear at the New York Medical College. Dr. Holcome was instrumental in the founding of the New York Genealogical and Biographical Society in 1869. At the time of General Grant's last illness he was one of the specialists called in consultation.

## BOOKS AND PAMPHLETS RECEIVED.

The Great Value of Drainage and Ice in the Early Stages of Mastoiditis. By Sargent F. Snow, M.D. Reprint.

A Manual of General Pathology for Students. By Sidney Martin, M.D., F.R.S., F.R.C.P. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1904.

Disease of the Intestines. A Text-Book for Practitioners and Students of Medicine. By Max Einhorn, M.D. Second, Revised Edition. Illustrated. New York: William Wood & Co. 1904.

Treatise on Diseases of the Skin. For the Use of Advanced Students and Practitioners. By Henry W. Stelwagon, M. D., Ph.D. Third Edition. Illustrated. Philadelphia, New York and London: W. B. Saunders & Co. 1904.

A Case of Mycosis Fungoides treated by the X-ray. By Albert E. Carrier, M.D. Reprint.

Lectures on Diseases of the Nervous System. Second Series. Subjective Sensations of Sight and Sound, Abiotrophy and Other Lectures. By Sir William R. Gower, M.D., F.R.C.P., F.R S. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1904.

The Practical Medicine Series of Year Books; Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Issued Monthly. Under the General Editorial Charge of Gustavus P. Head, M.D. Vol. II. November, 1903. Chicago: The Year Book Publishers.

A Chart of Diseases of the Lungs, Pleuræ, Bronchi, Trachea and Larynx. By Edward C. Hill, M.D. Ansonia, Conn: The McArthur Hypophosphite Co.

Howe's Handbook of Parliamentary Usage. By Frank William Howe. New York: Hinds & Noble. 1904.

Des Humeurs opalescentes de l'Organisme étude clinique, expérimentale et critique. Par Le Dr. André Jousset. Paris: George Carré et C. Naud. 1901.

The Etiology of Influenza. A Brief Outline. By J. D. Harrigan, M.D. Reprint.

The Man who Pleases and the Woman who Charms. By John A. Cone. New York: Hinds & Noble.

Medical Union Number Six. By William Harvey King. New York: The Monograph Press. 1904.

A Laboratory Manual of Physiological and Pathological Chemistry. For Students in Medicine. By Dr. E. Salkowski. Authorized Translation from the Second Revised and Enlarged German Edition by W. R. Orndorff. A.B., Ph.D. Illustrated. New York: John Wiley & Sons. 1904.

Preventive Medicine. Two Prize Essays. "The General Principles of Preventive Medicine." By W. Wayne Babcock, M.D. "The Medical Inspection of Schools; A Problem in Preventive Medicine." By Lewis S. Somers, M.D. Brooklyn, N. Y. The Maltine Company.

Widener Memorial Industrial Training School for Crippled Children. By De Forest Willard, M.D. Reprint.

Sunshine and Fresh Air vs. the Finsen Ultra-Violet Rays and the Roentgen Rays in Tuberculosis of the Joints and Bones. By De Forest Willard, M. D. Reprint.

Annual Report of the Lynn Hospital for the Year 1903.

Memoria de los Trabajos Ejecutados por el Consejo Superior de Salubridad en el ano de 1900. Mexico. 1902.

La Torsion du Gordon spermatique et l'Infarctus hémorrhagique du testicule. Par Le Dr. André Lapointe. Paris. 1904.

Transactions of the Maine Medical Association, 1901–1903. Vol. XIV. Portland: Stephen Berry. 1903.

Pancreatitis Diabetica. By Col. Francis T. B. Fest, M.D. Reprint.

Obstetrics for Nurses. By Joseph B. De Lee, M.D. Illustrated. Philadelphia, New York and London: W. B. Saunders & Co. 1904.

## Original Articles.

# ULTIMATE RESULTS OF SOME GYNECOLOGICAL OPERATIONS AT THE MASSACHUSETTS GENERAL HOSPITAL.

BY RICHARD G. WADSWORTH, M.D., BOSTON.

*For the Division of Surgery of the Medical School of Harvard University.*

During my service as surgical house officer at the Massachusetts General Hospital I had occasion to hear several adverse criticisms from some members of the medical staff in regard to the results of gynecological operations which had been performed there. These criticisms were inspired by the patients who returned to the outpatient department for treatment after operation. With the idea of reaching some definite conclusion on the subject, I have, during the past year and a half, obtained the after-history of many of the cases who had undergone operations of this class during the past five years and have had an opportunity of examining a limited number of them. Each member of the surgical staff gave me permission to use his cases, so that I have had all the cases in the three surgical services at my disposal.

The conditions included in this investigation are limited to lacerations of the cervix and vaginal outlet, displacements of the uterus, endometritis and uterine fibroids. A few cases of cancer of the uterus were also traced, but only those on whom radical operation was performed, those not having been followed which were in too advanced a stage to allow of anything but palliative treatment. Under the other heads, every case was written to which had been discharged from the hospital in good condition. In all, about 450 letters have been sent out, the patients being asked to briefly describe any trouble they may have had since the operation. About 250 responded, but in several cases the answer was too vague to give any idea as to the real condition. All the patients previously written to were asked to come to the hospital on some day during a period of ten days last summer. Ninety-five patients came and most of them were examined. The examination was unsatisfactory and valueless in many of the cases who had had lacerations repaired, owing to their having been confined since operation, but in most of the other cases a very satisfactory idea of the anatomical as well as the symptomatic result was obtained.

Thus altogether there are 58 cases in whom both the anatomical and symptomatic results have been recorded and 159 in whom only the symptomatic result has been obtained. In these cases the data have been obtained from the patient's written statement and although a more accurate and perhaps a more favorable idea of the result would have been obtained from a personal interview, it must be granted that an operation has failed in its purpose if it has not, in the opinion of the patient, relieved the symptoms for the relief of which it was performed, even if the anatomical result be perfect.

There are 53 cases in whom lacerations of the perineum or cervix or both were repaired. Twenty-three of these have been examined, but in 10, confinement had occurred since operation, so that the examination could not give an accurate idea of the result of the operation. These 10 cases will be spoken of among the others in whom only the symptomatic result was obtained.

Of the 13 cases in whom confinement has not occurred since operation, 6 have had satisfactory anatomical results, 5 have had only partially satisfactory results and 2 have had bad results.

Of the 6 cases who have had good anatomical results, 5 have been relieved of symptoms, while 1, in whom the perineum only was repaired but in whom there was also retroversion, has been somewhat helped but still has very annoying backache.

Of the 5 cases in whom I have classed the anatomical result as being only partially satisfactory, the cervix only was repaired in one and the cervix and perineum in the other 4. Of these 4 cases, 1 has been entirely relieved of symptoms, 1 has been partially relieved, while 2 have had no relief whatever. In one of these 2 last-mentioned cases there was endometritis and retroversion and the uterus was curetted a week before the lacerations were repaired. The uterus is now retroverted and there is a very incomplete perineum. The patient complains of dysmenorrhea and constipation and says the uterus comes down every evening. She considers herself no better than before operation. In the other case, the uterus was also curetted. There is a good cervix, but the perineum is poor. The uterus is in normal position. The patient complains of pain in the back and right side of the pelvis, which she says is just as bad as before operation.

The case in whom the cervix only was repaired says that before operation she never had any trouble with her catamenia. Since then, however, she has had a feeling of pressure in the head, often accompanied by nausea and palpitation for three or four days before the period. These symptoms pass off with the appearance of the flow. The uterus is enlarged and tender and there is much erosion of the cervix, which, however, is intact. I have classified this case as partially satisfactory anatomically, because although the laceration of the cervix has been successfully repaired it seems probable from the symptoms that the cervical canal was too tightly closed.

In the 2 cases of bad result, both cervix and perineum were repaired. One of these was seen two years after operation. The perineum was torn to the sphincter and the cervix was occupied by a hard nodular growth, the size of an English walnut, suggesting fibroid. In the other the operation was entirely unsuccessful and the lacerations were again repaired last April, at the City Hospital, five years after the first operation. Neither patient received any relief of symptoms.

Thus in the 6 cases of good anatomical result, 5 have been cured of symptoms, while 1 has been partially relieved. Of the 5 cases of partial anatomical success, 1 has been cured, 1 has been partially relieved and 3 have had no relief. Of the 2 cases of anatomical failure, neither have received any relief of symptoms.

Beside these 13 cases, there are 40 cases in whom the cervix or perineum or both were repaired, and who have been heard from by letter. Combining these two groups, there are 53 cases

in whom the symptomatic result is known. Fourteen or 26.4% have been entirely relieved, 25 or 47.2% have been partially relieved and 14 or 26.4% have had no relief.

Of these last 14 cases, 5 have been examined and have already been spoken of. Of the remaining 9 cases, in 1 a recto-vaginal fistula resulted from the operation and the discomfort from this has overshadowed any benefit which might otherwise have been felt. In another case there was superficial sepsis in the perineum during convalescence. This patient says she has been under a doctor's care ever since and is not at all satisfied with the result of the operation. The other 7 cases simply state that they have been no better since operation and a few say they are not so well as before.

There are 5 cases in whom cystocele was operated on besides other lacerations. Four of these have been heard from by letter. Two have had entire relief of symptoms and 2 have received no benefit. The fifth case, in whom a rectocele was also repaired, was seen three years after operation. There was a well-marked cystocele but the rectocele had been entirely cured. The patient had been perfectly well for a year and a half after operation, but had then caught a severe cold, immediately following which the symptoms which were present before operation, bearing-down pain and discomfort in walking, returned and have continued ever since, so that she now considers herself no better than before operation. In spite of the temporary relief in this case, the ultimate result cannot be said to be satisfactory, so that in these 5 cases of cystocele, the result has been satisfactory in only 2 or 40%.

There are 22 cases in whom endometritis was present and in whom only dilatation and curettage was done. In 17 of these endometritis was the only abnormality, while in the 5 remaining cases other lesions were also present.

Of the 17 cases of uncomplicated endometritis, 9 (53%) have had complete relief of symptoms. In 4 (23.5%) there has been partial or temporary relief, while the remaining 4 (23.5%) have received no relief.

Of the 4 cases which I have placed under the head of partial relief, the first, on whom the operation was performed for the relief of leucorrhea, menorrhagia and dysmenorrhea, the dysmenorrhea has not been relieved, but the leucorrhea is very much better and the periods are now normal in quantity. The second case, who was fifty-three years old at the time of operation, complained of menorrhagia. There was, besides endometritis, prolapse of the uterus, cystocele and lacerated perineum. She has had no catamenia since the operation but has occasional "unpleasant discharges." She wears a pessary and considers herself no better than before operation. The third case, forty-four years old, had hyperplastic endometritis. She says she was helped for a few months but that since then she has been only slightly better than before operation. The fourth case, twenty years old and unmarried, had endometritis. She says she was helped for a short time after operation but is poorly now, suffering from light-headedness and fainting sensation and constant leucorrhea.

Of the 4 cases who have had no relief, in 1 the pathological report on the uterine mucosa was glandular hyperplasia. She says she had a severe hemorrhage on the way home and has had a slight but constant bloody flow ever since. She now considers herself worse than before operation. The second case was operated upon for backache, irregular catamenia and constant leucorrhea. Over a year after the operation she was in the same condition as before. The third case, who had uncomplicated endometritis, wrote nearly two years after operation that she had been no better. The fourth case complained of backache, headache and painful micturition. A caruncle of the urethra was cauterized after the uterus had been curetted. Three and a half years later she reported by letter that there was no relief of symptoms, and five years after operation she was seen personally by the writer. She still complained of the symptoms for which she had been operated on. Examination revealed nothing, owing to the patient's extreme nervousness and sensitiveness. No trace of a caruncle, however, could be found.

Of the 5 cases in whom endometritis was not the only abnormality, retroversion was present in all and in 1 there was also a lacerated cervix. One of these says she has had perfect health since operation, 3 have been helped but not entirely relieved and 1 says she is no better than before operation.

Of the 4 cases who have not had entire relief 1 was interviewed four years after operation. She says she has had 4 miscarriages since the operation, but in spite of that feels better than before she came to the hospital. The uterus is in retroversion but there is no endometritis. The second case, thirty-six years old, was thought to be in very early pregnancy at the time of operation. She says she did not regain her strength after leaving the hospital and was curetted again at Lynn one and a half years later on account of a miscarriage. Since then her health has been very good. When seen last summer, she had been having leucorrhea for three months. The uterus was retroverted and there was marked endometritis. The third case was operated on when forty years old. Five years later, when seen, she said she had been fairly well since the operation but not very strong. One week before I saw her she had had an abortion performed. The uterus was large and soft but in good position and there were extensive lacerations. The fourth case, who was operated on three years ago and who had had no relief of symptoms, presented when seen last summer a well-marked splanchnoptosis. The uterus, which was retroverted at the time of operation, is now in good position, but the kidneys and liver descend abnormally on inspiration and in the upright position, both kidneys descend to the crests of the ilia and the lower border of the liver is just below the umbilicus, the stomach also descending to well below the umbilicus. No mention of this condition was made in the records but it is probable that it was present at the time of operation and is amply sufficient to account for the lack of relief obtained by curetting the uterus. She has been fitted with an abdominal supporter, but I have not been able to find out whether or not it has given any relief.

Thus of these 22 cases in whom curettage for endometritis was done, 10 have been cured, 7 have been partially relieved and 5 have received no benefit.

There are 62 cases of retroversion. Forty-six of these were treated by ventral fixation alone,

6 were treated by ventral fixation and repair of lacerations, 4 were treated by curettage only and 6 by Alexander's operation.

Twenty-two of the 46 cases treated by ventral fixation alone have been examined. Of these 22 cases, 17 have had excellent anatomical results, 1 has had a partially successful result and in 4 the retroversion has recurred. Of the 17 cases who have had excellent anatomical results, only 4 have been entirely relieved of symptoms, while 10 have been partially relieved and 3 have had no relief. The one case in whom the anatomical result has been partially successful has had partial relief of symptoms. Of the 4 cases in whom the operation was anatomically unsuccessful, 3 have had no relief of symptoms, while 1 says she has been perfectly well since operation. Thus of 17 cases in whom retroversion has been successfully corrected, only 23.5% have been cured.

Of the 10 cases of excellent anatomical result who have been placed under the head of partial symptomatic relief, the first case, thirty-seven years old, in whom the uterus was in retroversion and adherent to the rectum and the omentum adherent to the left ovary, was seen one year after operation. She complained of weakness after the day's work, with some backache and severe headache during the catamenia. She thought she had had a miscarriage at three months six months after operation. The uterus was in good position though perhaps rather far forward, and the cicatrix was firm. The second case, thirty-four years old, was seen three and a half years after operation. She still had a dragging backache which, however, was less than before operation. She also complained of pain in the right side after standing, which was relieved on lying down. She said she could do very little. Examination showed the uterus in good position but there was well-marked rectocele and cystocele. The third case, fifty-three years old, says her general health is improved but she still has more or less backache and occasional twinges of pain in the left side. Local treatment at the Massachusetts General Hospital a year ago gave her no relief. The catamenia had ceased six months before operation. The uterus is in good position and nothing was found to account for the symptoms. The fourth case, twenty years old and unmarried, says she is better than before operation but still complains of backache and a steady pain in the front of the abdomen. Dysmenorrhea is less severe than before operation but she has leucorrhea for a few days before the periods. The uterus is in normal position but there is a slight thickening of the left tube, which may account for the symptoms. The fifth case, twenty-eight years old and married, had had the left ovary removed six years before the uterus was suspended. She is much better than before operation but still has more or less pain in the right side. The uterus is in normal position. She is reported by her physician to be moderately hysterical and introspective, a type of patient in whom complete cure is hardly to be hoped for. The sixth case says she was well for six months, when after hard work she had steady abdominal pain for one week and since then has had the same pain occasionally. She now complains of getting tired very easily. The uterus is in good position but there is a slight cystocele. In the seventh case, thirty-nine and married, tucks had previously been taken in the round ligament without correcting the retroversion. One year later the uterus was suspended and a ventral hernia resulting from the former operation repaired. The hernia recurred in six weeks and nine months later it was again repaired, the uterus being found suspended by a fibrous cord about three inches long. The hernia had not recurred when I saw her two and a half years after the last operation and the uterus was in good position. She said she was perfectly well except for a burning sensation in the wound after working. In the eighth case, twenty-seven years old and married, a cystic ovary was removed at the time the uterus was suspended. She has been much better since operation but still has some backache. The uterus is in good position but there is a hard insensitive mass the size of an egg low down on the right side of the uterus which seems like a fibroid and which is presumably the cause of the persistence of the backache. The ninth case, thirty-three years old, complained chiefly of dysmenorrhea before operation. This has not been at all relieved but she says she has less backache between the periods than before. The uterus is in good position but there is a fibroid the size of an English walnut on the posterior surface of the uterus and slight thickening and tenderness of the left tube. The tenth case, fifty-five years old, wrote three years after operation that she felt much better for the operation but still had to wear a support. Examination one year later showed the uterus to be in excellent position.

Of the 3 cases who have had successful anatomical results but who have received no relief of symptoms, the first, thirty-four years old and unmarried, was operated on three and a half years ago. She says she has never been as strong since, as before, the operation. The catamenia is regular but scant and as painful as before, and she feels that she has not been helped. The second case, thirty years old and married, says that the backache, leucorrhea, painful micturition and frequent headaches, of which she complained before operation, have not been relieved at all. The third case, thirty-three years old and married, complained of constant pain in the left side and leucorrhea. The uterus was retroflexed and adherent. The pain has been just as bad since operation. Five months ago she bore twins, and she is now very nervous and tired. There is a deep stellate laceration of the cervix and the perineum is badly torn but the uterus is in good position.

The one case who has been classed as showing a partially successful anatomical result was sixty-two years old and married. She is much better than before operation but still complains of backache, frequent micturition and of feeling something come down after hard work. There is a well-developed cystocele and some prolapse of the uterus, which is, however, suspended to the anterior abdominal wall.

Of the 4 cases in whom the retroversion has returned, the first, forty-one years old, says she has been perfectly well except for occasional attacks of pain and swelling in the left leg in which there was phlebitis during convalescence. The uterus is retroverted and slightly enlarged but freely movable. The second case received no relief of symptoms and was told at the hospital, six months after the operation, that she ought to have the operation repeated. The uterus is retroverted. The third case, twenty-two years old and unmarried, had an anteflexed and retroverted uterus. The uterus was straightened with a probe and curetted, and a week later was suspended to the anterior abdominal wall. She had had no relief either of dysmenorrhea or of backache. The uterus is now in the same condition as before operation. The fourth case, twenty-seven years old and unmarried, complained chiefly of dysmenorrhea before operation. There has been no relief of symptoms and she now finds partial relief by wearing a pessary.

There remain 24 cases of retroversion in whom ventral fixation only was done and in whom only the symptomatic result has been obtained. Thirteen or 54.16% of these have been entirely relieved of symptoms, 2 or 8.33% have been partially relieved and 9 or 37.5% have received no benefit.

This result is in striking contrast to that among the cases who returned to the hospital for examination, for of the 21 cases in this latter category, only 23.8% have been cured of symptoms, while in the 24 cases whose subsequent history has been obtained by letter, 54.16% say they have been entirely relieved of symptoms. This discrepancy can probably be accounted for by the assumption that, as a rule, those cases who have been cured did not care to take the trouble to come to the hospital, while those who have not been entirely relieved came in the hope of receiving some further benefit.

If the statements of those who were seen and questioned and the written statements of those who replied by letter be given equal weight, it is found that in this series of 46 cases of ventral fixation for retroversion, 18 or 39.14% have been cured, 13 or 28.26% have been partially relieved and 15 or 32.6% have received no benefit.

Of the 6 cases in whom lacerations were repaired and the uterus suspended, 3 have been entirely relieved of symptoms, 2 have been partially relieved and 1 says she has had very little relief.

Only one of these cases was examined. She is forty-eight years old. The uterus was suspended and the perineum repaired. She still has some backache but feels much better than before operation. The uterus is in good position but somewhat enlarged and there is a deep bilateral laceration of the cervix. There is a good perineum. The laceration of the cervix in this case is probably the cause of her symptoms.

Four cases were treated by curettage. One of these has been perfectly well, 2 have been partially relieved and 1 has received no relief.

Of the 3 cases who have not been cured, in the first, twenty-three years old and unmarried, adhesions of the uterus were stretched while under ether. She has been partially relieved of the dysmenorrhea for which the operation was performed. In the second case, a fistula in ano was curetted at the same time. She writes that the fistula has been cured but that she has had more or less womb trouble ever since. A second letter asking for more details has not been answered. The third case died of pneumonia six months after operation. The husband writes that she did not seem to have been helped by the operation.

Of the 6 cases who were treated by Alexander's operation, only one was examined. In this case the chief symptom before operation was menorrhagia. This became worse after operation and the uterus was curetted at the hospital six months later, the uterus then being recorded as in retroversion. Since then she has grown stronger, but when I saw her four years later she said the pain was just as bad as before and that she had had pain in the left side ever since the operation. The uterus was anterior but enlarged and pulled to the right side of the pelvis and there was some tenderness on the left side.

Two cases returned to the hospital, sixteen months and two and a half years later, respectively, with return of the retroversion. Both had ventral fixation performed with an excellent result in both. The third case writes that she felt a little better for a year after operation but that since then she has had more pain than before.

The fourth case says the operation was successful except that she cannot carry a child more than five months, she having had two miscarriages since operation. The fifth case says she has been troubled with soreness in the right side since operation, and has severe pain unless she wears a support. She probably has a hernia.

Thus symptomatic results in these 6 cases have been good in only 1 and very unsatisfactory in 5. In the one case which was examined, the original malposition of the uterus has only been changed to another form.

Seven cases of prolapse of the uterus have been traced.

Three of these were treated by ventral fixation and repair of lacerations. Of these 3 cases, 2 have been examined. One of these had a perfect anatomical result and had been perfectly well for over two years since the operation. The other was seen three years after operation, at which a cystocele and rectocele were repaired and the uterus suspended. There is a fairly firm perineum, but the cystocele has recurred and the cervix protrudes from the vagina, so that the patient has to wear a napkin. In spite of this, however, she considers herself very well except for some dragging pain on micturition. The other case in whom the perineum was repaired and the uterus suspended was heard from two years after operation by letter, in which she stated that she was very little better than before operation.

In the other 4 cases, lacerations were repaired, the uterus not being suspended. Three have been examined and in all of them the prolapse had recurred, 1 has felt somewhat better since the operation, while the other 2 have received no relief. The other case, who was heard from by letter, says she is in very good health and has trouble with the uterus only when lifting heavy weights. Thus in 3 cases of prolapse of the uterus, repair of lacerations and suspension of the uterus has been entirely successful in 1, and has given only slight relief in 2, while in 4 cases repair of laceration without suspension has given nearly complete relief in 1, slight relief in 1 and has entirely failed in 2.

There are 18 cases of procedentia. Nine of these were treated by ventral fixation and repair of lacerations. Of these 9 cases, 4 were examined and in all but one the procedentia had returned soon after operation. In this one case the uterus was suspended and the perineum and a cystocele were repaired. The uterus is now

adherent to the abdominal wall, but the cervix is just within the vaginal outlet and there is a large cystocele. The patient has not been relieved of symptoms, still complaining of pain and a dragging sensation in the pelvis.

The other 5 cases have been heard from by letter. One says she has "got along wonderfully well," which probably means that the uterus has been restored to its normal position; 3 say that they are better than before operation, but still feel as though the uterus might descend if they are not very careful; and in the fifth case the trouble became as bad as ever a few weeks after operation.

Thus in 9 cases of procedentia treated by ventral fixation and repair of laceration, there has been entire symptomatic relief in only 1, and partial relief in 3, while of the remaining 5 cases there has been no relief, the procedentia having recurred in 4 of them.

Four cases were treated by ventral fixation alone. None of these have been examined. Three say they are just as bad as before operation, while one has been perfectly well and had a successful confinement two years after operation.

Two cases were treated by Alexander's operation and repair of the vagina. In both the procedentia has recurred and neither has been helped in any way. One has a double inguinal hernia, doubtless as a result of the operation.

In one case the perineum only was repaired. This case wrote over two years after operation that she was somewhat better but had to insert a sponge to keep the uterus from protruding when on her feet.

In two cases vaginal hysterectomy was performed and the vaginal outlet repaired. One wrote four years later that she then had the same trouble as before, while the other, three years after operation wrote that the "cushion of the bladder" came down somewhat and that she also had leucorrhea but that otherwise she felt very well.

In summing up the results in these 18 cases of procedentia, it is found that of 9 cases treated by ventral fixation and repair of lacerations, only 1 has been cured, 4 have been relieved to some extent and in 4 the procedentia has recurred. Of 4 cases of ventral fixation alone, 1 has been entirely relieved, while in 3 the condition has recurred. Repair of the perineum in 1 case has given only partial relief, and Alexander's operation has given no relief whatever in 2 cases. Vaginal hysterectomy with repair of the vaginal outlet has given no relief in 1 case and partial relief in the other. Thus in these 18 cases of procedentia only 2 (11.1%) have been cured, 6 (33.3%) have been partially relieved and 10 (55.6%) have been in no way benefited by the operation.

Fifty cases of uterine fibroid have been followed. In 42 of these supravaginal hysterectomy was performed, in 5 myomectomy and 3 were discharged without operation.

Twelve of the cases of hysterectomy were examined. Eight of these have had perfect anatomical results and all but one say they have been perfectly well. This one case was perfectly well and strong for three years after operation except for mild symptoms of the menopause, but for the last two years she has had pain in the right side of the pelvis, which was the location of the pain before operation. Examination showed nothing to account for it.

Of the other 4 cases who were examined, 2 have endometritis and vaginitis, which according to their statements has been present since operation. Of the other 2 cases, 1 has a hernia in the scar and there is a hard tumor, which feels like a fibroid, about the size of an English walnut, in the left side of the pelvis. She feels, however, perfectly well, complaining only of occasional headache. In the other, there is a smooth, rounded bony tumor on the inner surface of the pubes on the left side which is entirely insensitive to touch but is the seat of occasional sharp twinges of pain. A fibrous band extends from the tumor to the cervix, which is, however, perfectly free except for this. The patient says she first felt the tumor six months after operation and that it has been slowly growing during the four and a half years which have elapsed since then. She feels otherwise perfectly well.

In discussing the symptomatic results of these cases of hysterectomy for fibroid, I shall leave out of consideration the symptoms arising from artificial menopause, as these will be considered separately.

Of the 42 cases of this series, including those which have been examined, 33 (77.5%) have been perfectly well since operation and the other 9 cases have had more or less trouble. Five of these 9 cases have been described in speaking of the anatomical results. Of the other 4 cases, 1 had a hernia in the scar and vaginal inflammation and piles which had not been helped by local treatment at her home. Last April the hernia was repaired and the hemorrhoids cauterized at the Massachusetts General Hospital, with what result I have been unable to ascertain. The remaining 3 cases have complained of general weakness and nervousness but have had no local symptoms referable to the operation. In view of the fact that both ovaries were removed in these 3 cases, it is probable that the nervous symptoms are due to the menopause, and that they are, therefore, only temporary. Hence the results may be considered satisfactory. Thus the total of cases in whom the result has been satisfactory is swelled to 36 or 85.7%.

In regard to the effect of leaving one or both ovaries in a hysterectomy for fibroid, in avoiding the symptoms of the artificial menopause, data have been obtained in only 28 cases, because many patients have not given any information as to nervous symptoms following operation and have not answered later letters containing specific questions and because in the records of 7 cases I can find no clew to show what was done with the ovaries.

Of these 28 cases, in 23 both ovaries were removed. Twenty-one of these 23 cases have had moderate or slight symptoms, such as flush-

ing, giddiness, chills or palpitation. In the other 2 cases there have been no symptoms. One of these was fifty-four years old and had flowed only once in the six months before operation, so that it is probable that the climacteric was well established when the ovaries were removed. The other case was thirty-seven years old. There was a large fibroid extending to above the umbilicus. Her periods had been regular and normal up to three months before operation. She skipped the next period and since the last one, which came at its regular time, she had been flowing constantly. She writes, three years after operation, that she has been perfectly well and has had no nervous symptoms whatever. It would seem probable from this that the irregularity in the catamenia before operation was due to the menopause rather than to the presence of the fibroid.

Of the 5 cases in whom one or both ovaries were left, 3 have had typical symptoms of the climacteric. These cases were forty-two, forty-three and forty-six years old. All three had had menstrual irregularity before operation, and this in conjunction with their ages leaves little doubt that the menopause was beginning at the time the ovaries were removed. Whether or not the nervous symptoms were less severe than they would have been if both ovaries had been removed cannot, of course, be known. The fourth case was forty years old, and the catamenia was normal up to the time of operation. One ovary was left. She writes that she has had no typical symptoms of the menopause but has had chills accompanied by malaise and headache every month for three years. There has been no flow, but she has associated these symptoms with the catamenia on account of their regularity. She says she has not been so strong or "ambitious" since the operation. It is hard to see how any good has been done in this case by leaving an ovary. The fifth case, forty-five years old at operation, had flowed for ten days every two weeks for the previous ten years. There was a fibroid the size of a large egg and supravaginal hysterectomy was done, both ovaries being left. She writes, three years after operation, that she has been perfectly well and has flowed regularly, though much less profusely, ever since. She has had no nervous symptoms whatever. This, then, is the only case in which distinct good has been attained by avoiding castration, and the result is the more interesting as the patient was at the age when the menopause was to be expected.

These statistics, although too few to afford ground for any comprehensive conclusion, are reported because they seem to show pretty definitely, in spite of the exception just described, that in patients over forty years of age little benefit is to be derived from leaving an ovary and also because they show that sometimes in cases considerably younger than the usual age at which the menopause is to be expected, no symptoms follow complete castration.

Of the 5 cases of fibroid on whom myomectomy was done, 4 have been perfectly well during periods varying from two to six years after operation. The fifth case writes that she has not been in good health and suffers from backache. She says that her doctor thinks there may be another tumor growing.

Of the 3 cases who were not operated on, one, aged thirty-nine, had a fibroid the size of a cocoanut. It was not removed on account of the absence of symptoms and the history of Graves' disease. She wrote about four years after leaving the hospital that she felt poorly for eight months after leaving the hospital but that since then she has been in good health. She thinks the tumor is growing very slowly. It would be of interest to know whether the menopause has occurred, as this might account for the improvement in her condition, but she makes no mention of her catamenia and a second letter has not been answered.

The second case, forty-three years old, had a large fibroid. Hysterectomy was advised but refused. Three years later the patient reported that she felt much better. Up to a year before she had had a constant bloody vaginal discharge, but since then, the periods have been regular and the flow profuse but lasting only five days. There is now a constant watery discharge but without blood. There are no symptoms except occasional pain in the region of the left ovary. The fibroid now extends nearly to the umbilicus. It is freely movable and without tenderness. The patient says she does not think it has increased in size during the last three years.

The third case is now fifty-three years old. She was at the hospital four years ago with a large fibroid, twice the size of a child's head and adherent behind and laterally. The patient declined operation on account of the lack of symptoms. When seen last summer she said she had had no trouble since she left the hospital. Menstruation had ceased over two years ago and she had had no vaginal discharge since then until the last month, when she had noticed slight leucorrhea. There was a large fibroid reaching nearly to the umbilicus which seemed to be adherent. She said she had been enjoying better health since the menstruation ceased than for the last twenty years. Evidently, in this case, the improvement in the general condition has been due to the menopause.

Thus in none of these 3 cases has any ill effect resulted from not having removed the fibroid. They were all near the age of the menopause, and we know this has occurred in one case. In the other two it is probably about to occur.

Twelve cases of cancer of the cervix or body of the uterus on whom radical operation was performed and who left the hospital in good condition have been traced. Five of these cases have been examined, 4 have been perfectly well and show no sign of recurrence two and a half, four and a half, five and five and a half years after operation, respectively. The fifth case, three and a half years after operation, shows a slight indefinite thickening on the left side of the

pelvis, entirely free from the vault of the vagina, which shows a perfectly normal scar. There are no symptoms whatever. It is impossible to say whether this thickening is recurrence or not.

In 5 cases, recurrence and death occurred within three years. Of the other 2 cases, 1, operated on a little over two years ago, is perfectly well and has no pain nor vaginal discharge. The other, five years after operation, said she was perfectly well and had no vaginal discharge until two months before I saw her, when she had had a slight show after lifting a heavy weight. She refused examination, without which it is of course impossible to know whether or not this slight flowing was due to beginning recurrence.

Thus of 12 cases of radical operation for cancer, in 5 recurrence and death occurred within three years and in 3 cases there was no sign of recurrence four and a half years or more after operation. Of the other 4 cases, the time since operation is too short to give any idea as to the probable outcome in 2 and the evidence is inconclusive in the other 2. It may, therefore, be said that cure has been obtained in 3 cases, that the operation has failed in 5 and that the result is still uncertain in 4.

In summing up the results of this investigation, the following conclusions have been reached:

The anatomical results of repair of lacerations of the cervix or perineum, or both, in 13 cases have been satisfactory in 46%, partially satisfactory in 38.5% and entirely unsatisfactory in 15.5%. The symptomatic result in 53 cases has been entirely satisfactory in 26.4% and partially satisfactory in 47.2%, leaving 26.4% in whom there has been no relief. Of 5 cases in whom cystocele was repaired, there has been a satisfactory symptomatic result in only 2 or 40%.

Curettage for endometritis in 22 cases has given complete symptomatic relief in 45.5% and partial relief in 31.8%, the remaining 22.7% having received no benefit.

Ventral fixation for retroversion in 22 cases has been anatomically successful in 77.3%, partially successful in 4.6%, and has failed to cure the displacement in 18.1%. In spite of this satisfactory percentage of anatomical cure, only 23.5% of these 22 cases have received satisfactory symptomatic relief.

The symptomatic results in 46 cases of ventral fixation, including the above, have been entirely satisfactory in 39.1%, partially satisfactory in 28.3% and unsatisfactory in 32.6%.

Of 6 cases of ventral fixation with repair of lacerations, 50% have been cured, 33% have received partial relief and 17% have not been helped.

Of 6 cases of Alexander's operation only 16% have been cured, while the remaining 84% have received no benefit.

Of 4 cases treated by curettage alone, 25% have been cured, 50% have been partially relieved and 25% have not been helped.

Taking all these cases together we find that in 63 cases of retroversion, the symptomatic relief has been complete in 37% and partial in 27.5%, while in 35.5% there has been no relief.

Of 7 cases of prolapse, in 3 ventral fixation and repair of laceration was done, giving entire symptomatic relief in 1, partial relief in 1 and no relief in 1, while in 4 cases repair of lacerations without ventral fixation has given complete relief in 1, partial relief in 1 and no relief in 2,

| Lesion. | Operation. | Anatomical Result. | | | | | | | Symptomatic Result. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Excellent. | Percentage. | Fair. | Percentage. | Poor. | Percentage. | Total. | Excellent. | Percentage. | Fair. | Percentage. | Poor. | Percentage. | Total. | Total of Lesion. |
| Lacerations | Repair of Cervix or Perineum or both | 6 | 46 | 5 | 38.5 | 2 | 15.5 | 13 | 14 | 26.4 | 25 | 47.2 | 14 | 26.4 | 53 | 58 |
| | Repair of Cystocele and Perineum | | | 1 | 100 | | | 1 | 2 | 40 | 1 | 20 | 2 | 40 | 5 | |
| Endometritis | Curettage | | | | | | | | 10 | 45.5 | 7 | 31.8 | 5 | 22.7 | 22 | 22 |
| Retroversion | Ventral Fixation | 17 | 77.3 | 1 | 4.6 | 4 | 18.1 | 22 | 18 | 39.1 | 13 | 28.3 | 15 | 32.6 | 46 | 62 |
| | Ventral Fixation and repair of lacerations | 1 | 100 | | | | | 1 | 3 | 50 | 2 | 33 | 1 | 17 | 6 | |
| | Curettage | | | | | | | | 1 | 25 | 2 | 50 | 1 | 25 | 4 | |
| | Alexander's operation | | | 1 | 33.3 | 2 | 66.6 | 3 | 1 | 16 | | | 5 | 84 | 6 | |
| Prolapse | Ventral fixation and repair of lacerations | 1 | 50 | | | 1 | 50 | 2 | 1 | 33.3 | 1 | 33.3 | 1 | 33.3 | 3 | 7 |
| | Repair of lacerations | | | | | 2 | 100 | 2 | 1 | 25 | 1 | 25 | 2 | 50 | 4 | |
| Procedentia | Ventral fixation and repair of lacerations | | | 1 | 25 | 3 | 75 | 4 | 1 | 11.2 | 4 | 44.4 | 4 | 44.4 | 9 | 18 |
| | Ventral Fixation | | | | | | | | 1 | 25 | | | 3 | 75 | 4 | |
| | Repair of Perineum | | | | | | | | | | 1 | 100 | | | 1 | |
| | Alexander's operation | | | | | | | | | | | | 2 | 100 | 2 | |
| | Hysterectomy and repair of lacerations | | | | | | | | | | 1 | 50 | 1 | 50 | 2 | |
| Fibroid | Hysterectomy | 8 | 66.6 | 4 | 33.3 | | | 12 | 33 | 77.5 | 9 | 22.5 | | | 42 | 50 |
| | Myomectomy | | | | | | | | 4 | 80 | 1 | 20 | | | 5 | |
| | Not operated | | | | | | | | 3 | | | | | | 3 | |
| Cancer | Pan-hysterectomy | No recurrence 4½ years or more after operation 3 | | | Recurrence and death 5 | | | Uncertain 4 | | | | | | | | |

a total of entire relief in 28.6%, partial relief in 28.6% and no relief in 42.8%.

Of 18 cases of procedentia, in 9 ventral fixation and repair of lacerations have given entire symptomatic relief in 11.2%, partial relief in 44.4% and no relief in 44.4%. In 4 cases ventral fixation alone has given entire symptomatic relief in 25% and no relief in 75%. Alexander's operation has failed to give any relief in 2 cases, hysterectomy with repair of lacerations has given partial relief in 1 case and no relief in 1 case, and repair of the perineum has given partial relief in 1 case. Taking these 18 cases together, 11.1% have been entirely relieved, 33.3% have been partially relieved, while 55.6% have received no benefit.

Of 42 cases of hysterectomy for fibroid, 77.5% have been entirely relieved, while the remaining 22.5% have been only partially relieved. In 3 of the cases of partial relief, the trouble since operation has been slight and probably wholly dependent on the artificial menopause — so they may be classed as satisfactory. Thus 85.7% of these 42 cases have shown satisfactory symptomatic results.

The anatomical results in 12 cases of hysterectomy have been perfect in 66.6%, while the remaining 33.3% show no serious defect.

In regard to the avoidance of the symptoms of the artificial menopause by leaving an ovary in hysterectomy for fibroid, these cases show that little benefit is to be expected in cases over forty years old.

Of 5 cases of myomectomy, 80% show entire symptomatic relief, while in the remaining 20% there has been partial relief.

Three cases of fibroid, discharged without operation, have all been perfectly well for over three years.

Of 12 cases of cancer of the uterus on whom radical operation was performed, 3 show no sign of recurrence four and a half years or more after operation and may, therefore, be considered as probably cured. In 5 cases recurrence and death occurred within three years, while in the remaining 4 cases the result is still doubtful.

## EYE-STRAIN CONSIDERED AS A FACTOR IN THE PRODUCTION OF LATERAL CURVATURE OF THE SPINE (PRELIMINARY COMMUNICATION).[1]

BY HENRY W. KILBURN, M.D., BOSTON,
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EVERY ophthalmologist is familiar with the fact that astigmatic patients, when one or both axes are oblique, and patients having vertical heterophoria, are apt to tilt the head to one side in order to obtain clearer vision. Also, there have been reported some cases of torticollis in which there has been a marked improvement in attitude after correction of the refractive error and relief of any existing vertical heterophoria. It has been my lot to see a number of cases of lateral curvature of the spine in which eye-strain seemed to me to play a part in producing the condition. In two of these cases there was a progressive myopia, and not only did relief from eye-strain seem to cause a marked improvement in attitude, but, when the curvature had been corrected by appropriate exercises, the myopia stopped increasing. Also, in one of these two cases the vision improved to an unusual degree after correction of the spinal curvature and improvement of the general nutrition.

The cases are too few in number to permit of dogmatizing on the subject; but I think that the results obtained justify my belief that there is, in some cases, at least, a connecton between eye-strain and spinal curvature. I will describe briefly three of the cases. They may be taken as typical ones.

CASE I. Girl aged eleven. I first saw her Aug. 28, 1901. Complained of occasional blurring of print, and of frequent frontal and supraorbital pain. Carried her head tilted to the left. Compound hypermetropic astigmatism, Axis 90°, O.D.; Axis 75°, O.S. Corrective lenses were ordered for constant use. Nov. 20, 1902, head not tilted to the left as much as at first visit, but still tilted somewhat. Noticed that the patient sat in a slouching position, and seemed unable to hold herself erect. Referred the case to Dr. R. W. Lovett for correction of faulty attitude. Nov. 24, Dr. Lovett reported "a left curve" of the spine, "which carries her head and body to the left of the vertical." He also reported a "slight stiffness," "showing that the curve is of some duration," and stated that, in all positions the patient bent farther to the left than to the right. May 6, patient stands correctly.

CASE II. Girl aged eight. I first saw her on May 31, 1894. The mother stated that the child winked constantly when she read. Examination of the refraction with a mydriatic showed the following conditions:

R.V. = 6/4— c + 0.25 Sph. () + .25 Cyl., Ax. 0°.
L.V. = 6/4— c + 0.25 Sph. () + .25 Cyl., Ax. 0°.

At the post-cycloplegic visit, the cylinders only were accepted, and these were ordered for constant use. Sept. 18, 1896, the child says she can now see better without the glasses than with them. A mydriatic was again used, and the following refractive condition was found:

R.V. = 6/4— c — 0.25 Sph. () —0.25 Cyl., Ax. 0°.
L.V. = 6/4— c — 0.25 Sph. () —0.25 Cyl., Ax. 0°.

In other words, the child had become myopic. There was also an exophoria of 1.5°. Advised her withdrawal from school for a year. The patient held her own until March, 1898, when I found an increase of myopia of 0.5 D., O.U. In the following November, I found a further increase of 0.25 D., O.U. There was no change in the astigmatism or the vision. There was, however, a right hyperphoria of 1.5°. Also, I noticed that the patient tilted her head to one side. I referred the case to Dr. Lovett, who found a lateral curvature of the spine. In addition to the treatment prescribed by Dr. Lovett, I ordered exercise prisms for the correction of the hyperphoria. With appropriate exercises for the trunk muscles, the spine became straight, and the myopia stopped increasing. Also, on Sept. 23, 1899, there was barely 0.5° of hyperphoria.

CASE III. Girl aged twelve. Was brought to me Nov. 19, 1900. The father stated that she held her book very near when she read, and that she had worn glasses for near-sight for several years. The head was tilted forward and sideways. Examination with a mydriatic showed the following conditions:

[1] Read before the New England Ophthalmological Society, March 8, 1904.

R.V. = 6/8 c — 4.50 Sph. () —0.37 Cyl., Ax. 0°.
L.V. = 6/12 c — 1.50 Sph. () — 3.00 Cyl., Ax. 25°.

There was also a left hyperphoria of 2°. As the accommodation was excellent, the full correction was ordered for constant use. On May 4, 1901, the vision and refraction remained unchanged, and the patient had no discomfort of eyes or head; but the hyperphoria was still present. The head was now held erect. Nov. 30, 1901, the patient complained of ocular pain. The vision was unchanged, but there was an increase of myopia of 0.25 D., O.D., and 0.50 D., O.S. I ordered the full correction, combined, O.S., with a prism of 2°, base down. Feb. 8, 1902, the patient had no discomfort, but the myopia had increased 0.75 D., O.U., and the patient tilted head and body slightly to the left. Ordered the patient to be taken out of school, and referred the case to Dr. Lovett, for correction of faulty attitude. He reported a left lateral curvature. With appropriate exercises, the curvature soon disappeared, and the patient held head and body erect. Not only was there no further increase of myopia, but, what was still more surprising, the vision began to improve, until on Jan. 6, 1903, the right vision was 6/5—, and the left vision was 6/6—.

I have seen several other similar cases where similar results were obtained; but the three cases described above may be taken as typical. I feel strongly that, in these cases, eye-strain, by inducing a faulty attitude, acted as an indirect factor in the production of the spinal curvature. I think, also, that, when the curvature had become established, the stooping position caused the patients to approach the eyes too near to the desk, and caused the myopia to increase. Thus, both the myopia and the scoliosis acted and reacted upon each other in a vicious cycle, just as do eye-strain and neurasthenia. The patients were all growing girls, *i. e.*, patients whose bodies were in the plastic condition of adolescence. All of them had poor muscular development, and the rapid increase of body weight had contributed to the vicious result, being proportionally far greater than the increase of muscular strength.

In Case I, while the correction of the refractive error evidently caused a less faulty position of the head, it was not able to do more than this until the stiffness of the spine had been relieved, and the muscles strengthened by exercises, so that they could properly support the trunk.

In Case II, my theory is that myopia caused the patient to lean forward over her desk at school, and that, supporting her body by her left elbow, her position was such as to cause a dropping of the right shoulder, and a curve of the spine to the right, with the convexity to the left. It is possible that this position may have caused the hyperphoria. At all events, when the faulty attitude was corrected, the hyperphoria disappeared.

In Case III, I think that the hyperphoria caused the patient to tilt the head and body to the left.

In Cases II and III, I think the myopia stopped increasing because, when the trunk muscles had been strengthened, the patients were able to sit erect without difficulty, and ceased to bend forward over the desk as formerly. In all the cases, correction of the eye-strain was not alone sufficient to remedy an already established spinal curvature.

Dr. Scholder of Lausanne, in a paper entitled "Die Schulskoliose und deren Behandlung," [2] found a close relationship between myopia and scoliosis. He states that the amount of myopia found in such patients was in direct proportion to the amount of scoliosis. His statistics are based upon an examination of 2,314 school children, 571 of whom had a spinal curvature. The paper is a very exhaustive one and very interesting, and well repays a careful reading. Dr. Scholder's statistics have confirmed me in my opinion that there is often a direct relationship between eye-strain and spinal curvature. At all events, I think the idea deserves careful investigation.

## SUPERNUMERARY BREASTS AND NIPPLES, WITH REPORT AND PHOTOGRAPH OF A CASE.

BY ERNEST BOYEN YOUNG, M.D., BOSTON.

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The occurrence of supernumerary breasts and nipples has been recognized for many centuries; as in the time of the ancient Greeks, Diana was represented with multiple breasts as a symbol of plenty; while the mother of the Roman emperor Severus is said to have acquired her name, Julia Mammæa, from this deformity. In more recent times, the unfortunate queen Anne Boleyn is reported to have presented the anomaly of three breasts.

As the subjects of supernumerary breasts and nipples are so closely allied, they are considered together in the present brief article.

Case. A. B., thirty-eight years, married, was admitted to the Gynecological Service at the Boston City Hospital where I saw her with Dr. C. M. Green. About four weeks previous she had given birth to her fifth child by normal labor, but on the third day had chills and fever, and had not been well since. The child had nursed up to time of entrance and both breasts contained milk.

On the left breast about 6 cm. below the main nipple was another somewhat smaller but well formed, from which milk exuded almost as readily as from the upper. The patient said that milk always flowed from the lower nipple whenever the baby nursed upon the upper. While quite large at the time of entrance, it became reduced in size and appears in the photograph considerably smaller than when first seen. No other member of the family had any such deformity.

MEASUREMENTS.

| | |
|---|---|
| Main areola | 3.5 cm. in diameter. |
| Main nipple | .2 cm. in diameter. |
| Accessory areola | .3 cm. in diameter. |
| Accessory nipple | .1 cm. in diameter. |
| Distance between nipples | .6 cm. |

[2] Archiv. f Orthopädie, Mechanotherapie, u. Unfallchirurgie. I Band, 3 Heft, 1903.



Although often mentioned by the older writers, Meckel [1] was the first to attempt to explain these anatomical curiosities from an embryological standpoint, and following him, Darwin [2] and Bartels [3] called attention to them in connection with the theories of evolution. The references to the writings of the older physicians will be found in the very complete article of Leichtenstern.[4] According to many observers anomalies of this nature are not uncommon, appearing in men quite as often as in women; in fact both Bruce [5] and Leichtenstern declare them twice as frequent in the former. Bruce found 60 in 3,956 examinations (1.56%), while Leichtenstern places the proportion at 1 in 500, including both sexes. Leichtenstern, in 1878, collected 92, adding to them 13 of his own; Hartung [6] in 1885, 66; Puech,[7] in 1876, 77 in France alone; and Bardeleben,[8] among recruits, found one man in seven presenting one or more accessory nipples.

From external appearances these anomalies may be roughly divided into two general types according as multiple nipples occur upon what appears to be one breast (polythelia) or when nipples appear on other parts of the body apparently connected with a certain amount of isolated breast tissue (polymazia). Both of these terms, however, have been used interchangeably.

Usually the supernumerary breasts and nipples are small and poorly developed, but occasionally one or more of them may attain a considerable size and give milk freely. Gardeur [9] mentions a mulatto woman with four milk-giving breasts, and Bartholinus [10] a Danish woman with three. They increase in size during pregnancy and oftentimes the first sign of the nature of these nipples, which have often been mistaken for nævi, comes with the physiological activity of the underlying glandular structures. Occasionally breast tissue has also been known to exist in the axilla and swell with each pregnancy; although neither ducts nor nipple had developed. Goldberger [31] reports one and Leichtenstern three such instances.

Although usually found along two lines which run from the anterior borders of the axillæ to the pubes and rather inclined to symmetrical arrangement, they are often irregularly placed. Percy [11] refers to a case with five breasts, the fifth being in the median line, and in the writings of Fortunius Licetus (1668) [12] is a picture of such an arrangement (figured by Neugebauer). Accessory breasts are also reported on the labia majora (Hartung), on the outside of the thigh (Robert [13]), over the acromion (Klob [14]), on the back (Duval), twice in the walls of dermoid ovarian cysts (Haffter [30]); in the groin (Ahlfeld [15]) and in front of the ear (Barth [32]). In Robert's case the woman nursed a child from the breast for thirty months, and in one published by Jussieu [16] a gland in the groin was occasionally suckled by the infant. Neugebauer [17] reports the highest number of supernumerary nipples in a single individual and in his article, the reference to which is given, will be found a reproduction of a photograph of his case showing ten nipples of various sizes. In the article of Quinquaud [18] is also a most excellent photograph of axillary breasts.

Heredity appears to have a certain influence; as Hirst [19] and Robert have both seen polymazia and Woodman [20] supernumerary nipples in mother and daughter, while Lousier [21] speaks of a woman who, having but one breast, transmitted the deformity. Supernumerary nipples are found upon the same breast. Hollerius [22] mentions one with two nipples, each of which secreted milk in abundance and in our own case milk spurted from the lower nipple, although only the upper was suckled by the infant. They have been found in all positions around the chief nipple, but are usually small and situated below in over 90% of the cases: usually upon the line mentioned.

The questions as to whether the accessory nipples are connected with the main breast or with separate collections of tissue; as to the nature of the underlying glandular structures; as well as the cause of such anomalies, have been

[1] Meckel: Illus. Med. Zeitung. B. i, s. 142.
[2] Darwin: Descent of Man, 1877, p. 37.
[3] Bartels: Archiv. f. Anat. u. Phys., Leipzig, 1875, s. 745.
[4] Leichtenstern: Virchow's Archiv., 1878, B. lxxiii, s. 222.
[5] Bruce: Journ. Anat. & Phys., London, 1878–9, vol. xiii. p, 425.
[6] Hartung: "Ueber ein Fall von Mamma accessoria." Inaug. Diss., Erlangen, 1872.
Puech: Arch. de tocol. et de gynéc., Paris, 1892, T. xix, p. 393.
[8] Bardeleben: Anatom. Anz., 1892, No. 3.
[9] Gardeur: Dict. Sciences med., Paris, 1812, p. 528.
[10] Bartholinus: Hist. Anat. Rariorum, Cent. iv, Hafniae, 1654.
[11] Percy: Dict. de Sciences med., Paris, 1811, T. xxxiv, p. 525.
[12] Licetus: See Ref. 17.
[13] Robert: Journ. gener. de med., T. c, p. 57.
[14] Klob: Zeitschrift d. K. K. Gesellsch. d. Aerzte z. Wien, 1858, B. i, s. 52.
[15] Ahlfeld: Missbildungen der Menschen (Förster), I. Abschnitt, S. 110.
[16] Jussieu: Lancet, London, vol. xii, p. 618.
[17] Neugebauer: Centralbl. f. Gynxk., 1886, B. x. s. 729.
[18] Quinquaud: Revue phot. d. hôp. de Paris, 1870, T. ii, p. 16.
[19] Hirst: University Med. Mag., Philadelphia, May, 1896.
[20] Woodman: Trans. Obstet. Soc., London, vol. ix, p. 50.
[21] Lousier: Dissert. sur la lactation, p. 15, Paris, 1802.
[22] Hollerius: Consil. et Observat. rar., s. ii, p. 686, Ed. 1589.

variously answered by different writers. Förster [23] explains multiple nipples upon the same breast as separate openings for different bundles of milk ducts and in our own case this view seems quite probable. Ahlfeld considers it quite natural that milk-giving glands are found in the axilla, as the lymphatic glands of this region are connected with the breast; but Neugebauer thought his famous case one of true mammæ accessoriæ.

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among the writers upon these subjects and certainly offers the most satisfactory explanation for the appearance from time to time of these rather interesting deformities. For the anomalous position of such as occur on the outer side of the thigh and on the back, some further explanation must be sought and possibly in these very rare

[23] Förster: Missbildungen d. Menschen, iv, p. 49, Jena, 1865.
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[25] Duval: Du mamelon et de son aureole, Paris, 1861.
[26] Champneys: Trans. Med. Chir. Soc., London, vol. lxix, p. 419.
[27] E. Martin: Archiv. f. klin. Chir., 1893, B. xlv, p. 880.
[28] Flechsig: De Polymastia. Dissert. Schneeberg, 1839.
[29] Virchow: See Hausemann, Verhandl. d. Berlin. Anthropolog. Gesellsch. May 18, 1892.
[30] Haffter: Archiv. f. Heilk., xvi Jahrg., 1875, p. 56.
[31] Goldberger: Archiv. f. Gyn., 1895, B. xlix, s. 272.
[32] Barth: Archiv. f. path. Anat., 1888, B. cxii, s. 569.

cordant feeling, nor one which will cause a more heated discussion among children specialists. All now admit that it does occur, but its frequency is the question upon which the disagreements arise. Holt and Northrup, from their own experiences, and from the records of the New York Foundling Hospital and Infant Asylum, claim that it is extremely rare, the former stating that he has never seen a case in a child under two years of age, while Northrup, in his many hospital autopsies, has never once found

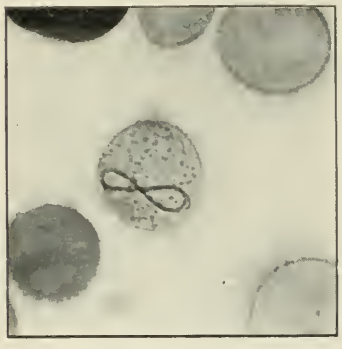
[33] Williams: Journ. Anat. & Physiol., 1891.
[1] Journ. of Med. Research, Feb., 1903.
[1] Read before the Norfolk District, Massachusetts Medical Society at Dorchester, Dec. 29, 1903.



giving breasts, and Bartholinus [10] a Danish woman with three. They increase in size during pregnancy and oftentimes the first sign of the nature of these nipples, which have often been mistaken for nævi, comes with the physiological activity of the underlying glandular structures. Occasionally breast tissue has also been known to exist in the axilla and swell with each pregnancy; although neither ducts nor nipple had developed. Goldberger [31] reports one and Leichtenstern three such instances.

Although usually found along two lines which run from the anterior borders of the axillæ to the

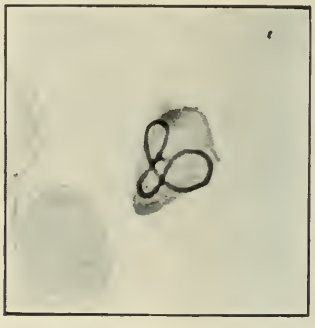
RING BODIES—CABOT.



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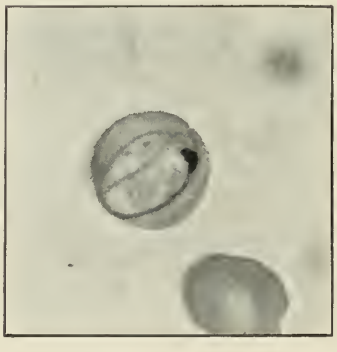
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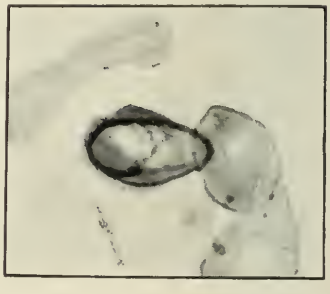
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these terms, however, have been used interchangeably.

Usually the supernumerary breasts and nipples are small and poorly developed, but occasionally one or more of them may attain a considerable size and give milk freely. Gardeur [9] mentions a mulatto woman with four milk-

[1] Meckel: Illus. Med. Zeitung. B. i, s. 142.
[2] Darwin: Descent of Man, 1877, p. 37.
[3] Bartels: Archiv. f. Anat. u. Phys., Leipzig, 1875, s. 745.
[4] Leichtenstern: Virchow's Archiv., 1878, B. lxxiii, s. 222.
[5] Bruce: Journ. Anat. & Phys., London, 1878–9, vol. xiii. p. 425.
[6] Hartung: "Ueber ein Fall von Mamma accessoria." Inaug. Diss., Erlangen, 1872.
Puech: Arch. de tocol. et de gynéc., Paris, 1892, T. xix, p. 393.
[8] Bardeleben: Anatom. Anz., 1892, No. 3.
[9] Gardeur: Dict. Sciences med., Paris, 1812, p. 528.

nipples are connected with the main breast or with separate collections of tissue; as to the nature of the underlying glandular structures; as well as the cause of such anomalies, have been

[10] Bartholinus: Hist. Anat. Rariorum, Cent. iv, Hafniae, 1654.
[11] Percy: Dict. de Sciences med., Paris, 1811, T. xxxiv, p. 525.
[12] Licetus: See Ref. 17.
[13] Robert: Journ. gener. de med., T. c, p. 57.
[14] Klob: Zeitschrift d. K. K. Gesellsch. d. Aerzte z. Wien, 1858, B. i, s. 52.
[15] Ahlfeld: Missbildungen der Menschen (Förster), I. Abschnitt, S. 110.
[16] Jussieu: Lancet, London, vol. xii, p. 618.
[17] Neugebauer: Centralbl. f. Gynxk., 1886, B. x. s. 729.
[18] Quinquaud: Revue phot. d. hôp. de Paris, 1870, T. ii, p. 16.
[19] Hirst: University Med. Mag., Philadelphia, May, 1896.
[20] Woodman: Trans. Obstet. Soc., London, vol. ix, p. 50.
[21] Lousier: Dissert. sur la lactation, p. 15, Paris, 1802.
[22] Hollerius: Consil. et Observat. rar., s. ii, p. 686, Ed. 1589.

variously answered by different writers. Förster [23] explains multiple nipples upon the same breast as separate openings for different bundles of milk ducts and in our own case this view seems quite probable. Ahlfeld considers it quite natural that milk-giving glands are found in the axilla, as the lymphatic glands of this region are connected with the breast; but Neugebauer thought his famous case one of true mammæ accessoriæ.

As to the manner in which the transplantation takes place, widely divergent opinions prevail. Ahlfeld [15] says that by pressure of the amnion part of the cells become separated, and, fastened to the amnion, are transplanted to other portions of the surface of the body. Förster and E. Hartung hold the same idea as to portions of tissue becoming separated, but express no opinion as to the manner of its occurrence. According to Leichtenstern many previously considered accessory breasts the result of aberration of the milk ducts probably from the work of Meckel and Owen. St. Hilaire sought to trace polymazia back to the general plan of the lower mammals and Darwin thought it due to atavism. Leichtenstern, Neugebauer, Billroth and many others consider it a reversion to the previous types of our ancestors. Perls, [24] on the other hand, has strongly combated the view of atavism and Duval [25] explained the axillary, as well as those appearing upon the back and acromion, as modifications of the sebaceous glands. Champneys [26] has also advocated this view. However, Virchow [29] remarks that it is not so easy to tell with which one is dealing as their development is so similar. E. Martin [27] believes that certain parts of the breast tissue are cut off from the mamma and lie near to the true breast. These are often felt as tumors, and swell with pregnancy and menstruation, but are not true accessory breasts. They may even appear in the axilla. Flechsig [28] held much the same view for this class of cases and Hartung gave to these structures the name of "mammæ accessoriæ spuriæ."

The proposition has been advanced that females with supernumerary breasts are more liable to multiple pregnancies, but there is no reason to believe that such is the case, as only two appear in Leichtenstern's series of 70 females.

The theory of reversion to some previous type has evidently the greatest number of adherents among the writers upon these subjects and certainly offers the most satisfactory explanation for the appearance from time to time of these rather interesting deformities. For the anomalous position of such as occur on the outer side of the thigh and on the back, some further explanation must be sought and possibly in these very rare cases the transplantation theory of Ahlfeld may be correct. As regards the nipples which appear as accessories of the main nipple of the breast, the theory of Förster offers an adequate explanation and one in keeping with the embryological development of the organ. Neoplastic changes, according to E. Martin,[27] are so rare in supernumerary breasts that he finds only one doubtful report in medical literature beside his own. At the same time he considers that the small "lobuli aberrantes" about the breast should be watched and removed if they are the cause of discomfort, as new growths appear at times to start in these structures. The reader is also referred to the article by Williams [33] for further information.

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[33] Williams: Journ. Anat. & Physiol., 1891.

## RING BODIES IN ANEMIC BLOOD, ADDITIONAL FORMS.

BY RICHARD C. CABOT, M.D., BOSTON.

Since my first article on the subject of ring bodies [1] I have examined in all fourteen cases of pernicious anemia in the active stages, nine of which (or 64%) showed the presence of rings more or less similar to those previously described. I have also found them in the anemia secondary to lead poisoning as well as in lymphatic leukemia. Negative results were obtained in four cases of pernicious anemia in the stage of remission, in ten cases of leukemia (six of the lymphatic and four of the myelogenous type), nine cases of severe secondary anemia from various causes and twenty-two cases of various skin diseases.

My friend, Dr. Charles E. Simon, in the latest edition of his text book on *Clinical Diagnosis*, confirms my findings and pictures.

In the accompanying cuts are shown some forms not previously illustrated and serving to increase, rather than to dissipate, my ignorance in regard to their origin and nature.

[1] Journ. of Med. Research, Feb., 1903.

## TYPHOID FEVER IN INFANCY, WITH REPORT OF A CASE COMPLICATED WITH MENINGITIS TERMINATING IN RECOVERY.[1]

BY CHARLES P. SYLVESTER, M.D., DORCHESTER, MASS.

Typhoid fever in infancy is getting its share of historians at present, and I know of no subject in pediatrics upon which there is more discordant feeling, nor one which will cause a more heated discussion among children specialists. All now admit that it does occur, but its frequency is the question upon which the disagreements arise. Holt and Northrup, from their own experiences, and from the records of the New York Foundling Hospital and Infant Asylum, claim that it is extremely rare, the former stating that he has never seen a case in a child under two years of age, while Northrup, in his many hospital autopsies, has never once found

[1] Read before the Norfolk District, Massachusetts Medical Society at Dorchester, Dec. 29, 1903.

evidence of the disease, nor do the records of the two hospitals show a single case. Griffith of Philadelphia, on the other hand, has collected 417 reported cases, some of which, however, are doubtful, owing to the absence of the Widal reaction. Morse, who has very carefully treated the subject, states that it is infrequent.

There is no doubt that infantile typhoid is much more prevalent than is generally believed, but, from the somewhat atypical symptoms, shorter duration and the teaching of authors of such eminent repute as Holt, it has neither been recognized nor looked for, but has passed under the disguise of ileo-colitis, ptomaine poisoning, broncho-pneumonia, influenza or meningitis, it sometimes closely simulating the latter disease. The fact that autopsy failed to give evidence of the intestinal lesion would not necessarily disprove its existence in infancy, however convincing such facts would be in childhood and adults, for, as I shall mention later, the intestinal symptoms are not often marked, the inflammation and infiltration of the intestinal glands not usually being severe enough to leave ulceration or to furnish diagnostic lesions for the pathologist, such complications as hemorrhage and perforation being extremely rare. Moreover, measles, scarlet fever, diphtheria, ileo-colitis or even simple diarrhea, may produce lesions of swelling, hyperplasia and fatty degeneration of the intestinal and mesenteric glands identical with those of typhoid of early childhood.

The shortness of the fever period would seem to confirm the statement as to the mildness of the intestinal condition, as the secondary fever due to the absorption of septic material from the sloughing ulcers is absent. Why infants should not be victims to the disease oftener than they appear to be I fail to understand, living as they so often do upon cow's milk modified with water, and being so susceptible to gastro-intestinal and other bacterial diseases. The physiological leucocytosis may be worth consideration as an immunizing power against the Eberth bacillus during the first two years of life. Breast-fed infants are far from being so naturally exempt as most chroniclers state, for aside from the water which the child takes, the mother, after being exposed to the disease, may excrete the bacillus from her breasts whether she be a victim to the disease or has a natural or acquired immunity. This would account for some of the sporadic cases of infancy. The case which I report below may have become infected from the breasts of the mother.

The only absolute way of differentiating between typhoid in infancy and diseases which resemble it is by the Widal serum reaction, and until this technique is employed in all cases of continued fevers no one has a right to say that the disease does not occur primarily, or as a complication, or that it is even extremely rare. Had this test been applied more since it was discovered in 1896, it is not improbable that some of the cases which Holt diagnosed as broncho-pneumonia from "prostration, cyanosis and rapid respiration," or as meningitis from the "continuance and severity of the nervous symptoms rather than by the presence or absence of single or special symptoms," might have responded beautifully to the reaction. Unfortunately the test does not occur early in the disease, frequently not before the tenth day, and often has not been found until after recovery, and no doubt death claims many which are buried under the certificate of other diseases before occurrence, unless autopsy clears up the diagnosis. In all continued fevers it should be sought for every second day until it is found, or until death or recovery takes place, and occasionally after the latter until the sixtieth day if any doubt still exists. Isolating the bacillus from the blood bids fair, when the technique is a little better developed, to differentiate the disease six or seven days before the clumping takes place. A positive paratyphoid reaction may clear up the doubt, although I find no report of this form of disease in infancy.

The period of incubation in the little ones is rather difficult to determine, owing to the small number of cases reported and to the difficulty in tracing the time of exposure and the first appearance of the symptoms. However, it would seem to be about the same as in later life, or longer, according to the susceptibility of the infant.

The bacillus, besides gaining entrance by the usual methods, may pass in utero, through the placenta, directly into the child's blood, generally causing its death, although not invariably.

*Symptoms.*—The onset is usually more abrupt than in later life, and the nervous symptoms are usually marked throughout the disease, much more than the intestinal. Vomiting is common; epistaxis is infrequent; bronchitis is generally present with its usual signs; diarrhea is the rule, though many cases are constipated; tympanitis, with gurgling in right iliac fossa, is usually marked and sometimes absent; and abdominal pain and splenic tenderness may be found; systolic heart murmur may be marked, and in the anemic or badly nourished may present a serious complication ere the disease ends.

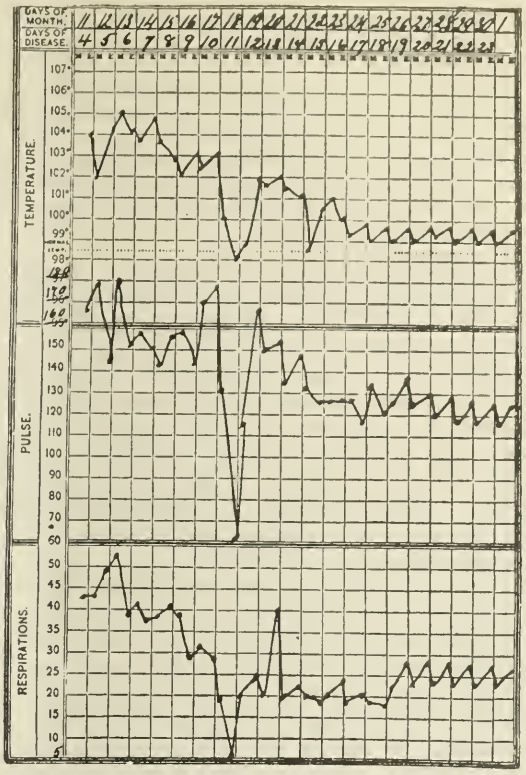
The spleen, although always enlarged, may be doubtful to palpation or percussion on account of the distention of abdomen. It may be very soft and should be handled with care. Although not always found, the eruption is probably present in every case at some time, and may be very profuse. Desquamation may occur, and moderate albuminuria is present. White blood count in absence of complications will be normal for infancy, when it is higher than in later life. The gradual incline of temperature curve may not be observed, owing to the sudden onset or late observance of sickness. Thus the symptoms in severe cases anyway are to a certain extent similar to those of typhoid of childhood. They may be typical or atypical, mild or severe, and the nervous symptoms are mild or severe, but usually predominate, and with the beginning of the disease mild muscular twitching, with

retracted head or general convulsions, may occur. Even Kernig's sign may be present to apparently confirm your diagnosis of meningitis, but wait,—the enlarging spleen, the distressing distention, appearance of rose spots, and lastly, the most important and absolute diagnostic point, the Widal reaction, appears and dissipates all doubt as to the disase.

The prognosis is more unfavorable than at any other period of life, owing principally to the frequency of the serious complications. Bronchopneumonia, scarlet fever, meningitis, measles, diphtheria, acute otitis media and noma may turn the tide against the patient. The mortality of cases recorded varies from 25 to 50%. This is certainly too high, as mild cases are not so apt to be diagnosed or reported. The duration of the fever stage is ordinarily from two to three weeks, and may be even shorter in infants recovering without complications. An idea as to the treatment will be considered under the case below.

R. L., boy, six months. Mother contracted typhoid in Ohio the last of March, 1903, by drinking water from an infected well, and returned East with child, to be taken sick April 20. Nursed child until April 30, when she had temperature of 104.5°. Baby was then put on a prepared food and removed to a room on the floor below, and on May 28 was brought to the dying mother, who held his hand — which was afterward carefully disinfected — for a few minutes prior to her death. Ten days later, thirty-nine days after last nursing and just sixty days after the mother drank infected water, the baby, who was previously well, although abnormally pale, became very nervous, irritable and sleepless. Vomited on third day and had three light-greenish, watery movements.

I first saw the child June 11, the fourth day of the sickness. Extreme pallor and nervous symptoms first attracted my attention. Head was retracted and fingers and muscles of other parts were convulsive; temperature was 104°, pulse 165 and respiration 44; lungs were negative, but there was a marked systolic murmur; spleen was palpable and abdomen distended with gurgling in the right iliac fossa; pupils were regular; Kernig's sign was present, no eruption. Temperature reached 105.1° in next two days; pulse 180; respiration 52 and irregular with slight cough and mucous rales in smaller bronchi. Rose spots appeared on the sixth day in successive crops in right epigastrium, hypogastric and lumbar regions, and were present for a week. Patient was now delirious, with carphologia and other nervous symptoms intensified. Distention became greater, making percussion and palpation of spleen difficult, and discharges from the bowels were four to five daily. On the ninth day temperature had declined to 102°, pulse 150 and respiration 30. Tongue was brown, dry and cracked; cough slightly increasing. On June 17, the tenth day of disease, unmistakable symptoms of incipient meningitis appeared, followed later by others which fully confirmed the diagnosis. The skin was hyperesthetic; the child, jumping on being touched or at loud noises, would awaken screaming in pain, vomiting and refusing all food. Eyes were widely dilated, and convulsions occurred one after the other almost all night and occasionally next day, opisthotonos and stupor following with an intense drop in pulse, temperature and respiration during the next twenty-four hours, as shown on chart, the temperature




falling from 103 to 98, pulse from 176 to 60 and respiration from 30 to 7 per minute and irregular, when child was cyanosed and in deep coma with lower extremities rigidly flexed and pupils contracted and unequal. Opisthotonos, rigidly flexed legs, unequal pupils and coma remained for two days. Twitching of right side, especially leg, and later, to a less degree, the left side, and internal strabismus of right eye, remained until the eighth day of meningitis and the eighteenth of typhoid. On the twentieth day, morning and evening temperatures were practically normal, bowel discharges about normal in number and color, and slight cough, heart murmur and cyanosis, requiring constant stimulation, were still present, but improving. The serum reaction was positive on the eighteenth day of disease, although last negative was four days previous. Paratyphoid was negative; urine, examined on twelfth day, contained moderate amount of albumen. I regret that no blood count was made.

*Treatment.* — Ice compress was kept continually around the head until the temperature and nervous symptoms had practically disappeared. The irritable stomach was fed with milk modified and peptonized, its strength increased by the addition of one of the prepared foods. For two days of coma peptonized enemata of milk and beef juice were administered, except when the legs were too rigidly flexed to allow the insertion of the rectal tube. Brandy, five drops in the beginning every three hours, was gradually increased to one or one and a half drams every one to three hours, depending upon the degree of collapse, and was at times with digitalis, nitroglycerin and atrophin ruthlessly given, with mustard paste about the chest and actual cautery to the back of the neck. Strychnin was not used much on account of the nervousness. Oxygen was given with good effect toward the end of the meningeal symptoms, when the child was cyanotic, improving his color, soothing him to sleep and quieting his cough, which I believe

was due then to cardiac weakness. For tympanitis injections of soap and water or oil, emulsion of assafetida and turpentine were used, with occasional doses of calomel and high insertion of the rectal tube left in for half an hour, the latter being extremely beneficial and facilitating the expulsion of gas. Cracked, bleeding lips and other conditions were treated as they arose. The infant made a perfect convalescence, the first case of recovery in infancy with the meningeal complications I find reported.

The case shows how one might have been led to the diagnosis of meningitis from the increasing severity of the nervous symptoms, had not the mother suffered from typhoid, or had not the Widal reaction been persistently sought for, and a few cases, occurring under such conditions, apparently sporadically, might call for a little more care in differentiating epidermic cerebrospinal meningitis than is perhaps sometimes utilized. After carefully considering the possible exposures of the child to the infection, when his food subsequent to the breast nursing can be excluded as a source, the apparently efficient isolation of the mother, the gradual increase in the pallor and irritability of the child during the latter weeks, which may have been due to change of food, although there was no apparent loss of weight or gastro-intestinal disturbances, I am forced to believe that the period of incubation may have been at least thirty-nine days, that the insusceptibility of the infant was overcome only after a long struggle. As, however, I saw the mother only in consultation, I am unable to vouch for the constancy of the quarantine, but if the child contracted the disease during the thirty-nine days previous to the appearance of the symptoms, more care should be used to protect the susceptible than is deemed necessary or exercised by our contemporary therapeutists.

## Clinical Department.

### AN ATTEMPTED SUICIDE BY ILLUMINATING GAS.[1]

BY FRANK HOLYOKE, M.D., HOLYOKE, MASS.

The toxic results of inhalation of illuminating gas are twofold, causing in some cases simple asphyxiation; in others "an intoxication by prolonged contact with the gas, leading to a toxemia and the formation of co-hemoglobin" (E. H. Bartley).

The following case is of the second type, in the acute form, and occurred on July the first, when the roomers in an apartment house were disturbed by moaning heard in a neighboring room which had continued through the afternoon and evening until eight o'clock. They knocked at the door but were unanswered. The police were called and on breaking in the door, which was locked and corked with rags and the windows closed tightly, quite effectually preventing the escape of the illuminating gas which was pouring into the room from two open jets of the chandelier, they discovered the air unbreathable and Mr. A. C., a man of forty-four years of age, lying back in an easy chair unconscious, in a high-studded room which was 12 by 15 feet square. He was removed from the room and the windows and doors thrown open. It may be well to note that this illuminating gas is a mixture which averages, through the year, two parts coal and one part water gas, according to the state inspector's test at Holyoke.

[1] Read before The Massachusetts Medico-Legal Society, Oct. 7, 1903.

Dr. J. C. Hubbard of Holyoke answered the call within ten minutes and found his patient perspiring profusely, his clothes being drenched with sweat; the pupils were dilated, face cyanotic, the limbs relaxed, pulse imperceptible at the wrist, but a feeble heart's action was felt, beating about 140 per minute. Respiration was very slow and gasping and the jaw had dropped — in short what appeared to be a state of collapse.

Dr. Hubbard first tried artificial respiration, which was followed by increased frequency in respiration, while $\frac{1}{30}$ gr. of sulphate of strychnia in divided doses and $\frac{1}{100}$ gr. of nitro-glycerine, during the half-hour that he was in attendance, restored the pulse to the wrist, but the doctor had little hopes of his recovery. The patient being removed to the House of Providence Hospital, I was called as medical examiner at 9.30 P.M. I found him lying in bed stripped of clothing but covered with blankets. The body was pale and cold. The arms and legs had now become cold, rigid and in a state of tetanic convulsion. The pupils were markedly dilated and did not respond to light. The breath was strong with the naphtha-like odor of gas, which did not entirely disappear until the fourth day. Temperature by rectum was subnormal 96⅘, which according to statistics appears exceptional. The pulse 142, respiration 32 and shallow, with spasmodic action as though snapping for breath, and a thin frothy mucus had to be wiped occasionally from between the lips.

Physical examination showed feeble heart's action and large mucus rales over both lungs. These rales cleared completely on the second day. A strong draught of fresh air passing through the room from open windows, warmth to the body and heart stimulants hypodermically were the only measures taken for immediate relief.

The normal temperature was not reached until the third day, when it rose steadily to 100⅗, the highest point reached, on the evening of the sixth day, and gradually diminished from the sixth, with slight feverish action throughout the second week. The pulse fell to 80 on the seventh day and respiration to 20. He voided urine in considerable quantity and involuntarily during the first three days. Bowels first moved by enema on the second day. Through the night of the second day he gradually regained consciousness, became quite rational and began to take liquid nourishment, though he swallowed with difficulty and cold water caused severe pain in the mouth and throat, producing a spasmodic action of the throat. He vomited his milk several times on the third day. For the first two days of consciousness he complained of great pain in his head, which was general, not localized, and also of a numbness of the limbs which continued for nearly a week.

On the morning of the second day my attention was called to a peculiar condition on the back of the shoulder blades and over the sacrum and buttocks, which parts came in direct contact with the easy chair where he was originally found sitting. These parts were thickened and brawny, bright red, hot and very sensitive as though scalded but the brawny thickening was too deep for an external burn or for a recent bed sore. The skin was not blistered, but loosened in a

few days, leaving a large denuded surface which healed over very slowly and was sensitive for several weeks. Numbness of the legs disappeared in about one week's time and as this abated he suffered with sharp shooting pains in the left leg and foot, accompanied with motor paralysis of the muscles controlling foot and toes, from which he has not at expiration of twelve weeks fully recovered, though the muscles respond to the faradic current.

It was also interesting to observe the result of paralysis of the vasomotors of this leg, which, when allowed to hang from the bed, or, as in the second week, when he tried to stand up, rapidly filled with blood, the skin becoming turgid and deep purple with distended vessels until he felt faint. The right leg was unaffected, retaining its normal color. This vasomotor paralysis disappeared entirely by the sixth week and also the shooting pains in the limb.

The latest article that I have seen on "poisoning by illuminating gas" is a very clever one by Dr. Paul M. Pitcher published in the *Brooklyn Medical Journal* of May, 1903, in which he concludes that: "The toxic effects of inhaling illuminating gas are due primarily to chemical changes produced in the constituent elements of the blood, this being a substitution of carbon monoxide hemoglobin for the oxy-hemoglobin, so diminishing the supply of oxygen to the tissues. Further that the *direct cause* of most of the symptoms *is* the diminished percentage of oxygen contained in the arterial blood supplying the central nervous system" (compare Haldane, p. 443).

We may concede this effect of carbonic monoxide (the chief poisonous agent of illuminating gas) to *be* the primary cause of the paralysis of the sensory, the motor and vasomotor nerves, producing the variety of symptoms here observed, possibly also the exquisite sensitiveness of the mouth and throat to cold drinks. I am at a loss, however, to account for the peculiar *external* appearances over the buttocks and shoulders. The question naturally arises if it can be due to any local irritation from the poisoned sweat in prolonged and close contact with a surface preventing the free escape of the perspiration from those parts, or is it because the pressure, long continued, has caused a temporary emptying of the blood vessels which, being suddenly relieved from pressure at that part, react *more* strongly and fill to *excess* by reason of the *general* tendency to vasomotor paralysis, causing here such a congestion as to result in inflammation of the skin tissues? The latter supposition seems to me more plausible.

## A CASE OF TRAUMATIC CEREBRAL HEMORRHAGE.[1]

BY C. A. ATWOOD, M.D., TAUNTON, MASS.

I PRESENT to your notice to-day a case of traumatic cerebral hemorrhage.

It seems to me that the case may be of interest, not only in its medico-legal relation, but surgically.

E. M., a French-Canadian, age forty-four, was returning from the city to his home on an electric car at about 9 P.M., June 7, 1902. While the car was in motion and fearing probably that it would not stop in front of his house, he attempted to save time and distance by getting off. The result was that he was thrown into the road, striking upon the back of his head. The road had recently been repaired by filling with sand and it was soft. He got up and went to his home. A short time after he complained of not feeling very well and sent for his physician. The physician at that time found no serious symptoms. E. M.'s condition, however, became worse and the physician was again summoned, who found him unconscious and pronounced the case one of apoplexy, for which he bled him.

E. M. never regained consciousness and died at 6.40 A.M., June 8, 1902. I viewed the body and performed an autopsy at 3 P.M. There were no visible marks of violence on the body. The symptoms followed by coma before death all pointed to some acute cerebral injury. On reflecting back the scalp, beneath it and near the occipital protuberance of the occipital bone was found a blood clot. The cranium was opened and there was no fracture of the skull. The dura was tense. When opened quite an amount of cerebral fluid escaped. The sinuses and vessels of the pia and brain were full and engorged. In the frontal lobe of the left hemisphere near the longitudinal sinus was a blood clot the size of a golf ball. This was the only lesion found and caused death by cerebral pressure. Macroscopically there were no other lesions.

The theory is that the man fell forcibly on to the back of the head with sufficient momental violence to cause by contre-coup a rupture of a blood vessel in the anterior portion of the brain opposite the site of the original injury.

The Court asked this question: "If there were no external marks of violence and no fracture of the skull how was it possible to state that the cause of death was due to violence or the fall?" The answer was: "The man never having had any cerebral symptoms of disease before, and in this case having come on immediately or soon after an injury, with the finding of an antemortem blood clot beneath the scalp, in the region where he was struck when he fell with force, was evidence enough to consider the hemorrhage of the brain, which caused death, to be due to injury and not to previous disease, together with the fact that there was no other pathological lesion present." *The Court so ruled.*

It may not be too much out of place to mention surgically something about this case. At the present time I believe that some of our more progressive surgeons advise even in the absence of localizing symptoms, if coma and other conditions are progressive, to interfere; that is, to open the skull in the sense of an exploratory trephining. The usual rule would probably be in a case like this, if undertaken, to trephine at the seat of injury. I have thought since if this had been attempted that it would certainly have been a long hunt for the seat of injury.

[1] Read before the Medico-Legal Society, Oct. 7, 1903.

# Medical Progress.

## RECENT PROGRESS IN GYNECOLOGY.

BY W. L. BURRAGE, M.D., BOSTON.

### THE NATURE OF MENSTRUATION.

Bandler,[1] having studied the function of menstruation by means of microscopical specimens and a survey of the literature, concludes that: "Menstruation is not a process by which the mucous lining of the uterus is thrown off with subsequent regeneration previous to the next menstruation. It is simply the excretion of blood from the decidua menstrualis occurring for the simple and sole reason that there is in the uterus no fecundated ovum.

"Ovarian secretion is the direct cause of this periodical swelling of the mucosa, and it continues, if fecundation has taken place, to exert not alone a local but likewise a stimulating influence on the general and sexual organs. This stimulation occurs to a heightened degree during pregnancy and on removal of the uterus, since the secretion is ordinarily excreted during menstruation. On the occurrence of pregnancy, this secretion causes a further development of the uterus and the decidua, and plays an important part in the process of labor; it stimulates the functions of the breasts, exerts a decided constitutional stimulation, and is the cause of many of the pathological conditions occurring before and during labor."

### ECTOPIC GESTATION.

In considering the etiology of tubal gestation Bandler[2] considers that external migration of the ovum frequently occurs, although it can hardly be regarded as causative of tubal gestation.

It seems probable that various inflammatory changes in the tubes are etiological factors in that they destroy the cilia in whole or in part, or diminish their functional activity. Thus the ovum is permitted to remain and develop in the tube. Dührssen found cilia on the abdominal side of the placental site and none on the uterine side, and Veit observed the presence of inflammation in the tube on the uterine side of the ovum.

The processes of gestation in the tube are the same as those in the uterus, modified only by the absence of the decidua and the thinness of the tube wall.

"The theory that the tube ruptures because the ovum is too big is, as a rule, wrong, for cases in the first three months. The various interruptions of ectopic gestation are all the result of hemorrhages, primarily minute. The usual ending, clinically, of the gestation begins with bleeding in the tube. . . . The death of the fetus, as in the case of the uterus, brings about changes which result in bleeding. The primary cause is a lack of decidua. . . . In the uterus the vessels are firmly embedded in the thick decidua and take a twisted course; in the tube the vessels are straight and embedded in loose connective or fetal tissue."

"Rupture of the tube almost always takes place at the placental site, which is the seat of old and new hemorrhages. The hemorrhage and loosening of the ovum which represent the clinical ending of these cases is not the first bleeding, for older ones are usually present."

### TOTAL ABDOMINAL EXTIRPATION OF THE UTERUS FOR CARCINOMA.

Krönig[3] considers the chief dangers of Wertheim's radical operation for uterine cancer to be necrosis of the ureter, postoperative cystitis and phlegmon of the connective tissue. To avoid these Krönig does not separate the ureters from the overlying peritoneum, but leaves them attached to a broad strip. He operates as follows: Median abdominal incision; uterus drawn forward with forceps; ligation of ovarian artery at outer end of broad ligament, also of ovarian and tubal branches of uterine artery *en masse* near the uterus. The round ligament and ovarian artery are divided to where the latter is ligated, and the broad ligament split into two layers. An incision is carried through the anterior layer forward and across the anterior uterine wall to meet a corresponding incision on the opposite side; the peritoneal flap is dissected up and the bladder separated from the vagina.

The posterior layer of the broad ligament is then incised parallel with the ureter, which remains attached to the parietal peritoneum where this is dissected free. The vagina is clamped from above and the uterus removed according to Wertheim's technique. The anterior vaginal wall is sutured to the base of the anterior peritoneal flap and the posterior vaginal wall to the posterior peritoneal flap. A rubber drainage tube is carried from the outer end of each broad ligament into the vagina, these tubes providing for possible ureteral complications. The anterior peritoneal flap, sutured only at its base, is drawn over the vaginal opening and its margin sutured to the peritoneum of Douglas' cul-de-sac.

### GONOCOCCI IN DEEP LAYERS OF FALLOPIAN TUBE.

Emil Kraus[4] confirms the statement of Wertheim that gonococci are not necessarily confined to the superficial layers of the tubal mucosa, as commonly believed. In his specimen they were found in the epithelium and stroma of the mucosa, in the muscular layers, in the periphery of the tube, and in the subperitoneal tissue.

### CHORIO-EPITHELIOMA.

J. Whitridge Williams[5] reviews at length a work on "Tumeurs du Placenta et Tumeurs Placentaires (Placentomes Malins)," by Dr. Paul Briquel.

Briquel gives the name of malignant placentoma to deciduoma malignum or chorio-epithelioma, considering that this form of tumor is derived entirely from fetal elements and that

[1] Uterine and Tubal Gestation, 1903.
[2] Ibid.
[3] Monats. f. Geb. u. Gyn., Bd. xv, H. 6.
[4] Ibid., Bd. xvi., H. 2.
[5] American Gynecology, vol. iii, No. 5, page 480.

therefore the original term deciduoma malignum is a misnomer. Williams considers that chorio-epithelioma is more descriptive than malignant placentoma and should henceforth be adopted.

Briquel has collected 254 cases of this condition from the literature and has carefully sifted the views concerning its histological structure and mode of production.

In considering its etiology, he points out the preponderant part played by the hydatidiform mole, and upon analyzing 217 cases of chorio-epithelioma reported in literature, states that 45.5% were preceded by it, while full-term labor, abortion or very early pregnancy, and tubal pregnancy were observed in 22.6, 33.6 and 2.3% of the cases, respectively.

Briquel thinks we should be extremely cautious in diagnosing the condition solely from the examination of uterine scrapings, as there is a possibility of error. Metastases in other organs are very frequent.

Hysterectomy is the treatment. According to his tables there were 63.15 %of cures in the 114 cases in which this operation was performed. [It is probable that these were all instances of early operation before metastases had occurred, otherwise we should hardly expect such a favorable showing.]

### LABIA URETHRÆ AND SKENE'S GLANDS.

Howard Kelly [6] describes anew two well-defined mucous folds at the external orifice of the female urethra which he terms labia urethræ, having first called the attention of the profession to them in 1895. When the labia are well developed they lie in close contact from side to side, forming a longitudinal slit, the urethra as a rule being completely hidden. They are well shown by introducing in the urethra the tip of the conical urethral calibrator when the labia show on each side of the calibrator, also by making downward and outward traction on the upper part of the hymen, when the lips separate and turn down and out.

Kelly considers their function to be protective, serving to keep the delicate urethral mucosa with its glands from constant exposure to leucorrheal discharges and the bacterial flora of the vaginal outlet. They also form an important part of the sexual apparatus as they are impinged upon during coitus and, in cases of disease, are more liable to insult than any other part of the genital tract, especially so in cases of rigid hymen and intact levator ani muscle.

The labia are often absent, especially in old women. In these cases we see a funnel-shaped orifice of the urethra and the urethra gapes exposing Skene's glands and the mucosa.

Kelly thinks he has solved the question as to the physiologic importance of Skene's glands. He considers that their function is partly for the lubrication of the labia urethræ, but mainly sexual. The exact *role* played by the urethral orifice in the sexual act has not heretofore been correctly interpreted. The first contact of the glans penis is with the orifice of the urethra, thus separating its labia and exposing it to any existing infection.

The tendency of the act of penetration is to displace the urethra inward until it lies in the plane of the vaginal wall and the urethlar orifice is carried downward and inward also as the male organ enters the vagina.

As the urethra is thus displaced the orifice becomes everted and the inner mucous surface applied to the dry dorsum of the penis. The function of Skene's glands then is to exercise an office for the urethral orifice precisely similar to that of the vulvo-vaginal glands in relation to the vaginal orifice, to provide a lubricating fluid for protecting the delicate mucosa from harmful attrition. At other times the secretion of the glands serves to prevent drying and agglutination of the delicate urethral labia.

Kelly demonstrates how the little openings of Skene's glands may be exposed, lying posteriorly and just inside the urethra, by using a speculum made of a fine wire hairpin with the legs bent at an angle and grasped with a pair of artery forceps.

He injects diseased glands by means of a syringe constructed by inserting a large hypodermic needle in the end of a two-inch piece of rubber tubing, the free end of the tubing being tied with a string. This syringe he finds much more efficacious than a hypodermic syringe because the amount of the injection can be carefully graduated ; with the hypodermic syringe too much fluid is apt to escape and in the case of pure carbolic, nitrate of silver and other cauterizing agents the excess is apt to injure the surrounding vulvar tissues.

Kelly reports two cases in which smegma bacilli in large numbers were found lodged in Skene's glands.

### CONDITION OF THE ENDOMETRIUM IN CASES OF UTERINE MYOMATA.

Cullen gives the following description of his findings from the examination of the endometrium in cases of fibroids: [7]

"*Cervix.* — As a rule the cervical mucosa shows no change. Occasionally, however, cervical polypi are present or the cervical glands may be moderately or markedly dilated. In rare instances true cervical erosion, in other words an ulceration of the cervix exists, and now and then squamous-cell carcinoma or adenocarcinoma of the cervix, may be associated with myomata. Where the cervix is much lengthened out the glands are often unraveled. We then note the squamous epithelium of the cervix alternating with that of the unfolded gland.

"*Body.* — Endometritis is occasionally found ; when present it is almost invariably associated with inflammatory changes in the adnexa.

"Tuberculosis is not uncommon, but while sometimes occurring independently is usually associated with similar processes in the fallopian tubes.

"Finger-like or dome-like projections from the

[6] American Medicine, vol. vi, pp. 429–431 and 465–468.

[7] Journ. Amer. Med. Asso., Aug. 8, 1903.

mucosa have been seen from time to time, and also other pictures more or less suggestive of a malignant change.

"Adenocarcinoma of the body of the uterus is quite frequently associated with myomata, as we have noted elsewhere. In the majority of cases it was not suspected.

"From an examination of a great many specimens we can lay down the general rule that where the fallopian tubes are normal and where no sloughing submucous myoma is present, the uterine mucosa will be perfectly normal or show simple mechanical changes. The import to the surgeon is that where such favorable conditions are present he can do a myomectomy, opening, if necessary, a large part of the uterine cavity with little danger of infection. On the other hand, if the tubes be adherent, or a sloughing submucous myoma be present, complete removal of the uterus is indicated, the sloughing submucous nodule, of course, being removed some time prior to performing the hysterectomy.

"These results are based on the gross or histologic examination of nearly one thousand cases."

### DEVELOPMENT OF CANCER IN MUCOUS POLYPI.

Opitz [8] reports the case of a woman fifty-seven years old, and seven years past the menopause, who applied for treatment because of persistent uterine hemorrhage. Exploratory curretting was done and the diagnosis of adenocarcinoma made. After removal of the uterus a polypus was found near the fundus that had undergone sarcomatous degeneration. Near the surface the tumor showed the typical structure of adenocarcinoma and there were nodules of adenocarcinoma scattered over the endometrium.

The author also reports another case in which a polypus was removed from the cervix of a patient fifty-eight years of age who had had hemorrhages and a foul discharge for several months. The growth proved to be cancerous and vaginal hysterectomy was performed. The tumor showed a connective tissue stroma with large cancer alveoli, the cells being continuous with the squamous epithelium on the surface. Normal glands were found between the alveoli.

### TREATMENT OF GONORRHEA IN WOMEN WITH YEAST.

Otto Abraham [9] concludes as a result of chemical and bacteriological investigations and forty clinical experiments that yeast can kill gonococci. The action is of a chemical nature and is not caused by an enzyme. Sterile yeast has this bactericidal action only when sugar is added; living yeast acts by itself, but its activity is increased by the presence of asparagin. For ease of application by the patient, and to keep the yeast cells alive, Abraham makes the yeast and asparagin with gelatin into vaginal suppositories. These suppositories caused no disagreeable symptoms and gave good results in the treatment of gonorrheal diseases of the vulva, vagina and uterus. They affected gonorrheal salpingitis favorably only by preventing repeated infection of the tubes from the uterus.

[8] Zeitschr. f. Geb. u. Gyn., Bd. xlix, H. 2.
[9] Monats. f. Geb. u. Gyn., Bd. xvi, H. 6.

### TRANSABDOMINAL, INTRA- AND EXTRA-PERITONEAL URETERO-VESICAL GRAFTING.

Under this title Dougal Bissell [10] reports an interesting case of vesico-uterine fistula following a difficult forceps delivery on which he operated successfully. The patient being very stout a long abdominal incision had to be made. By cystoscopy it had been previously determined that no urine came from the left ureter into the bladder. The left ureter was found terminating in the uterus at the base of the broad ligament somewhat posterior to its normal situation. It was considerably dilated. The ureter was cut off close to the uterus and its end beveled after being freed from its bed in the broad ligament.

A long curved dressing forceps was then passed through the urethra into the bladder until it came in contact with the posterior vesical wall to the left of the median line. The blades were slightly opened and an incision made between them from the abdominal side about three-eighths of an inch long. The points of the forceps were passed through the opening in the bladder wall and made to grasp the free end of the ureter and pull it into the bladder. The ureter was held in place by the forceps until it had been stitched to the bladder wall by eight stitches of intestinal silk.

Drainage into the vagina by means of a rubber tube passing from the bottom of the broad ligament space was established and the abdomen closed tight. The bladder was drained for four days by a block-tin catheter and the vaginal drainage was removed in five days. The convalescence was uneventful except for the formation of phosphatic deposits in the bladder.

Bissell publishes a photograph of the orifice of the implanted ureter in the bladder taken five weeks after operation by passing the photographic apparatus into the bladder (distended by boric acid solution) through the urethra.

It shows a rather large opening of irregular shape and above it, projecting into the bladder, a little eminence in the mucosa which represents the beveled end of the ureter.

The author presents a table of fifty-eight cases of uretero-vesical grafting which he has collected from the literature.

### URETHRAL CARUNCLES.

M. Lange [11] has studied fifty-eight cases of urethral caruncle and concludes that they are not true angiomata, but neoplasms of the mucous membrane of the type of granulomata, extremely vascular papillary polypi or telangiectatic polypi of the mucosa. They are differentiated from other neoplasms of the same region by the constant presence of glands, which are often changed by cystic degeneration, inter-glandular hemorrhage and round-cell infiltration; from

[10] Amer. Journ. of Obst., vol. xlvii, No. 2, 1903.
[11] Zeit. f. Geb. u. Gyn., Bd. xlviii, H. 1.

prolapse of the urethra by the macroscopic appearance and by the absence of cylindrical or transitional epithelium upon their surface.

They are not especially frequent at any particular period of life, but after the fiftieth year they are usually papillary polypi; before forty, more granulomata and telangiectatic polypi are found. Gonorrhea may be the cause of granulomata, and gaping of the urethral orifice from senile atrophy may lead to papillary polypi. The cause is usually not ascertainable. The incidental symptoms are the result of a complicating chronic urethritis or prolapse of the urethral mucosa or high insertion of the caruncle.

*(To be continued.)*

## Reports of Societies.

### NORTHWESTERN BRANCH OF THE PHILADELPHIA COUNTY MEDICAL SOCIETY.

Meeting held March 10, 1904, Dr. Samuel Wolfe, President.

A. Genito-Urinary Symposium.

Dr. H. R. Loux, Chief of Genito-Urinary Clinic, Jefferson Medical College Hospital; Assistant Surgeon to Philadelphia Hospital, read a paper entitled

THE LOCAL TREATMENT OF GONORRHEIC INFECTIONS.

Dr. Loux stated that, although a continuous service of eleven years in one of the largest genito-urinary clinics in America had afforded him unusual opportunities for observation, he had never written a paper upon the treatment of gonorrhea, because no method heretofore suggested proved, upon prolonged trial, to be an advance worthy of commendation. Clinical observation in thousands of cases convinced him that gonorrhea is too often grossly mistreated. He deprecated the use of strong, irritating injections because they aggravate the disease and damage the urethra, and stated that treatment of acute anterior urethritis by irrigation is to be condemned because it causes an extension of the disease by continuity; he quoted statistics, reasons and authoritative statements to show that these opinions represented the beliefs of the leading and most conservative genito-urinary surgeons.

The speaker stated that during the past year and a half the results at his clinic at the Jefferson Hospital and in private practice had been much better than ever before; this statement he based upon the observation of several thousand cases of gonorrhea at all stages. The reasons for this improvement he ascribed to careful local treatment in which he abandoned, absolutely, the use of any drug as an injection which can cause the slightest irritation. Dr. Loux stated that, in a general way, his methods of treatment were as follows: For acute gonorrhea, he prescribes light diet, with very little meat, no fats, fruit or alcoholic beverages, but allows as much skimmed milk as the patient can drink. If the infection is confined to the anterior urethra, he prescribed the injection of 2 dr. of a 10% solution of argyrol, held in the urethra ten minutes; this injection is made in the morning, at noon and at night. Internally, he prescribes capsules of copaiba, cubebs and sandalwood three times daily. This treatment is practiced for one week, during which time the discharge will almost if not entirely cease, there will be no pain or irritation by the injection or upon urination, and the gonococci will disappear.

If, at the end of one week, the urine remains continuously shreddy, a weak solution of astringents is employed, and of these drugs he preferred zinc sulphate, iodide, chloride, hydrastin or berberine muriate, but emphasized that these astringents should not be used during the first week of the disease and never in solutions sufficiently strong to produce pain or irritation.

If the two-glass test shows cloudy first and second portions of the urine, showing the presence of antero-posterior urethritis, he irrigates the anterior urethra with a warm solution of boracic acid in order to remove the accumulated secretions. Then he makes deep instillations of 20% argyrol solutions once daily or on alternate days; the inflammation of the anterior urethra is treated in the manner already described.

The writer quoted from statistics of four hundred cases, treated since July, 1902, by the methods described and stated the advantages as follows: simplicity; the relief afforded the patient from pain and irritation; the extreme rarity of complications; shortened duration of diseases, in that an average time required for cure in acute cases was twenty-one days, whereas by the older methods practiced at the clinic and in private work, the best average obtainable was forty-two days.

Dr. Loux then discussed the treatment of gonorrhea in the female the methods of which are best described by an illustrative case: A. G., age twenty-one, came under observation June 5, with acute vaginitis, endometritis and urethritis for which she had been under treatment in New York for one week. Typical symptoms of gonorrhea were present; microscopical examination positive. The vagina was dilated to full extent by means of speculum. To every portion of the vaginal mucous membrane a 50% argyrol solution was applied, and the same to the urethra by means of a cotton-tipped probe. The interior of the uterus was then freed of accumulated secretions by means of a cotton-wrapped applicator, after which the 50% argyrol solution was applied to the cervix and the body of the uterus. These applications are repeated 2 or 3 times so as to fill the uterine cavity with the solution. This local treatment was carried out every second or third. After eight days no gonococci could be found. For home treatment the patient was ordered vaginal douches of from 2 to 4 quarts of hot boracic acid or normal salt

solutions taken in the recumbent posture. On June 20, there was no discharge or other symptoms of gonorrhea and the patient was discharged. On June 29, she was attacked with acute appendicitis, for which he operated and removed a sloughing appendix. For the subsequent five weeks, during which she was in bed in the hospital recovering from the operation, he made observations every few days of her genito-urinary organs and there was no symptom of gonorrhea. The patient made an uninterrupted recovery and left the hospital.

In discussing *chronic conditions* which result from a neglected or improperly treated gonorrhea, Dr. Loux stated that care should be exercised in adapting methods and means to avoid irritating the already damaged urethral structures. He emphasized the necessity of making routine use of the endoscope and determine its nature.

Chronic follicular urethritis is readily recognized by endoscopic examination and by palpation of the enlarged follicles over a bougie, and is treated by gradual dilatation of the urethra by means of bougies, massage of the enlarged follicles, and by the local application of 25 to 50% argyrol solution to the individual enlarged follicles as revealed by the endoscope. This treatment is carried out 3 or 4 times a week and is by far the most satisfactory method he had ever found.

Most cases of chronic gleet are due to ulcerative conditions of the urethra and in the management of these the endoscope is indispensable. After determining the exact location of the individual ulcerations the method of treatment depends upon whether the ulcerations are sharply localized or whether there is a coexistent general hyperemia of the urethra. In the former case, applications of 50% argyrol solution (through the endoscopic tube) to the ulcerations should be made at least three times a week. If general hyperemia exists, the use of mild astringents should precede the topical application of argyrol, in order to rid the urethra of the mucopurulent accumulations. From four to six weeks of this treatment, with care in the use of instruments, will heal the ulcerations and cure the gleet in the large majority of cases.

Another very common condition is the reduction in the lumen of the urethra by inflammatory exudate, occasioned by repeated attacks of gonorrhea or a primary case of long duration. In these cases, endoscopic examination shows the seat of beginning stricture and the presence of more or less localized inflammation. The management of these cases is extremely important because of the certainty of the occurrence of organic stricture unless the patient agrees to a several weeks' course of treatment. He should report every third or fourth day for the passage of bougies of gradually increasing sizes, followed, if active inflammation exists, by the deep instillation or topical application of 25% argyrol solution, depending upon whether the inflammation is circumscribed or more or less diffuse.

Dr. Loux summarized his paper as follows: Concerning acute gonorrhea, (1) He would strongly deprecate the treatment of acute anterior urethritis by means of irrigation, because of the danger of spreading the disease to the posterior urethra. (2) Irritating injections of any kind should never be used in acute gonorrhea because of the certainty of occurrence of a mixed infection and the extension of the disease, by contiguity, to the urethral follicles. (3) Argyrol, as a non-irritating gonococcide, with a specific effect in allying the symptoms of inflammation, is the drug of choice for injection, and may be used in any strength and at any stage of the disease. (4) Astringents, such as zinc, hydrastin, bismuth and lead, should never be used in the acute stage of gonorrhea, but should be reserved for the post-gonococcus period when the urine remains shreddy. (5) These astringents should not be used in sufficient strength to cause the patient to experience pain or irritation.

To summarize concerning chronic gonorrhea: (1) Endoscopic diagnosis and treatment is indispensable as a routine measure. (2) Silver nitrate or other caustic or irritating applications or instillations should be seldom used, and then only in the most skilled hands and with the greatest care; otherwise there are likely to occur structural changes in the urethra, predisposing to organic affections amenable only to surgical procedures.

The discussion of Dr. Loux's paper was opened by Dr. H. M. Christian, Professor of Genito-Urinary Surgery, Medico-Chirurgical College.

Dr. Christian complimented Dr. Loux upon the excellence of the paper read and stated that the methods mentioned were, in the main, those practiced by himself. He stated that potassium permanganate is of no value in gonorrhea other than as a simple cleansing agent. Dr. Christian agreed with Dr. Loux that argyrol was undoubtedly the best gonococcide known to-day. After having used that silver salt continuously for more than two years, he prefers it because it never irritates, it is rapidly destructive to the gonococci, lessens the discharge and shortens the duration of the disease.

The speaker stated that it must be borne in mind that we have to deal not only with the gonococci, but with the destructive action of the micro-organism as well; in other words, destruction of the gonococcus does not, by any means, imply of necessity the cure of the disease, as there always remains a condition of catarrhal urethritis which requires a particular line of treatment. If a case of gonorrhea is seen in the early inflammatory stage, where ardor urinæ and chordee are the most annoying subjective symptoms, Dr. Christian orders powders containing salol, sodium bromide, potassium bromide, each two and a half grains, every two hours. At the same time a 5% solution of argyrol is ordered to be used by the patient as a hand injection three or four times daily, the solution being held in the urethra for ten minutes. If the patient can spare the time it is advisable to wash

out the anterior urethra with several syringefuls of warm normal salt solution prior to using the argyrol injection; this line of treatment can be carried on through the second and third weeks. When the subjective symptoms subside, it is sometimes of considerable advantage to supplement the local treatment with the use internally of copaiba and sandal-wood oil. Ordinarily at the beginning of the third week, the patient enters upon the stage of decline, or, as Professor Finger styles it, the "mucous terminal stage" of the disease. In a case going on to recovery, the discharge is now scanty, then muco-purulent in character and containing few if any gonococci, and this is by far the most important stage in the treatment of the disease as regards the patient's future welfare; it is here that experience teaches that we need more than a mere gonococcidal agent. We need here in addition mild astringent lotions to help restore the integrity of the damaged mucous membrane. A good plan now is to use 5% solution of argyrol night and morning, employing through the day some such astringents as zinc, bismuth, hydrastic, lead, berberine, etc. At the beginning of the fifth week, when nothing remains but the well-known "morning drop" and the urine is clear but contains shreds, it is well to use the argyrol solution at night and to use once or twice through the day one of the well-known astringent mixtures.

If in the second or third week the clinical symptoms and the two-glass test show involvement of the whole urethra, the treatment by hand injections is temporarily abandoned. Deep instillations of 10% solutions of argyrol are then employed at short intervals until such time as the second urine becomes clear.

This in general is the line of treatment that the speaker had used at the University of Pennsylvania and his other clinics for the past two years and is one that has given more satisfactory results than any hitherto employed.

Dr. Orville Horwitz condemned the irrigation treatment of gonorrhea and summarized his opinions as follows: The irrigation method of treatment will not abort acute specific urethritis; chronic urethritis and involvement of the deep sexual organs are common sequences; in many instances, in order to effect a cure in the terminal stage of the disease, the irrigation must be discontinued and other methods of treatment employed; irrigation should not be employed in the acute stage of specific urethritis; irrigation of the deep urethra by means of hydrostatic pressure is injurious in the majority of cases of acute gonorrhea, and is conducive to the development of complications; the best treatment we have to-day for gonorrhea is that by means of injection of argyrol solutions which are strongly antiseptic and non-irritating.

Dr. R. O. Kevin, Attending Surgeon, Genito-Urinary Dispensary, Jefferson Hospital, prefaced his remarks with the statement of the French surgeon, Ricord, that "A clap begins and God alone knows when it will end." Fortunately, however, this statement is not as true as it was a few years ago. Dr. Kevin stated that with the use of 20% argyrol solution he had been able to cure 85% of his acute cases in from two to four weeks. He quoted Purdy of London who stated that since the introduction of argyrol into the enormous clinic at the London Lock Hospital, 72% of the early cases had been cured within a month and there had been no relapses after six weeks. Dr. Kevin had been associated with Dr. Loux for several years at the clinic and could corroborate his conclusions. The speaker stated that he had seen so many acute cases cut short that he always practiced the abortive method when possible; this method is as follows: If the patient presents himself during the first forty-eight hours of an attack of gonorrhea, the anterior urethra is washed out with warm water or normal salt solution. Then two dr. of 20% argyrol solution is injected into the anterior urethra and held there for ten minutes; this injection is repeated by the patient every three hours, night and day, for three days. Even if this method does not abort the disease, it always effects a cure in a shortened period, and affords the patient entire freedom from the pain and irritation usually present in an early gonorrhea. If by this means the disease does not show signs of being aborted, Dr. Kevin practices the same methods mentioned by Dr. Loux.

Dr. Orville Horwitz, Professor of Genito-Urinary Surgery, Jefferson Medical College, read a paper entitled

THE RADICAL CURE OF SENILE HYPERTROPHY OF THE PROSTATE; BASED UPON A STUDY OF 145 OPERATIONS PERFORMED BY THE AUTHOR.

Dr. Horwitz stated that the question under discussion has, with the possible exception of appendicitis, attracted more attention in the surgical world than any other subject. It is well-recognized that the danger to the patient with enlarged prostate begins as soon as it is necessary to resort to the daily use of the catheter, and when this period arrives a surgeon should be consulted to supervise the case and decide what operative measures are desirable or necessary. It was emphasized that no one operation was suitable to all cases and that each patient is a law unto himself in the matter of choice of operation.

The two operations which have stood the test of experience are prostatotomy by means of the galvano-cautery (the so-called Bottini operation) and prostatectomy. The speaker stated that the Bottini operation is extremely valuable, safe and always to be preferred to cutting operations in suitable cases. Out of 98 cases operated upon by the author, by the Bottini method, 3 died, 2 of uremia, and 1 of sepsis; all three were very old men. Twelve cases were lost sight of after leaving the hospital but were much improved when last examined. This leaves 81 cases concerning which there was obtained definite knowledge as to results. The ages of the patients varied be-

tween fifty-two and eighty-one years. The speaker stated that his statistics proved conclusively that the earlier the patient submitted to operation, the better the results. Of the total 81 Bottini operations all the patients were either entirely cured or very much benefited; 4 required second operation, and a considerable proportion were treated for several months subsequently for accompanying chronic cystitis.

Prostatectomy, the speaker stated, is regarded as a valuable operation but authorities differ as to when and how it is to be performed. As many as 20 different operations have been suggested. Here, too, the individual case decides methods, choice of operation, etc. The prostatectomies performed by the author were as follows: 3 complete (suprapubic incision); 6 complete (combined suprapubic and perineal incisions); 7 partial prostatectomies (suprapubic incision); 34 complete perineal prostatectomies.

Of the 9 complete suprapubic operations, 2 died, 1 of suppression of urine, 1 of uremia. In all the cases, convalescence was slow; in five cases the ultimate results were all that could be desired.

Of the 34 perineal prostatectomies, 6 died from uremia, sepsis or shock; 6 cases were lost sight of after leaving the hospital; 16 were cured, 4 markedly benefited, 1 unimproved.

Dr. Horwitz summarized the results of observations in his 145 operations as follows:

(1) A routine method is not applicable to the treatment of prostatic hypertrophy; every case is a law unto itself and the treatment will depend on the various conditions presented in each individual case.

(2) The dangers attendant on the daily catheterism are greater than those of a radical operation performed at the onset of the symptoms caused by the obstruction.

(3) The proper time to perform a radical operation is reached as soon as it becomes necessary for a patient to resort to daily catheterism.

(4) The gratifying results obtained by a number of the operations in many cases demonstrates that the Bottini operation is one of great surgical value. It is applicable to a large percentage of cases; which if properly selected has proved to be the safest and best method of relieving an obstruction caused by prostatic hypertrophy. In those cases in which a stone in the bladder is associated with a prostatic enlargement, lithoplaxy may be performed in conjunction with a galvano-cautery prostatotomy.

(5) A complete prostatectomy is justifiable if performed early before the individual is broken down in health and secondary complications have supervened. In early operation the results are most satisfactory, recovery rapid, the mortality varying between 5% and 7%.

(6) A complete prostatectomy in feeble elderly patients with longstanding obstruction and secondary complication, the prognosis is grave and the mortality ranges between 15% and 18%. If the bladder in these cases happens to be hopelessly disabled, the results obtained by the operation are negative. Cases of this description are only suitable for suprapubic drainage.

(7) In 90% of all cases the gland can be readily removed by means of a median perineal incision. The perineal operation recommended by Bryson is considered the operation of choice.

(8) Complete suprapubic prostatectomy is shown to be more dangerous than the perineal operation for obvious reasons. A suprapubic prostatectomy is safer if combined with perineal drainage.

(9) Partial suprapubic prostatectomy is indicated in such cases as where a valve-like lobe exists which interferes with urination, or where there is a partial hypertrophy of one of the lobes.

(10) A perineal prostatectomy is best suited for those cases where the enlargement of the lateral lobes has a tendency to progress towards the rectum, to obstruct the urethra, or project backwards into the bladder.

(11) A prostatectomy is always attended with more danger than the Bottini operation and the convalescence is more prolonged. In suitable cases the latter operation is therefore the one of choice.

Dr. Edward Martin, Professor of Clinical Surgery, University of Pennsylvania, discussed the preceding paper as follows:

He agreed with Dr. Horwitz that, if operation has been advised and consented to, the circumstances of the individual case decided which of the several operations is to be performed. He believed that the Bottini operation has proved of great value and is preferable to cutting operations in suitable cases. He did not, however, advise operation in all cases of enlarged prostate. He recognized the inconveniences and dangers attendant upon the daily use of the catheter, but believed in the value of palliative measures in the majority of cases. He recommended care in the selection of catheters and chose one that enters the bladder with the least force and least pain to the patient. If a soft rubber catheter cannot be introduced, a woven elbowed one is to be chosen. If obstruction or spasm necessitates habitual resort to a metal catheter, surgical intervention is required. When patients use the instrument upon themselves, the hands should be washed thoroughly, dipped in bichloride solution, the meatus washed with the same solution, and be provided with an irrigating bag containing one pint of hot argyrol solution, 1 to 1000. Infection of the bladder is commonly present and should be treated by means of bladder irrigations. For this purpose a fountain syringe, supplied with a catheter, should be suspended two feet above the level of the bladder. The anterior urethra is first thoroughly flushed, after which the catheter is pushed into the bladder and the urine withdrawn. The flushing of the bladder is continued until the return flow no longer contains pus or mucus. The temperature of the argyrol solution employed should be of the temperature of the body or a little above it. When practicable this antiseptic flushing should be done each time the

catheter is passed. If this treatment is inefficacious continuous catheterization becomes necessary. For this purpose a large, soft rubber catheter, or a self-retaining one, is selected and the antiseptic solution introduced; if the catheter is properly introduced, the entire amount of the solution will return. Twice a day the urethra and bladder are thoroughly flushed with the antiseptic solution, the catheter being withdrawn far enough to allow the injected fluid to escape from the meatus, and then being pushed back into its former position.

The success of this treatment depends upon securing free and continuous drainage and this is incident to the permeability of the catheter and its retention in the proper position. When skillfully applied it is one of the safest and most successful means of treating cystitis, which so frequently complicates obstruction from prostatic enlargement.

## Recent Literature.

*Introduction to the Study of Malarial Diseases.* By Dr. Reinhold Ruge of the Imperial German Navy. Translated by P. Edgar, M.B., C.M. (Edin.), and M. Eden Paul, M.D. (Brux.), M.R.C.S., L.R.C.P. Illustrated. New York: Rebman Company. 1903.

The author of this small volume of 138 pages modestly states that he offers little new to the student of malaria. His intention is rather to provide government officers with a brief compendium of important facts relating to this type of disease. The book is, therefore, eminently practical in its method of presentation, and discusses essentially those matters in the investigation of malaria which may lead to confusion on the part of the somewhat inexperienced. The book is well printed, adequately illustrated and should fill the place for which it is intended. Two plates of microphotographs are appended illustrating the endogenous development of the human malarial parasite and certain facts relating to the infecting mosquitoes.

*The Complete Medical Pocket-Formulary and Physician's Vade-mecum.* Collected for the Use of Practitioners. By J. C. Wilson, A.M., M.D., Physician to the German Hospital, Philadelphia, etc. Third revised edition. Philadelphia: J. B. Lippincott & Co. 1903.

As stated in the title, this small volume contains a series of prescriptions taken from various sources, together with many facts relating to the giving of drugs, and to their dosage, which cannot fail to be of value. Other facts and tests of various sorts are added, which may also be commended. The volume has reached its third edition. It makes no pretence to be anything more than it is. It is attractively bound in flexible leather, and may conveniently fit into a pocket or bag. Throughout the text various blank pages are left for personal notes.

THE BOSTON

# Medical and Surgical Journal.

THURSDAY, MARCH 24, 1904.

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## INTRACRANIAL SURGERY.

A matter of constantly recurring interest to practitioners of medicine, whether physicians or surgeons, is the question of the relief or cure of intracranial growths. The surgeon who has come to look for definite curative results from his operative procedures is apt to regard with a certain scepticism the possibility of relief in cases of brain tumor. The physician on the other hand is, if not sanguine of results, still often hopeful that the tumor may be successfully reached or removed, or at least that the symptoms may be so far benefited as to give the patient a relative degree of comfort. The attitude of the surgeon is no doubt in a measure justified by the facts of experience; and the hopes of the physician are not infrequently wholly disappointed by the outcome of surgical interference; nevertheless, this type of disorder demands for this reason the most painstaking study, both on the diagnostic and on the palliative side. Such study is being given as never before. Great numbers of cases are being reported, a few successful, many benefited, and some without material effect, or even fatal, after surgical intervention. It is certainly a branch of medical practice which requires the concentrated attention of surgeons, as well as neurologists, if the best results are to be attained.

We have been gratified and instructed in reading a discussion of the surgery of tumors of the brain by Dr. Charles H. Frazier of Philadelphia, published in a recent number of the *American Journal of the Medical Sciences.* Dr. Frazier finds that the statistics of the last five years give

renewed hope in the surgery of cerebral tumors, due to more accurate diagnosis, earlier recourse to operation, and to decided improvements in technique. On the surgical side the improvements in technique have as a common object the prevention of shock. Stress is very rightly laid upon the necessity of taking additional precautions in operations on the brain. To this end the avoidance of unnecessary exploration, or of prolonged operations, or of excessive hemorrhage, or of rough manipulations, are important. Furthermore, the anesthetic should be given by an experienced man, and circulatory conditions should be frequently observed during the operation. As to methods of opening the skull Dr. Frazier decidedly prefers the dental engine, armed with trephine and drill, by means of which an osteoplastic flap may be most quickly and easily made. The chisel and mallet, which had a brief period of popularity, the Gigli saw, and the recently introduced Stellwagen trephine, are all open to serious objections. The advantages of the dental engine, in Dr. Frazier's hands, are rapidity, ease of control of hemorrhage, and reduction in traumatism.

Precautions against hemorrhage from the very beginning of the operation are insisted upon. Even the blood lost from an extensive scalp incision should be considered, and to this end a tourniquet to the head is strongly advised. The problem of controlling hemorrhage from the brain or from a vascular tumor is a more difficult one. Two courses are open; either to pack gauze into the wound, or, as suggested by Crile, to close one or both carotids temporarily. This latter procedure is apparently not without danger, and in Dr. Frazier's opinion should be reserved only for extreme cases. As practiced also by Cushing, Frazier regards the observation of blood pressure during intracranial operations as of great importance, particularly since it affords information of practical utility as to the advisability of performing operation in one or two stages. The rather startling statement is made that about twenty-five per cent of patients operated upon died immediately from the effects of operation, variously attributed to shock, concussion or "unknown causes." It is now thought probable that the sudden withdrawal of intracranial pressure, leading to the breakdown of the vasomotor regulatory mechanism, is responsible for these too frequent deaths. The following rule is, therefore, worthy of consideration: If there be a very decided fall of blood pressure following the reflection of the dura after an osteoplastic operation, the operation should be temporarily discontinued and completed in a second stage from two to seven days later. This permits the circulatory equilibrium to be restored and removes the essential source of danger.

The discussion of the bulging or hernia of the brain after operation is also of much importance. The immediate bulging on opening the dura is sufficiently explained by the existing increase of intracranial pressure; the consecutive bulging, so often an annoying and dangerous feature of convalescence, is of more importance, since it is probably in a measure avoidable. If the experimental evidence as pointed out by Cannon is correct that cerebral edema is due to traumatism through certain chemical changes in the brain substance itself, it at once becomes of importance to recognize the fact that the various manipulations of the brain by the palpating finger, and by other efforts to discover the existence of a growth, are positively deleterious, since they lead to a swelling and subsequent hernia which might otherwise have been avoided.

Frazier is of the opinion, which must be shared by all who have had experience with this type of case, that palliative operations are wholly justified for the relief of the distressing symptoms when hope of cure is not to be considered. It is, perhaps, in these increasingly frequent palliative operations that special care should be taken by the surgeon to avoid risks of hernia and the consequences of over-much manipulation of the brain cortex. Lumbar puncture as a means of palliation should in the light of accumulating experience certainly be regarded as a dangerous procedure, and if attempted at all, an exceedingly small amount of cerebrospinal fluid should be withdrawn. In general it is concluded that the statistical study of the results of the last five years is encouraging; that the mortality, both immediate and subsequent, has been materially reduced; and that recurrence after removal of the growth is not to be expected more frequently than in other organs.

We have discussed this paper of Dr. Frazier at some length because it seems to us an admirable exposition of the surgical aspect of the general question. If the suggestions made by him could be put into active operation by all surgeons operating on the brain, we feel confident that results would be more satisfactory and the mortality much lessened. We are inclined from time to time to regret that surgeons do not take a more vital interest in the symptomatic course

of these cases, an attitude which would certainly induce a heightened appreciation of the necessity of devotion to the details of operation to which Dr. Frazier calls attention.

## THE BOSTON DISPENSARY.

The managers of the Boston Dispensary are making an appeal to the public for money to enable them to add to their present buildings.

This institution has a long and very creditable history. It was started in 1796, eight years before the founding of the Massachusetts General Hospital, and sixty-eight years before the City Hospital, for the purpose of affording medical advice and relief to the sick poor of Boston. It is wholly a private charity entirely dependent upon popular support. In 1883 the present building was constructed, having been paid for by contributions from the charitable public of Boston. In 1900 an addition was completed at a cost of about $65,000, all of which, with the exception of $10,000 contributed by two friends, was paid out of invested funds. The capacity of the Dispensary was doubled, yet to-day it is badly cramped for room. The desired addition is imperatively necessary if the Dispensary is to properly care for the sick poor who come for aid. The estimated cost of the additional land and building is about $100,000.

In 1884 the total visits at the Dispensary were 31,725, or 103 per diem on the average, and the number of physicians was 39. The recipes put up by the apothecaries were 36,704. The total number of visits made by patients at the Dispensary in the year ending Sept. 30, 1903, was 89,207, which is an average of 295 a day. These patients were treated by the 77 physicians and surgeons of the Dispensary, who give their services without compensation. In addition, 20,501 visits were made at patients' homes by the 13 district physicians employed by the Dispensary, and 92,162 recipes were put up by the apothecaries. This indicates that the service has nearly trebled since 1884.

All those familiar with hospitals realize the great development in recent years of out-patient departments, both in numbers of patients and in importance in relation to the community and to the hospitals as a whole. The more modern medical methods, the growth of specialties, necessitate more equipment and more space than formerly. The buildings recently opened, or about to be opened, for the out-patient services of leading hospitals emphasize this proposition. The floor space of this new department of the Massachusetts General Hospital is nearly 80,000 square feet, while that of the Boston Dispensary is but 30,000, and yet very nearly the same number of patients is treated.

## MEDICAL NOTES.

New York State Abandons Research on Cancer. — According to the *New York Medical Journal*, after spending $100,000 New York State has abandoned its attempt to find a cure for cancer. The Senate Committee on Finance has reported the annual appropriation bill, and from it has been stricken the provision of $15,000 for the cancer laboratory at Buffalo. The institution has had the benefit of State funds for six years. "We are convinced that no progress is being made in the Buffalo laboratory," said Senator Malby. "The state would gladly spend its money in the effort to find a cure for cancer if it could be shown that any advance had been made. My own impression is that if a cure for this much dreaded disease is ever found it will come through the work of some man who has devoted his life to scientific research and not through any state endowed institution."

This reasoning is of questionable validity, and savors rather of politics than of a progressive scientific spirit. We regret that New York is to be deprived of this relatively small sum of money in its attempt to solve the problem of cancer.

Panama Canal Commission's Sanitary Advisers. — Accompanying the Panama Canal Government Commission, which sailed from New York on the steamship "Alliance" for Colon on March 29, were Col. William C. Gorgas, M.D., and Major Louis La Garde, M.D., of the United States Army, and Dr. J. W. Ross of the Navy, who are to have supervision of the sanitary arrangements on the Isthmus. The Commission will probably remain at the Isthmus about two months and will inspect the entire route of the Canal.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon March 23, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 58, scarlatina 22, typhoid fever 9, measles 212, smallpox 0.

Medical Examiner, Yale Gymnasium. — The position of medical examiner for the Yale University gymnasium has been abolished. The last incumbent, Dr. Jay W. Seaver, held the appointment for twenty-five years.

A New Type of Litigation. — Suit has been brought against the Boston Elevated Railway Company for damages because a passenger contracted a cold while riding on one of the company's cars. Plaintiff's claim is that during a rain storm she was exposed to wet and damp to such a degree that she contracted a cold therefrom. This exposure, it is claimed, was due to the negligence of the defendants. The defendants naturally set up a claim that the plaintiff assumed such a risk when she entered the car and that they were exercising due care. The judge before whom the case was presented reserved his decision, the importance of which is evident.

Boston Mortality Statistics. — The number of deaths reported to the Board of Health for the week ending March 26, was 237, as against 201 the corresponding week last year, showing an increase of 36 deaths, and making the death rate for the week 20.48. The number of cases and deaths from infectious diseases was as follows: Diphtheria, 58 cases, 5 deaths; scarlatina, 23 cases, 2 deaths; typhoid fever, 8 cases, no deaths; measles, 194 cases, 2 deaths; tuberculosis, 51 cases, 38 deaths; smallpox, no cases, no deaths. The deaths from pneumonia were 32, whooping cough 1, heart disease 23, bronchitis 13, marasmus 4. There were 10 deaths from violent causes. The number of children who died under one year was 44; under five years, 61; over sixty years, 47; deaths in public institutions, 74.

NEW YORK.

Opening of Mount Sinai Hospital.—The new Mount Sinai Hospital was formally opened on March 15, and among those who made addresses were Governor Odell, and President Fornes of the Board of Aldermen representing the mayor. In presenting the keys Joseph Fox, vice-chairman of the building committee, said: "Our greatest thanks are due to the Jewish community of this city, whose unprecedented liberality in providing the means for the erection of this group of buildings stands as an unequaled achievement in the line of communal work, an honor to our race and a credit to the metropolis." In the course of his remarks Edward Lauterbach, counsel for the hospital said: " These buildings have been erected, but there is the burden of an enormous expenditure that is still to come. There is a distressing spectacle in this city to-day, and it is that kindred institutions are threatened with diminution of their great services because of the lack of funds. That condition can never come to Mount Sinai Hospital as long as the pulse of the great Jewish community beats in unison with that of its directors, whose sacred duty it is to preserve and maintain it." The new Mount Sinai is unquestionably one of the finest and most perfectly equipped general hospitals in the world.

Private Hospitals in Need. — Nearly all the large private hospitals in the city (known as private by way of distinction from the municipal hospitals) are at present more or less crippled by a deficiency of funds, in consequence of the increasing demands upon them for the treatment of charity patients. Some of them have therefore been obliged to curtail their work, and retrenchment would seem to be a necessity as regards nearly all these institutions. The case of the New York Eye and Ear Infirmary has already been mentioned in the Journal, and recently the Roosevelt Hospital has closed its special ward for diseases of women. If such retrenchments continue to be made, Bellevue and the allied public hospitals, which are now taxed to their utmost capacity, will be quite inadequate to care for the patients turned away from the private hospitals. During the past winter, however, there has been a very unusual amount of illness to contend against, and it is to be hoped that with the advent of spring the tension on all the hospitals will be materially relieved.

Mount Sinai Hospital. — The Mount Sinai Hospital is having trouble in disposing of its old site, on Lexington Avenue, 66th and 67th Streets. On March 11 the Appellate Division of the Supreme Court rendered a decision, reversing the lower court's, to the effect that the corporation cannot give a marketable title to the property, the hospital first built upon the ground, which was in two plots, in 1871, holding the property under leaseholds from the city for ninety-nine years at one dollar rental per year for each plot. In June, 1898, in response to the corporation's petition, the commissioners of the sinking fund of the city granted the property to the corporation in fee simple absolute, with the right to dispose of it at best advantage for the maintenance of the institution. In view of the contemplated removal of the hospital to its new site, the corporation, in December, 1901, agreed to sell the property to David H. Hyman, who paid $20,000 on account when the contract was executed in the month following. Title to the portion recorded as Lot 1, Plot 2, passed March 1, 1902,

when $10,000 additional was paid, together with a mortgage for $51,500. When in July, 1903, the corporation tendered the deed for the remainder, Mr. Wyman refused it, claiming that it was invalid because the leases and deeds from the city were illegal and unconstitutional.

## Correspondence.

### MAMMEATA.

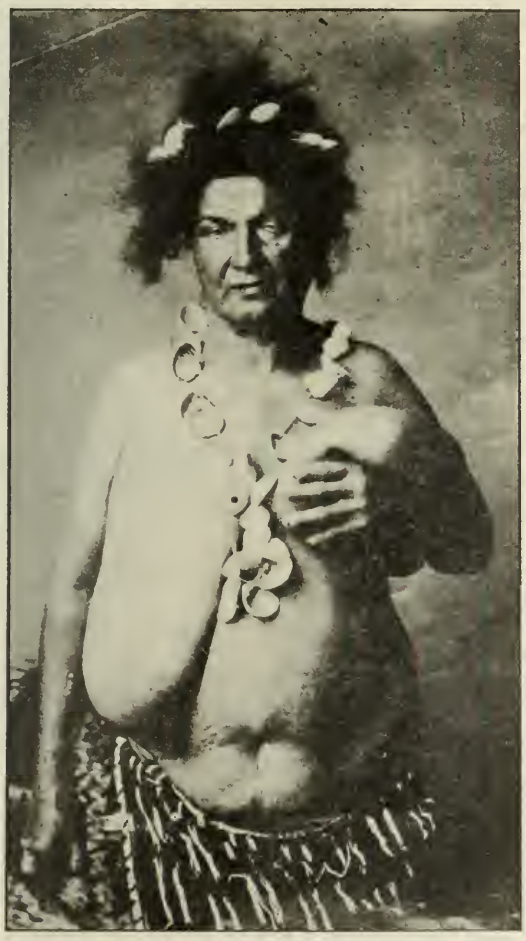
Suakim, Upper Egypt, March 2, 1904.

Mr. Editor: The enclosed photograph of the wet nurse of the Emperor Menelik's little grandchild may interest such of your readers as are trying to solve the problem of infant feeding.

We have no milk laboratories in this country.

Yours very respectfully,

Mantzaris Bey, M.D.,
(Paris, 1891),
Late Physician to the Imperial Household and at present Chirurgien en Chef of the Suakim-Berber Railroad.



### CREDIT WHERE CREDIT IS DUE.

Manila, P. I., Feb. 11, 1904.

Mr. Editor: Vol. cxlix, No. 26, Dec. 24, 1903, on page 707, first column, a writer in the Journal gives a reference to an order of General Grant's Headquarters, Department of Texas, in regard to the protection of the command from yellow fever. The writer does not mention on whose recommendation this order was issued. Is it to be understood that it was of General Grant's own initiative or upon the recommendation of his medical officer? If so the credit for the steps belongs to the medical officer and not to General Grant, who only ordered that which the intelligence of another man had dictated. I do not think that General Grant would have cared to be put into the position of trying to steal another man's ideas, and equally difficult is it to think of him with expert medical knowledge.

Very truly yours,

J. S.

## Miscellany.

### BUILDINGS FOR THE INSANE.

According to *Charities* nearly a million and a half dollars is now being spent, or is about to be spent, in some nine different states for new buildings for the insane. This is exclusive of New York state where between $600,000 and $900,000 is annually expended for this purpose. It would seem pertinent to inquire whether there might not be an increase in efficiency and decrease in cost if the experience of the different states were in some way made available to one another. We have practically the same classes of patients to be provided for in all cases, and there is little reason why buildings which have been found suitable in Massachusetts should not be suitable in Oregon. The building operations now under way, or already planned, include entirely new institutions at Norwich, Conn., Allentown, Pa., and Parsons, Kans., and additions to existing buildings at Morristown and Harrisburg, Pa., Spring Grove and Sykesburg, Md., Dunning and Watertown, Ill., Lyons View, Tenn., Hopkinsville, Ky., San José, Cal., Eloise, Mich., Las Vegas, New Mex., Norfolk, Neb., and Pineville, La. The buildings include administration buildings, nurses' homes, cottages for convalescents and buildings for almost all other classes of patients. These buildings are probably designed in most cases by architects who have little familiarity with the requirements of the insane or with expert opinion on the subject of their accommodation. It is not customary for architects to specialize on institution construction, and the appointment of an official state architect has probably never been considered in most cases. Problems which have been solved only after many failures in some of the older states are, perhaps, worked out afresh without adequate data. In 1891 William P. Letchworth, a member of the New York State Board of Charities, wrote a valuable paper on "Poorhouse Construction," which was transmitted by the State Board of Charities of the Legislature and was afterwards reprinted and circulated for the information of the public. How helpful it would be if some expert in hospital construction would prepare a treatise on the construction of institutions for the insane, illustrated with plans and elevations and equipped with references to localities where successful exponents of sound theories of construction could be seen and studied.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MARCH 12, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseases. | Typhoid fever. |
| New York . . | 3,908,644 | 1,779 | 493 | 20.00 | 27.82 | 2.47 | 1.96 | .50 |
| Chicago . . . | 2,021,086 | 549 | 140 | 24.21 | 23.12 | 1.09 | 3.64 | 1.63 |
| Philadelphia | 1,407,968 | 709 | 192 | 27.91 | 22.13 | 1.69 | 4.37 | 3.52 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 282 | 78 | 22.69 | 18.44 | 1.06 | 1.06 | 1.06 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 140 | — | 18.57 | 26.42 | — | 2.85 | 7.85 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 75 | — | 22.66 | 24.00 | 5.33 | 4.00 | 1.33 |
| Boston . . . | 617,950 | 247 | 63 | 23.89 | 19.43 | 2.43 | 1.21 | .81 |
| Worcester . . | 136,925 | 43 | 14 | — | 18.60 | — | — | — |
| Fall River . . | 119,349 | 28 | 8 | 10.71 | 28.57 | — | — | — |
| Lowell . . . | 104,402 | 26 | 6 | 11.55 | 15.40 | — | — | 3.85 |
| Cambridge . | 100,998 | 25 | 6 | 17.50 | 5.00 | — | — | 2.50 |
| Lynn . . . . | 73,875 | 19 | 2 | 10.52 | — | — | — | — |
| Lawrence . . | 72,348 | 20 | 6 | 40.00 | 10.00 | — | — | 5.00 |
| Springfield . | 72,020 | 21 | 3 | 4.76 | 4.76 | — | — | — |
| Somerville . | 70,413 | 23 | 3 | 17.39 | 17.39 | — | — | — |
| New Bedford | 68,863 | 30 | 14 | 30.00 | 23.33 | 6.67 | 6.67 | — |
| Holyoke . . . | 50,538 | 21 | 7 | 9.52 | 19.05 | — | — | — |
| Brockton . . | 46,601 | 17 | 3 | 29.41 | — | — | — | 5.88 |
| Newton . . . | 39,310 | 10 | 1 | — | 10.00 | — | — | — |
| Haverhill . . | 39,061 | 14 | 2 | 35.71 | 7.14 | — | — | — |
| Malden . . . | 37,205 | 8 | 2 | 12.50 | 50.00 | — | — | — |
| Salem . . . . | 37,188 | 12 | 5 | — | 16.67 | — | — | — |
| Chelsea . . . | 36,499 | 12 | — | 25.00 | 16.67 | — | 8.33 | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 14 | 2 | — | 21.42 | — | — | — |
| Everett . . . | 30,209 | 13 | 4 | 23.10 | — | — | — | — |
| North Adams | 29,201 | 8 | — | 25.00 | 12.50 | — | — | — |
| Quincy . . . | 26,798 | 8 | 2 | — | 12.50 | — | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 7 | 1 | — | 14.30 | — | — | — |
| Brookline . . | 23,576 | 8 | 1 | — | 12.50 | — | — | — |
| Pittsfield . . | 22,870 | 5 | 2 | — | 20.00 | — | — | — |
| Medford . . | 21,956 | 2 | — | — | — | — | — | — |
| Chicopee . . | 21,692 | 11 | 3 | 9.09 | — | — | — | — |
| Northampton | 20,314 | 10 | — | 40.00 | 20.00 | — | — | 10.00 |
| Beverly . . . | 15,807 | 5 | 1 | — | 40.00 | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 0 | — | — | — | — | — | — |
| Adams . . . | 14,745 | 1 | 0 | — | — | — | — | — |
| Attleboro . . | 14,561 | 3 | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 4 | 1 | 25.00 | 75.00 | — | — | — |
| Newburyport | 14,478 | 7 | 1 | 14.30 | 14.30 | 14.30 | — | — |
| Woburn . . . | 14,315 | 2 | 1 | — | — | — | — | — |
| Melrose . . . | 13,819 | 4 | 1 | 25.00 | 25.00 | — | — | — |
| Westfield . . | 13,809 | 2 | 1 | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 4 | 1 | 50.00 | — | — | 25.00 | — |
| Revere . . . | 13,609 | 4 | 1 | 25.00 | — | — | — | — |
| Framingham | 12,974 | 7 | 1 | — | 14.30 | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 3 | 1 | 100.00 | — | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 4 | 1 | — | — | — | — | — |
| Weymouth . | 11,350 | 3 | 0 | — | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 4,249; under five years of age, 1,074; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 925, acute lung diseases 1,002, consumption 495, scarlet fever 37, whooping cough 14, cerebrospinal meningitis 17, smallpox 6, erysipelas 12, puerperal fever 19, measles 49, typhoid fever 65, diarrheal diseases 107, diphtheria and croup 78.

From whooping-cough, New York 7, Philadelphia 2, Baltimore 2, Pittsburg 1, Boston 2. From smallpox, Philadelphia 6. From cerebrospinal meningitis, New York 10, Pittsburg 1, Boston 3, Lynn, Brockton and Gardner 1 each. From erysipelas, New York 3, Chicago 1, Philadelphia 3, Baltimore 3, Boston 1, Somerville 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,475, for the week ending Feb. 27, the death-rate was 17.5. Deaths reported, 5,137; acute diseases of the respiratory organs (London) 180, whooping cough 163, diphtheria 58, measles 104, smallpox 2, scarlet fever 22.

The death-rate ranged from 6.4 in Hornsey, to 30.6 in Plymouth; London 16.5, West Ham 13.9, Brighton 20.2, Southampton 13.9, Bristol 18.2, Birmingham 22.7, Leicester 13.3, Nottingham 19.7, Liverpool 21.4, Bolton 16.0, Manchester 20.7, Salford 19.8, Bradford 14.4, Leeds 19.3, Hull 16.8, Cardiff 13.3, Rhondda 19.2, Merthyr Tydfil, 25.1, Tottenham 14.8, Bootle 22.8.

## METEOROLOGICAL RECORD.

For the week ending March 12, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S.. 6 | 30.66 | 28 | 38 | 19 | 74 | 70 | 72 | S E | S | 9 | 8 | O. | F. | 0 |
| M. 7 | 30.06 | 40 | 50 | 31 | 90 | 96 | 93 | E | S E | 8 | 19 | O. | R. | .20 |
| T.. 8 | 27.57 | 46 | 54 | 37 | 93 | 79 | 86 | W | W | 6 | 13 | O. | C. | .56 |
| W. 9 | 29.72 | 28 | 38 | 18 | 50 | 53 | 52 | W | W | 12 | 22 | C. | F. | 0 |
| T.. 10 | 29.99 | 24 | 31 | 16 | 50 | 36 | 43 | N W | W | 18 | 10 | C. | C. | 0 |
| F.. 11 | 29.75 | 28 | 31 | 25 | 41 | 65 | 53 | W | N E | 5 | 7 | O. | O. | T. |
| S.. 12 | 29.64 | 29 | 40 | 18 | 51 | 46 | 48 | N W | N W | 18 | 22 | C. | C. | 0 |
| ☞ | 29.63 | | 40 | 23 | | | 64 | | | | | | | .76 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

DELAYED PUBLICATION. — The strike, now happily at an end, among printers and pressmen is responsible for delays in issuing the JOURNAL, which will soon cease.

## SOCIETY NOTICE.

AMERICAN ACADEMY OF MEDICINE. — The twenty-ninth annual meeting of the American Academy of Medicine will be held at the Shelburne, Atlantic City, beginning on Saturday, June 4, at 11 A.M., and continuing through Monday the 6th. CHARLES MCINTIRE, M.D., *Sec'y.*

## CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING MARCH 19, 1904.

N. M. FEREBEE, medical director. Detached from the Navy Yard, Washington, D.C., and granted sick leave for six months.

A. E. PECK, assistant surgeon. Granted sick leave for two months.

## BOOKS AND PAMPHLETS RECEIVED.

Atlas and Epitome of Operative Gynecology. By Dr. Oskar Schaeffer. Authorized translation from the German with Editorial Notes and Additions edited by James Clarence Webster, M.D. (Edin.). F.R.C.P.E., F.R.S.E. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

Fourteenth Annual Report of St. Mary's Hospital, Rochester, Minn. for the Year 1903.

Annual Report of the Boston Floating Hospital. Season of 1903.

University of California Publications. Physiology. On the Production and Suppression of Glycosuria in Rabbits through Electrolytes. (Second Communication.) By Martin H. Fischer.

The Principles of Diagnosis of Medical Malingering. By John Punton, M.D. Reprint.

The Trend of Modern Psychiatry and its Relation to General Medicine. By John Punton, M.D. Reprint.

An Atlas of Human Anatomy for Students and Physicians. By Carl Toldt, M.D., assisted by Prof. Alois Dalla Rosa, M.D. Translated from the Third German Edition and adapted to English and American and International Terminology by M. Eden Paul, M.D. (Brux.), L.R.C.S., L.R.C.P. Third Section. New York: Rebman Company. 1904.

Some Subjective Hints of the Morphine Habit. By William Lee Howard, M.D. Reprint.

Sexual Perversion in America. By William Lee Howard, M.D. Reprint.

Treatment in Four Hundred and Forty-two Cases of Movable Kidney without Surgical Intervention. By Charles D. Aaron, M.D. Reprint.

# Original Articles.

## THE PARTIAL PASSING OF NEURASTHENIA.[1]

BY CHARLES L. DANA, M.D., NEW YORK.

There have come of late years much clearer ideas of the nature and relationships of the insanities. The analysis of symptoms has been keener and clinical study has been pursued with scientific methods and with an especial enthusiasm. There has been, in fact, a kind of intellectual renaissance in psychiatry which has aroused deeply the interest and respect of neurologists to whom for many years alienism has stood chiefly for politics and stewardship.

This activity has perhaps excited in us a more careful study of mental states, and it has emphasized to us the fact that while insanity is a psychosis, or morbid mental state, there is a large number of such states that are not insanities, though showing a kinship to them. These non-insane psychoses come to the general practitioner, and perhaps especially to the neurologist, by whom they are put down commonly as some form of neurasthenia, perversity, hysteria or degeneration. It is my contention that a large number of these so-called neurasthenias and all the hysterias should be classed as prodromal stages, abortive types or shadowy imitations of the great psychoses. For in these cases it is the morbid mind that dominates the situation, not a weak eye-muscle, a poor stomach, a heavy womb, uric acid, arterial sclerosis or even an exhausted motor, nerve cell. They are not often, to be sure, pure psychoses; the body is also at fault, but the psyche is in main control and it gives the stamp to the syndrome, directs the prognosis and most acutely solicitates the treatment. Many neurathenias are only a kind of understudy of some particular type of insanity, or they make the forming stage of some major psychosis which, perhaps, under wise direction never fully develops.

With all this I think you will agree, and perhaps even say that it is both old and obvious.

But it is my particular task to try and show not alone that neurasthenia is often or usually a minor psychosis, but to indicate how we can often assign an individual case to its specific group.

For these purposes I must say something about the grouping of these psychoses.

I am not going to make any serious assault upon that mighty Gibraltar of nosology, the classification of the insanities. I have, however, tested some of my most meticulous alienistic friends with certain propositions, and they have yielded a satisfactory acquiescence. I hope they will be as well received by you. The propositions are these: There are, speaking broadly, five types of insanity, each representing a somewhat more instable brain upon which external or internal agencies of an injurious kind have acted. There is underlying all the chief non-accidental or functional insanities, an innate constitutional weakness, instability, or taint. This inherent structural weakness varies in intensity and seriousness with the character of the psychosis. Represent the normal human constitution by a horizontal line, and I think it will be agreed that the mental departures from this line are greatest in about the following order: precocious dementias; paranoia; manic depressive and melancholia; phrenasthenic psychoses; toxic and exhaustion psychoses; organic psychoses.

I am leaving out of consideration the idiocies, imbecilities, and the organic insanities from syphilis, epilepsy and gross-brain disease, for they present another problem.

There may be disagreement about the relative degrees of the teratological deviation in this scheme. I do not insist upon its absolute correctness. It is based mainly upon the different degrees in which the human mind deviates or disintegrates under the influence of the psychosis; and not upon the statistics of heredity.

It will be necessary for me to give some indication of my interpretation of those different forms, though it will readily be understood that I do it only in a most schematic way. I am following as you see in a general way the views of Kraepelin and his pupils, but also the admirable studies of Dercum; and I will confess to my indebtedness to this latter, as well as to the practical help I have got from the physicians of the Psychopathic wards at Bellevue Hospital, where for some years classifications have been put to vigorous tests.

### THE PRECOCIOUS DEMENTIAS.

I do not suppose any one doubts that there are dementing insanities which attack people almost always before thirty, and very often before twenty; that they sometimes come on quietly, without noise, and with a long period of pseudo-neurasthenia, and that they sometimes remit and even cease entirely to progress. They are simple or primary dementias.

On the other hand, they sometimes develop with an outburst of violence, followed by confusion, stupor or a katatonic state, with remissions and relapses later. They sometimes come on with delusions and go ahead like a rather rapid type of delusional monomania. But they all, as a rule, tend to dementia sooner or later. We can use for them a multitude of qualifying names, but the main clinical facts are known, and generally agreed upon. They may some day be looked at in a different light, or grouped in a different way. Their present grouping is an easy and satisfactory one to the clinician, and is at the present day very widely accepted.

### PARANOIA.

*Paranoia* is a form of the major psychosis about which there is practically no disagreement, and I need not take up your time with any description of its characteristics. It comes on after adolescence, has a tendency to a cyclical course in which there is at first depression, moodiness, suspicion, egotism and sense of being badly

[1] Read at the meeting of the Boston Society of Psychiatry and Neurology, Jan. 21, 1904.

treated; then follow systematized delusions, and sometimes active explosions of excitement under these influences. The course is long, but there is very little tendency to dementia.

MANIA-MELANCHOLIA, RECURRENT MELANCHOLIA, CHRONIC MELANCHOLIA.

The condition known as mania-melancholia is one much harder, perhaps, for the neurologist than the psychiatrist to accept. For we see much melancholia and very little mania; but there is undoubtedly a depressive insanity which begins early in life, often develops from slight causes, and recurs again and again with slight tendency to dementia.

On the basis of my own experience, I am inclined to out-Kraepelin Kraepelin, and place the chronic melancholia of middle and later life, *i. e.*, the melancholia of involution, in the same group. I cannot here present all my reasons for this view; but I believe it is a common experience to find a patient, who in the forties develops a mild melancholia or an agitative melancholy, to give a history of nervous prostration when in the twenties or a little later on sometimes, of attacks, five, ten or fifteen years previous to the one which is brought before me. We see analogies also in the neuroses, such as migraine. Migraine usually develops like dementia, before the twentieth year, and ceases at the climacteric, but often it does not develop until late in life, or having had a few years of display in early life, some new manifestations of migraine or some equivalent neurosis develops about the forty-fifth or fiftieth year. It can readily be understood that what is a pure psychosis, as is manic depressive insanity in youth, may easily be made a chronic one by the complications and degenerative changes of later life. The late development of the psychosis suggests that the constitutional taint, which underlies it, is dying out, and hence, we would not get the violence of explosion or the occasional rapid tendency to dementia seen in the early and pure form.

PHRENASTHENIA.

The *neurasthenic* or *degenerative psychoses*, for which I use the term, *phrenasthenia*, form a well-recognized group also. I would make it include the perversions, hysterias, phobias, abulias, amnesias, as well as the compulsions and impulsions, the dipsomanias, morbid fears, and the psychic tics. In his work on the mental state of hystericals, Janet describes most of the phenomena of this group. The word, *hysteria*, however, conveys a different meaning to the minds of most, and the term "phrenasthenia" is one which implies little, and answers the purpose better.

I may be charged with using the term phrenasthenia as a kind of pathological catch-all for the psychopathic, but that is not my intention or view. In this group of persons, there are these dominant traits: (1) a tendency to psychical storms or explosions as in dipsomania, hysteria, or the psychic tics; (2) a tendency to psychical "tonus" or contracture as shown in obsessions, besetments and fixed ideas. There is with all a defect of inhibition which leads the instincts and the subconscious mind-stuff to play havoc with the conduct. The patients are often neurasthenic also, on the ordinary somatic side.

EXHAUSTION PSYCHOSES.

The *exhaustion and toxic psychoses* form a much divided group, but they can be, as Dercum states, classed pretty closely together under the delirium, confusion, stupor syndrome.

I presume that most cases of neurasthenia proper, occurring in adult and middle life, are exhaustion neuroses, with often some suggestions of the analogous psychosis. Thus the extreme nervousness is the nerve equivalent of mania, the inability to work and concentrate the mind often amounts to a confusion; and the absolute physical lassitude and weariness is the analogy of the stupor and dementia of a toxic insanity. This, then, is my schematic view of the great groups of insanities of which much of neurasthenia is a prodrome, a *forme fruste*, or an imitation.

Perhaps all that I ought really to assert is what you will readily grant, *viz.*, that among neurasthenics, currently so-called, we can find:

(1) Early stages and abortive types of dementia precox.

(2) Mild attacks of manic-depressive insanity, with exhaustion and retardation of thought, but not much melancholia.

(3) Many *formes frustes* of the neurasthenic insanities, with doubts, fears, impulsions, especially with obsessions and fixed ideas, drug and alcohol tendencies, and even sexual perversions.

(4) Mild forms of paranoia, in its depressive and hypochondriacal stage.

(5) Early attacks and mild attacks of the melancholia of involution.

(6) Early stages of paresis.

(7) Slight grades of the exhaustion psychoses, following typhoid fever, grippe, prolonged alcoholic indulgences, or non-paretic syphilis.

One might admit this much and yet be unwilling practically to grant that most neurasthenias are mental cases. But there are some general as well as specific and technical reasons favoring this view. It is notorious, for example, the number of "cures" that exist for the alleviation of the neurasthenic state. The patent medicines, suggestive and pedagogical therapeutics, like the New Thought, Mental Healing, Christian Science, Osteopathy, electricity, water cures. We all remember, also, the vogue at one time or another of specialistic cures by treatment of eyes, stomach, uric acid and the pelvic organs.

All this variety and excess of therapeutics certainly suggests either no disease or a mental one.

I have been watching for a case of neurasthenia due to excessive physical work alone, but I have never seen it. It does not occur, for example, as the result of long and hard athletic work, nor in bicycle racers, or six-day pedestrians, or in firemen and stokers. It is always the psyche that has to be hit in order to get a neurasthenia.

I am not, however, especially anxious to argue

this point, for I think the truth will be reached finally by a close study of symptoms.

I shall be very much disappointed if those who hear or read this paper should flippantly express their interpretation of it by saying, "Well, he just wants to make out that all neurasthenics are crazy people and ought to be locked up." Yet I can hear something of this in the air.

This is very far from my meaning. I would emphasize, rather, the fact that there are many important psychoses or morbid mental states that are not at all insanity, and never will be. Nevertheless, they are not perfectly healthy minds, and their maladies or sufferings are largely due to the mismanagement of their minds, rather than their bodies. *Mensa sana* means almost always *corpus sanum* so far as functional conditions go; and I say this at the risk of having Mrs. Eddy claim me for her own.

Furthermore, I would insist that these minor psychoses which make or keep up neurasthenia are generally manageable things. If one third of the major psychoses are curable, we can say that three fourths of the minor groups are so. But they are much more curable if we know which is the organ most in need of therapeutical attack.

And here is where the importance of recognizing the presence and nature of a psychosis comes in. We know that in phrenasthenia the trouble is a chronic one, with some tendency to a cyclic course. But in this phrenasthenia we need, above all, pedagogical treatment, isolation and a routine of regular life, while treatment makes them worse by intensifying the obsessions. In the early neurasthenias that suggest, at least, a precocious dementia, very prolonged rest is absolutely needed.

In melancholia-mania, the malady we know will run a course, and we can predict a cure, often in a short time; but we can also predict and try to avoid a relapse.

In the melancholic neurasthenia of later life, we have the hardest problem to meet, and must prepare the patient for it. Here recovery is likely, but it is slow, and not ever quite perfect.

Without going into further analysis, I should say that many neurasthenic psychoses can be recognized if we rememper these facts:

(1) Neurasthenia, strictly speaking, very rarely occurs under twenty. What we see then is pseudo-neurasthenia of dementia precox, or dementia precox itself; slight attacks of recurrent melancholia or manic-depressive insanity; or some early development of a phrenasthenia, showing itself in chronic headache, spinal irritation, hysterical seizures, fears and obsessions.

(2) Depressive forms of neurasthenia with mainly symptoms of exhaustion, and retardation of thought recurring, and coming on often without adequate cause or many bodily symptoms are forms of manic-depressive insanity.

(3) Neurasthenia in the luetic is often, not always, a precursor of paresis.

(4) The depressive and anxious types of neurasthenia occurring after forty or forty-five are usually mild forms of the melancholia of involution.

(5) The neurasthenias occurring after severe illnesses, toxemias and shocks, show sometimes signs of the confusional psychosis.

(6) So-called congenital neurasthenia or chronic hypochondria, is usually a dementia precox, paranoia or phrenasthenia.

Cut out all the foregoing, and one has cut out about 50% of neurasthenia. What is left is usually not a general neurasthenic state, but a local disorder. So that if one follows it up very closely we may yet end in finding that there is no such thing as neurasthenia at all. These are neurasthenic psychoses, and there are enfeebled nervous mechanisms, so that people have irritable or weak hearts, stomachs, legs or bowels. But this is not a general neurosis or neurasthenia.

I must confess that I may be charged with dealing disrespectfully with our one great national malady. You may say that if half our neurasthenics are just of fancy bred, and the other half not neurasthenics at all, America has been deleted of one of its most distinctive and precious pathological possessions. If no longer able to claim any disease as specially our own, or point with pride to a national and neurasthenical syndrome, there is removed, we may be told, an important stimulus to patriotism and racial solidarity!

I do not think, however, that I shall seriously jar the national pride. The removal of the term neurasthenia from the list of easy diagnoses will have its most tragic effect on the European professors whom our wandering plutocracy consults; and by whom the diagnosis of the "American Disease" is usually made as the patient is announced.

I am not, however, insisting that neurasthenia, *i. e.*, nervous exhaustion, is not a real thing. I think it is, and that the term will still have to be used.

But I specially urge that the mental state of these patients be carefully examined. The neurologist needs the help of the psychiatrist here, and I hope it will be given. I doubt if neurologists, as a rule, know enough of psychiatrical methods to make always the proper diagnosis of neurasthenia. This ignorance, however, will not last long and then there will develop a readjustment of our neurasthenic states with a knowledge of the psyche as a basis as well as of the *soma*.

It is in the hope of promoting this object that I have written this paper.

## Appendix.

### Description of the different types of psycho-neuroses.

The task of describing specifically the character of the different types of neurasthenic psychoses is difficult, and I do not pretend that I can accomplish it here. I shall in fact only try to point out some features of the more prominent groups.

A majority of the cases commonly called neurasthenia should be called "psycho-neuroses." This is a general term meaning nothing

much more definite than that the patient has a functional disturbance of the mind and nerves.

But a large number of these psycho-neuroses can be easily recognized as cases of phrenasthenia, of the explosive type like hysteria and dipsomania, or of the obsessive type.

A considerable number are cases of the mild or recurrent melancholia type, and they really belong to manic-depressive insanity, or to its allied form, chronic melancholia of involution. A smaller number of cases belong to the pseudo-neurasthenia that precedes or substitutes itself for dementia precox. A small number will be found to be really abortive types of paranoia. I have here arranged the psycho-neuroses in their order of frequency, at least, as I have observed them. Finally, most real neurasthenias are exhaustion and toxic neuroses or local neuroses. Thus we would have:

True neurasthenia: usually an exhaustion or toxic neurosis or local disease.

Psycho-neuroses: including: (1) pseudo-neurasthenia of dementia precox, (2) *formes frustes* of paranoia, (3) the same of the mania melancholia psychosis, (4) mild types of phrenasthenia, (5) mild types of exhaustion psychoses.

The *Pseudo-Neurasthenia of Phrenasthenia* — the most important and frequently seen psycho neurosis probably is that which have I called *phrenasthenia.*

This condition comes on in its hysterical and explosive form at the period of puberty and adolescence; but in its more chronic and obsessive form later in life, *i. e.*, after maturity. It occurs in women somewhat oftener than men. While congenital conditions are fundamental in the cause, the exciting causes are oftenest overwork, shock, worry and exhausting diseases and toxemias.

The condition is chronic, but tends to improvement and often cure. It runs a very variable, but not a regular or cyclical course. There is no tendency to dementia; and the patients are often active and intelligent; their social instincts are good, and they have not any deep or dominant melancholia. The memory is unimpaired, and the power of work often considerable, but concentration of mind is difficult, and there is a weakness of will and lack of initiative amounting to abulia. The hunger and sexual sense may be obtunded, or exaggerated; and there is usually an exaggeration of the sensations of pain, both physical and psychical. There are sometimes crises and prolonged conditions of what is called "nervousness"; this is a kind of pressure-activity, indicated by a feeling of restlessness and desire to do something or say something all the time. In the latter characteristic *place aux dames.*

Sometimes we get even suggestions of negativism, *i. e.*, a stupid refusal to react to sensible reasoning and advice, and the suggestion of any particular plan at once arouses antagonism and desire to do the opposite. Who has not met this person both in lovely woman and unlovely man? There is sometimes a marked diffidence and refusal to take part in ordinary social life. For the social instinct, though present, is crowded out by morbid self-consciousness and fears.

The phrenasthenic woman often shows an extremely morbid anxiety over her children, her husband and her household affairs, so that domestic peace is difficult and domestic service an especial trial. Affairs are run with a tremendous waste of energy; and, after all, not always well run, nor are the children well brought up, for the untrained phrenasthenic is over-rigid or over-indulgent, and in general makes a poor mother.

It is this class of people who get fixed ideas regarding their own malady or doctors, and become slaves to medication, or run off to Christian Science or some particular fad of treatment or diet. Sometimes the compulsion seizes them to go to bed, and they, on any excuse, run home, take off their clothes and soothe their fears between the sheets.

On the somatic side we find many of the ordinary symptoms of neurasthenia, such as periodical headache, occipital pain, and head pressure feelings of cerebral congestion, and a kind of subjective vertigo, which is really only a kind of crisis of apprehension. It is these patients who sometimes have long-standing and inscrutable headaches and local pains. They "never remember being without a headache" or pain in the back. No form of treatment has ever helped this. It is increased by exertion, mental or physical, and yet is not cured by rest or by anything but moral measures, including especially neglect.

Some cases of spinal irritation belong to this group, as well as that symptom which has been called topoalgia. It is not to be forgotten that some chronic headaches and spinal pains, however, are due to bad eyes, or to weak spinal muscles, or pelvic irritations. Nor do I deny that the soma may be the prominent defect in some patients who along with an obsessive brain, have small hearts, weak stomachs, and over-active thyroids, or perhaps a poor adrenal, and sphlanchniac system.

Naturally, these persons are sensitive to stimulants and rich foods, and are thrown into crises by moderate indiscretions. They are helped but not cured by washing the stomach, giving tonics, and so forth, but it is the "psyche" that really requires treatment.

The trouble is, in fine, a chronic non-dementing neuro-psychosis with tonic and clonic "seizures" affecting the intellectual field with fixed ideas, the emotional with crisis, fears, jealousies, doubts and morbid apprehensions; the instinctive with perverted impulses and the volition with periods of foolish action or actual paralysis.

I am not trying to describe that very easily recognized group of phrenasthenics who have serious phobias, doubts and almost insane obsessions and impulsions. Their characteristics are well-known and are sometimes so marked as to put them among the major psychoses. Mysophobia, doubting mania, belong most typically to this class.

It is the more subtle types that go often unrecognized as anything more than neurasthenic or

hysterical or hypochondriacal, though they really belong in the same great category.

*The Pseudo-Neurasthenia of Melancholia.* — The mania-melancholia syndrome is only an outfit of mental symptoms that may affix itself on any morbid and unstable brain. It occurs in the dipsomaniac and in the paranoic, it occurs as a phase of paresis, and in exhaustion psychoses. But it fits with particular purity of type a certain constitution coming nearest to that of phrenasthenia or the neurasthenic psychosis.

This syndrome does not always include a real melancholia or develop into a mania. Its principal underlying condition on the melancholia side, may be only exhaustion, retardation of thought, indecision and depression. There is a real and horrible melancholy, at times; at others, only an undercurrent of apprehension which stands for melancholia, and there are occasionally periods of nervousness, restlessness, and desire of action which stands for a mania. But the patient, on the whole, looks like a simple case of cerebral exhaustion, with inability to concentrate or use the mind, with simple "anhedonism," or loss of pleasure, sense and of interest in the work of the world, to which are added moods of melancholy, insomnia, pains and cerebral discomfort. The slightest effort seems impossible, and the smallest task a mountain of labor. The patient cannot read without fatigue or sense of nervousness, or even nausea.

Often the patients are girls or young women who break down at school, recover, and break down again in the twenties; perhaps during this decade they only have short periods of depression lasting a few weeks, but recurring every few years. Finally they become well, but sometimes develop new attacks at the period of the climacteric. These attacks are now more severe or, at least, more chronic, and are associated with many somatic symptoms due to arterial sclerosis, vasomotor and glandular disturbances, and the other frailties of the climacteric. Sometimes the attacks which occur late in life take the form of a hypochondriacal melancholia, because there are now real somatic disturbances which turn the mind upon the individual's own condition. The patient thinks he has a bad stomach, or liver, or heart, or is greatly worried over the parasthesias of arterial sclerosis and rheumatism that appear at this time. The characteristic of this psycho-neurosis in early life is a tendency to come on without much cause, and to recur without any marked physical disease or disability. The cases occurring at and after the climacteric are more obstinate and are associated with the somatic symptoms of the degenerative period of life.

The patients have no fixed ideas, or compulsions, nor much of the selfish egoism of dementing types of psychoses. There are sometimes periods of exalted feeling, of good health and spirits, with a flow of ideas and talk, and an exuberant delight in being well again. This leads sometimes to excesses that bring on exhaustion and depression.

Most cases perhaps are those which we see only in this later stage; and inquiries bring out the fact that at school or before marriage, she had one or two attacks of nervous prostration.

It is the fact that we see cases shading all the way from simple depression-exhaustion to real recurrent melancholia, that I consider these cases to belong to the psychoses.

*The Pseudo-Neurasthenia of Dementia Precox.* — These are neurasthenics of early life occurring under the age of twenty or twenty-five. There may be a bad mental heredity, and alcholism in the father is often noted. They include the cases of prodromal pseudo-neurasthenia, and the arrested and abortive types that pass later in life, perhaps, as chronic or congenital neurasthenia: Persons who achieve some success in early life, but have to husband their resources at every point or they break down.

The basis of all is a good brain originally, but one which at the time of maturity ceases to develop or to work well any more. It does not go to pieces, but its evolution ceases. It is not a short-lived, but an arrested organ.

Perhaps some cases get nearly well, for in a way, dementia precox is an exhaustion psychosis, and if the exhausting condition is quickly removed and long rest given, the brain may reassert its capacity to live. I am an optimist.

In pseudo- or prodomal, neurasthenic cases there is a period of two or three years in which a young man or woman shows symptoms of mental dulness or negligence. He does not do his work as well as formerly; and shows indifference to reproof and consequences. He has some ordinary neurasthenic symptoms, such as headache, insomnia, and cerebral parasthesia. He sits up late and sleeps very late. His conduct shows indecision and abulia, a loss of mental grasp and capacity to understand or do the work formerly attempted. The patient will spend hours in trying to finish a letter, or read a few pages in a book, or finish some calculation. He is often strong, physically, and will stand the work of a summer camp, of sports, or of hunting expeditions; eventually, however, this also tires him. The trouble may begin in a somewhat different way: A young man who has been working or studying steadily, rather suddenly finds he can't do his task. He goes home and lives with his family, simply refusing to work. He has not many complaints to make, but he simply cannot follow systematically any line of thought or industry. He sits at home a great deal, reads or pretends to do so, and lies in bed a great deal. His future depends on his situation in life, or the means, sympathy and affection of his parents. He is sent to travel, or to a life on a ranch, or in the woods. If urged too much, an explosion occurs, and his real malady is recognized. But if left alone, he continues his vegetative life, receiving casual treatment for his neurasthenia. After one, two or three years, perhaps, excitement or delusional conditions develop, and his trouble is recognized.

I am sure that there are types in which the

dementing condition is even slighter than this. The progress is really arrested for many years, and the patient is simply a rather useless homebody, doing nothing, not suffering much, helping a little about the house, showing aversion to real work however, complaining of his head, his stomach, probably sexually weak, developing some delusional ideas or vagaries. If he is originally serious-minded and brought up to ideals of duty and work, he makes a serious fight, but a little work causes profound exhaustion, and he has to give up. These patients do not have the egotism of paranoia. The malady runs a slow course; there may be periods of depression and apathy, suggestive to the watchful of a stupor, but there is not true melancholy. The great characteristic is the mental exhaustion and exhaustibility; the difficulty in attention and decision. It is an abulia from sheer weakness, however, not the hesitation of the doubting mania between two motives, or the indecision of fear and apprehension. The mental depression as stated is not acute, and if present is simply the psychic pain that comes from exhaustion.

To sum up: It is my contention, first, that many cases of dementia precox are in the early stages considered neurasthenics; but also that there are abortive types of dementia precox which pass through life or many years of it, with the dementia arrested, and are classed simply as neurasthenic. They are seen in college men and young professional men who break down suddenly after starting out brilliantly and are never heard of, becoming perhaps, breadwinners and fathers and mothers of families, but never amounting to anything, and always working at a disadvantage. They have no initiative; they break down often, and have to rest and limit their work.

Finally, neurasthenia occurring under twenty is rarely neurasthenia. It is a dementia precox, or a recurrent melancholia, or the exhaustion of a phrenasthenia, and it is rarely paranoia. Neurasthenia occurring at this early period with a bad family history, including family alcoholism, should make one very suspicious of a serious malady.

## THE CYSTOSCOPE — ITS DIAGNOSTIC VALUE.[1]

BY A. M. WOSE, B.S., M.D., SYRACUSE, N. Y

By cystoscopy of to-day is meant the introduction of an instrument through the urethra for a visual examination of the bladder. This instrument, as you know, is called the cystoscope.

Like other articles of utility the cystoscope has its cycle of development. It is divided into two epochs:

(1) Instruments constructed on the plan of a tube passed into the bladder with the source of light reflected from a mirror without.

Bozzini at Frankfort in 1806 devised the first cystoscope. Then followed Segalas in 1826 with a modification, Bombolgini and John D. Fisher in 1827, Desormeaux in 1863, Cruise in 1865, Stein, 1873, and Gruenfeld in 1874. A question at that time was the choice of a light to be reflected; one advocated gas, another — petroleum, gazogen or magnesium — light. The open tube gave rise to difficulty from the fact that the contents of the bladder flowed out on introduction, and that the bladder-walls collapsed soon after, thus limiting the time and field of observation. The use of fenestrated tubes overcame this difficulty. All this, however, found its application in the female alone; for, at no time did this reflected light suffice to examine the male bladder.

This state of things changed on the introduction of the electric-light into therapeutics. Here commences the

Second epoch — that of the modern cystoscope.

Dr. Julius Bruck, Jr., of Breslau in 1867 was the first to use the platinum-light in medicine. He devised two methods for its use:

(1) What he called stomatoscopy, or direct illumination of a cavity oy a glowing platinum-thread.

(2) Diaphanoscopy — indirect illumination or translucency of a cavity by a glowing platinum-thread.

Ten years later Nitze returned to Bruck's method. For he believed that an organ like the bladder, connected by a long narrow canal to the outer surface of the body, could be satisfactorily lighted by passing the light itself into it. To accomplish this Bruck had already surmounted many perplexities for him as he had used the glowing platinum-thread, cooled by a stream of water, to investigate the aural cavity; and, as said, by introduction into the rectum to illuminate the bladder. Nitze then contrived an instrument not unlike an endoscopic-sound with Bruck's arrangement of lighting and cooling to be passed through the urethra into the bladder. On account of the narrowness of the lumen of the urethra, the field of vision of this cystoscope was no greater than the aperture of the sound used. On a suggestion from Nitze to enlarge this field of vision, an optician — Beneche in Vienna — constructed a tube with a combination of lenses comparable to those of a terrestrial telescope. After a thorough trial in Von Dittel's clinic, Nitze described and demonstrated this instrument at a meeting of the Medical Association of Vienna, March 9, 1879. So many were the difficulties in the use of his instrument, it found few adherents.

Dittel, however, added new life to this method of investigation. In place of the glowing platinum-thread, he believed he could substitute Edison's incandescent-light, which came to his notice for the first time in 1880. For the cystoscope this light was its greatest boon. Thus the former cumbersome stream of cool water became superfluous, and in 1886 Leiter of Vienna completed an instrument, which was small in caliber, simple in construction, and handy in use. In the beginning of the year 1887 the problem of the cystoscope was solved.

The fundamental principles, as you know, in the construction of all modern cystoscopes is: the arrangement of an electric light on the vesical

[1] Read before the Onondaga County Medical Society of New York State March 8, 1904.

end of a catheter-like metallic instrument with the optical enlargement of the field of vision by means of a prism, mirror and lenses. These instruments have a short Mercier curve with the lamps usually detachable, while the shaft of the instrument carries the optical apparatus, and a small wire to complete the electrical circuit. All the cystoscopes constructed by Nitze, Casper, Gueterbock, Berkley-Hill, Fenwick, Boisseau du Rocher, Leiter, Loewenstein, Lewis or Albarran are of the same principle. The improvements in the instruments in the hands of these experimenters have been numerous; each and all, likewise, precious adjuvants for the diagnosis or treatment of the great number of the maladies of the urinary tract.

The cystoscope of to-day is employed in two classes of cases:

(1) For diagnosis, by the ideas it gives of the character of the vesical mucosa and the products of secretions issuing from the ureters.

(2) For therapeutics, that intervention which it permits to effect directly on the ureters or the mucosa itself.

Thus there are simple cystoscopes, more complex ones, as those given to irrigation of the bladder or for the catheterization of the ureters, operating cystoscopes with a cold wire or a galvano-caustic loop, photographic-cystoscopes, and the cautery-cystoscopes employed in the operation of Bottini.

In spite of the perfection and the ingeniousness of the instruments themselves, cystoscopy remains a delicate and often difficult undertaking. A certain number of causes in fact may complicate its employment, and so introduce an error in the appreciation of the results obtained: First of all insufficiency in the brightness of the light always restrains one, which by too deep an introduction of the cystoscope obscures the view entirely, and if in contact with the bladder-wall may burn it with the consequent pain and movement of the patient (this latter property has been irradicated by the use of the new so-called cold lamps. These do not become heated). The arrangement of the apparatus — perhaps an imperfect contact in battery, or rheostat — diminishes the light or momentarily closes the circuit which prevents a just interpretation of that portion of mucosa observed. Immobility of the instrument after introduction, as rotation of the cystoscope on a longitudinal axis, or the movement of the ocular from side to side, forward or backward, limits the field of vision and a nicety of adjustment of the focal point to a clear image. Narcosis of the patient is generally necessary.

In order to investigate the bladder by means of the cystoscope the urethra must be passable. Strictures, a narrow meatus, or enlarged prostate must be calibrated or otherwise treated. In prostatic hypertrophy the use of the cystoscope becomes many times very difficult, and one should hold himself here to the strictest indications in its employment. The bladder must allow a moderate distention. Here a contraction or malformation embarrasses one. Likewise acute cystitis, tubercular cystitis must be given due consideration before any cystoscopic investigation. The bladder must contain a transparent medium to obtain a clear view of the intra-vesical relations. This medium is water or air, the former is at present most frequently used. Purulent and catarrhal secretions or conditions with hematuria must be repeatedly irrigated until the wash-water runs clear, otherwise one has a dim and imperfect reflection from the mirror.

It can but suffice to mention briefly the most important vesical observations by means of the cystoscope:

The cystoscopic picture of the normal bladder appears strikingly pale, whereas the mucous membrane after a suprapubic cystotomy is usually dark red in color. At the base of the bladder one finds the ureteral openings, which are often in diseases of the pelvis of the kidney or the kidneys, reddened, swollen, and edematous. In renal hematuria or pyuria the blood or pus can be detected coming from the ureter or ureters. The cystoscope is of the greatest aid to differentiate the origin of intermittent hematuria, whether the blood comes from the kidney, or its pelvis, the bladder, prostate, or urethra. In the male a question of import, many times, is the contour and relation of the prostate-gland. The cystoscope gives positive evidence in hypertrophic conditions of the median or lateral lobes.

It stands for reason that the cystoscope renders the greatest possible assistance in the differentiation of acute or chronic cystitic conditions, tumors of the bladder, whether they are infiltrated, papillomatous, carcinomatous, or papillary excrescences; and such plastic objects as foreign bodies or vesical calculi. In the search for a stone the cystoscope is always a valuable and often an indispensable diagnostic aid, as it reveals a vesical calculus, which by sounding may fail to be discovered. After litholapaxy, the cystoscope is used in search of remaining fragments. There may be a stone in a diverticulum of the bladder-wall, while the lithothrite is contra-indicated, the cystoscope leads one to the proper treatment. Also such rare conditions can readily be detected as: troublesome cicatrices or presence of ligatures after operation on the bladder; wounds or lacerations of the bladder-wall after contusions; the presence of a fistula; the point of perforation into the bladder from abscesses in the surrounding viscera, as in appendicitis, pyosalpinx, perinephritic abscess; and likewise in malformations as the remains of the urachus and the like. In gynecology the cystoscope gives additional insight to the pathology of displacements and malpositions of the uterus and adnexa, the striking appearance of the base of the bladder and ureteral openings in cystocele, the transformation of the bladder by a gravid uterus, and in uterine neoplasms, as carcinoma and the like.

In those rarer cases where the urethral cys-

toscope cannot be employed, an instrument has been constructed of late with a trocar, which allows a suprapubic puncture of the bladder, and at the same time a cystoscopic investigation of this viscus.

### THE IMPORTANCE OF THE CYSTOSCOPE IN THE DIAGNOSIS OF DISEASES OF THE KIDNEY BY MEANS OF CATHETERIZATION OF THE URETERS.

For the progress in the surgery of the kidneys seen in the last ten years, we are much indebted to the use of the cystoscope in the catheterization of the ureters. A question often of first importance to the surgeon in contemplated renal operations is, whether his patient has one or two kidneys. Although the presence of only one kidney is a rarity, nevertheless, such cases are recorded and likewise not a few of them for the first time at the necropsy, after the removal of that kidney. Here the cystoscope with the catheter leads to positive evidence in diagnosis and for the subsequent treatment. One can determine the existence of this kidney, if it is healthy or diseased, or if its functional activity is impaired. As above mentioned one can differentiate by means of a simple cystoscope the diseases of the bladder from those of the kidneys by the changes taken place in the ureters or about the ureteral openings. With the catheterizing-cystoscope one is in a position to collect this urine from both kidneys, as it were, and separately subject it to the important microscopic, chemical and cryoscopical analyses.

For the collection and segregation of urine from each ureter, there are such instruments as those advocated by Harris, Downes, and more recently, those of Cathelin and Luys. These instruments are more applicable to the female, for the slightest enlargement of the prostate-gland lessens their value in the male; and likewise, in such affections of the bladder with purulent, catarrhal, and hemorrhagic secretions. Thus the problem to separate the urine of both kidneys in a complete and unobjectional method is solved only by the direct catheterization of the ureters; or, best of all, by the catheterizing cystoscope.

The catheterism of the ureters by the cystoscope is not infrequently crowded with difficulties, for one may deal with those rarer cases where the ureteral openings cannot be detected, for example: cases with a tumor-like swelling of the mucous membrane of the bladder in chronic cystitis, prostatic hypertrophy with excessive enlargement of the median or lateral lobes, a trabeculated bladder, and one with other deformation or deformity.

The combination of the x-rays with a catheterizing cystoscope mounted with a silver ureteral sound or a catheter loaded with a mandrin gives the following assurances in the radio-graphic plate: (1) absolute confirmation of course of ureters, (2) exact localization of an obstruction in ureter, (3) the exact topographical localization of pelvis of kidney, (4) solution of difficulty in diagnosis between biliary and renal calculi, (5) conclusion over size of kidney pelvis, (6) nature of a stopping of the ureter.

By the same method one can often differentiate between an abdominal tumor, wandering spleen, or a questionable wandering kidney on the left side.

As advocated by Dr. Howard A. Kelly, a ureter-stone can be revealed by the scratch marks on such a substance as a mixture of wax and olive oil on a catheter, after contact with the said stone.

When it is necessary to operate for calculus anuria it is often difficult to know upon which kidney to operate. The inquiry as to the side which gave localized pain is deceptive, and examination of the kidney region gives no assistance. Here the cystoscope clears up the scene.

Catheterization of the ureters is now employed with success in cases of tuberculosis of the kidneys, inflammation of renal pelvis depending on the presence of calculi or pyelitis itself. In these cases the common cure may remain resultless. Pawtick, Albarran, Casper and Kelly advocate the direct catheterization of the pelvis of the kidney. They employ this means in cases with increasing pyelitis or infectious forms, but not in primary affections of the kidney. Casper is of the opinion that in all cases of chronic pyelitis, which defy medical treatment, catheterization of the ureters is indicated; an operation is then in order if this fails.

Prior to an Edebohls or modified Edebohls operation for nephritis, the ureters should be catheterized. By this segregation of the urine one can determine the permiability of the kidneys, whether he deals with a unilateral affection, and that important question, whether his patient can sustain this operation. This latter factor would bring one to the consideratlon of the functional diagnosis of the kidneys. To allude briefly to this subject:

There is a comparable value between the permiability of the kidneys and the catheterization of the ureters. This value is in the Phloridzin test, the Methylene-blue test and the Cryoscopic test, in estimating the functional activity of the kidneys. Results of these tests are:

*In the Phloridzin test:* on segregation of the urine one obtains, from a healthy kidney, glycosuria, and from a diseased kidney no change whatever.

*In Methylene-blue test:* on catheterizing the kidneys, from a diseased kidney a pale barely-colored urine will be collected, while from a healthy kidney a pure green urine is obtained.

*The Cryoscopic test:* the freezing point of the urine lies between 0.9 and 2.3°. If the urine on segregation from the kidneys is below 0.9, an insufficiency of kidney or kidneys is shown.

Thus by the catheterization of the ureters one is able to estimate the functional activity of each kidney individually, by separately collecting the urine and subjecting it to the microscopical, chemical and cryoscopical analyzation.

In conclusion one can rightly say that the cys-

toscope of to-day affords an exactness in the diagnosis of urinary diseases, which as yet in comparison is unattainable by any other means. Likewise, one can safely conclude in the present state of our knowledge that the catheterization of the ureters offers a valuable and ever-widening field of usefulness in the just appreciation of nephritic affections.

## LIGATION OF THE LACHRYMAL CANAL TO PREVENT INFECTION FOLLOWING CATARACT EXTRACTION.[1]

BY ALEX. QUACKENBOSS, A.M.,M.D., BOSTON,

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Infection through the tear duct is one of the common causes of suppuration following cataract extraction. To overcome this difficulty, various means have been employed, in cases where disease of the tear passage exists; viz., probing, syringing out the sac, treating the nasal cavity, packing the sac with antiseptic ointment, obliteration of the sac or canal with the cautery and extirpation of the sac. Probing, syringing out of the sac, or treatment of the nasal cavity, entails a long course of treatment, and is often ineffectual. Personally, I have had no experience with packing the lachrymal sac with antiseptic ointment. Cauterizing the duct or sac has occasionally been followed by infection. Removal of the sac is undoubtedly the safest procedure, the only objection to it, in cataract operations, is that a great many of this class of patients are old and infirm. Dr. Knapp, in Norris and Oliver's "System of Diseases of the Eye," speaks of "ligating the lachrymal canal as a temporary or permanent means of shutting off infection."

At the meeting of the American Ophthalmological Society in 1902, Dr. Buller of Montreal advised the "temporary ligation of the canaliculi, as a means of preventing wound infection in operations on the eye."

During the past year, I have operated on two cataract cases in which there was trouble with the tear passage; I have also seen two other cases operated on. The canal was tied, and in each case was successful in preventing infection.

The report of one case will suffice to show the method employed.

Case. Female, age sixty-two; mucocele, O. U. staphylococcus; pressure over lachrymal sac causes muco-purulent discharge into eye.

The usual preparations for cataract extraction were carried out.

Operation under cocaine. Before operating for cataract, the contents of the mucocele were squeezed out, the eye washed out with corrosive (1–5,000), then a small probe was inserted into the upper puncta, and a suture passed around the canal, from the inside of the lid out. This was repeated on the lower lid. The sutures were passed two or three mm. from the puncta and were tied quite firmly.

Inserting a probe into the puncta aids in controlling your lid and in placing your stitches; this is especially so with the upper lid. The cataract was then extracted without incident, the usual dressing was applied, the dressing was changed daily and omitted at the end of six days. Healing process normal, very little injection being present at any time following the operation.

The patient complained of no discomfort from the stitches, and they apparently caused no irritation. The stitches were removed at the end of two weeks; before taking them out, pressure over sac failed to discharge anything into eye, but after removal, a probe was easily passed, and pressure on sac caused a small amount of muco-purulent matter to come through puncta.

I see no reason to keep stitches in, after the corneal wound has healed firmly, and in my second case removed them at the end of the ninth day. The advantages of this method are, its simplicity, the ease with which it can be done, its freedom from pain, that it can be done at the time of the operation, and that it can be used even in doubtful cases.

[1] Read at the New England Ophthalmological Society, November, 1903.

# Clinical Department.

## A CASE OF APPENDICITIS WITH GENERAL PERITONITIS.

BY CHARLES A. ATWOOD, M.D., TAUNTON, MASS.

L. M., schoolboy, age fourteen years. Has had four previous attacks of appendicitis within the last year. These attacks were of varying intensity and usually kept him confined to his bed about two weeks. Present attack began Dec. 24, 1903. I first saw him Dec. 28, 1903, at 9 P.M. Pulse 120. Temperature 103. Vomiting. Abdomen tense and distended. More resistance over the right lower quadrant. Diagnosis, appendicitis with probable general peritonitis. Prognosis decidedly unfavorable. Immediate operation advised as only chance. This was accepted. I immediately sent the boy to Morton Hospital and with usual preparation operated at 10.15 P.M.

*Operation* under ether. I opened the abdomen by an incision parallel with the fibres of the ext. oblique over the appendix. As soon as peritoneum was opened, there was found to be free pus in the abdominal cavity. The pelvis was full of pus, the intestines red and covered with masses of lymph.

Pus was washed away with normal salt solution. A short, gangrenous, perforated appendix was found, tied off, and removed. Salt solution was used in washing out the abdomen until the washings returned clear. Large gauze wicks were introduced around former site of appendix. A gauze drain passed up towards diaphragm and one into the pelvis. A long counter opening was then made in the left lower side of the abdomen and a long gauze drain introduced into the pelvis. The boy was in poor condition when removed from the table. Temperature next morning was 100.6° F. Pulse, 119. Dec. 30 temperature had come down to normal. His convalescence has been uninterrupted.

I report this case because it has been one of much interest and satisfaction to myself, also as it shows how much we may sometimes accomplish by surgery even under most unfavorable conditions, and lastly, as this was a case where

the whole abdominal cavity was infected, a case of general peritonitis. When the physician will call in the surgeon as soon as he even suspects trouble with the appendix, and not when his patient is moribund, then and not until then will these desperate cases cease to be so common.

The early removal of an inflamed non-perforated appendix, with its mortality so slight, is not to be compared with the deplorable results by any method of treatment of general infection.

## Medical Progress.

### RECENT PROGRESS IN GYNECOLOGY.

BY W. L. BURRAGE, M.D., BOSTON.

(Concluded from No. 12, p. 329.)

#### LARGE SARCOMA OF THE OVARY SITUATED IN THE LEFT KIDNEY REGION.

Agnes Bluhm [12] reports the case of a woman twenty-eight years of age who came into Czerny's clinic at Heidelberg complaining of pain and tumor in the left hypochondrium of eight weeks' duration. An elastic tumor the size of a child's head was found in the region of the left kidney, and partially under the edge of the ribs. The urine was negative. By bimanual examination the uterus was found retroflexed and the right ovary and tube normal. The left ovary could not be found. The clinical diagnosis was tumor of the kidney, probably hydronephrosis.

The tumor was removed after a difficult dissection and the wound drained with gauze. The patient made a good recovery. The growth proved to be a necrotic sarcoma of the left ovary, measuring 52 cm. in circumference and 19, 17 and 7 cm. in diameter. About three-quarters of it lay retroperitoneal and only the under fourth free in the peritoneal cavity.

The left kidney was displaced upward but had no connection with the tumor. A band ran downward behind the transverse and descending colon from the capsule of the tumor to the left broad ligament. The left ovary was absent. The author concluded that the tumor had developed in an undescended fetal ovary.

#### DISADVANTAGES OF THE TRENDELENBURG POSTURE.

Franz [13] has not observed a single case of serious circulatory disturbance in 745 abdominal sections performed in the elevated position, but from studies of the pulse and respiration curves he concludes that with the pelvis elevated the abdominal breathing is diminished and that there is little or no compensatory increase in the thoracic breathing.

As to the effect of anesthesia he noted 19 cases (2.3%) of bronchitis among 825 cases of ether narcosis in the dorsal position, while there were 44 cases (8.9%) among 493 cases in the Trendelenburg posture, 4 cases (2.7 %) of bronchitis among 150 cases of chloroform narcosis in the dorsal position and 9 cases (3.9 %) among 233 cases in the elevated position; showing much less difference between the positions in the case of the use of chloroform. Franz thinks the frequency of bronchitis after operations in the Trendelenburg posture is due to the escape of the infectious contents of the mouth into the bronchi after the patient has been lowered, and suggests that the mouth be carefully cleansed before the change is made to the dorsal posture.

He considers that the diminished oxygenation, which is present when the patient is in the elevated posture, probably has a deleterious influence on the central nervous system and that many disturbances which are referred to opening the abdomen are really due to this cause.

#### TELANGIECTATIC ANGIOMA OF THE BLADDER.

A. Berliner [14] adds a fourth case to the three cases of this rare affection already reported in literature.

A girl eleven years of age had suffered since her fourth year from hematuria. For the last weeks the hematuria had increased to such an extent that the anemia of the patient had become alarming. Since early childhood a pronounced asymmetry of the face had been noticeable. On examination a telangiectatic angioma the size of a walnut was found on the right labium majus. The urine contained blood in large quantity, had an alkalin reaction and contained pus but no tumor elements.

Cystoscopy revealed a number of circumscribed ridges or round elevations varying in size and bluish-red in color dispersed over the mucous membrane; between these the mucous membrane of the bladder was injected. Application of stypticin and douches being ineffective suprapubic cœliotomy was performed. The telangiectatic areas were treated with the thermocautery and the bladder was drained through the abdominal wound with gauze. Cystitis followed and this was treated with instillations of nitrate of silver with the result that complete recovery finally occurred.

This is the first case on record in which a correct diagnosis was made and the proper treatment applied. The three other reported cases died, and it is probable that this girl would have gradually bled to death had she not had suitable treatment.

The diagnosis was rendered more probable by the simultaneous existence of an angioma of the labium and also by the deformity of the facial bones. Hypertrophy of the face concomitant with angiomas has frequently been observed.

Berliner points out that these angiomas consist of distended capillaries or radicals of veins; the connective tissue proliferates but little and there is no new formation of vessels. Angiomas, although frequently found in the epidermis, are rarely observed in mucous membranes.

Hematuria in young patients without cachexia,

[12] Archiv. f. Gyn., Bd. lxviii, H. 2.
[13] Centralbl. f. Gyn., No. 32, 1903.
[14] Deutsche. Zeitschr. f. Chir., Bd. lxiv, H. 5 and 6.

especially if inspection of the surface of the body reveals the presence of an angioma of the skin, should lead to the probable diagnosis of telangiectasis of the bladder.

### ASCENDING RENAL INFECTION; WITH SPECIAL REFERENCE TO THE REFLUX OF URINE FROM THE BLADDER AND URETER AS AN ETIOLOGICAL FACTOR IN ITS CAUSATION AND MAINTENANCE.

Under this title John A. Sampson, Resident Gynecologist at the Johns Hopkins Hospital, publishes a lengthy article,[15] giving the results of a series of experiments and his conclusions arrived at from a study of the literature as to the anatomy, physiology and pathology of the ureter.

He states that he has previously described a radical operation for cancer of the cervix uteri, which consists in the removal of the lymphatics from the sides of the pelvis together with the uterus and carcinomatous growth *en masse*, this procedure being the reverse of the usual hysterectomy with a "digging out" of the glands subsequently. He has now done ten of these radical operations with three deaths and has resected one or both ureter in three cases.

He has found that if some 4 cm. of the lower end of the ureter are resected with the growth and the ureter implanted in the bladder there is danger of an ascending renal infection, and it was to study the cause of this infection that he undertook the study of the anatomy and physiology of the ureter.

A plate showing a longitudinal section of the vesical portion of the ureter with the bladder distended shows that the ureter passes through the bladder wall as a distinct organ, its course being very oblique. When the bladder is contracted, as shown by another plate, the course of the ureter is nearly at right angles to the internal surface of the bladder. The mucosa of the ureter is continuous with that of the bladder; it is smooth and the lumen of the ureter is flattened from before backward.

The ureteral orifice may be a slit with the labia close together, or an oval or even almost round opening, and sometimes the lumen of the ureter extends below the orifice, forming a pouch. That portion of the upper wall of the ureter which forms part of the bladder wall, that is to say, the V-shaped piece lying back of the orifice as seen in a longitudinal section of a distended bladder, is called the ureteral valve. Pressure on this valve by the fluid distending the bladder brings the anterior wall of the ureter in contact with the posterior wall and occludes the lumen, thus preventing reflux up the ureter. When this valve is injured by inflammatory processes the ureteral orifice remains patent and the valve cannot close the ureter. This is very clearly shown by a longitudinal section of the vesical portion of the infected ureter from a patient dying of unilaternal ascending renal infection.

Sampson points out that curettage of the trigonum is attended with danger of injuring the ureteral valve and thus making possible renal infection, also that ureteritis and renal infection are maintained by stricture of the ureter caused by pressure of the thickened bladder wall on the ureter.

As to the physiology of the ureter, the author made experiments on dogs, and also studied the ureteral orifices and the changes which they underwent during contraction of the ureter in ten women, using the cystocope with the patient in the Sims position. He concludes that the contractions of the ureter are dependent on the functional activity of the kidney and that the chief stimulus is fluid, without regard to its chemical constituents, running into or through the lumen.

The different avenues of infection of the kidney are discussed at length, *i. e.*, by the blood vessels, by the lymphatics and by the ureters. As to the blood vessels the infection may come through the general circulation; of this little is known except that one of the functions of the kidney is to excrete organisms which have gained entrance to the blood. Aside from the general circulation the blood vessels of the kidney communicate with those of the bladder through two other channels, the utero-ovarian vessels and the vessels of the ureter. The author's experiments on dogs to demonstrate lymphatics in the ureters were not successful and he quotes Sakata, who found lymphatics in the muscular and outer coats of the ureter, but not in the mucosa. He also found that the communication between the lymphatics of the bladder and kidney was not direct, but existed either by means of the local glands of the bladder and kidney or by means of the lymph-vessels of the ureter.

Sampson considers that infection generally occurs by an extension of an inflammatory process from the bladder through the ureteral walls, or along the lumen of the ureter. Reverse peristalsis in the ureter may occur, but the author is skeptical about it. Two etiological factors in renal infection are an injured kidney and general ill health.

In conclusion, the reflux of urine from the bladder into the ureters may be considered an etiological factor in the causation and maintenance of renal infection only when the intravesical portion of the ureter is diseased, thus impairing its function, or when some ureteral abnormality exists.

### PAPILLOMA OF THE URETER.

Mackenrodt [16] reported a case of this rare affection before the Berlin Obstetrical and Gynecological Society.

A woman of sixty had passed blood in her urine and had had severe pain for a number of months. It was thought that the blood came from the kidney in all probability. Mackenrodt dilated the urethra and diagnosticated a tumor of the bladder and then inspected the tumor through a cystoscope. It projected from the

[15] Johns Hopkins Hosp. Bull., No. 53.

[16] Zeitschr. f. Geb. u. Gyn., Bd. I, H. 1, 1903.

orifice of the right ureter, the ureteral mucous membrane being continued on to the surface of the tumor.

At the operation, 5 cm. of the ureter together with the right half of the trigonum, were removed with the papilloma and the ureter implanted in the bladder. The patient made an uninterrupted recovery.

Eight days after this operation, Mackenrodt had the good fortune to see another case of large papilloma of the ureter. The woman was seventy-six years old. He operated on her and fourteen days after operation had obtained a satisfactory result.

In operating on the bladder from the abdominal side, the author advocates making the abdominal incision in the form of a horseshoe, the curve of the horseshoe being at the symphysis and the ascending arms along the borders of the recti muscles. The recti are separated from the symphysis. By this method access to the bladder is very free and manipulations in the pelvis easy. He also advocates a transverse incision into the bladder instead of a longitudinal one, as affording a better veiw of the bladder interior and as causing less injury to the blood vessels.

### LATE RESULTS OF VAGINAL HYSTERECTOMY FOR UTERINE CANCER.

N. Flaischten [17] is an ardent advocate of vaginal extirpation of the cancerous uterus, affirming with Winter that early operation is preferable to, and accomplishes more, than extensive operation. He emphasizes the necessity of early recognition of the disease and prefers the vaginal to the abdominal route. He reports cases operated on by himself and by Ruge in which the patients have remained well from seven to eighteen years. Of the 17 women who were permanently cured, 12 remained well over ten years and 9 more than thirteen years. Nine of the patients had cancer of the cervix, 6 cancer of the uterine body and in 2 the cervix and endometrium were both involved.

### TYPHOID SUPPURATION IN OVARIAN CYSTS.

P. V. Zantchenko [18] refers to three cases on record in which an ovarian cyst suppurated and the typhoid bacillus was found in the pus, accompanied by a diplococcus in one instance. The cysts were all of dermoid origin, but in a case he has personally observed pure cultures of the typhoid bacillus were cultivated from a pseudomucinous cyst — the only case of the kind of which he has knowledge.

### THE SO-CALLED FUNDAMENTAL NERVE PLEXUS OF THE UTERUS.

S. Pissemski [19] having studied preparations of the uteri of cats, bitches, guinea-pigs, pregnant and non-pregnant women, children and infants, comes to the following conclusions: (1) In women and the animals examined the cervical ganglion as described by J. Walter, R. Lee and Frankenhauser does not exist. (2) At each side of the cervix, in the region where the cervical ganglion has been described as situated, is a network of nerves with a number of scattered ganglia. (3) This plexus is derived from branches of the second, third and fourth pairs of sacral nerves of the cerebrospinal system and receives nerves from the hypogastric plexus of the sympathetic. (4) At the junction points of these nerve fibers and along their course are numerous ganglionic collections of nerve cells, many of these ganglia being macroscopic, others to be discovered only with the microscope. (5) These ganglia and nerves form the sympathetic plexus of the pelvis. They may be described as uterine, vesical, vaginal and rectal. (6) The character of the plexus and the macroscopic size of the ganglia is the same in gravid as in non-pregnant women. (7) This plexus may be designated the fundamental nerve plexus of the uterus.

### STREPTOCOCCI IN THE NORMAL MALE URETHRA.

Asakura [20] examined the secretions found in the fossa navicularis in 112 apparently healthy men and found the streptococcus pyogenes present in 14 (12.5%). This fact the writer regards as of especial interest to gynecologists, since it proves that streptococci may be introduced into the vagina during the sexual act.

### INJECTIONS OF PARAFFIN AT THE NECK OF THE BLADDER IN INCONTINENCE OF URINE.

Hock [21] reports the case of a girl aged twenty-three years, who six years before had had a calculus removed per urethram, with resulting incontinence which resisted all treatment. After two operations for narrowing the urethra, and one in which torsion was performed, her condition was worse than before. A second torsion gave only slight relief. Two injections of paraffin (75 gr. each time) were made at the neck of the bladder, when the incontinence was speedily cured. Three months later the patient again began to have dribbling of urine, and the injections were twice repeated, with permanent relief. The paraffin remained unchanged at the point of injection.

### THIRTY-ONE CASES OF DUDLEY'S OPERATION FOR ANTEFLEXION.

R. G. Wadsworth [22] analyzes the results in the cases of Dudley's operation performed at the Free Hospital for Women in the last two years.

The technique followed was the same as that described by Dudley, except that no wedge-shaped pieces were removed from the central portion of the edges of the divided posterior lip of the cervix, and, instead of excising an oval piece from the elongated and flattened anterior lip, as advised by Dudley, the operators did

[17] Zentralbl. f. Gyn., Dec. 26, 1903. N. Y. Med. Journ., vol. lxxix, p. 225.
[18] Russki Vratch, No. 30. Journ. Amer. Med. Assoc., vol. xlii, p. 346.
[19] Monatschr. f. Geb. u. Gyn., Bd. xvii, H. 4.
[20] Zentralbl. f. die Krankheiten der Harn. med. Sexualorgane, Bd. xiv, H. 3. Amer. Journ. Med. Sci., February, 1904.
[21] Praeger med. Woch., 1903, No. 6. Amer. Journ. Med. Sci., February, 1904.
[22] Bulletin of the Free Hospital for Women, vol. i, No. 3, January, 1904.

an operation which had for its object the lengthening of the anterior vaginal wall, operating as follows: A transverse incision is made in the anterior wall of the vagina, just in front of the anterior fornix, about an inch to an inch and a half in length. The incision is carried down to the areolar tissue between the vagina and bladder, and along this line of cleavage the bladder is separated from the cervix by the finger up to the level of the internal os, and from the vagina on each side sufficiently to avoid danger of wounding the bladder in placing sutures. The incision is closed at right angles to its original direction by a continuous chromicised catgut suture.

Dudley's operation was performed for the relief of dysmenorrhea in 21 cases in which anteflexion was the only discoverable cause of the symptoms. Of these six, or 28.5 %, were entirely relieved five to fourteen months after operation. Thirteen, or 67 %, were partially relieved in from four to twenty months after operation. Two cases, or 9.5 %, received no benefit. Two cases have become pregnant.

## Reports of Societies.

### BOSTON SOCIETY OF PSYCHIATRY AND NEUROLOGY.

The regular meeting was held Jan. 21, 1904, with the president Dr. G. L. Walton in the chair.

Dr. E. W. Taylor reported a case of

#### BRAIN TUMOR WITH ASTEREOGNOSIS.

The patient, referred by Dr. Vivian Daniel, was a man of twenty-nine, married, who had been ailing for seven months, dating from an attack of influenza. He was at that time ill in bed and made a poor recovery. He had persistent headache, chiefly frontal, at first unassociated with nausea. Four weeks before seen, on April 18, 1903, he gave up work on account of general weakness. Three weeks previous to his first visit numbness and weakness of the right hand developed. At the time of examination he was somewhat unsteady in walking; his eyesight was not impaired; his appetite and sleep were sufficiently good. He had lost some thirty pounds in weight, twelve in the last three weeks. The right pupil was slightly larger than the left; there was no defect in light reaction, or on accommodation. There was a suspicion merely of optic neuritis. The cranial nerves showed no paralysis; the speech was slightly thick, but there was no mental impairment; the right hand and arm were extremely weak without marked alteration in the reflexes. The sensibility of the hand was normal to painful stimuli and to contact, but showed a complete astereognosis. No object placed in the hand was rightly interpreted. The pulse was 140; respiration was rapid; knee jerks were lively; there was no Babinski. A few days later nausea and vomiting developed, together with spasms of the right hand and arm and increased mental irritability.

Electrical examination showed nothing abnormal. Treatment with iodide was unavailing. The temperature was at this time, and had been for many weeks, elevated several degrees. A later examination showed a marked increase of the symptoms given above, and in view of the fact that physical examination was otherwise negative, operation was decided on in spite of the elevation of temperature because of the evident localization of the new growth, and also because the patient was rapidly failing.

Operation was done May 1, by Dr. F. B. Lund. Several nodules of a hard tumor were easily extracted from the arm area, mainly anterior to the fissure of Rolando. Temperature at the time of operation was 103.5°. The patient made a good recovery from the operation; was relieved completely of his headaches; was without discomfort, excepting for the presence of a right hemiplegia. He died May 28, slight improvement in motility having taken place during the interval. Autopsy, May 28, showed an extremely active miliary tuberculosis, with a primary focus in the prostate. The brain, apart from the tumor, which on microscopic examination proved to be tuberculous, showed only a very slight tubercular basal meningitis. Other organs were thickly studded with miliary tubercles.

The interest of the case centers in the following points: The failure to determine the presence of tuberculosis, although it was suspected; the possibility of successful operation in the presence of considerable elevation of temperature; the localization of the tumor anterior to the fissure of Rolando, but associated with a definite astereognosis bearing out the work of Walton and Paul; and finally the significance of the symptoms as again pointing to the sensory motor character of the Rolandic cortex, as pointed out by Dana and others.

Dr. F. B. Lund described the operation and spoke of the resulting relief of headache.

#### EPILEPSY WITH PARALYSIS.

Dr. P. C. Knapp showed a man, aged thirty-nine, who five years before had suddenly lost power in the left arm for about ten minutes. Since that time he has had similar attacks at varying intervals, once in five or six weeks, even two or three in an hour. When the attacks occur frequently he does not fully regain use of the arm in the interval. With the attack there is a sensation of numbness, which extends over the shoulder and chest, and sometimes over the face. Once it extended to the leg and the leg muscles were slightly affected. In the attack there is no convulsive movement, no loss of consciousness, no flushing of the face, no change of temperature and no change in the pupils. There has been no headache, vertigo, nausea, vomiting, somnolence, mental disturbance or optic neuritis. The physical examination was absolutely negative, except that after an attack there was di-

minished sensibility to pain, touch, motion and position in the hand. The attacks were somewhat controlled by bromide. The long continuance of the attacks without other symptoms rendered a diagnosis of cerebral tumor or general paralysis improbable. Binswanger has cited cases of epilepsy in which the attack was attended with paralysis instead of convulsion, and that diagnosis seemed probable in this case.

Dr. S. G. Webber recalled the case of a man who, without loss of consciousness, had sudden loss of power in one arm lasting only half a minute, so that he would drop whatever the hand held, but was immediately able to use the member perfectly. The attacks were deemed epileptic.

### SPASMODIC TORTICOLLIS.

Dr. W. E. Paul showed a patient two and a half years after resection of the spinal accessory nerve by Dr. M. H. Richardson, and subsequent prolonged rest, for spasmodic torticollis. The muscles paralyzed by the operation have regained their tone and are under voluntary control. There is only rarely spasmodic twitching of sternocleido, or trapezius. The result seems satisfactory.

Dr. J. J. Putnam thought that when spasmodic torticollis could be relieved without resort to operation it was preferable.

Dr. C. F. Folsom reported a case relieved by non-operative treatment.

Dr. H. C. Baldwin referred to the lasting immunity from spasm in a severe case operated upon by Dr. M. H. Richardson several years ago.

### TORTICOLLIS IN A MARE.

Dr. Knapp said that he and Dr. Putnam had recently seen a mare who apparently had spasmodic torticollis. The mare was out of a thorough-bred dam by a French bred coach horse and had won various prizes. She first came in season at the age of three, and at times after that, when in season, she would try to bite her tail. She was not nervous, although she was obstinate and would behave badly if not harnessed to her liking. She showed none of the equine stigmata of degeneracy. About a year ago, possibly after exposure, she began to turn her head toward the off side, the spasm recurring several times a day and lasting two or three minutes. She has had as many as nineteen of these spasms in an hour. They are usually worse when she is in season. The spasm can be felt by a person on her back to involve the muscles of the flank and rump, but it does not cause any change in her gait, either the walk, trot or canter. She does move her forward feet a trifle in the spasm to preserve her balance. There is no history of injury, no tender spot and no spot which seems by pressure to influence the spasm. Massage, electricity, ounce doses of Fowler's solution, and large doses of bromide and chloral had no effect. Absolute rest in a box stall had apparently made her worse. Breeding and the freedom of a paddock had been suggested. The spasm seemed to involve chiefly the levator humeri and the sterno-maxillary muscles, the analogues of the levator anguli scapulæ and the sterno-mastoid. The circular nerve of Willis, analogous to the spinal accessory, supplies these muscles in part, and in one place is quite superficial. The nerve is often divided at this point to prevent cribbing, and this operation is now proposed for this condition. The case is apparently unique. None of the veterinary surgeons here or in New York and no stable men have ever seen anything like it. Dexler in his "Nervenkrankheiten des Pferdes" describes a facial tic in the horse and other forms of tic, but nothing like this. Rudler and Chomel [1] describes various forms of tic in the horse, notably the "tic de l'ours" or "weaving," but no reference has been found to any condition such as this mare presents, which closely resembles spasmodic torticollis as observed in man.

Dr. G. A. Blumer, president of the Society for the ensuing year, assumed the chair, and called on Dr. C. L. Dana of New York for his paper entitled

### THE PARTIAL PASSING OF NEURASTHENIA.

The president, Dr. Blumer, in calling for the discussion of the paper, commented upon the essential unity of nervous and mental diseases. The latter, he said, were merely nervous diseases with greater prominence of the mental symptoms. He welcomed the commoner use of the term "phrenasthenia," which the French had found useful, and approved the essayist's attempt to popularize it as one that described more accurately, in the majority of instances, the symptom-complex which neurologists, as a sweeter morsel for the invalid's tongue, had described under the all-inclusive "neurasthenia," whose partial passing the distinguished visitor from New York had come to Boston to proclaim. He animadverted banteringly, and with an attempt at defence, as himself a recent comer to New England, on the pronunciation of the word "neurasthenia" as current in these parts and nowhere else, the adoption of which by the essayist would entitle him at once, despite his modest protest, to recognition in New England as to the manner born.

Dr. J. J. Putnam said that he was glad to hear Dr. Dana lay emphasis on the mental element in neurasthenia, since from a practical standpoint, it was, perhaps, the most important element. On the other hand, there seems to be no sufficient reason for making the mental symptoms the turning point in classification. Many patients do not present such symptoms in any considerable degree, if at all, and their symptoms are often relieved to a greater or less extent by treatment and operations calculated to relieve some peripheral irritation. It would be just as reasonable to point out the relationships between neurasthenic conditions and quasi-normal conditions as between neurasthenia and more pronounced forms of mental disease. The

[1] Revue neurologique, xi, 541, June 15, 1903.

latter classification has a certain clinical advantage, but if it came into general use, it would cause unnecessary distress to many patients who were really not so very ill.

Dr. G. L. Walton agreed with the reader regarding the limitation of the diagnosis neurasthenia. In the neurological department of the Massachusetts General Hospital during October, November and December, 1896, this diagnosis was made 43 times, whereas it had been made during the same months of the past year only 11 times, which would have corresponded to about 16 times, if the number of cases had been the same. Most of the cases classed formerly as neurasthenia were now transferred to the "psycho-neuroses." He did not think they had often mistaken dementia precox, or paranoia, for neurasthenia.

Dr. P. C. Knapp believed there were many cases of true neurasthenia or irritable weakness — a condition of pathological fatigue. In uncomplicated cases the mental symptoms are not prominent. Study of a number of cases diagnosticated as neurasthenia showed definite mental symptoms in only a small percentage. A distinction must be made, however, between simple mental depression and true melancholy states. Every sick person is apt to be depressed. This is physiological and should not be classed as melancholia. In only a comparatively small proportion of neurasthenics are there insistent ideas, morbid doubts, morbid fears and other indications of the ideo-obsessive tendency. When a patient becomes weak, however, he begins to distrust his own powers and in this way, especially among the "deviates" and those of an unstable mental organization, morbid doubts and fears may develop. In other cases obsessions may arise in a person who is not neurasthenic, and the struggle against them may so exhaust the patient as to give rise to neurasthenia. We can usually distinguish, however, which is primary. Obsessions sometimes develop into actual delusions, akin to the delusions of paranoiac states; in fact, folie du doute is sometimes spoken of as abortive pananoia. His experience agrees with that of Dr. Walton, that as a rule we do not find any tendency to paranoia, or dementia, among neurasthenics.

Dr. J. W. Courtney spoke of pathologic fatigue supposed to underlie the neurasthenic state. One is too prone to believe that because over-fatigued honey bees and humming-birds show changes in the nerve cells, analogous changes take place in the human species. Such assumption is unwarranted by clinical experience. In a neurasthenic who can barely crawl from home, yet who walks homeward with buoyant step, the conditions are psychical rather than physical. Whether called phrenasthenia or psychasthenia, it is to a limited extent a mental degradation, a pathologic state of nolition and the simulacrum of various forms of insanity.

Dr. Wm. McDonald regarded true melancholia and true paranoia as rare, the former falling generally under manic depressive, the latter under dementia precox. He coincided with the reader in limiting the use of neurasthenia. The term congenital neurasthenia, though scarcely permissible for the characterization of a special group, has been of some use in differentiating patients with congenital pathological tendencies.

Dr. Dana said, in concluding, that cases of neurasthenia allied to or leading up to dementia precox were not very numerous, but their serious character made it very important to recognize them. They were in persons under twenty-five. There were relatively few cases of abortive types of paranoia passing around as neurasthenias; yet they did exist in the early depressed and moody stage. The largest number of cases miscalled neurasthenia, came under the head of phrenasthenia. The group in its well-marked forms was easily recognized as hysteria, doubting mania, morbid fears, obsessions, and so forth. It was the imperfectly developed forms that were unrecognized and which passed as "nervous exhaustion." A great many cases of mild recurrent melancholia or manic depressive insanity, were classed as neurasthenia. The speaker thought this would not occur if a more serious study of the mental state were made. He was inclined to favor the view of Dr. McDonald that paranoia should be classed with paranoid dementia. He would still recognize some cases as real neurasthenia; the others were 'psycho-neuroses," and these could be further distributed mostly as phrenasthenia or depressive psycho-neuroses.

## THE AMERICAN SOCIETY OF CLINICAL SURGERY.

A regular meeting of the Society was held in New York on March 18 and 19, under the supervision of the President, Dr. George E. Brewer, assisted by Dr. P. R. Bolton and Dr. J. A. Blake.

The two days were spent in visiting hospital clinics and laboratories.

At the College of Physicians and Surgeons Dr. F. C. Wood, by invitation, in the pathological laboratory demonstrated specimens illustrating the pathology of tumors of the parotid; Dr. Churchill Carmalt, by invitation, demonstrated specimens showing the development and morphology of the salivary glands; Dr. J. A. Blake showed his interesting modification of the Murphy button for gastro-enterostomy; Dr. J. W. Draper Maury, by invitation, showed a modified method of performing gastro-enterostomy with the McGraw ligature and Dr. George E. Brewer demonstrated his ingenious method of treating wounds of the larger arteries by wrapping them with an elastic adhesive plaster.

In the afternoon, at the Presbyterian Hospital, Dr. Ellsworth Eliot, Jr., gave an operative clinic and demonstration of cases, showing the x-ray plate of an open safety-pin in the esophagus; a patient operated upon for cancer of the tongue and another patient operated upon six years ago for cancer of the breast without recurrence; also two cases of hepatieptosis operated upon with relief of symptoms, by stitching up the round and falciform ligaments and denuding the liver and diaphragm. Dr. Eliot also operated upon a case of acute appendicitis, before the Society.

The members next assembled in the amphitheatre

of the Roosevelt Hospital where Dr. R. F. Weir, by invitation, showed two cases recently operated upon by hypoglosso-facial anastomosis for facial paralysis; a woman operated upon for hydronephrosis with a history of eleven previous abdominal sections: a case of pharyngeal tumor, a case of stone in the kidney and cases of foreign bodies in the trachea and esophagus. Dr. J. A. Blake then demonstrated, in a case of bleeding ulcer of the stomach, the use and advantages of his modified Murphy button in an operation for gastro-enterostomy.

On Saturday, March 19, members assembled at 8.30 A.M. at the Hospital for the Ruptured and Crippled where Dr. W. B. Coley, by invitation, demonstrated three operative cases of inguinal hernia. Dr. P. R. Bolton then conducted the members over the Hudson Hospital illustrating "a type of an emergency hospital." After this visit Dr. Bolton operated at the New York Hospital, showing the transverse abdominal incision for pelvic disease. The afternoon was spent in visiting and inspecting, under the guidance of Dr. Howard Lilienthal, the fine new Mount Sinai Hospital.

The Society then adjourned to meet next autumn in Buffalo and Cleveland.

## Recent Literature.

*Practical Handbook of the Pathology of the Skin.* An Introduction to the Histology, Pathology and Bacteriology of the Skin, with Special Reference to Technique. By J. M. H. Macleod, M.A., M.D., M.R.C.P. Philadelphia: P. Blakiston's Sons & Company.

In the preface the author states that this handbook is intended primarily for students of dermatology, and is based on demonstrations given by him at Charing Cross Hospital.

Although the agents which affect elements of the skin in disease are described in detail, the book does not profess to be a complete treatise on the pathology of the skin, but rather a practical introduction to it. Most of the illustrations are drawn from his own specimens, a few from preparations lent him for the purpose, and there are several reproductions. The book certainly supplies a want, as the only other work dealing with this subject is Unna's large and much-involved "Histo-Pathology of Diseases of the Skin."

Macleod begins by a chapter on the apparatus necessary for histological technique, and follows with chapters on methods of examination, fixing, hardening, etc. These chapters, as well as those on staining, are exceedingly well written and clearly expressed. Various affections of the skin are then taken up in chapters dealing with the pathology of the epidermis, corium, blood vessels, pigment, etc. There are chapters dealing with bacteria, protozoa, etc. A little more space might advantageously be given to blastomyces and allied subjects. Altogether the book is to be greatly commended. The illustrations are clear and well printed. The paper and type are good, and the work, as a whole, will be gratefully consulted by those interested in dermatology.

*Manual of Medicine.* By Thomas Kirkpatrick Monro, M.A., M.D., Fellow of and Examiner to the Faculty of Physicians and Surgeons, Glasgow; Physician to Glasgow Royal Infirmary, and Professor of Medicine in St. Mungo's College; formerly Examiner in the University of Glasgow and Pathologist to the Victoria Infirmary. Illustrated. Philadelphia and New York: W. B. Saunders & Co. 1903.

Another work on general medicine is before us, intended primarily for students and what the author is pleased to call junior practitioners. He considers that a manual of this size, which comprises about 900 pages, is needed, on the ground that many books are too small for the needs of the modern student, whereas others are too large. He compromises with a book of goodly size, but still in form and treatment by no means so inclusive as many of the standard works on the practice of medicine have come to be. We are inclined to think that books of this character are useful for the reasons specified by the author. The modern student is required to cover more and more ground in his medical studies without any very great addition to the length of time allowed, and it therefore becomes necessary that practical working textbooks should be of moderate compass, avoiding, however, the charge of superficiality. This, we should judge, Dr. Monro has accomplished in this new book.

It is printed in clear, good-sized type, with conspicuous headings, so that it should prove useful as a book of ready reference. We note that a section on diseases of the skin is included and also one on diseases due to animal parasites. The book is therefore rather more inclusive than many more pretentious volumes, and no doubt will fill the place for which it is designed. We note the almost complete absence of references to literature, a growing custom of textbook writers which in a certain sense is regrettable.

*A Treatise on Orthopedic Surgery.* By Royal Whitman, M.D. Second edition. Lea Brothers & Co. 1903.

It is a gratifying evidence of the interest taken in orthopedic surgery that a second edition of this valuable book has appeared so promptly. The work in the new edition has been enlarged and strengthened in many directions. The writer has the gift of clear statement and definite ideas founded on an extensive experience. A detailed, critical analysis of the different views advocated by Dr. Whitman, with an examination of the exact value of those of his ideas which differ from that of other orthopedic surgeons is to be left for the columns of special journals. It is sufficient to state here that the work is of the very highest character and is a standard of the best work in the specialty.

The book may be strongly recommended to all students and general practitioners who wish instruction in this important branch.

*Lessons on Massage.* By Margaret D. Palmer, Masseuse and Manager of the Massage Department of the London Hospital, Instructor of Massage to the Nursing Staff of the London Hospital, Member of the Council of the Incorporated Society of Trained Masseuses. Second edition. Illustrated. New York: William Wood & Co. 1904.

We reviewed this book with commendation in its first edition. This second edition is slightly extended in scope. A brief chapter on the Nauheim treatment is appended and also one on bandaging. The book is, as was its predecessor, amply illustrated, and contains many facts with which those interested in massage should be acquainted. A lack of knowledge of human anatomy is a defect in many of those who give this type of treatment. This book should tend to overcome this deficiency.

*A Manual of the Practice of Medicine.* Prepared especially for Students. By A. A. Stevens, A.M., M.D., Professor of Pathology in the Woman's Medical College of Pennsylvania; Lecturer on Physical Diagnosis in the University of Pennsylvania, etc. Sixth edition, revised and enlarged. Illustrated. Philadelphia, New York and London: W. B. Saunders & Co. 1903.

A sixth edition of this concise book on the practice of medicine attests its popularity and usefulness. We are pleased to see the distinct statement on the title page that the book is prepared for "students" without mention of the usual "practitioner." Evidently books of this description are essentially useful to somewhat elementary students, and if any distinction at all is desirable, we are glad to see it drawn as Dr. Stevens has seen fit to do. A complete revision has been made in this edition, the section on diseases of the digestive system entirely rewritten, as well as many other individual articles. The book, as heretofore, is very attractively bound in flexible leather covers, is capable of fitting into a good-sized pocket, is comprised in 556 pages and is altogether a vast improvement over the ordinary quiz-compend, and deserves general recognition.

*An Atlas of Human Anatomy.* For Students and Physicians. By Carl Toldt, M.D., assisted by Alois Dalla Rosa, M.D. Translated from the third German edition and adapted to English and American and International Terminology by M. Eden Paul, M.D. (Brux.), M.R.C.S., L.R.C.P. Second Section, C, Arthrology. Third Section, D, Myology. New York: Rebman Company. 1903 and 1904.

Part II of this atlas, to which we have already alluded in some detail, concerns itself with the subject of arthrology. The same general plan is adhered to in this volume as in its very successful predecessor, and we have only words of commendation for the cuts, the accompanying descriptions and the generally systematic arrangement of the subject matter. The atlas idea is evidently kept distinctly in mind and is altogether to be commended since there is a certain tendency to advertise as atlases volumes which on examination bear but slight resemblance to our idea of that type of publication. Colors are sparingly used in this as in the preceding plates, but quite sufficient to make clear the different anatomical structures.

Part III is devoted to myology. The cuts, as in the preceding sections are very numerous, and executed in such a way as to express clearly the fundamental anatomical features. Muscles are, for the sake of contrast, colored an attractive brown, which serves to render clearer their finer relations. As a supplement to the general myology the inguinal and femoral canals are pictured with descriptive text and the customary use of red and blue to indicate arteries and veins.

Full indices are appended to each of these volumes, and every effort has clearly been made to render the books diagrammatic without being untrue to the facts, and convenient for purposes of quick reference. We can only repeat our commendation expressed in our notice of the first volume. We shall await the appearance of the three succeeding sections with much interest.

*Manual of Practical Anatomy.* By D. J. Cunningham, M.D. (Edin. et Dubl.), D.Sc., LL.D., D.C.L. (Oxon.), F.R.S. Two volumes. Third edition. Illustrated. Philadelphia: J. B. Lippincott Company. 1903.

This "Manual of Practical Anatomy" has reached its third edition with certain alterations of detail. Some of the material, which experience has proved unessential for a work of this sort, has been omitted. The descriptive matter has been rendered more concise, and the book has not grown in bulk in spite of general revision of the text. The chief changes have been made in those portions of the book which treat of thoracic and abdominal viscera. This has been rendered possible and desirable by improved methods of hardening fresh material, so that many errors have been corrected regarding the relationships of the viscera. The illustrations also have been modified and improved. In this edition they are certainly admirable. Colors have been used somewhat sparingly, but sufficiently to bring out important points. Particularly commendable are the excellent drawings of the nervous system. Although not very numerous, we have rarely seen better reproductions of sections through the oblongata and pons. The subject matter is arranged by regions rather than in the ordinary didactic fashion of the conventional textbook, and should, therefore, be of service, as is the intention of the author, to men engaged in the practical applications of anatomical knowledge. The volumes are small, attractively bound, and excellently printed. Particularly to be commended is this convenience in size, a striking contrast to the ponderousness of the ordinary work on anatomy.

*The After-Treatment of Operations.* A Manual for Practitioners and House Surgeons. By P. Lockhart Mummery, F.R.C.S. (Eng.), B.A., M.B., B.C. (Cantab.). Demonstrator of Operative, Surgery, St. George's Hospital Late Senior House Surgeon, St. George's Hospital. New York: William Wood & Co. 1903.

This book is a small volume of 218 pages, compact and fairly well done. The author has evidently had a very considerable experience in the after-treatment of operations. The directions given are very simple and direct, but the minute details of the treatment are not given. In a future edition, which we feel confident will be called for, we believe that the author should add more details. An exception to this absence of detail is in the treatment of shock, which is given very fully. The after-treatment of laparatomy is considered at length. Operations in the various regions are touched upon. The appendix contains details on the different methods of feeding, diets, massage, exercises, artificial appliances, including limbs and belts and antistreptococcic serum injections. The cuts somewhat crude and the printing is only fair. There can be but little doubt that the treatment of the critically ill patient is a subject of vital importance.

*The Practical Medicine Series of Year Books.* Comprising ten volumes on the Year's Progress in Medicine and Surgery. Issued monthly, under the General Editorial Charge of Gustavus P. Head, M.D. Vol. VI. General Medicine. Edited by Frank Billings, M.S., M.D., and J. H. Salisbury, M.D., May, 1903. Chicago: The Year Book Publishers. Vol. X. Skin and Venereal Diseases, Nervous and Mental Diseases. Edited by W. L. Baum, M.D., and Hugh T. Patrick, M.D. Illustrated. September, 1903. Vol. III. The Eye, Ear, Nose and Throat. Edited by Casey A. Wood, C.M., M.D., D.C.L., Albert H. Andrews, M.D., and Augustus P. Head, M.D. Illustrated. December, 1903.

Volume VI of the "Practical Medicine Series of Year Books" on general medicine, under the editorship of Drs. Frank Billings and J. H. Salisbury, contains the usual concise review of important articles in this field during the past year. Attention should be called to the fact that this series of books is published primarily for the benefit of the general practitioner, hence the arrangement in separate volumes. The more specialized fields of medicine are, however, not neglected.

Another volume of the series on the skin, venereal, nervous and mental diseases for September, 1903, is also before us. This volume requires no special note beyond the general statement that the standing of the authors leaves no question of the correctness and value of the abstracts of current progress in their several fields.

Volume III on the eye, ear, nose and throat, bearing the date of December, 1903, discusses the progress made in these special branches.

THE BOSTON

# Medical and Surgical Journal.

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## THE VISIT OF PROF. PAUL EHRLICH.

It is no longer an unusual experience to be visited by distinguished men of science from Europe. We have in mind, for example, the very recent visits of Professor Foster, Professor Ewald and Professor Lorenz. This fact, however, should not abate our interest in the sojourn of Prof. Paul Ehrlich in this country. Professor Ehrlich occupies a wholly unique position in the medical world at the present time. It is to him more than to any other one man that we look for discoveries of moment in the now vital questions of immunity and serum therapy. These studies on immunity in the broad sense are in a way comparable to the discovery of the circulation of the blood, the cellular basis of pathology and the pioneer work of Pasteur in bacteriology. To prosecute this new research with success requires a peculiarly broadly trained mind and one in which the element of originality and the power of generalization are conspicuous. These attributes Professor Ehrlich possesses in unusual degree.

The immediate occasion of this visit to America is the delivery of the Herter lectures for the year at the Johns Hopkins University. It will be remembered that this lectureship was founded by Dr. Herter of New York for the purpose of bringing into closer touch medical scientists in this country and in Europe. A more opportune choice for this year's lectureship could hardly have been made, and, although Professor Ehrlich does not speak English, we can have no doubt that his remarks will be listened to by an attentive and appreciative audience. The University

of Chicago has already honored him by the degree of LL.D., and this week he is to be the guest of the American Association of Pathologists and Bacteriologists at its annual meeting in New York. It is hoped and expected that he will visit Boston in the course of his travels, although so far as we have learned there has been no arrangement for a formal address on his part.

In this connection it may be well to allude to the peculiarly favorable conditions under which Professor Ehrlich has been able to carry out his researches. In 1896 he was appointed director of the Institute of Serum Therapy in Frankfort-on-the-Main, a laboratory maintained by the German government. At this laboratory, with an adequate staff of assistants, untrammelled by the details of teaching and wholly independent of outside conditions, he is enabled to prosecute without restriction his chosen subject. The only limitation to the work is that it shall be directed toward the serum treatment of bacterial diseases.

This somewhat unique position, unfortunately, finds few parallels in other countries. Naturally a man of science, who willingly gives up the best and most active years of his life to the elucidation of an abstract subject, should be free from the cares and responsibilities which the necessity of procuring a livelihood demands. In spite of liberal provisions now made for research through the munificence of Mr. Carnegie and Mr. Rockefeller in this country, there is still apparently lacking that assurance of permanency which must be had if the best results are to be attained. Very recently the New York legislature has cut out the appropriation of $15,000 for the prosecution of cancer research in that state on the ground that nothing as yet has been accomplished. If such action be possible, for the reasons given, it is clear that the services of well equipped men cannot be obtained. The spirit of research is sufficiently active in this country and unquestionably the means to support it are equally abundant, but it is absolutely necessary that these resources be distributed in such a way that the greatest possible independence of investigation for long periods of time, regardless of immediate results, may be attained. It is perfectly clear that the questions now confronting scientific men in medicine are not such as may be answered in one or perhaps ten years, but that long periods of research, possibly discouraging alike to investigator and to the public, must be expected before final results of importance may be reached. The means of supporting such investigations should be wholly irrespective of results and until this is in some way attained, we may hardly expect to accomplish what our colleagues in Germany are doing. If Professor Ehrlich's visit, with its other advantages to us, may also result in directing the attention of our public spirited men toward the best way of encouraging and maintaining research, it will have accomplished a most beneficent end.

## CATHETERIZATION OF THE URETER.

The danger attending indiscriminate catheterization of the ureter in women as practiced in the clinics at the present time is forcibly presented to us in a recent article on urinary tuberculosis by Hunner.[1] He shows that given bacteria in the bladder, as in the case of urinary tuberculosis, and the trauma which of necessity attends the passage of a ureteral catheter, be the catheter ever so deftly introduced, we have present two important factors in the causation of infection of the ureter and kidney. Furthermore in bladder tuberculosis in a cachectic patient it has been determined that when the woman is placed in the knee chest posture and air is admitted to the bladder through a cystoscope the ureteral orifices are apt to gape on the sound as well as the diseased side, and thus permit the entrance of air together with bladder contents into the ureters.

Bearing on this point are to be considered the researches of the resident gynecologist of the Johns Hopkins Hospital.[2] He instituted a series of experiments on animals and a cystoscopic study of the ureteral orifices in women, because it had been found that implantation of the ureter in the bladder after resection of the ureter in cases of advanced uterine cancer, was almost invariably followed by infection of the kidney belonging to the implanted ureter. According to these experiments renal infection is most often produced by the passage of microorganisms from the bladder up to the lumen of the ureter, and this passage of bacteria takes place under ordinary conditions only when there is present some injury to the vesical end of the ureter thereby preventing the valve-like portion of the vesical wall at this situation from maintaining the ureteral canal in a state of closure.

If, as would appear to be the case, urinary tuberculosis is almost invariably primary in the kidney, and in its early stages, at least, con-

[1] Johns Hopkins Hospital Bulletin, January, 1904.
[2] Ibid. No. 153.

fined to one kidney, the physician should be able to make a diagnosis without catheterizing the ureters. A history of pain in the back, side or inguinal region, together with a disturbance of bladder function, having led to a suspicion of some kidney disease, physical examination shows the kidney usually palpable and tender, and palpation over the course of the ureter as it crosses the brim of the pelvis elicits tenderness and a desire to void urine. Through the vagina the thickened bladder or the tender utero-vesical region is palpated, and the thickened ureter can nearly always be felt at its vesical junction just anterior to the cervix, and through the rectum it may be felt coursing outward and backward. A systematic search for tubercle bacilli in the urine, examining one or two slides a day for a week instead of many slides from one specimen as so often done, will verify the diagnosis.

If cystoscopy is resorted to it should be done with the patient in the elevated dorsal position. It is not necessary to catheterize the ureter on the supposedly sound side. Urine enough for microscopic examination and for an estimation of urea may be obtained from this side by inserting a ureteral catheter in the ureter of the diseased side and while it is in place washing out the bladder and then collecting the bladder urine. Suitable allowance can be made for the contamination from the bladder.

The danger which attends infection of a sound ureter and kidney in the case of urinary tuberculosis applies to other diseases in which the bladder is teeming with bacteria, so that too great care cannot be exercised in selecting cases for ureteral catheterization.

## THE ETIOLOGY OF SPINA BIFIDA.

When one considers the embryology of the spine and cord, it is easy to explain how a primary lesion of the former may mechanically act on the development of the rachis, alter its make-up and prevent the union of the vetrebral plaques. In some instances the medullary lesion, no matter what it may be, must appear at a very early embryonal period, because it existed when the cord was in the state of a sulcus and prevented the closure of this sulcus; such is the case, for example, in myelo-meningocele produced by an external hydrorachis.

If the causal lesion has acted at a later date, when the medullary sulcus has closed, one may admit that hydrops of the central canal of the cord has played the same part as an exostosis, or a foreign body, and from its size has opposed the union of the vertebral arches. It would appear that, in such cases, it is useless to search the why of the arrest of development of the osseous canal, the reason for the rachischisis, of spina bifida, properly speaking. The reason resides in the fact that hydrorachis exists, and it is only the cause of the hydrorachis that should be ascertained.

Beyond any doubt the cause producing the arrest of development of the neural sulcus may act likewise on the vertebral plaques, and this is so evident that, if in all cases of hydrorachis there is spina bifida, in all the instances of the latter affection there is not necessarily a hydrorachis. Let us explain. One sometimes meets with cases of spina bifida without tumor, the so-called spina bifida occulta, and this latter type appears to us to show the independent relationship of rachischisis and hydrorachis, and also the reality of this fact, namely, that a vertebral fissure is not enough to produce an hydrops of the cord or of its envelopes.

If in cases of spina bifida occulta, lesions are present which indicate a lesion of the cord, we are of the opinion that the medullary lesions are independent of the spina bifida, or, at any rate, are of earlier origin than those which are the cause of the rachischisis. Whatever the truth may be, the important point to retain is that spina bifida arises either from an arrest of development or from an hydrops of the cord or its envelopes.

The etiology of the affection is surrounded with mystery, and textbooks consider it unexplained. The pathogenesis of spina bifida has been little studied, but among the probable causes admitted, we would mention first Cruveilhier's opinion, according to which the inocclusion of the vertebral canal results from adhesions contracted by the fetus with the membranes of the ovum. Dareste believes that the inocclusion is consecutive to compression exercised on the dorsal aspect of the embryo by an abnormally narrow caudal fold of the amnios. On the other hand, Houel, Sulzer, Pilliet and Recklinghausen believe the inocclusion to be due to a mechanical cause, such as an exostosis, a pedunculated neoplasm of the ependymis, or a fibro-myo-lipoma, while Lebedeff considers the causal factor to be an exaggerated curve of the rachis.

None of these interpretations is quite satisfactory, and none explains the frequent coexistence of this anomaly with other various malformations, such as hare lip, club foot, etc.;

and still more they do not explain the intimate relationship which appears to exist between hydrorachis and hydrocephalus.

In 1883 Lannelongue offered the opinion that arrests in development might be due to a *virulent condition of the generators,* and in order to give weight to this hypothesis, he recorded four cases in which he considered that syphilis could be legitimately held responsible for the origin of spina bifida. Fournier also upheld the same doctrine, based on a number of personal observations.

It is far from our thought to uphold that in all cases of this affection syphilis is the causal agent, but we cannot refrain from believing that no other etiology is so fit to explain both the arrest in development and the medullary hydrops. Then again, among all the infections which might be incriminated as the primary origin of this malformation, there is hardly any which can be more legitimately suspected than syphilis, and, in point of fact, of all the infectious causes, is there one more intense or virulent in its effects than syphilis? Is there one that attacks the embryo more profoundly or at an earlier period of its development, or which better realizes the ensemble of lesions which so frequently accompany this developmental anomaly?

So many cases of spina bifida have been recorded in which syphilis in the parents has been found, that it is incumbent upon every medical man to study his cases with the view of ascertaining to what extent this potent virus may act in the causation of this congenital defect.

## MEDICAL NOTES.

Undrinkable Alcohol. — According to *Science,* the Russian Government has offered a prize of about $25,000 for the discovery of some method to make alcohol undrinkable.

Anniversary Dinner of the Henry Phipps Institute. — The anniversary dinner of the Henry Phipps Institute was given by the staff at the University Club, Philadelphia, on Monday evening, the 28th. The delegates to the convention, which was called to consider the question of forming a national organization for the study of tuberculosis, were all invited as guests of the occasion. Sixty-two persons were present, among whom were many of the most eminent physicians of the United States.

The feature of the evening was the presentation of a silver pitcher to Dr. Lawrence F. Flick, the director of the Henry Phipps Institute, by the members of the staff as a token of their esteem. Mr. Henry Phipps, the founder of the Institute, was present and made the presentation in the name of the staff.

Among those who spoke after dinner were Dr. Abraham Jacobi of New York, Dr. William H. Welch of Johns Hopkins University, Dr. Vincent Y. Bowditch of Boston, Dr. John H. Prior, Dr. Charles L. Minor of Asheville, N. C., Dr. George M. Sternberg, former surgeon general of the army; Dr. John B. Huber of New York; Dr. Leonard Pearson, State Veterinarian of Pennsylvania; Dr. S. A. Knopf of New York; Dr. Ward of Albany, N. Y.; Dr. Henry B. Holton of Brattleboro, Vt.; Dr. John Musser and Dr. James Tyson of University of Pennsylvania and Dr. J. C. Wilson of Jefferson Medical College.

Dr. L. F. Flick acted as toastmaster and chairman and Dr. M. P. Ravenel spoke for the staff of the Henry Phipps Institute.

The Herter Lectures. — The first course of lectures on the Herter foundation will be delivered by Professor Paul Ehrlich, M.D., LL.D., director of the Royal Prussian Institute of Experimental Therapeutics, Frankfort-on-the-Main, Tuesday, Wednesday and Thursday, April 12, 13 and 14, 1904, at 4.30 P.M., in McCoy Hall, The Johns Hopkins University, Medical Department.

The lectures will be in the German language upon subjects relating to immunity. The special topics will be: (1) "The Mutual Relations between Toxine and Antitoxin;" (2) "Physical Chemistry versus Biology in the Doctrines of Immunity;" (3) "Cytotoxines and Cytotoxic Immunity."

Resignation of Sir Lauder Brunton. — It is announced that Sir Lauder Brunton has resigned his position at St. Bartholomew's Hospital, and has been appointed honorary consulting physician and a governor. He has been connected with the institution for thirty-three years in various capacities, but only nine years as full physician. Commenting on this resignation, the *British Medical Journal* makes the following remarks:

Recognizing that there are many young men at the hospital who are in the same position as he was fifteen years ago, and who would willingly devote a large proportion both of energy and time to hospital work and teaching and being conscious that for the last five or six years the claims of practice have tempted him to diminish the time spent in the hospital, he has taken the step now announced. Sir Lauder Brunton has expressed to us the opinion that the system of age

tenure as applied to the medical staff of St. Bartholomew's Hospital is bad, and nearly though not quite as bad as that of life tenure against which Abernethy inveighed after having been twenty-eight years assistant surgeon. We learn that before he was appointed full physician Sir Lauder Brunton suggested that the tenure of office should be altered to a time tenure of ten or twelve years as assistant, and ten or twelve years as full physician or surgeon, but this suggestion has not hitherto been adopted. We believe that but for accidental vacancies caused by the appointment of Dr. Southey to be a commissioner of lunacy, and by the creation of the appointment of a fifth physician to the hospital Sir Lauder Brunton would only have become full physician about six months ago; this is a *reductio ad absurdum*.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon March 30, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 43, scarlatina 29, typhoid fever 8, measles 195, smallpox 0.

Dr. D. H. Craig Honored. — At its meeting on March 23, 1904, the Massachusetts Medical Society, Suffolk District, Section for Obstetrics and Diseases of Women, elected Dr. Daniel H. Craig as its President. On March 24, 1904, after presenting a paper for their consideration Dr. Craig was given an Honorary Membership in the New Hampshire Surgical Club at its semi-annual meeting held at Concord, N. H.

### NEW YORK.

Poisoning by Oxalic Acid. — Deputy United States Marshal John E. Thorne of Brooklyn was fatally poisoned on March 28 by a dose of oxalic acid which was accidentally administered to him by a member of his family for Rochelle salts.

Commitments for Drunkenness. — In the annual report of the State Commission of Prisons, recently presented at Albany, it is stated that during the past year there were 28,519 commitments to the jails and 3,615 to the penitentiaries for intoxication, making a total of 32,134 commitments for the single offence of drunkenness. The total commitments during the year to the penal institutions of the State, for all offences, were 102,581. Thus it appears that nearly one-third of all commitments were for intoxication. While it may be necessary for the protection of the public that intoxicated persons should be taken into custody and receive treatment at the hands of the state, it is urged that this offence should not be treated strictly as a crime. "Drunkenness," the report continues, "has in it no element of malice — one of the usual and necessary elements of crime. Habitual drunkenness arises largely from mental weakness, and its treatment should partake of the characteristics which the state has deemed wise to use in other cases of mental aberration. There is a large distinction between the man who cannot control his appetite for drink and the man who wilfully and maliciously commits an offence agaist the person or property of another. The law should recognize this distinction. The present practice of sending him to jail or to a penitentiary, branded as a criminal, to consort with thieves, only depraves and discourages him, and at the same time inflicts punishment and privation upon his family. Some wiser method of dealing with this offence should be ascertained and adopted."

Part-Time System at Public Schools. — By direction of the Board of Superintendents of the Department of Education, City Superintendent Maxwell has instructed the district superintendents to place the part-time system devised by Dr. William Ettinger, principal of public school No. 147, on trial generally throughout the city. It is stated that this system, which has been in use experimentally at a number of schools for several months past, will probably be adopted formally by the Board of Education in time for the autumn term for all schools where there are part-time classes, if it continues to meet with success. The system requires the two classes, which use one class room, to attend school twice a day. Class A occupies the room from 8.30 to 10.30 in the morning, plays quiet games under the direction of a teacher from 10.30 to 11.30, goes home for lunch between 11.30 and 12.30, and takes its second period in the class room from 12.30 to 2.15 P.M. Class B goes into the class room at 10.30 and remains till 12.30, when it goes to lunch. At 1.30 it returns, and, after playing games until 2.15 it re-enters the class room and remains until 4 o'clock. While it is at present to be employed only in schools where the excess of pupils has rendered the part-time plan necessary, the Ettinger system is believed to be actually more scientific for a considerable proportion of school children than the full-time system. The best pedagogical authorities are of the opinion that the smaller children should have shorter periods in the class rooms and longer recesses than are now provided in the regular courses.

## Obituary.

### AMBROISE A. LIEBAULT, M.D.

The death of Dr. Ambroise A. Liébault of Nancy, France, whose name is associated with the modern use of hypnotic suggestion as a therapeutic agent, is announced. He studied medicine in Strassburg, taking his doctor's degree in 1850. Soon after entering upon practice, he began the study of hypnotic suggestion and settled in Nancy, opening there a clinic for the treatment of the poor by suggestion. His reputation and experience rapidly grew, and, although for years he was looked upon as an imposter by the more conservative, his principles were later generally accepted and the Nancy School of Psychotherapy was established, with the co-operation of Bernheim, Beaunis and Liégeois. His work antedated Charcot's in the same field. During recent years, although differing widely from his more distinguished contemporary in the theory of hypnotism, he had a wide following, and undoubtedly has had a definite influence for good in the establishment of treatment by suggestion. He was honorary president of the first and second congresses of hypnotism and died finally at the ripe age of eighty years, having convinced the world of his absolute honesty of purpose and sincerity.

## Miscellany.

### DEATHS UNDER ANESTHETICS.

Commenting on a recent death from chloroform anesthesia, the *Medical Press* draws the following conclusions, which we imagine will not receive unqualified assent in this country:

Last week a tragic death took place under chloroform at the West London Hospital. The victim of the unfortunate accident was a kitchen maid, who died after the administration of one drachm of chloroform. As commonly happens, the amount of the anesthetic was small, so that the cause of death must be sought in other directions, such as shock and mental depression and fright. The theory that the danger of chloroform depends on the dose and the subsequent devices to measure and regulate the amount will be found to be advocated mainly by anesthetists and others who are interested in pushing some particular inhalation apparatus. A certain percentage of deaths must occur, at any rate in our present state of knowledge, whatever drug be used to procure general anesthesia. Chloroform is used so much oftener than ether that the absolute number of deaths from its use is naturally far greater. On Feb. 28 a woman died under ether at Blackburn Infirmary, when the main part of a serious operation had been performed. A death from nitrous oxide is reported in the issue for Feb. 20, 1904, of *American Medicine*. In short, the annals of medical science remind us that death may occur under wellnigh if not quite all known general anesthetic agents.

## Correspondence.

### A NATIONAL SOCIETY FOR THE STUDY OF TUBERCULOSIS.

Baltimore, March 29, 1904.

Mr. Editor: For the purpose of discussing the question relating to organizations for the study of tuberculosis in this country, the following met at the College of Physicians, Philadelphia, on the afternoon of March 28: Howard S. Anders, Philadelphia; J. M. Anders, Philadelphia; William M. Angney, Philadelphia; Henry G. Beyer, U. S. Navy; Herman M. Biggs, New York; Jonathan J. Black, New Castle, Del.; Oliver A. Blumenthal, Syracuse, N. Y.; Vincent Y. Bowditch, Boston; M. J. Brooks, New Canaan, Conn.; Herbert C. Clapp, Boston; J. Solis Cohen, Philadelphia; Solomon Solis Cohen, Philadelphia; W. M. L. Coplin, Philadelphia; Frank A. Craig, Philadelphia; Alex. H. Davisson, Philadelphia; B. H. Detweiler, Williamsport, Pa.; A. H. Doty, New York; J. W. Ellenberger, Harrisburg; W. B. Fetterman, Jr., Philadelphia; Lawrence F. Flick, Philadelphia; F. Forchheimer, Cincinnati; Albert C. Getchell, Worcester, Mass.; William B. Hackenburg, Philadelphia; H. A. Hare, Philadelphia; Charles J. Hatfield, Philadelphia; Henry D. Holton, Brattleboro, Vt.; A. Jacobi, New York; Henry Barton Jacobs, Baltimore; Edward G. Janeway, New York; Herbert M. King, Liberty, N. Y.; S. A. Knopf, New York; Alexander Lambert, New York; H. R. M. Landis, Philadelphia; Charles M. Lewis, Philadelphia; Daniel Lewis, New York; D. J. McCarthy, Philadelphia; James Alex. Miller, New York; Charles H. Miner, Wilkes Barre, Pa.; Charles L. Minor, Asheville, N. C.; J. H. Musser, Philadelphia; Estes Nichols, Augusta, Me.; George W. Norris, Philadelphia; William Osler, Baltimore; Jay Perkins, Providence; W. H. Peters, Providence; C. O. Probst, Columbus, Ohio; John H. Pryor, Ray Brook, N. Y.; Mazyck P. Ravenal, Philadelphia; DeLancey Rochester, Buffalo; Milton J. Rosenau, Washington; J. T. Rothrock, Mont Alto, Pa.; W. B. Stanton, Philadelphia; George M. Sternberg, Washington; Elwell Stockdale, White Haven, Pa.; Arthur K. Stone, Boston; J. Edward Stubbert, New York; J. M. Taylor, Boise, Idaho; James Tyson, Philadelphia; T. Mellor Tyson, Philadelphia; Josephus T. Ullen, Germantown, Pa.; Agnes C. Vietor, Boston; Joseph Walsh, Philadelphia; Samuel B. Ward, Albany; William H. Welch, Baltimore; J. M. Willcox, Philadelphia; Francis H. Williams, Boston; J. C. Wilson, Philadelphia.

Prof. William Osler of Baltimore presided and Dr. Henry Barton Jacobs of Baltimore acted as secretary.

After a full discussion participated in by Drs. Daniel Lewis, Minor, Flick, Knopf, Solomon Solis Cohen, James Tyson, Stubbert, Pryor, Holton, Biggs, Rothrock, Jacobi, Janeway, Hare, Sternberg, Welch, Forchheimer, Ravenal, Rochester and Ward, Dr. Lawrence F. Flick of Philadelphia offered the following resolution which was seconded by Dr. Forchheimer and carried unanimously: *Resolved*, "That we here assembled do now organize ourselves into a United States society for the study of tuberculosis." It was then moved by Dr. George M. Sternberg of Washington and seconded by Dr. Hare of Philadelphia "that the Chair appoint a Committee of five to prepare a constitution and by-laws for such a society." This motion was carried unanimously. The Chair appointed Dr. Edward L. Trudeau, Dr. Herman M. Biggs, Dr. Lawrence F. Flick, Dr. William H. Welch and Dr. George M. Sternberg as that Committee.

It was farther moved by Dr. Sternberg and carried unanimously "that the Chairman and Secretary of this meeting be *ex-officio* Chairman and Secretary of the Committee." Dr. Ravenal then moved and it was unanimously carried, "that it is the sense of this meeting that the committee call us together for organization at Atlantic City during the week of the meeting of the American Medical Association."

Previous to the meeting an abstract of Professor Maragliano's lecture was read.

The meeting then adjourned.

Henry Barton Jacobs, M.D., *Secretary*.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MARCH 19, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseases. | Typhoid fever. |
| New York . . | 3,908,644 | 1,707 | 503 | 23.25 | 25.90 | 2.34 | 2.16 | .41 |
| Chicago . . . | 2,021,086 | 578 | 138 | 21.79 | 23.70 | 1.70 | 2.42 | 1.21 |
| Philadelphia | 1,407,968 | 634 | 153 | 26.18 | 22.86 | 1.73 | 2.84 | 3.31 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 215 | 63 | 23.72 | 12.56 | .93 | 2.79 | — |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 167 | — | 27.54 | 19.76 | 3.59 | 4.19 | 6.58 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 80 | 23 | 22.50 | 21.25 | 1.25 | 3.75 | — |
| Boston . . . | 617,950 | 253 | 67 | 21.34 | 20.95 | 2.76 | .79 | 1.18 |
| Worcester . . | 136,925 | 26 | 15 | 3.85 | 19.25 | — | — | — |
| Fall River . . | 119,349 | 32 | 13 | 15.62 | 18.75 | 3.12 | — | — |
| Lowell . . . | 104,402 | 35 | 10 | 11.43 | 14.28 | — | — | 2.86 |
| Cambridge . | 100,998 | 34 | 6 | 20.58 | 20.58 | 2.94 | — | — |
| Lynn . . . . | 73,875 | 20 | 2 | 5.00 | — | — | — | — |
| Lawrence . . | 72,348 | 34 | 12 | 14.74 | 20.58 | — | 5.88 | 2.94 |
| Springfield . | 72,020 | 27 | 8 | 37.03 | 7.40 | — | — | — |
| Somerville . | 70,413 | 20 | 4 | 15.00 | 15.00 | — | — | — |
| New Bedford | 68,863 | 28 | 8 | 3.57 | 25.00 | 3.57 | — | — |
| Holyoke . . . | 50,538 | 13 | 5 | 7.70 | 15.40 | — | — | — |
| Brockton . . | 46,601 | 6 | 3 | 16.67 | — | — | — | — |
| Newton . . . | 39,310 | 8 | 1 | 25.00 | — | — | — | — |
| Haverhill . . | 39,061 | 11 | 2 | — | 9.09 | — | — | — |
| Malden . . . | 37,205 | 10 | 4 | 10.00 | 40.00 | 10.00 | — | — |
| Salem . . . . | 37,188 | 9 | 2 | 22.22 | — | — | — | — |
| Chelsea . . . | 36,499 | 15 | 2 | 13.33 | 6.67 | — | — | — |
| Fitchburg . . | 36,335 | 5 | 1 | — | 40.00 | — | — | — |
| Taunton . . . | 34,577 | 18 | 3 | — | 16.67 | — | — | — |
| Everett . . . | 30,209 | 8 | 3 | 12.50 | — | — | — | — |
| North Adams | 29,201 | 3 | 2 | 33.33 | — | — | — | 33.33 |
| Quincy . . . | 26,798 | 14 | 3 | 28.57 | 14.28 | — | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 8 | — | 25.00 | 25.00 | 12.50 | — | — |
| Brookline . . | 23,576 | 4 | — | — | 50.00 | — | — | — |
| Pittsfield . . | 22,870 | 13 | — | 7.70 | 30.80 | — | — | — |
| Medford . . | 21,956 | 8 | 1 | 50.00 | 12.50 | — | — | — |
| Chicopee . . | 21,692 | 7 | 3 | 14.30 | — | — | — | — |
| Northampton | 20,314 | 3 | 1 | 33.33 | — | — | — | — |
| Beverly . . . | 15,807 | 1 | — | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 3 | 2 | — | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | 4 | 3 | 25.00 | 25.00 | — | — | — |
| Hyde Park . | 14,500 | 10 | 1 | 20.00 | 40.00 | — | — | — |
| Newburyport | 14,478 | 5 | 2 | — | — | — | — | — |
| Woburn . . . | 14,315 | 6 | 2 | — | 50.00 | — | — | — |
| Melrose . . . | 13,819 | 3 | — | — | 33.33 | — | — | — |
| Westfield . . | 13,809 | 3 | — | — | 33.33 | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 2 | 1 | — | — | — | — | — |
| Revere . . . | 13,609 | 5 | — | 20.00 | 40.00 | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 5 | 2 | 20.00 | — | 20.00 | — | — |
| Southbridge . | 11,716 | 1 | 1 | — | 100.00 | — | — | — |
| Watertown . | 11,575 | 8 | 2 | 12.50 | 25.00 | — | — | — |
| Weymouth . | 11,350 | 2 | 0 | 50.00 | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 4,111; under five years of age, 1,077; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 926; acute lung diseases 935, consumption 495, scarlet fever 44, whooping cough 11, cerebrospinal meningitis 22, smallpox 9, erysipelas 22, puerperal fever 14, measles 64, typhoid fever 53, diarrheal diseases 90, diphtheria and croup 81.

From whooping-cough, New York 5, Chicago 2, Philadelphia 1, Pittsburg 2, Boston 1. From smallpox, New York 1, Philadelphia 7, Pittsburg 1. From cerebrospinal meningitis, New York 16, Baltimore 1, Boston 1, Springfield 1, Brockton 1, Medford 1, Attleborough 1. From erysipelas, New York 13, Chicago 5, Baltimore 1, Boston 1, Cambridge 1, Somerville 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,425, for the week ending March 5, the death-rate was 18.6. Deaths reported, 5,436; acute diseases of the respiratory organs (London) 202, whooping cough 176, diphtheria 71, measles 139, smallpox 2, scarlet fever 33.

The death-rate ranged from 8.7 in Handsworth to 29.8 in Norwich: London 17.9, West Ham 17.7, Brighton 18.2, Southampton 17.6, Plymouth 20.1, Bristol 17.6, Birmingham 21.1, Leicester 16.5, Nottingham 20.3, Liverpool 22.3 Bolton 13.4, Manchester 21.3, Salford 17.5, Bradford 18.8 Leeds 22.0, Hull 16.8, Cardiff, 18.9, Rhondda 27.7, Wigan 25.7, Hornsey 10.3, Plymouth 20.1.

## METEOROLOGICAL RECORD.

For the week ending March 19, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. . 13 | 29.84 | 28 | 35 | 21 | 47 | 51 | 49 | N W | N | 12 | 20 | F. | F. | 0 |
| M . 14 | 30.00 | 30 | 38 | 22 | 51 | 55 | 53 | N W | S | 9 | 14 | O. | O. | 0 |
| T. . 15 | 29.76 | 32 | 34 | 30 | 95 | 100 | 98 | N | N W | 8 | 14 | N. | N. | .15 |
| W . 16 | 30.00 | 28 | 33 | 22 | 69 | 59 | 64 | N W | N W | 12 | 31 | O. | C. | .01 |
| T. . 17 | 30.34 | 30 | 39 | 22 | 51 | 47 | 49 | N W | S | 18 | 14 | C. | C. | 0 |
| F. . 18 | 29.90 | 33 | 36 | 30 | 94 | 91 | 92 | S E | N W | 7 | 17 | N. | O. | .30 |
| S. . 19 | 29.92 | 40 | 48 | 32 | 57 | 62 | 60 | S W | S | 14 | 20 | C. | O. | 0 |
| ☞ | 29.97 | | 38 | 26 | | | 66 | | | | | | | .46 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

DELAYED PUBLICATION. — The strike, among printers and pressmen, is now over. And it is hoped to issue the JOURNAL on time from April 14th.

## SOCIETY NOTICE.

AMERICAN NEUROLOGICAL ASSOCIATION. — The American Neurological Association has fixed the time of its meeting at St. Louis for Sept. 15, 16 and 17; and this will be immediately followed by the sessions of the various medical departments of the Congress of Arts and Sciences, beginning Sept. 19.

FRANK R. FRY, M.D., Secretary.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING APRIL 2, 1904.

J. M. EDGAR, surgeon. Detached from the "Wisconsin" and ordered to the "Monadnock," March 30.

J. P. TRAYNOR, assistant surgeon. Detached from the "Frolic" and ordered to the "Albany."

C. M. OMAN, assistant surgeon. Detached from the "Monadnock" and ordered to the "Frolic."

R. O. MARCOUR, assistant surgeon. Detached from the "Dixie" and ordered to duty with the Marine Battalion at Guantanamo, Cuba, March 31.

W. E. G. HIGH, assistant surgeon. Detached from the "Constellation" and ordered to the Midway Islands for duty with the Marine detachment at that place, sailing from San Francisco, Cal., April 3, via the "Supply."

## OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED MARCH 31, 1904.

WASDIN, EUGENE, surgeon. Granted leave of absence for one month from April 1, 1904, on account of sickness. March 30, 1904.

ROSENAU, M. J., passed assistant surgeon. Detailed to represent service at meeting of Tuberculosis Committee, College of Physicians, Philadelphia, Pa., March 28. March 26, 1904.

CUMMING, H. S., passed assistant surgeon. Granted leave of absence for ten days from April 5. March 25, 1904.

LAVINDER, C. H., passed assistant surgeon. Granted leave of absence for two days from March 29. March 26, 1904. Granted three days' extension leave of absence from March 31. March 26, 1904.

GRUBBS, S. B., passed assistant surgeon. Granted ten days' extension of leave of absence from March 31. March 28, 1904.

BILLINGS, W. C., passed assistant surgeon. Granted leave of absence for two months and three days from April 30, 1904, with permission to go beyond the sea. March 23, 1904.

RICHARDSON, T. F., assistant surgeon. Detailed to attend conference of State Health Officer and County Health Officers of Texas, March 31. March 29, 1904.

AMESSE, J. W., assistant surgeon. Granted leave of absence for two months and fifteen days from May 1. March 26, 1904.

BOGGESS, J. S., assistant surgeon. Granted leave of absence for two days from March 30. March 29, 1904.

# Original Articles.

## INFECTIOUS ARTHRITIS.[1]

BY JOEL E. GOLDTHWAIT, M.D., BOSTON.

The following paper is presented without apology, however unusual it may be for an orthopedic surgeon to write upon a subject belonging so largely to the realm of general medicine, since it is only by the most exact knowledge of the various aspects of such diseases that the treatment of the disabled joints which result from them can be intelligently carried out. It was in this spirit that the work was originally undertaken, and it is my hope that the results may be of as distinct service to others in the treatment of the acute disease as they have been to me in the treatment of the results of the disease. It is my hope at the same time that the confusion which exists in regard to the various non-tubercular joint diseases may be somewhat less as the result of this communication.

The term here used may not be above criticism, but it is simple and represents a reasonable mode of approach to this large class of disease which includes many of the cases of "rheumatism" and many of the other conditions which have been variously classified. Subdivisions under the term will undoubtedly follow, based upon the organism which may be present in a given case, or upon the results of the presence of that organism, but as the principles underlying all these conditions are the same it is thought wise to consider the whole subject in this form, allowing the individual observer to make the special application. For the opportunity to study the acute cases, especially the so-called acute rheumatism, I am indebted largely to the medical staff of the Massachusetts General Hospital, all of the members of which have been most kind and helpful in the work.

The term infectious arthritis is used to designate a joint disease resulting from the presence within the body of some infectious organism, the symptoms being due either to the presence of the organism itself within the joint or to some toxine produced by that organism in some other part of the body. The condition is rarely primary, but usually appears as a sequela of some other disease, representing in all probability the extension of an infection. The primary disease may be mild and attract but little attention, so that in a large number of cases, especially the so-called acute rheumatisms, the few symptoms of the primary disease are often considered to be prodromata of the joint lesion. Upon careful inquiry it will be found that in the majority of cases definite symptoms did precede the trouble in the joint and that these are too varied both in character and location to be fairly considered prodromata, especially as with the majority of persons having similar symptoms no joint disease develops. It seems more reasonable therefore to consider the joint condition as a sequela of the original disease rather than that the joint disease itself is an entity. This is exactly the position that is held in regard to much of the disease of the middle ear or the mastoid cells, and as with these and other analogous conditions the same thing is true with this type of joint lesion, that the secondary is frequently more serious and annoying than the primary disease.

Infectious arthritis may result from practically any of the infectious or pus producing organisms and the type of the lesion or its character will naturally depend upon the special organism involved. The disease may be mild and of short duration with complete recovery, or it may be very severe with much suffering and at times fatal termination. One joint may be affected, and if so the disease in this joint may be very slight or may go on to considerable destruction of the articulation; on the other hand, many of the joints may be involved, — at times all of the joints in the body, — and, as when the single joint is affected, there may be severe permanent changes or the disease may soon be over, leaving little to show for its presence.

In this type of disease the onset is usually abrupt, at times symptoms of great acuteness resulting within a few hours. At other times the process is more insidious and gradual, some weeks being required for its development. It is, however, characteristic of this general class of disease, whether mild or severe, of abrupt onset or gradual development, that all of the joints that are to be affected become affected at practically the same time. With those organisms which have but a short period of active life the joints which are to be affected become so at once and there is no farther extension to the other joints. With some of the other organisms, such as the gonococcus, which may live in the various tissues for many weeks, while the beginning of the joint disease may be abrupt, other joints may develop symptoms later at any portion of the time during which the organism is active, but even under these conditions, the progression is confined to a few months at most, and is in marked contrast to the type of disease described under the head of "atrophic or rheumatoid arthritis," in which, although many or all of the joints may be involved, the extension of the disease is very gradual, joint after joint breaking down at long intervals, so that the complete extension of the disease is not reached until many years have elapsed.

With infectious arthritis the symptoms depend upon the severity of the infection; if it be mild there may be little if any temperature, the pulse but slightly accelerated, the glandular enlargement not marked, with only a serous effusion into one or more of the joints which subsides in a few days, with or without treatment, leaving no permanent impairment. If the infection is more profound the temperature is more elevated, the pulse is much accelerated, the blood count shows a definite increase of the leucocytes, the lymphatic glands are enlarged

[1] At about the time this paper was completed a paper by Dr. T. J. Harrington appeared in this Journal Jan. 28, 1904, emphasizing some of the features here described. In spite of the danger of repetition the paper is still published, as too much attention cannot be attracted to this subject at the present time.

throughout the body and there is marked effusion into the affected joints which frequently goes on to the infiltration of the membranes and ligaments about the joint.

In the exposed joints, especially in the fingers, the swelling produces a distinct spindle shape, and at first glance may be mistaken for the spindle joint of the atrophic or "rheumatoid" arthritis. At first the swelling is simply a distension of the synovial sac, but unless this is absorbed within a few days the membranes and periarticular structures become infiltrated and the swelling persists, but not from fluid within the joint, but from the swelling of the membranes and the soft structures about the joint. In the healing or organization which follows such a condition, the membranes if left to themselves usually adhere so that the joint motion is restricted either wholly or in part.

The joint lesion in infectious arthritis is, in the majority of cases, of the nature of a toxemia. The organisms are not found in the joint, but the marked hyperemia of the membranes, the rapid increase in the joint fluid, with the general aspect of the case in its onset, clinical course, and its behavior under treatment, all suggest the result of an infection.

At times the organism itself may be present within the joint, and whenever this is the case the symptoms are much more severe, and not infrequently marked destructive changes result. Here, as with practically all of the other features, the extent of the destruction depends upon the organism present. Occasionally, in a given case many of the joints may show the changes, suggesting a toxemia, while in some one or two joints the organism itself may be present producing in those joints the more serious destructive changes, while the other joints in which the symptoms were those of a toxemia recover with less, or entirely without, impairment of the joint function.

The origin of the infection or the point from which the absorption has taken place, is, of course, of considerable importance and at times can be definitely determined and the organism isolated. At other times this is not possible, but it is not, however, unreasonable to consider such cases as infectious, since the pathological appearance of the joints is in keeping with this theory, as well as the entire clinical aspect together with the fact that the cases are in every way similar to those in which the nature of the infection can be definitely proven. The same reasoning is used in many of the ordinary infectious diseases in which the nature of the infection has not as yet been demonstrated.

It is, it seems to me, only in this way that many of the cases can be understood, and when such a theory is once accepted, it serves to connect and to make comprehensible the various opinions which have at times been advanced in connection with rheumatism or the rheumatoid diseases. It explains at once the reports of the finding of organisms in the joints of certain cases of rheumatism, as certain cases of infectious arthritis undoubtedly have organisms in the joint, but as in only a few of the cases is the infection severe enough for them to be present it is easy to understand why the organism is found so infrequently and why in many cases even those who have urged the germ theory most strongly are unable to detect them. It also makes comprehensible the fact that the organisms which have recently been reported by two or three groups of men are distinctly different in their characteristics. It explains the fact that some of the cases of rheumatism are mild and some are severe; that some of the mild cases are of short duration while others last for a much longer period; that some of the severe cases are of much longer duration than others; that some of the cases which are severe may have little elevation of temperature (this being particularly true of the gonococcus infection) while with other cases, really no more severe, the temperature is very high, the so-called "rheumatic fever;" that some of the acute cases become chronic, or do not recover promptly; that with some of the acute cases which become chronic one joint may be troublesome, or the chronic condition may persist in all of the joints; that with some the heart is affected, since the endocardium is not infrequently involved in the general septic processes, but this feature would naturally be expected only when the infection is quite severe. It makes comprehensible, also, the type of disease originally described by Still as simulating rheumatoid arthritis but being more rapid in its onset with glandular enlargement and other evidences of infection and, according to Still, ending fatally, but it also explains why some of the cases of Still's disease are now being reported as going on to complete recovery, the recovery or the general course of the disease depending naturally upon the severity of the infection.

The result of the infection in a given case must necessarily depend upon the organism from which the infectious element is absorbed. If due to the typhoid bacillus, the joint process may consist simply of a toxemia with a slight increase of temperature, with a serous exudate into the joint, and with recovery in a short time leaving no permanent change in the joint function. The same organism may, on the other hand, be present in the joint in pure culture causing severe destructive changes. In the first case, the process, if seen in the spine, would ultimately show nothing abnormal, while in the latter case the evidences of the more serious condition would at once be apparent, with the limitation of the motions and in the extreme cases when there had been bone destruction, a true kyphos.

That which is true of the typhoid bacillus is true also of the other organisms. The pneumococcus, the streptococcus, the staphylococcus, the gonococcus, the influenza bacillus, dysenteric bacillus, etc., may all produce a toxemia with joint changes which would be in keeping with such a condition, or they may be present in a given joint in pure culture, producing more



FIG. 1.— Showing the swollen and distorted fingers of Infectious Arthritis without bone or cartilege change. Case 16.



FIG. 2.— The hand of Fig. 1, showing no atrophy of the joint structures, although all of the joints of the fingers and wrist are stiff. Case 16.



FIG. 3.— Atrophic or Rheumatoid Arthritis, showing the atrophy of both bone and cartilage, with fusion of the carpal bones and actual telescoping at the metacarpo-phalangeal articulations.



FIG. 4.— Hypertrophic or Osteo-arthritis, showing the elongation of both the coranoid and the olecranon processes due to the hypertrophy of the edge of the articular cartilage, without the fusion of the bones. Some motion is present, but is limited by the thickened cartilage.



5.— The result of Infectious Arthritis with suppuration and bone destruction, g the character of the bone thickening. The bones are fused together, causing te anchylosis. Case 7.



FIG. 6.— Infectious Arthritis without suppuration, but with a perfectly stiff shoulder due to the infiltration of the capsule and the consequent obliteration of the joint. There is no bone or cartilage atrophy or hypertrophy. Case 7.

serious lesions. The pneumococcus and the streptococcus, as is true with the typhoid bacillus, may cause marked destructive changes of the bones as well as of the soft parts. The gonococcus, on the other hand, rarely leads to bone changes, but is associated with much thickening of the capsule and interference with joint function. It is possible that a similar condition may result from the tubercle bacillus, but it seems more probable in the tubercular cases that the joint symptoms suggesting "rheumatism" are due to toxines which result from some of the other organisms which are almost always present with the tubercle bacillus (the so-called mixed infection) in the last stage of tuberculosis, the stage when the so-called rheumatic symptoms are most seen. It is also possible, and indeed probable, in the light of recent reports, that organisms have been found or will be found which will explain some of the cases which, up to the present time, have been shown to be undoubtedly infectious, but in which the definite organism could not be found.

The character of the onset with the different organisms varies. With the typhoid bacillus the onset of pain is sudden, but the temperature requires a few days before the maximum is reached, this lasting a few days, after which the decline also is slow, suggesting at once the character of the chart of typhoid fever as it is usually seen. The streptococcus and the pneumococcus usually have a more abrupt onset with the sudden rise of temperature and with a rather rapid fall if the symptoms represent a toxemia, or continuing at the height until drainage is obtained or until the abscess is walled off if the organism is present. With the pneumococcus the joint symptoms may follow the process in the lung or may develop without other signs in the body. With the gonococcus the onset is usually very abrupt, frequently within a few hours, with marked swelling, pain and tenderness, but with only a moderate elevation of temperature. With this organism the condition is rarely grave unless the infection becomes more general (the organism has been found in pure culture in the heart), but means in the severe cases without treatment a long period of suffering with the ultimate loss of function of the joint, due to the changes in the membranes and periarticular structures.

In the differential diagnosis of infectious arthritis from the other types of rheumatoid disease, in case the history, the general appearance of the patient, and the local lesion is not distinct, the x-ray is of the utmost importance. In infectious arthritis the process is a local inflammation; the joint is swollen; the capsule, if the inflammation has lasted for any length of time, is thickened, giving the spindle shaped swellings (Fig. 1) in any exposed joints, with practically no change in the bone or cartilage (Fig. 2) unless the process is of the destructive nature, in which case the mere extent of the destruction would make the recognition of the condition easy.

In atrophic arthritis, with which the condition will be most often confounded, from the very beginning of the disease, atrophy takes place, at first showing in the cartilage between the bones, but ultimately in the bones themselves. (Fig. 3.)

In infectious arthritis, the bones are of normal density; the cartilage is present and of normal thickness (Fig. 6), and although the joints may be ankylosed, the ankylosis is due to the adhesions which have resulted as a part of the inflammation. In atrophic arthritis, the ankylosis, if it takes place, may be due either to adhesions formed from the disintegrated material resulting from the atrophy or there may be actual fusion of the bones together.

In case the infectious arthritis goes on to more destructive changes in the repair there may be new bone formed about the joint and true ankylosis result, but the appearances are entirely different, as shown in the illustrations, from the atrophic or rheumatoid arthritis, and also the hypertrophic or osteo-arthritis with which, because of the marked thickening, the condition in this stage would be most apt to be confounded. In hypertrophic arthritis the thickening is always primarily at the edge of the articular cartilage growing outward from this line as is shown in Fig. 4. The joint motion may be much impaired, but except in the spine and in a few rare instances does complete ankylosis take place. In infectious arthritis the new formation of bone is similar in every way to the new formation of bone which follows a septic periostitis. It is not a thickening of bone at the edge of the cartilage, but thickening of the bone at the point of infection wherever the periosteum is present as is shown in (Fig. 5).

The blood in infectious arthritis in the beginning and during the active stage shows a marked increase of the leucocytes with usually a high percentage of hemoglobin. As the disease progresses and the acute symptoms subside the increase of the leucocytes gradually disappears, and the percentage of hemoglobin becomes less so that in the later stages of the disease a secondary anemia is almost invariably present. In atrophic arthritis the leucocytes are not increased and the secondary anemia does not develop. The extent to which the changes in the blood occur naturally depends upon the severity of the infection, but even in the comparatively mild cases, the increase of the leucocytes is quite marked.

The lymphatic glands in infectious arthritis are almost always somewhat enlarged in the beginning of the process, and this enlargement remains until the toxemia has been overcome, when it gradually and entirely subsides. If any one joint develops symptoms more pronounced than the others or in case suppuration develops, the glands which would be affected by that joint naturally are larger than those in other parts of the body, and at times, in the particularly virulent cases, may go on to suppuration.

The urine of infectious arthritis is not peculiar unless the infectious process be quite profound, in which case the characteristics are

simply those of a septicemia, and what is true of the kidneys is true also of the other organs.

The treatment of infectious arthritis must be considered in two parts, that which pertains to the general condition and that which is required for the local process. It is of the first importance to keep up the general health as much as possible, and for this purpose all the details of general care should be observed, as they would be carried out in a case of septicemia. In the very beginning, if the disease be acute, with much fever, naturally the diet should be restricted, but after this period has passed, the diet should be wholesome and generous, with the idea of increasing the general strength and nutrition as much as possible. In the mild cases with good general care recovery may take place entirely without the aid of drugs, but if drugs are to be used tonics and reconstructives are indicated. In the early stages in many of the cases salicylic acid or some of its compounds will be of distinct help to relieve pain, but in case this drug is to be used it should be borne in mind that in many of the cases it affords no relief whatever, and also that if it is to be of help that the improvement is noticed at once. It should also be borne in mind that although it relieves pain it is a distinct depressant, disturbing both the action of the heart and the digestion, and if continued for any considerable length of time is distinctly harmful, as it lessens the resisting power of the patient. For this reason in case salicylic acid is to be used it should not be continued for more than a few days, after which in the majority of cases it is possible to entirely dispense with it, using instead some of the simple alkalies with at the same time the use of large quantities of water internally.

It is undoubtedly essential that the eliminative functions, both from the kidneys and the bowels, should be kept as near the normal standard as possible. For the former the large quantity of water with the simple alkalies, such as the bicarbonate of soda or potassium, the phosphate of soda or the salts of lithium, are usually sufficient, and any tendency to the increased acidity, due either to the presence of the formic or uric acid, which are a result of the condition and not the cause, is entirely overcome. For the intestinal elimination cathartics should, of course, be used if needed, and frequently olive oil in half ounce doses once or twice daily is helpful to improve or correct this feature. Aside from this the medication should be planned with reference to the infection, and tonics and reconstructives should be used freely with fresh air, stimulating bathing, and any such measures as improve the body tone.

It is probable, in the light of the pathological and clinical nature of the disease, that as the condition represents so probably an infection, that some anti-toxine may be discovered, the use of which will control the disease. At this time observations are being made with the anti-streptococcus serum, but as yet the results of this treatment are too recent to report definitely.

For the local treatment in the active stage there is comparatively little to be done other than to protect the affected joint, and by means of hot applications, either moist or dry, liniments and such remedies, to relieve the discomfort as much as possible. If the process be acute, fixation will undoubtedly give relief, and this can be accomplished by the application of some form of splint, or a pillow folded about the leg and held with straps is oftentimes enough. At times complete fixation is necessary, in which case the plaster of Paris bandage is the most satisfactory. In arranging the position of the joint during this active period, the danger of contractures or dislocations should be borne in mind, and after the inflammation has passed, in case any stiffness or impairment of motion remains, passive motion, manipulation, and massage should be used in order to restore the joint to its normal function as soon as possible. In case the joint lesion represents a toxemia the recovery is rapid, so that within a week or two the acute symptoms have passed and motion should be encouraged. If the infection prove to be of the more serious type in which the organism itself is present in the joint more radical measures are frequently indicated and the joint should be opened and thoroughly irrigated. The infiltration of the capsule seen in this more severe type of the disease and which is responsible for the impairment of motion in many of the cases, particularly those due to the gonorrheal infection, does not take place to any marked degree until after the first three or four weeks. Up to that time the infection and swelling is confined largely to the joint itself. For this reason, if the improvement is not marked at the end of the first three or four weeks, in case only one or two of the joints are involved, they should be opened and thoroughly washed out. The same principle holds in the cases of this nature in which many joints are involved, but as in these cases the virulence of the process is less severe, measures as radical as incision are rarely necessary. In some cases, especially those due to the presence of the pneumococcus or the streptococcus, the symptoms may develop so rapidly and indicate so definitely an active septic process in the joint that there can be no question but that the joint should be opened at once and thoroughly drained, it being frequently possible in this way to prevent the marked destructive changes which otherwise would take place.

In operating the joint should be as thoroughly explored as possible, and in the exposed joints, such as the knee or elbow, the opening should be made on both sides, so that the irrigation may be thorough. In the gonorrheal cases, which are probably those in which the operation is most commonly needed, simply flushing the joint with water at the temperature of 120° F. is sufficient to destroy the organism. With the infections due to other organisms, definite antiseptics will be required and any of them in proper strength may be used. In the gonorrheal cases the wounds should be closed tightly except for one or two strands of silk which are allowed to

remain in the joint for twenty-four or forty-eight hours. After that it is customary for the healing to take place rapidly, and the function of the joint to return almost as rapidly. The marked relief from pain in these gonorrheal cases which follows such an operation is at times very striking. If the organism present is a more active pus producing element, such as the pneumococcus or the streptococcus, the joint should not only be flushed out, but drainage of some sort should be inserted so that repeated irrigations may be possible, and any accumulations of pus which may form, easily escape.

With the pneumococcus infections, if the joint alone is affected, the prognosis is good and healing takes place rapidly after the joint is once thoroughly opened. With the streptococcus the healing is apt to be more delayed, requiring a longer course of treatment, and the end result almost invariably shows some impairment of function of the affected joint. As both of these organisms, and several of the others, if allowed to remain in the joint for any considerable length of time attack the bone as well as the soft parts, naturally the operation should be performed at the earliest possible moment after the diagnosis is made.

In many of the cases of infectious arthritis and even those which are quite mild after the acute swelling and sensitiveness has passed, instead of the joint returning to its normal size and function, some swelling persists and the joint remains sensitive, weak and uncertain for an indefinite period. This condition is due usually to the fact that as a part of the original inflammation the membranes are swollen, and instead of contracting to their normal size as the inflammation subsides, the swelling remains and leads to the formation of folds and fringes, so that a villous arthritis results. It is also true that in certain cases the fibrin in the synovial fluid is precipitated, so that after the swelling goes down these masses of fibrin remain and act within the joint, as a foreign body, producing irritation and symptoms exactly as would any other foreign body. Both of these conditions should be definitely recognized, and if after a reasonable length of time, with stimulating bathing and local tonic treatment, the part does not return to its normal size and function the joint should be opened, and these features removed. This undoubtedly explains the persistence of symptoms in many cases which are at first supposed to be simply acute rheumatism, but in which the symptoms do not entirely disappear, and what is considered as chronic rheumatism develops.

If, as is not infrequent in a considerable number of cases, the patients are seen for the first time after the acute symptoms have passed and after the thickening of the capsule has resulted, and the contractures or the other undesirable features have taken place, an effort should be made to improve the condition. If there are dislocations attempts should be made to reduce them; if contractions, they should be overcome; and every possible effort made to restore the joint to as near as possible its normal condition. In practically any case, no matter how extreme the condition may be, improvement is possible, but, of course, in varying degrees; in some the joints can be made nearly normal; in others the improvement is necessarily less marked, but an attempt should be made in any such case, no matter how severe the crippling may be, to improve the condition of the patient.

During all of this late period of the disease the rheumatic remedies are naturally not of the slightest use and should be carefully avoided, the whole plan of treatment, both internal and external, being to improve the patient's general health as much as possible.

The following cases are reported, as offering suggestive evidence to the conclusions presented above. It is to be understood that they are only suggestive, and do not pretend to offer positive proof:

Case I. Mr. C., a man thirty-five years of age, was seen at the Massachusetts General Hospital, giving the following history: Having previously been well, one week before entrance he started in with what apparently was a hard cold. There was general feeling of malaise with cough and considerable muco-purulent expectoration. The day before entrance several of the joints became swollen and tender, supposed to be rheumatism. One wrist and several of the other joints were involved. The temperature was but little elevated, the glands could be felt all over the body, and the blood count showed over 20,000 leucocytes. Under rest in bed with local warmth to the affected joints, and with salicylic acid the condition entirely cleared up, so far as the pain and swelling was concerned, in four or five days.

The case suggests an influenza or severe cold with a toxemia following in which the joints were involved.

Case II. A child of five years was seen at the Children's Hospital with trouble with the shoulder joint of two weeks' duration. At the time of the first examination the general condition was very poor, and the joint was swollen and reddened. A diagnosis of septic arthritis was made and the joint opened, the pus showing the pure culture of the pneumococcus. The recovery was rapid with a fairly good functional result.

In this case the joint symptoms were due to the pneumococcus which was present in pure culture.

Case III. Mrs. E. D. R. was seen at the Massachusetts General Hospital with Dr. F. C. Shattuck. She had a typical severe attack of lobar pneumonia with pleurisy, with a gradual subsidance of symptoms until two days before she was seen by me. At that time she began to have joint symptoms referred to the knees, left shoulder, hand and elbow and to the right elbow. There was swelling and marked tenderness on motion. The white count was naturally high during the penumonia, but had fallen so that at the onset of the joint symptoms it was 12,200. There was moderate glandular enlargement and a serous exudate into the joints. In a few days with nothing more than good care the joint symptoms subsided and the normal function returned, the condition probably representing a toxemia following the pneumonia.

Case IV. E. E., a physician thirty years of age, was seen by me several years ago in reference to an attack of supposed rheumatism in several of the joints, particularly one knee. The onset had been abrupt and the symptoms in all of the joints but one knee soon disappeared. The swelling and pain in the knee persisted for two or three weeks and then disappeared leaving a normal joint. A few days before the onset of the joint trouble the patient had had a sharp attack of pharyngitis and the culture taken at the time of my first visit showed a pure culture of streptococcus.

The treatment consisted chiefly in tonics, with a splint for the knee, followed by a bandage for a short time after the swelling subsided.

The joint symptoms in this case were of the nature of a toxemia and probably came from the throat where the streptococcus was found in pure culture.

Case V. J. H., a physician thirty years of age, had a sharp attack of dysentery from which there was marked prostration with much septic absorption. During the recovery, after the acute intestinal symptoms had subsided, when the patient was still very weak, symptoms developed very abruptly in one knee, one foot, and one sternoclavicular articulation. The joints were swollen and tender. The joint condition gradually improved under moderate protection during the stage of swelling, with active use as soon as this had subsided. The internal treatment consisted of the use of large quantities of water with tonics and stimulants. The sternoclavicular articulation and the knee recovered in a few weeks under protection but several months elapsed before the sensitiveness about the foot at the attachment of the tendon Achilles disappeared. Several years have now elapsed since the trouble developed, and no further trouble has followed.

The joint symptoms represented undoubtedly a part of a general toxemia, following the dysentery.

Case VI. L. H., a woman forty-five years of age, was admitted to the Massachusetts General Hospital in August, 1903, and was under the care of Dr. J. J. Minot, at whose request she was seen by me.

The patient having previously been well, had had, three weeks before entrance, a sharp attack of pain and swelling in the right knee. One week later the right wrist and the joints of the fingers became red, swollen and painful and a few days later the left hand developed symptoms similar to the right, only less acute.

The condition presented the appearance of an acute articular rheumatism, and with good general care steadily and rapidly improved except the right wrist which remained swollen and gradually grew worse. The redness and swelling increased until suppurative changes were evident, when the joint was opened, thoroughly cleaned out, and drained. After this the healing went on rapidly and steadily. Before the operation there had been a moderate elevation of temperature. The case represents a toxemia with rapid recovery in all but one joint in which the suppurative changes indicated the presence of the organism itself. There was no growth on the ordinary culture media employed in this case.

Case VII. Mrs. H. A., thirty-one years of age. The patient, the wife of a physician, was seen in September, 1902, giving a history of having been perfectly well up to a year and a half before, at which time she had an attack of erysipelas about the head. A short time after her recovery from this, the right shoulder, the left elbow, both knees and the right ankle became swollen and painful. Abscesses formed at the right shoulder, the right ankle and the left elbow, which discharged and rapidly healed. She was kept in bed for seven months and was considered very ill.

At the time of the examination, the left elbow was firmly ankylosed with no swelling or evidence of active joint disease; the right foot was stiff and in the position of valgus; the ankle and shoulder were completely ankylosed, and one knee was quite stiff. The condition undoubtedly represented a profound toxemia probably resulting from the erysipelas, associated with suppurative changes in some of the joints. There had been no extension of the disease and the type, as illustrated in the x-ray, Fig. 5, does not suggest atrophic arthritis or hypertrophic arthritis. In the joints in which the suppuration occurred, there is considerable formation of new bone, not the thickening confined to the edge of the cartilage, as is seen in hypertrophic arthritis, but the general thickening following an inflammatory process in which the periosteum or the general joint structures are involved. In the joints which did not suppurate there is no evidence of cartilage or bone atrophy. (Fig. 6.)

Case VIII. Mr. J. B., twenty-eight years of age. In 1896, patient had an attack of gonorrheal arthritis, both knees, the right shoulder, the toes, the back and one finger being affected. After a few months the condition entirely cleared up except the lumbar spine and the left knee which continued to pain and have remained troublesome ever since. The knee joint has been aspirated several times and he has received much treatment at the various baths, none of which have yielded more than temporary relief. During periods of quiet the swelling and irritation of the joint subside but they are always made worse by active use.

On examination, the joints were normal except the lumbar spine which was quite stiff with some pain on motion, and the left knee which showed considerable thickening of the capsule with such a definite villous arthritis that the fringes could be palpated and readily demonstrated on motion. The condition is undoubtedly one in which for some reason following the toxemia of a gonorrheal process a few joints became more involved than the others. The condition in the affected joint at the present time is not a gonorrheal process, but the result of that infection, the symptoms at the present time being due entirely to the presence of the synovial fringes or villi and the mechanical irritation which their presence represents to motion. Naturally in such a case on any considerable amount of use, the fluid in the joint would increase, and aspiration or such other treatment as has previously been tried would give relief but would not cure the condition. The treatment which offers hope of cure must naturally be the thorough opening of the joint and the removal of the villi which are responsible for the irritation. The patient is awaiting operation.

Case IX. J. L. Q., machinist, aged twenty-five years, admitted to the Massachusetts General Hospital Jan. 6, 1904. About one week before onset of the joint symptoms he had an acute attack of urethritis. The joints first involved were the feet, a few days later the elbows, both knees, back and several finger joints. The shoulders were unaffected. Some of the joints were not swollen at all; several of the others showed periarticular thickening with apparently no increase in the joint fluid. The spindle shaped swelling of the second phalangeal joint in the index finger of the right hand was very noticeable. The glands all over the body were moderately enlarged. During the stay in the hospital the temperature ranged from 99° to 100°; pulse was quickened, reaching 122. Hemoglobin 70°; whites 18,600; urine shows slight trace of albumen with occasional

casts and round cells. The improvement under good, general care was rapid.

The case represents an infectious arthritis of moderate severity following a gonorrheal arthritis, with little to produce permanent changes.

Case X. Mr. A. B., forty years of age, was seen in consultation with Dr. E. C. Boland. Shortly after a definite attack of gonorrhea, he developed symptoms in the left knee. The onset was abrupt; the swelling marked; the suffering very great, with no relief from the rheumatic remedies or from protection of the joint which was kept up for four weeks. Large doses of morphia were necessary to control the pain. After waiting four weeks without improvement the joint was opened and irrigated with water at the temperature of 120°; the wound closed, except for a strand of silk and sterilized dressings applied.

The pain was at once relieved by the operation and motion was possible within a few days, and function gradually and steadily improved.

The examination in this case of the fluid confirmed the diagnosis of gonorrheal arthritis.

Case XI. V. Y., a man forty-five years of age, was seen with Dr. H. F. Vickery at the Massachusetts General Hospital with what appeared at first to be an ordinary but severe case of acute rheumatism. The onset of joint symptoms and the early history was not noted so that the nature of the early infection is not known. The patient seemed quite sick with a moderate elevation of temperature, with a rapid pulse, and with the general enlargement of the glands, besides the swelling and pain in most of the large joints. With good general care the excess of the joint fluid was gradually absorbed leaving the periarticular structures considerably infiltrated. The patient's general condition did not improve and later on symptoms of valvular disease of the heart developed, which increased in severity and death followed in a few days. The pathologist's report was that death was due to a "septic endocarditis."

The case represents a profound toxemia with a final lesion involving the heart.

Case XII. Miss I. M. P., twenty-nine years of age. Patient entered the Massachusetts General Hospital in the service of Dr. James J. Minot in June, 1903. Three months previous she had an attack of typhoid fever, and three weeks after the onset of the disease severe pain developed in the back, relieved only by morphia. This continued for three weeks and then largely disappeared, and the patient was able to be about until five days ago when the pain in the back recurred with such severity that the patient was put to bed. For a week her temperature ranged about 101° and after that gradually fell to normal and remained there during the balance of her stay in the hospital.

At the time of the examination the motions of the lumbar and low dorsal vertebræ were much restricted with marked tenderness over the spinous processes in the region of the upper two or three lumbar vertebræ. All motion of the spine was so painful at this time that it was with difficulty that a thorough examination was made. The heart and lungs were negative; the urine was normal; the hemoglobin was 70%; there were 10,600 whites in the blood count and the widal reaction was positive.

At that time a diagnosis of typhoid spine was made and a plaster of Paris jacket applied to immobilize the spine until the active inflammation subsided. The patient was kept in bed with the jacket on for about a month. During the first part of the use of the jacket the pain continued, the only benefit from the support being the greater ease in moving from side to side. After that the pain gradually disappeared and a leather jacket was substituted for the plaster one. The patient then left the hospital with the understanding that the leather jacket was to be gradually discontinued. The spinal motions at that time were distinctly limited in the region of the inflammation, and undoubtedly much of this will be permanent.

The spinal process represented undoubtedly a definite infection due to the typhoid bacillus with enough inflammatory change and thickening to cause permanent thickening and thus limit the spinal motions. In the simple toxemias which undoubtedly do at times affect the spine the relief from the pain would probably have followed the application of the jacket, while in the case reported with the organism itself probably present, in spite of the fixation, the pain persisted, as is usual in such infections until the temperature disappeared and the evidences of the active life of the organism had passed.

Case XIII. Pauline W., ten years of age, seen in January, 1903, in consultation with Dr. T. M. Rotch, had the following history: Until four years ago the child had been so unusually well as to be considered a model of health by the people of the neighborhood. At that time the child had some trouble with a tooth which was followed by acute disease of the cervical glands. Shortly after this she began to have trouble with the feet so that it was difficult to pull on her boots. With this there was some lameness, and a short time afterward the neck became suddenly sensitive and the head was drawn to the right. Soon after the knees and then the hands and wrists became swollen. All the joints which are now involved or which have been involved became so during the first six months. Under the supposition that the condition was rheumatism the patient was treated with the ordinary rheumatic remedies, was taken to the Hot Springs in Virginia for some time without benefit and under the various forms of anti-rheumatic treatment she ran down in health steadily.

At the time of the examination the tarsal and ankle joints were swollen and boggy but the motion was not much affected; both knees were swollen, and also the wrists with but little restriction of motion; the cervical spine was stiff with very little apparent swelling and the inguinal, axillary and cervical glands were moderately enlarged. The x-rays taken at that time showed no atrophy of the bone or cartilage, the joint swelling being due apparently to the infiltration and relaxation of the membranes. The child was put upon a course of general stimulating tonic treatment, and the father, who is a physician, reported three months later that she was much better and was continuing to follow the same general directions.

This case represents quite typically the disease described by Still, except that it was of a milder type than the cases reported by him. From the most careful study of the disease it suggests an infectious process, the infection most probably having been absorbed from the abscess about the tooth. Unlike the atrophic form of arthritis the disease has not progressed since that time, nor has the swelling of the individual joints subsided and gone on to ultimate atrophy. At present the swelling of the various joints is undoubtedly due to the hyperemia of the mem-

branes and the villous arthritic change which results from this. In case the general stimulating and tonic treatment does not effect a material improvement in the condition, an operation with the idea of removing the villi which represent the mechanical irritation to the joints must be considered.

Case XIV. Miss E. M. S., a patient of Dr. W. W. Pillsbury, having previously been well and with a good family history, in March, 1903, met with a slight injury to the left knee. This was followed by a synovitis, and shortly afterward pain developed in the joint so that motions were restricted, and gradually during the next four or five months the process extended from joint to joint until at the present time practically all of the joints in the body are affected. In the individual joint there is comparatively little increase in the joint fluid but much infiltration of the membranes and periarticular structures, giving in the exposed joints a marked spindle shaped appearance. All during the developmental stage of the disease there has been a slight increase of temperature, from one to two degrees, and the pulse has been much accelerated, from 120 to 130 most of the time. The glands throughout the body are much enlarged. While at first there was comparatively little abnormal in the character of the blood, a profound anemia has developed.

The case suggests in all its appearances a typical chronic rheumatism, undoubtedly resulting from some organism, the exact nature of which we do not at the present time know. It seems probable that it is in such a case that the organisms which have been recently recognized in cases of rheumatism will be found to represent the causative factor.

Case XV. Mr. R. W., twenty-one years of age. Four years previous to the time of the examination in July, 1903, the patient had an attack of pneumonia which was followed by an empyemia, for which a radical operation was discussed, but which for some reason was not performed. The convalescence from this condition occupied a long time and in that time pain developed in one hip. Shortly afterward the other hip, both knees, one ankle, shoulder, elbow and jaw became affected. Two years later the patient had scarlet fever, following which all of the symptoms were worse. The condition at first was considered an acute articular rheumatism which has gradually gone on to a chronic condition.

At the time of the examination many of the joints were involved as stated. The spine was stiff, both hips allowed only a slight amount of motion, the knees were flexed with considerable stiffness, the right ankle was swollen and stiff, the jaw was practically ankylosed and the left shoulder could be moved but little. The other joints were practically free. None of the joints showed any changes of atrophy and there had been no progression or extension of the disease since the original trouble began. The patient presents the typical appearance of chronic rheumatism and in the light of similar cases probably represents a toxemia following upon the pneumonia and the empyemia, the organism probably responsible for the infection being the streptococcus. A pneumococcus toxemia does not as a rule last so long, and for the organism to have been present itself would have undoubtedly been followed by suppuration in some of the joints.

The treatment with this patient, as the active disease was over when he was first seen, has consisted of regular manipulation of the joints, tonics to improve the general nutrition, and has been followed by considerable improvement in the function of the affected parts.

Case XVI. Mr. F. R., twenty-one years of age, having previously been well, two years ago developed suddenly an attack of what was called rheumatism, confined at first to the right knee. The joint was red, hot and considerably swollen. In three months the other knee became involved, then gradually the neck, elbows, feet, hips and shoulders. Each joint behaved in the same way, showing swelling with much sensitiveness which gradually subsided leaving in almost each instance some restriction of motion. At the time of the examination the cervical spine was stiff, the motions in the left shoulder restricted about one half. The left elbow, which had been more seriously affected than the other joints, was completely ankylosed. Both knees were flexed to about 45°; the wrists were stiff, and the fingers of both hands were flexed and distorted (Figs. 1 and 2); the feet were quite flat and the right one stiff at the ankle. The case represented undoubtedly the so-called chronic rheumatism, and at the time of the first examination there was very little evidence of active disease. The glands, however, were still somewhat enlarged; there was practically no elevation of temperature, but the anemia was quite marked.

For treatment the patient has had regular and repeated manipulations of the various joints with the idea of improving their function as much as possible. He is, at the present time, able to walk about with his legs straight; the hands are used more perfectly, and in all the joints there has been some improvement. The degree of helplessness as the result of treatment has been materially lessened.

Case XVII. Mrs. B., thirty-five years of age. Two years previous to the time of her first being seen the patient had a severe attack of what was called articular rheumatism, many of the joints being swollen and acutely painful, the right hip being especially involved. The symptoms of acute suffering lasted for several weeks, during which period the patient was kept upon her back, the leg raised and supported upon pillows with considerable adduction. This position was maintained throughout the period of active inflammation, and after the acute symptoms had passed and the patient began to get about it was found that the right hip was dislocated, the dislocation having undoubtedly resulted from the distension of the joint during the inflammation together with the position of flexion and adduction which would make dislocation easy.

There was at the time of the examination no apparent destruction of bone, and accordingly the leg was manipulated under ether, and with comparatively little difficulty the head of the femur put back into place. The position was maintained with fixed dressing for a few weeks, after which motion and weight bearing were allowed. The bones remained in the proper position and the function of the part improved so that except for some limitation of motion in the extremes there was little to show for the previous condition.

This case illustrates a result which may follow a comparatively simple inflammatory process unless the position of the part is carefully considered.

Case XVIII. Mr. A. O., a young man twenty-two years of age, was seen in July, 1903, in consultation with Dr. J. J. Whoriskey. Having previously been well, he developed following the wearing of an imperfectly fitted shoe a blister upon the heel, which was

followed by a small pustule at that point. Twenty-four hours later symptoms of acute infection developed, with high temperature, rapid pulse and glandular enlargement. The pustule was promptly opened with temporary relief, but one parotid gland became infected and went on to suppuration. One or two other points of infection developed, and finally a few weeks after the first onset of the disease the left hip became acutely sensitive. From the beginning of the infection the patient was very seriously ill, and with the development of the symptoms in the hip the condition was so grave that a rapid incision was made into the joint for drainage as an operation of last resort. The hip joint was filled with pus, as had been all the other parts in which the infection had manifested itself. Under gradual, stimulating tonic treatment, with protection of the joint, and with such treatment as would tend to lessen the suppuration in these parts, the patient gradually recovered with a moderate restoration of function in the affected part.

The case represents an infectious process starting in the subcutaneous tissue, followed by joint suppuration, the specific organism not being determined as the culture was lost. In such a case, it is, of course, impossible to expect normal recovery because of the amount of destruction of tissue which has taken place.

## SOME POINTS ON THE DIAGNOSIS AND TREATMENT OF CERTAIN NEGLECTED MINOR SURGICAL LESIONS.[1]

BY E. A. CODMAN, M.D., BOSTON.

The subject on which I have chosen to speak to you is not remarkable for its brilliancy, as you may guess by the title. I think that we may justly criticise ourselves as surgeons, for our tendency to pay too much attention to the cases on which we may obtain brilliant and striking results, rather than to endeavor to do our best for every surgical case which is presented to us. In the cases which I shall describe, as a rule, the results are not very good and even when intelligently treated, the patients are apt to think that doctor so and so made some error because the limb is not more useful. The material which I have used for this paper I have obtained mainly from my service in the Surgical Out-Patient Department of the Massachusetts General Hospital. In my work there, the cases in which I am not able to make a satisfactory diagnosis are always more interesting to me than those in which the diagnosis is clear and the treatment sharply indicated.

Among the lesions which have been most troublesome, are certain unrecognized fractures which we have only lately learned to distinguish from sprains. It used to be said that a sprain was worse than a break, but from my experience of the last four or five years, I feel quite certain that the majority of sprains which do not promptly recover are in reality breaks. Among the most common of these unrecognized fractures is that of the scaphoid bone of the wrist. The history of the following case is quite typical:

H. S. F., aged twenty, injured his wrist in playing football at Cambridge. He was seen by the surgeon of the football squad and the wrist was put in splints for several days. The swelling and tenderness subsided to a certain extent. No crepitus was obtained, no ecchymosis, and the patient could use his fingers and wrist a certain amount. There was no abnormal mobility. In football practice it is found that a sprain does better if the use of the limb is kept up, and this wrist was treated on this principle. While there was some improvement, the joint still remained sore, forced motions beyond a slight angle were very painful and the gain in strength was slow. About six weeks after the original injury the patient consulted me at my office. I made a diagnosis of fracture of the scaphoid and confirmed it by an x-ray. Feeling that it was too late to endeavor to obtain union between the fractured ends of the bone, I only kept the wrist on splints for about two weeks and then had it massaged. The rest on the splints improved the joint to a considerable extent but it still remained somewhat swollen and gave pain if extreme motions were forced. The young man was prevented from doing any sort of athletics with the wrist, he could not play football, and frequently found that he hurt it in scrapping with the other fellows. This condition has lasted over two years with a very gradual gain, so that even now the wrist cannot be extended beyond an angle of 25° without giving extreme pain; flexion is less painful, but in the extreme position almost as bad as in extension. There is marked tenderness over the scaphoid bone which is best obtained by adducting the wrist and pressing with the thumb just in front of the styloid process of the radius in the anatomical muff box.

This history is typical of fracture of the scaphoid and while at first I found the x-ray a necessity in making the diagnosis of this fracture, I can now in a large proportion of cases diagnose it from the clinical side alone. With the assistance of Dr. H. M. Chase, I have collected about 15 cases which have been at the Massachusetts General Hospital and obtained their detailed histories. We hope to publish these cases soon. In addition to these there are perhaps twenty-five more of whom we have x-ray plates, but whose clinical histories we have not been able to obtain.

Prof. Dwight has offered the suggestion that these fractures are perhaps due to a congenital condition of the scaphoid bone which is characterized by the forming of two centers of ossification instead of one, so that a lamina of cartilage is left between the two halves of the bone and that it is through this weakened area that the fracture takes place. Be this as it may, fracture does take place and in my opinion the assumption that such a weakened portion of the bone exists is entirely a theoretical one. To sum up the diagnosis of fracture of the scaphoid: There is no deformity, no ecchymosis, no crepitus, no abnormal mobility — in other words the classical signs of fracture are absent. What we do have is localized swelling and tenderness in the region of the scaphoid bone, *i. e.*, in the radial half of the wrist joint; limitation of active joint motion and sharp pain called forth by efforts at

[1] This paper was prepared to be read at a meeting of the Worcester District Medical Society on March 9, 1904. A number of anatomical preparations on the bursæ about the wrist, shoulder and ankle were demonstrated, and lantern slides illustrating this paper were shown. Owing to lack of time, the formal reading of the paper was omitted.

forced passive motion. The joint protects itself from such efforts at forced flexion or extension by muscular spasm, which is particularly evident in extension. The diagnosis should be confirmed by the x-ray, the best position in which to take the x-ray being an antero-posterior view in adduction. As I have said the above history is very characteristic of this fracture and the reason for the continued impairment of the wrist is that the bone being in such delicate relation with the other bones any deformity of it prevents the other bones from going through their normal arcs of motion.

In most of the cases as shown by the x-ray, union does not take place and in those in which it does take place, the bony callous is so large as to destroy the accurate contour of the bone, which is necessary to secure a perfect mechanical action of the joint. In some cases, though, the displacement of the fragments has been very little and a union has at length taken place. These cases are as a rule, more comfortable than those in which union has not taken place or a large callous has formed. The treatment indicated, therefore, would be to prevent motion of the joint while there is still a hope of the fragments uniting. In other words, if we treat the case as a sprain and continue active and passive movements of the joint, the union will be prevented; we must, therefore, keep the joint in a fixed position for at least three weeks in order to obtain union. It is impossible for me to tell just how long such fractures should be kept fixed, but I am inclined to think that three weeks is a fair amount. If this has not been done immediately after the injury, I doubt if union can be obtained for the fracture is on both sides open into the wrist joint, the inter-space is filled with synovial fluid, and the adjoining synovial membrane, I am inclined to think, spreads over the raw edges of the bone and a false joint is formed.

As to the treatment of the condition when union has not taken place and a considerable period of time has elapsed, although I have never done it, I should advise excision of the proximal half of the bone. In two cases of compound dislocation of the wrist where this bone was also broken, one-half of it was excised, in one case by one of the house officers, in the other by Dr. Greenough. Both these cases have now fairly good wrists in spite of the great severity of the original lesion. I am inclined to think that if the proximal half of this bone were absent, the permanent condition of the wrist would be better than if the bone remained un-united, in which case one half of the bone constitutes practically a foreign body. I should, of course, not advise this operation unless the condition of the wrist was so troublesome as to interfere with the occupation of the individual.

Another injury of the wrist which should be spoken of in this connection is dislocation of the semilunar bone. This often occurs with fracture of the scaphoid, although in two cases I have seen it the only lesion. One of these I was able to reduce by manipulation without open incision. In the other case I was obliged to make an anterior incision and with the aid of a tenaculum easily reduced the bone. The result in both the cases has been very nearly perfect.

The method of reduction of the semilunar bone is to forcibly extend the wrist; an assistant then makes pressure with his two thumbs over the flexor tendons of the wrist on the semilunar bone, while the surgeon with the assistant's thumbs still in position, flexes the wrist completely. The os magnum slips over the posterior horn of the semilunar and the latter pops into its position on the radius.

Another lesion which must be considered in the diagnosis of fracture of the scaphoid, is early tuberculosis of the wrist joint. This condition is sometimes found confined to the region of the scaphoid so that the swelling, tenderness and spasm, closely resemble the condition in fracture. In the diagnosis, the absence of history of injury, the slow onset, the extreme grade of spasm of the muscles and local temperature, are important aids. The x-ray by showing the focus of bone destruction from the disease is the decisive test. By the kindness of Dr. J. G. Mumford I am able to show you an x-ray of such a case in which the focus was successfully excised.

Rheumatoid and osteoid arthritis may also be confusing although in both, other joints are apt to be implicated in the disease. The former is characterized in the x-ray by the absorption of cartilage so that the bones approach each other very closely. The latter shows the characteristic enlargement of the articular margins typical of osteoid arthritis.

I have never known syphilis to affect the wrist joint except in one case of Charcot's disease. In this case the great mobility and anesthesia characteristic of a Charcot's joint left little doubt of the diagnosis, although the deformity was characteristic of a Colles fracture.

Another lesion in this region which should be considered, is teno-synovitis of the tendons of the thumb and long extensors of the wrist. You may or may not recall from your study of anatomy that the bursæ surrounding the tendons of the extensor ossis metacarpi pollicis and extensor primi internodii pollicis communicate with one another and that the bursæ of the extensor secundi internodii pollicis and those of the extensor carpi radialis longior and brevior have a common sheath. Teno-synovitis of these bursæ is very common and is characterized by the anatomical location of the swelling and the well known tendon crepitus. These bursæ overlie the scaphoid bone and swelling and inflammation of them is quite confusing.

Another point which is not generally known (and I have never seen it mentioned in the books) is that in fracture of the lower end of the radius, as in Colles' fracture, and the various fissures which occur through the lower end of the radius, bleeding is apt to take place into the common bursa of the radial extensors. When I see this bursa enlarged and fluctuant after an injury to the wrist, I feel almost certain that a fracture of

the lower end of the radius exists even if no displacement of the bone is seen and no other deformity is present. This is generally borne out by the x-ray.

Another region which is interesting from an anatomical standpoint in diagnosis is the shoulder joint. No surgeon can practice long without seeing certain puzzling cases of lesions in this region which defy his diagnosis and treatment. Unrecognized fractures are not uncommon in this vicinity, especially in the greater and lesser tuberosities. Cases which show neither crepitus, abnormal mobility nor deformity may prove to be fractures of the facets of insertion of the short rotators of the humerus. The x-ray is particularly useful in indicating fractures of the greater tuberosities which appear like laminæ torn from the head of the bone. Unfortunately the fracture of the lesser tuberosity is apt to oe unrecognized in the x-ray because the facets pulled off by the subscapularis fall in the shadow of the rest of the oone. The same is true of the supra and infra-spinatus. Some weeks after the injury the fossæ of the supra and infra-spinatus show great atrophy, due to the inability of these muscles to perform their functions. This may occur in other conditions, however. The importance in treatment of recognizing these lesions early, is so that the shoulder can be immooilized for a continued period in order to allow the facets of bone torn away by the muscles to form new attachments. As in the wrist, if motion is allowed, it is unlikely that we will get union. I am sorry to say that it is unlikely even with treatment, and such cases usually fall into the class which we call peri-arthritis for want of a better term.

We all know how often the shoulder remains crippled for life and the patient complains that he is unable to get his hand to the back of his head. This term, peri-arthritis, is a sort of surgical waste basket in which we throw our diagnostic failures. We manage to keep our self-respect by telling the patient that rheumatism has set in or that he has a gouty joint, but I believe that such lesions, when we know more about them, will be separated into more distinct anatomical entities. In the diagnosis of such lesions we must not forget a simple impacted fracture of the shoulder joint. It is extraordinary how little displacement such fractures present.

We are apt to depend in our diagnosis of fracture on the presence of abnormal mobility, crepitus or deformity. Personally, I think that local tenderness and ecchymosis are of as great importance. The more I see of fractures about the shoulder joint, ankle joint or wrist, the oftener do I find that where ecchymosis is present, there is bleeding from a broken bone. In speaking of ecchymosis, I refer to the discoloration which takes place in adjoining parts which were not directly subjected to the forces causing the injury. In the instances of fractures about the shoulder joint the bleeding may travel under the fascia and appear on the inner and posterior surfaces of the arm just above the elbow. In the ankle such hemorrhages appear just above the sole on either the outer or inner side of the oscalsis. When ecchymosis is present in these situations, I seldom fail to find fracture of some bone, and if I do fail to find it, I regard it as more than likely to be present in spite of my efforts. As in the neighborhood of the wrist joint, so in the shoulder joint, we may confuse fracture with teno-synovitis of the bursæ.

About the shoulder we find numerous bursæ, the most constant of which are: the deltoid or subacromial lying just under the fibers of the deltoid muscle and extending between the acromion process and the capsule of the joint; the trapezoid, lying over the little triangular area at the posterior end of the spine of the scapula; and the coracoid, lying under the tip of the coracoid process and between the tendons of the coraco-brachialis and the supscapularis. The diagnosis of inflammation of these bursæ is not difficult if their anatomical situation is borne in mind. In raising the arm over the head, the first third of the motion may be accomplished by the rolling of the head of the humerus on the glenoid cavity but to move beyond this if the scapula be fixed, the great tuberosity and the capsule of the joint must also roll under the acromion process. This would bring into play the two surfaces of the acromial bursa which, if inflamed, gives great pain and causes the muscles about the joint to fix the humerus at this point, and the remaining arc of motion is carried by the movements of the scapula on the thorax. Hence to make a diagnosis of deltoid bursitis, the scapula should be held by an assistant and the arm moved upwards by the examiner. Somewhat less than one third of the motion can be made without causing pain, but effort beyond this will cause great pain referred to the region of the acromion process. Often there is tenderness at a joint just below the tip of the acromion extending backward and forward along the edge of the process. Where the bursa is filled with serous effusion the contour of the shoulder may be rounder than on the other side. Inflammation of the coracoid bursa is characterized by local tenderness just below the tip of the coracoid process and pain on muscular efforts which call into play the coraco-brachialis; for instance, if the patient with extended arms tries to press his palms together in front of his chest. I have several times seen this lesion in truck drivers who had pulling horses. The trapezoid bursa is particularly apt to be inflamed where for some reason there is fixation of the shoulder joint from disease or injury. In this case the scapula is obliged to take part in all the motions of the arm, and the bursa between the trapezoid and posterior edge of the scapula does more than its normal share of work. There is not infrequently a crackling fremitus when the two surfaces of these bursæ roll over one another. This crackling we are all familiar with in the pretapella bursa, although I find that most surgeons imagine that this crackling is inside the joint.

The treatment of these bursæ is the same as in inflamed serous cavities in other portions of the body, *i. e.*, mechanical rest and counter-irritation. The form of work which has produced the inflammation must be stopped, and the motions of the joint which call the bursæ into play must be restricted. A very effective form of treatment of the mild cases of the shoulder joint I have found to be the simple pinning of the coat sleeve to the coat. This allows a certain amount of rotation in the joint cavity, the free use of the forearm, but restricts the motions of the upper arm. As a counter-irritant, it has seemed to me that I have often seen benefit from using a light stroke of the actual cautery. Some of my colleagues are very enthusiastic about the high frequency electric current. It certainly is helpful in ruling out neurasthenics and malingerers.

Another region of the body which is interesting in the diagnosis of obscure lesions is the ankle joint. We have learned lately to detect fractures in this region too, in which the old signs failed, and which used to be called sprains. One of these, which is not at all uncommon, is impacted fracture of the oscalsis.

The salient points for diagnosis in this lesion are: (1) The history of a fall on the feet or heels. (2) Tenderness over the oscalsis. (3) Ecchymosis just above the sole on both sides of the foot. (4) Shortening of the distances between the malleoli and the floor as compared to the other foot. (5) No crepitus, abnormal mobility or obvious deformity. This fracture is very common, particularly in working-men, and the ultimate result sometimes leads to considerable incapacity. The direct result is flat foot, the impairment of the motion of the joint through formation of bony callous and the alteration of the lines of weight bearing on the bony and ligamentous structure of the foot. I have never seen one of these cases as a late result, who did not complain of some soreness in his foot on unusual exertions, such as extreme flexion of the ankle, walking on rough ground, long standing, etc. The treatment in these cases should be directed to preventing the patient from walking on his feet before bony union has taken place. This has the double result of preventing a further impaction of the bone causing shortening of the distance of the malleoli from the floor and of lessening the degree of permanent callous, which in any fracture is greater if it is continually disturbed while healing. When the acute symptoms have subsided, and the patient commences to walk, he should wear a flat foot plate to prevent increasing pronation of the foot.

Perhaps the commonest fracture about the ankle which is overlooked, is oblique fissure of the external malleolus. In this, also, we fail to find crepitus, abnormal mobility and deformity, we rely for our diagnosis on local tenderness, ecchymosis and the x-ray. This fracture is the badly sprained ankle, which we used to see before the x-ray. The line of fracture takes place just above and through the external malleolus from behind, forwards, downwards and inwards. What little displacement there is, is a tilting or rotation of the lower fragment which produces a slight irregularity on the posterior surface of the fibula at the point where the upper edge of the lower fragment is located; tenderness at this point is usually acute, and by careful palpation, the tenderness will be found to follow the line of the fracture downwards and forwards. The ecchymosis takes the form of a bloody sac which falls over the tip of the external malleolus and spreads along the outer side of the foot. The ecchymosis has almost a characteristic shape, so that I am inclined to think it is due to the filling with blood of the peroneal bursa which lies just behind the external melleolus. As in the radial bursa the base is directly on the bone and must be torn by a fracture.

At first I was always in doubt about these cases and relied wholly on the x-ray to detect them, but now-a-days I am able to recognize them at a glance, and while I always have the x-ray taken, I am seldom mistaken in the character and position of the lesion from my "snap diagnosis." This fracture should be treated as a fracture, not as a sprain. As in the other forms which I have spoken of, the rule that callous increases if the fracture is continually moved, is true in these cases too, and patients who have had this insignificant fracture, and have been treated for sprain in the ankle, will often tell you that it is of considerable annoyance when it has been used more than a moderate amount, even years after the injury.

There are in the ankle other fractures which the x-ray has taught us to recognize which are important from a point of view of prognosis and treatment and which I should be glad to dwell on at length, if time permitted. Among these I may mention the fracture of the posterior facets of the astragalus, of the facets of insertion of the lateral ligaments of the ankle joint, etc.

In making these fragmentary remarks I have confined myself to the wrist, shoulder and ankle; but let me say that the same general principles apply to the other joints too. You will be astonished to find how often the presence of ecchymosis and accurately localized tenderness are proofs of fracture where no crepitus, deformity or abnormal mobility can be obtained. You will also be astonished to find how a little brushing up of your knowledge of the anatomy of the bursæ will help you in your clinical diagnoses. "House-maid's knee" and "weavers' bottom" are not the only ones.

## RADICAL CURE OF INGUINAL HERNIA.

BY JOHN O'CONOR, M.A., M.D.,

*Senior Medical Officer, British Hospital, Buenos Aires, S. A.*

I wish to invite the attention of my American colleagues to a method which I have recently practiced in 50 cases with very satisfactory results.

A four-inch incision is made over the line of the inguinal canal. The sac is thoroughly isolated from cord, opened, and its interior carefully in-

spected, and palpated right into abdomen. Any intestinal or omental adhesions which may be present are separated and occasionally it is necessary to excise some omentum before the contents of sac can be returned into abdominal cavity.

An assistant next draws the sac downwards by a forceps applied to its distal extremity and retaining my left index finger within sac nigh to internal ring in order to prevent intestine or omentum getting caught, I transfix and ligate sac with fine silk, then divide it about half an inch below ligature; the stump recedes into abdomen, and the distal portion is removed.

The conjoined tendon and Gimbernat's ligament are next differentiated from surrounding structures, and with left index finger introduced into canal as a guide four "strong" fishing gut sutures are passed from within outwards by means of a full curved hernia needle, about one-third of an inch apart, through the projecting ledge of Gimbernat and external oblique, the ends of sutures are retained outside external oblique and the needle withdrawn.

The free ends are next threaded on a hernia needle with an opposite curve and are carried upwards from within outwards into substance of, and through conjoined tendon. The ends of these sutures are similarly retained outside sheath of tendon, and the needle withdrawn.

A straight Reverdin needle, or sinus forceps, is next entered through each suture hole in tendon, passed across just beneath aponeurosis and made to emerge at corresponding suture hole in external oblique, the end of this part of suture is caught in needle or forceps, drawn across and out through suture hole in conjoined tendon, thus both ends of each suture emerge from the same aperture in tendon, and form a most efficient submuscular stitch, excepting the fourth or lowest suture which is only partially submuscular in that it crosses in front of external ring. These sutures are tied with sufficient force so as to approximate the tendon and Gimbernat, care being taken on adjustment of lower suture so as not to unduly compress the cord. I generally allow enough room for the insertion of my little finger.

The ends of sutures are snipped off and the knots retreat into substance of tendon and each little stitch aperture in sheath of latter is closed by a fine catgut suture.

The operation which takes from ten to fifteen minutes to perform is concluded by uniting the skin wound with a continuous blanket suture.

The advantages which I claim for this method are, (*a*) its simplicity; (*b*) the two strongest and most suitable structures in the inguinal region for effective barrier formation are utilized; (*c*) there being no interference with the position or structure of cord, orchitis, with subsequent atrophy of the testis, does not supervene; (*d*) there is no splitting up of structures which experience shows are never anatomically replaced, not to mention the fact that all cicatricial barriers tend to weaken in time.

To any surgeon wishing to put this method to the test might I suggest, to perform it on a cadaver and then make an inspection from inside abdomen.

In conclusion I wish to mention that full use must be made of the left index finger introduced into inguinal canal during the application of the sutures, which not only protects the structure of cord, but differentiates the projecting ledge of Gimbernat, and so obviates the danger of injuring the external iliac vessels.

In my 50 cases no accident occurred, no orchitis supervened, and only in one instance did sepsis take place, which promptly ceased on opening up lower angle of wound. The silkworm gut sutures being buried in the substance of conjoined tendon, and covered over by sheath, are practically out of the range of contamination.

Iodoform gauze dressing is applied, the skin suture is removed on seventh day and the patient allowed out of bed on the fourteenth day.

## Clinical Department.

### A CASE OF OVARIAN TUMOR WITH TWISTED PEDICLE. THREE REDUCTIONS WITHOUT OPERATION. OPERATION; RECOVERY.

BY CHARLES ALLEN PORTER, M.D., BOSTON,
*Assistant Visiting Surgeon to the Massachusetts General Hospital,*
AND WILLIAM CARTER QUINBY, M.D., BOSTON.

With Dr. Herman Baldwin, of Chestnut Hill, on Jan. 11, 1904, the following case of ovarian tumor, with twisted pedicle, was seen, which, owing to a definite history of reduction by manipulation, previous to operation, is of sufficient interest to report.

A. P., age thirty-five, had a healthy child in May, 1900. A year ago, she complained of bearing-down sensations in the pelvis, and discomfort in this region on lifting the baby, and on pushing the baby carriage uphill. She had gynecological treatment by tampons, but was not informed of the condition found. Her last treatment was in October, 1902. Since then, she has been well, except for occasional pains in the back, until her present illness.

On Dec. 22, 1903, after eating some bad steak, she was taken sick in the night, and vomited violently all day. On Dec. 23, after an especially severe attack of vomiting, she was seized with a sudden, sharp pain in the right iliac region. She states that she saw and felt a lump there, the size of a small orange, which after massage and manipulation, disappeared. The pain ceased immediately. She vomited daily in the morning, but was up and about, and free from pain until Jan. 5. On this day, after carrying the baby upstairs, she had another attack of severe pain, similar to that on Dec. 23. On Jan. 4, the catamenia began, with more flowing than usual, and severe backache.

On the morning of Jan. 5, she was found crying and groaning, evidently in great pain. Temperature was normal, pulse 68, abdomen lax, not distended, tender in the right iliac region, but without muscular spasm. Examination was unsatisfactory, owing to the patient's rather hysterical condition. At the end of an hour, the pain suddenly ceased, the patient said that she was well, refused further examination, and wished to get up. Occasional vomiting was still present. Bowels

moved normally, no distention, no fever. Although at work, she did not feel well.

On Jan. 11, in the morning, she had another sudden attack of pain, similar to the other two. Flowing was still present, although usually it lasted only three days. Temperature 97.8, pulse 66, vomiting about every fifteen minutes, with continuous pain. At four in the afternoon, after another attempt at palpation of the abdomen, the pain suddenly disappeared.

When seen with Dr. Baldwin on the afternoon of Jan. 11, about five o'clock, she had no fever, pulse was 72, and she was apparently free from pain. There was no distention. The abdomen was soft, with considerable fat between the umbilicus and pubis. No tenderness in the epigastrium. She did not appear sick. On careful examination, a globular tumor could be felt in the hypogastrium, which slipped readily from side to side. The tumor was about the size of a large grape fruit, irregular in contour, elastic, not tender to pressure. It could be pushed to the left for several inches, when further pressure caused a sensation of tension and pain in the right iliac fossa. It could also be pushed upward, so that it occupied the right hypochondriac region. Attempts to push it further were again resisted by an apparent attachment in the right iliac fossa, and caused pain and tenderness in that region. When the tumor was pushed into the right iliac fossa, no pain was caused. On making deep pressure on the inner side of the right pelvic brim, there was slight tenderness. On coughing, there was no evidence of a hernia in either the femoral or inguinal canals. The right kidney was not palpable, and the tumor could not be pushed below the ribs. No blood count was made, nor was a vaginal examination proposed, owing to the flowing.

In view of the vomiting, apparently of a reflex nature, the absence of constipation or distention, and the presence of a tumor, movable to a certain degree, as if attached on the right iliac fossa; also in view of the absence of fever, tenderness or spasm suggesting appendicitis, the diagnosis of an ovarian cyst, the pedicle of which had become twisted, causing these three attacks of pain, seemed assured. That in one instance, the abdominal manipulation had righted the twist, did not seem improbable, in a tumor of such marked motility. The other two reductions were apparently more spontaneous. The tenderness at the point of origin of the pedicle, which was most probably the right broad ligament, appeared to indicate where the twist had occurred, and that here thrombosed vessels might be found. In view of the ease with which reduction had occurred, with relief of all symptoms, except slight tenderness and vomiting, it seemed as if the cyst could not have twisted more than once or twice. Immediate operation was advised, on the grounds that the tumor might be infarcted, or further twisted at any time, with consequent gangrene, that nothing could be gained by delay, and that if thrombosis occurred, it might become progapated to the vena cava, or to the internal iliac vein.

Operation was done on the morning of Jan. 12, 1904. The previous night had been fairly comfortable. She vomited once, but in the morning felt well enough to walk upstairs, and was free from pain, though the abdomen was somewhat tender. For the first time, she had a temperature of 100 F°.

On opening the abdomen, just inside of the right rectus, the intestines were found collapsed, and an infarcted ovarian cyst at once presented, in a moderate amount of fluid, containing a few fibrin flakes. The tumor was dark purplish, tense and shiny. It was seen to spring from the right broad ligament, the tube being continued over it. The twist had occurred immediately after the tube and ovary left the uterus. The round ligament was slightly involved in the rotation. The tube had also been twisted, and was of a deep violet color. It was found that the tumor was rotated one and three-quarters times on its axis, the rotation being towards the median line. The ovarian vein was ligated, and the tube and ovary removed, cutting the narrow pedicle close to the uterus. The ovarian veins, and those in the broad ligament were found thrombosed, at the site of the twist.

On examining further, a similar tumor, about as large as a medium-sized orange, was found to involve the left ovary. This tumor was the color of an ovarian dermoid, and was not infarcted. The tube was not enlarged. It was decided, owing to the age of the woman to leave a small amount of ovarian tissue, which was dissected off from the base of the ovary. No ligatures were used, but the few bleeding points were controlled by a continuous chromic catgut suture. The uterus was small, and in normal position.

Recovery from the operation was entirely satisfactory, and the patient made an uninterrupted convalescence. Had a vaginal examination been possible, the left ovarian tumor, which lay beneath the one with the twisted pedicle, could easily have been discovered. Of especial interest in this case are the repeated reductions of the torsion, which, together with the physical examination, gave a perfectly definite clinical picture, on which to base the diagnosis.

*Pathological Report* of Specimens sent to Dr. W. F. Whitney, consisting of a cystic tumor of each ovary:

First, a tumor the size of an orange, with a thin wall; the sac containing sebaceous material and hair, and the inner surface lined with a cutaneous membrane.

Second, a cystic tumor, the size of a grape fruit, of a dark blue color, with evident infiltration of the walls with blood. On section, it was found to be chiefly composed of a single cyst, with papillary projections from one side.

*Diagnosis:* Simple dermoid cyst of one ovary, and papillary cysto-adenoma, with infarction of the other.

## Medical Progress.

### PROGRESS IN PUBLIC HYGIENE.

BY SAMUEL W. ABBOTT, M.D., BOSTON.

#### Management and Control of Infectious Diseases.

##### tuberculosis in england.

Newsholme [1] notes the following as the measures which are at present contributing to the extinction of tuberculosis in England,

A. Means of ascertaining the existence of the disease.
   (1) Bacteriological diagnosis.
   (2) Notification of cases, voluntary or obligatory.

B. Direct preventive measures.
   (1) Law against expectoration in public places.

[1] Journal of Hygiene. Vol. iii, No. 4, 1903.

(2) Disinfection and cleanliness.
(3) Sanatoria.
(4) General Sanitary Improvement.

C. Education of the public and of patients in the importance of the foregoing measures.

The author also discusses the relation of the food-supply to the prevalence of tuberculosis, and shows that while the price of wheat diminished from 775 pence per quarter in the five years (1838–42) to 343 pence in the five years (1896–1900), the death-rate from phthisis declined from 3,880 per million to 1,321 per million in the same time.

### ORIGIN OF PULMONARY TUBERCULOSIS.

Behring [2] insists upon the identity of human and bovine tubercle bacilli, and urges that the chief source of pulmonary tuberculosis occurring at any time during life is from infection through the milk taken in infancy, whether the tubercle bacilli in the milk are of human or bovine origin. The presence of a coughing consumptive in a family often results in the infection of the infants by inhaling the germs, or by their getting into the milk, or upon the vessels used. This is the secret of the so-called heredity and predisposition to tuberculosis in the members of a family. The infection is post-genital, not inherited. It may remain latent for years or for life, but under predisposing conditions it may develop into pulmonary tuberculosis which is thus traced to infection in infancy.

### TUBERCULOSIS IN PRISONS.

Schaefer, of Munich,[3] found in a Bavarian prison that 13% of the prisoners admitted were suffering from tuberculosis. Almost half of the prisoners were also suffering from some form of tuberculosis. Schaefer lays special stress on the food as a vehicle for the transference of the bacilli into the body. He found cultivable tubercle bacilli in the cooking dishes, even after the dishes had been washed. He recommended the isolation of the sick from the healthy, the provision of country colonies for tuberculous prisoners, together with absolute cleanliness.

Theodor, commenting upon the same topic, states: (1) that prisons favor a rapid form of phthisis. (2) The tendency to spontaneous cure found outside is not noticed in prisons. (3) They favor in a high degree the continuance of epidemics of tuberculosis.

### INFECTION BY THE BREATH.

Koeniger [4] refers to the projection of bacilli from the mouth while in the act of speaking, such bacilli having been placed in a fluid with which the mouth had been washed. The higher the note uttered the more bacilli were found in the air of the room used for the experiment. No bacilli were found in the air of the room, one hour after speaking.

[2] Deutsche Med. Wochenschrift, 29, No. 39.
[3] Vierteljahrs, f. off. Ges. Supplement, 1902.
[4] Deutsche Vierteljahrs. f. off. Gesundheitspflegen Supplement, 1902.

### ADVANTAGES OF TREATMENT IN SANATORIA.

Parkes [5] enumerates the advantages of sanatoria treatment for consumptives as follows:

(1) The public health would benefit by the withdrawal from among the general population of active foci of disease. A reduction in the prevalence of consumption would ensue when the system is thoroughly established.

(2) The sanatorium treatment made available for sufferers in the early stages of the disease would restore to health and activity a certain proportion of those who under present circumstances succumb.

(3) In the event of a patient being discharged relieved, but uncured, or in the event of a recurrence of the disease after discharge, the precautionary habits acquired by the patient whilst under treatment would largely tend to prevent during his illness the diffusion of infection which would otherwise occur in his own home and place of occupation.

### THE SOURCE OF INFECTION IN TUBERCULOSIS.

In a paper upon this subject presented by Dr. S. Davies [6] of Woolwich, England, at a meeting of the Society of Medical Officers of Health, much stress was laid both by the author and by those who took part in the discussion, upon the excessive prevalence of tuberculosis among drunkards, and the probability that infection among them often occurred in consequence of the exceedingly filthy condition of the floors of public-houses or saloons which they frequented, where spitting upon the floor was a very common practice.

### PROPHECIES RELATIVE TO THE EXTINCTION OF TUBERCULOSIS.

Dr. Hillier [7] in a paper entitled "The Probable Extinction of Tuberculosis," predicts its extinction in England and Prussia, within "about a generation," and shows, by means of a chart, the rate of decrease in each country.

Dr. Newsholme [8] also in a paper entitled "Public Health Authorities in Relation to the Struggle Against Tuberculosis in England," says, "There is, I believe, more hope of the almost complete extermination of tuberculosis than of any of the acute infectious diseases, with the possible exception of typhus and smallpox."

Again Professor Von Behring [9] expresses "his firm hope and belief that all hospitals and homes or shelters for consumptive patients will become unnecessary in future through the same means which Jenner used to render smallpox hospitals superfluous in the past."

At the present rate of decrease in the mortality from phthisis it does not seem at all improbable that in the next half century, the many sanatoria now peopled with consumptives may be needed for a different class of sufferers, possibly those who are suffering with cancer, since cancer

[5] Public Health, December, 1903, p. 149.
[6] Public Health, December, 1903, p. 130.
[7] Public Health, London, March, 1903.
[8] Journal of Hygiene, Vol. iii, No. 4, October, 1903.
[9] Report of Seventy-fifth Annual Meeting of Philosophers and Biologists at Cassel, 1903.

appears to be steadily increasing, while phthisis is tending towards extinction.

These facts, however, should only be the incentive to greater exertions to hasten the eradication of a disease which has produced and is still producing a large share of the general death-rate of the population.

After the crusaders had returned from the East in the twelfth and thirteenth centuries, there was scarcely a town in continental Europe in which leprosy did not exist, but great numbers of lazarettos were established in which the sick were isolated, and now the disease is almost unknown in Europe, except in Norway.

### EBERTH'S BACILLUS IN THE BLOOD IN TYPHOID FEVER.

Courmont and Lesieur [11] demonstrated the presence of Eberth's bacillus in the blood in 37 cases, in all of which the attacks were of moderate severity, from the first few days up to the end of the third week.

### OYSTERS AND TYPHOID FEVER.

In an examination of the population of the English district of Southend-on-Sea, Nash [12] found in a population of 33,000 that 250 were regular shellfish-eaters all the year round, this number increasing in the oyster season to 1,500. Among the shellfish-eating portion the typhoid attack-rate was 51.25 per 1,000, and in the non-shellfish-eating portion it was only 0.75 per 1,000. Among employees of shellfish dealers the percentage of attack was 160 per 1,000.

### THE BACTERIOLOGY OF BANK-NOTES.

On account of the liberal use of bank-notes of small denominations in Greece, Cumulis [13] submitted bank-notes to experiment, and came to the following conclusions: (1) When the cholera spirillum was scattered upon a dirty bank-note and exposed to dry air, the spirillum died in fifteen to twenty minutes. (2) On a clean note, covered with glass, but exposed to daylight, it lived forty minutes. (3) On a note placed in an envelope the life of the spirillum may be prolonged to sixty minutes, but not more. Koch and Kitasato found that the cholera spirillum lived as long as three hours when dried in air. Cumulis explains this by the fact that their experiments were made on glass and not on paper, and in air moister than that of Greece.

### FLIES, TYPHOID FEVER AND SUMMER DIARRHEA.

Martin [14] says: "Each succeeding year confirms my observation of 1898 that the annual epidemic of diarrhea and of typhoid is connected with the appearance of the common house-fly, which becomes very numerous at the beginning of July, and breeds chiefly in privy-middens. The increase and decrease of the annual diarrhea and typhoid epidemic can be foretold with a great degree of accuracy, an increase in the diarrhea cases occurring in a week, and typhoid notifications in three or four weeks after an increase in the number of flies is observed. The annual epidemics of these two diseases begin and end with the appearance and disappearance of the domestic fly."

### HOSPITAL ISOLATION OF SCARLET FEVER PATIENTS.

The practice of isolating patients ill with scarlet fever in hospitals designed for this purpose, having been vigorously attacked by three British medical officers, Drs. Marriott, Millard and Fraser,[15] the subject was discussed by the Society of Medical Officers of Health, and the following resolution was adopted by the Society, at the suggestion of Dr. Fraser:

"That in the interests of public health, and in view of the large sums expended annually upon the hospital isolation of scarlet fever, it is, in the opinion of the branch, advisable that a full and searching inquiry into the whole system be held."

The general opinion of the sanitary officials who participated in the discussion was in favor of such hospitals, and opposed to the statements of Dr. Fraser. In Portsmouth, to which most of Dr. Fraser's statements had reference, about 60% of all reported cases are isolated.

The editor of *Public Health* also, in commenting upon Dr. Fraser's address, differs in opinion from him, regarding the isolation hospital as a necessity *pro bono publico*, and any failure of the system is due "largely to defective administration. . . . We must confess to surprise that this was not made the basis of the demand for an inquiry. To our mind, that is the true conclusion to which all the papers on the subject point. But what does it mean? It means the indictment of the local authorities and their advisers for faulty construction and mismanagement. Hospitals play a very important part in the methods at our command for dealing with infectious diseases, and the sooner the administration of those which are defective is put on a proper and efficient basis the better it will be."

[No reference appears to have been made in this discussion to the matter of improper or inefficient notification. In every large city where hospital isolation is provided, a considerable percentage of those attacked, living in well-to-do families, are treated in their own homes, and while isolation is required it may be of a very different character from hospital isolation. Again, very many cases, mild in character, but still quite as infectious as severe cases, are treated in families without the attendance of a physician, no notification being made. (But the law requires it as much of the householder as of the physician, in Massachusetts.) And, lastly, cases are not rare in which the disease is entirely unrecognized. All these classes may, and undoubtedly are, fruitful means of the spread of infection, so that it is difficult to estimate the actual value of a system

[11] Bull. et mem. de la Soc. Med. de Hôp. de Paris, 16, Third Series, 1902, p. 1063.
[12] Medical Magazine, August, 1903, p. 564.
[13] The Medical Magazine, August, 1903.
[14] Public Health, August, 1903, 652.
[15] Is the Hospital Isolation of Scarlet Fever Worth While? by A. M. Fraser, M.D., Medical Officer of Health, Portsmouth. Public Health, January, 1904.

which is from the nature of the case imperfect in its application.]

CONFIRMATORY CULTURES IN DIPHTHERIA.

Dr. J. S. Billings, Jr.,[16] finds that, while in a certain percentage of cases the diphtheria bacillus fails to appear in the first cultures, the failure is generally due to a conjoined infection with the septic micrococci. Aside from these cases, the statement that the case is probably not diphtheria can be made on one negative culture up to the tenth day of the disease. Valid reasons for requesting a confirmatory culture in negative cases are: (1) When there is no growth whatever on the culture media. (2) When there is complete contamination and liquefaction of culture media in cases which are clinically diphtheria. (3) Cases where there are suspicious bacilli. (4) In croup cases where the membrane is limited to the larynx and the duration of the disease is less than five days. Dryness of culture media, scanty growth, and the recent use of antiseptics with satisfactory growth of other organisms than the diphtheria bacilli, do not alone furnish sufficient grounds on which to request a confirmatory culture.

CEREBRO-SPINAL MENINGITIS.

In two German regiments at Homburg and at Darmstadt, there were 1,900 cases of epidemic cerebro-spinal meningitis. The diplococcus of Weichselbaum was found in three cases, once in the nasal mucus, once in fluid obtained by lumbar puncture, and once in the post-mortem exudation. At Homburg the barracks were overcrowded. Emptying them, disinfecting and cleansing them, seemed to stop the epidemic. The disease was also prevalent among the civil population at the same time.

UNCINARIASIS IN MINERS.

The International Congress of Hygiene at Brussels [17] voted in favor of: (1) Complete medical inspection. (2) Declaration of cases. (3) Provision of suitable latrines, both above and below ground, and of dressing-rooms and baths. (4) Cleansing of the soil and ventilation. It may be noted that disinfection — in Germany with milk of lime (whitewash) and in Belgium with cresols — has been used with partial success as secondary to the hygienic regulations as to the care of excreta, water-supply, baths, change of clothing, and supervision.

THE CONFLICT WITH MALARIA (ROBERT KOCH[18]).

It is stated that when, ten years ago, the author was face to face with the combat with cholera, it was recognized that the preventive measures must be directed against the germs which could in every case be demonstrated by bacteriology to be the active agents in the spread of the disease. When he had time to turn his attention to the diagnosis of malaria, he found in a similar way that the blood was infected with a parasitic organism easily destroyed by quinine, which, although it was wholly different from that of cholera, might be attacked and dealt with on a similar principle; and, by means of his experiments at New Guinea, he satisfied himself not only that it was possible to destroy the malarial parasite in human blood, much in the same manner as in the case of the cholera germ; but also that the active agent of malarial diseases was capable of existing only in man and in certain insects of the gnat tribe, and was not to be found in any other organism. This rendered it possible to undertake the necessary preventive measures which have been adopted with complete success. Accounts are then given of the conflicts with malaria at Brioni (Istria) by Prof. P. Frosch, and at Puntacroce by Dr. Bludau. A report is printed of the malaria-expedition to German South West Africa by Dr. Vagedes, and descriptions follow of the conflicts with this disease at Daressalam by Dr. Ollwig, and in the Tuscán Maremma by Dr. B. Gosio. This last investigator declares that only time and a sufficient supply of quinine are needed to stamp out the disease. Dr. E. Martini treats of the precautions taken to avert an outbreak of malaria at Wilhelmshaven, and Mr. Dönitz gives an account of the various species of the anopheles which serve to spread the disease in the different countries where the question has been actively studied. All these essays are illustrated with maps and diagrams.

CAISSON ILLNESS AND DIVER'S PALSY. MODES OF PREVENTION.

Hill and Macleod [20] report the results of experiments and observations relative to this form of illness.

They believe that by proper choice of men (healthy young men, eighteen to twenty-six years old, and not too stout) and regulation of the shift and decompression period, work can be carried out without loss of life at a depth of even 200 ft., *i. e.*, about seven atmospheres, or +100 lbs. pressure.

They also conclude : that the circulation is unaffected mechanically by compressed air, that the cause of caisson disease is the escape of gas bubbles in the blood-vessels, and tissue fluids on decompression. An animal exposed four hours to eight atmospheres of air and quickly decompressed is like an opened bottle of soda-water. The fluids of the body generally effervesce. Recompression causes the bubbles to go into solution, and if applied quickly enough the circulation recommences. The varying symptoms of caisson-sickness are due to the varying seat of the air emboli.

Young men escape caisson-sickness owing to the elasticity of their tissues, and greater facility for collateral pathways of circulation.

Animals can be safely exposed to eight atmospheres of air for four hours, if two hours be spent in gradual decompression. Such exposure can be safely repeated three times a week. By the

[16] N. Y. Med. Journ., Sept. 12, 1903.
[17] Sanitary Record, Sept. 24, 1903, p. 313.
[18] Zeitschrift fur Hygiene, Vol. xliii, 1903, p. 1.
[20] Journal of Hygiene, Vol. iii, No. 4, October, 1903.

choice of suitable men, and proper regulation of the period of compression and decompression, caisson and diver's sickness can be avoided.

One of the earliest American papers upon this subject was presented by Dr. R. T. Davis of Fall River at a meeting of the Councillors of the Massachusetts Medical Society, Feb. 2, 1876.[21]

### Disinfection.

#### THE DISINFECTING POWER OF HOT SODA SOLUTIONS.

According to Simon [22] the bacteriological methods of research have rendered it possible to assign very definite limitations to the activity of a number of substances employed as disinfectants, and have made it evident that, owing to the varying degrees of resistance possessed by different species of bacteria, there is a wide range of usefulness for many of the materials which have been proposed for this purpose. The author thought, therefore, that it might be expedient to ascertain how far the common washing soda, used in nearly every household, was capable of being employed for disinfecting the dwelling-house. Reference is made to some previous experiments by Jaeger, Förster, Behring and others. The present tests were mainly directed to ascertain the action of hot solutions of soda of various degrees of concentration on the pathogenic organisms likely to be encountered in dwelling-houses; as, for instance, the diphtheria bacillus, the different kinds of cocci (Staphylococcus, Streptococcus, etc.) and tuberculous sputum. Bouillon-cultures of all these germs were dried on to silk threads and were exposed to the action of 2%, 5%, 10% and 20% solutions of soda. The threads were steeped in the solutions which had been raised to various temperatures from 22° C. to 62° C., for periods which ranged from one minute up to sixty minutes. Tests were also made by infecting different polished surfaces of furniture, flooring, leatherwork and linoleum, which were then treated with a 5% solution of soda at a temperature of 60° C. In a similar way experiments were conducted with tooth-brushes, combs, hair-brushes, kitchen utensils, etc.; also with secretions, such as sputum, pus, etc. Full details are given of all the tests, and the results are tabulated. The author states that even in dilute hot solutions (60° C. to 62° C., such as are employed in the kitchen and laundry), soda is a safe and reliable disinfectant and it is also extremely cheap.

#### THE STANDARDIZATION OF DISINFECTANTS.

Rideal and Walker [23] say the makers of genuine disinfectants have to compete with others whose preparations are not only worthless, but actually dangerous, while the use of such products gives rise to a false sense of security. The public should know that disinfection — the killing of disease germs — is by no means a simple operation, and the control of disease by this means should form a part of the routine work in every sanitary area under the direction of the board of health. He therefore argues for a bacteriologic test, the details of procedure to be agreed upon beforehand by different investigations, the following factors to be considered: (1) Time; (2) age of culture; (3) choice of medium; (4) temperature of incubation; (5) temperature of medication; (6) variations in vital resistance of same species; (7) variations in vital resistance of different species; (8) proportion of culture to disinfectant. He suggests pure phenol as a standard, since it has marked advantages over a metallic salt. Similar work [24] has been accomplished by the American Public Health Association.

*(To be continued)*

[21] Report of Proceedings of Mass. Med. Soc., 1875–6, p. 44.
[22] Zeitschrift fur Hygiene, Vol. xliii, 1903, p. 348.
[23] Jour. of Sanitary Institute, paper read at Congress, July, 1903.
[24] Trans. Am. Pub. Health Assoc., Vol. xxvii, p. 247.

## Reports of Societies.

### THE NEW YORK ACADEMY OF MEDICINE.

Stated meeting, March 17, 1904.

The President, Andrew H. Smith, M.D., in the chair.

The meeting was under the auspices of the Section on Ophthalmology of the Academy, Dr. Alexander Duane, Chairman. The subject of the evening was

#### THE EYE IN ITS RELATIONS TO FUNCTIONAL NERVOUS DISEASE.

Dr. Charles L. Dana read a paper on

#### MENTAL DISTURBANCES PRODUCED BY EYE-STRAIN.

He said it would perhaps be more strictly accurate to announce his title as "Eye-strain and the Psychoses." The term eye-strain was not found in works on psychiatry, but it was a convenient word and one which had become popular. There were two forms. The first, which was eye-strain proper, was of mild gravity and sub-cerebral in its operation. The second was more serious in character, and the cortical centers were involved. This effect might not be distinctly recognized, but it really constituted a brain-strain. It seemed to him that it was only this kind of strain that could work any serious injury. The possible disturbances attributed to ocular defects, he thought of no serious import, since nature provided ample compensation, just as in the case of a leaky heart.

Two groups of psychoses were recognized. In the first were the grave cases, insanity. In the second were included all the minor psychoses, such as hysteria, impulsive acts, sexual perversions, hypochondriacal manifestations, melancholia, etc. At the St. Lawrence State Hospital for the insane the experiment was made of treating the patients by attention to eye defects, but without success. So also at the Willard State Hospital, and here, likewise, no benefit resulted. Dr. Dana then referred to the negative results of the investigation, sixteen years ago, by the Stevens Commission of the New York Neurological Society, of which he was a member. In certain secondary schools for boys he had found cases of a kind of exhaustion psychosis resulting from close application to study. The scholars appeared to be markedly apathetic and depressed, and lost their interest even in out-door sports. No serious results occurred, however, and prompt cures were reported. We believed that such instances were rare and that ordinarily eye-strain was attended only by such mild manifestations as headache, etc.

After watching carefully for twenty years, he had

found scarcely any cases in which eye-strain has proved a source of any serious trouble. When the mind of the individual was a good one, the eye-strain had but little effect. Perhaps, after all, the most interesting psychosis connected with it was that which had prevailed among a certain class of oculists. It was a fact, however, that psychoses are increasing in a marked ratio among the community, and new combinations were constantly arising which ought to be carefully studied and wisely prescribed for.

Dr. Colman Ward Cutler read a paper on

HEADACHE, MIGRAINE, AND OTHER SENSORY DISTURBANCES PRODUCED BY EYE-STRAIN.

It was principally devoted to a consideration of migraine, or sick headache, which, he said, was considered a distinct disease by some. In the *modus operandi* of its production great stress was laid by some writers upon the agency of the eye, while by others this element was practically disregarded. Perhaps the true solution of the question was to be found in a happy medium between these two views. Among the characteristics of the affection were periodicity and heredity. In different members of a family in which it was present it was attended by the same special phenomena. It naturally presented some features which were common to it and epilepsy, and it had been regarded by some, more particularly the French authorities, as practically identical with that disease. It could easily be shown, however, he thought, that such was not the case. Thus, while epilepsy was unquestionably more common in families with a bad history, such as alcoholism, etc., the opposite of this was apt to be true as regards migraine. Again, while many cases of migraine were relieved or cured by appropriate eye treatment, this was not the fact with epilepsy.

The influence of heredity should be fully recognized in migraine as it was fairly constant. At the same time it was undoubtedly true that it was often a reflex neurosis of ocular origin. It had been contended by many that there was such a thing as idiopathic migraine, but as a rule the affection could be traced to some peripheral irritation, and, in the treatment, should be approached from the periphery. There were a certain number of cases, however, which were of unknown origin, and which persisted in spite of all treatment. In these it was often necessary to depend on morphine as a palliation at the time of the attack. Still, in some instances, after persisting for a long time, the disease finally yielded to treatment. Migraine being then, for the most part, a reflex neurosis, all avenues should be tried in turn in order to discover, if possible, the source of difficulty. Not infrequently cases were met with in which the objective symptoms were found to be not dependent on the eyes. The site and character of the headache, it was to be remarked, was of little diagnostic value. Often a dull pain followed upon eye-work.

Migraine, he thought, should be studied from a statistical point of view. Recognizing the tendency in some quarters to associate migraine with the graver forms of nervous trouble, such as epilepsy, Dr. Cutler had made inquiry of Dr. Spratling of the Craig Colony for Epileptics, as to the prevalence of migraine among the patients at that institution, and he had received the reply that it was exceedingly rare.

Dr. B. Sachs read a paper on

THE RELATION OF EPILEPSY, CHOREA AND OTHER MOTOR DISTURBANCES TO EYE DISEASE.

He said that the branch of the subject assigned to him had to do with motor phenomena principally. He might quote statistics almost indefinitely, but statistics could be juggled so as to mean almost anything that one wished. In the first place, he could assert with positiveness that the dependence of the motor neuroses on the eye had been greatly exaggerated, and that however few the instances of this might be, the cases that had been cured by oculists were fewer still. This dependence, it was well known, was chiefly maintained by a certain variety of oculists and pseudo-oculists. By the Stevens Commission of the New York Neurological Society fourteen test cases were thoroughly investigated, and not a single one of them was a case of epilepsy. His experience since that time had borne out the conclusions arrived at by the Commission. The advocates of this doctrine had written and talked a great deal, but such evidence as they had presented seemed to him wholly unsatisfactory. Their great aim seemed to be to impress the general practitioner with the importance of their views, and the general practitioner had too often fallen a victim to them. In an article published in a prominent medical journal Dr. A. L. Rauney had reported a series of cures by eye muscle cutting in cases of grave nervous disease such as epilepsy, and one of the patients, according to the writer, presented the symptoms of cerebral softening. Yet there was not a single one of these reported cases which would stand the test of scientific investigation.

In a recent annual report of the Craig Colony for Epileptics, Dr. Spratling stated that under the advice of Drs. Gould and Bennett 68 of the patients (all but one of whom suffered from astigmatism) had been fitted with glasses, and it was hoped that much benefit might be derived from this treatment. Yet in the next annual report of the institution it had to be acknowledged that in all the 68 cases there had been improvement, and that but slight, in only one. Notwithstanding this brilliant result, Drs. Gould and Bennett still persisted in their opinion that epilepsy might be successfully treated by proper attention to the eyes of the patient. All authorities were agreed that true epilepsy is a serious affection of the central nervous system, that it persists for years, and that it shows a tendency to become aggravated and end in grave degenerations. Only a small proportion of cases could be cured by any known method of treatment. At the Craig Colony it had been demonstrated that, as a rule, the mode of life there enforced was more successful than anything else in bringing about an amelioration of the condition.

In order to show that ocular disturbance had any relation to epilepsy it would be necessary, for one thing, to prove that such disturbance had existed as long as the nervous disease. It was quite conceivable to suppose that some peripheral irritation, such as that from a phimosis or a nasal lesion, might cause a single convulsion, or perhaps more than one, but there was no ground whatever for believing that such irritation was a cause of true epilepsy. If the ocular treatment of epilepsy were entirely an innocent affair it might be regarded with composure, but, unfortunately, this was not always the case. In illustration, Dr. Sachs mentioned the case of a gentleman suffering from nocturnal epilepsy who was advised to consult a certain oculist. He did so, and the result of the treatment he received was to give him double vision, which he found to be far more annoying than the epilepsy itself. So general had grown to be the opinion that nervous troubles are dependent on ocular disturbance that private patients were almost universally found to be wearing glasses, and he thought it would be a great advantage to the patient when such erroneous views had been relegated to their merited oblivion.

Again, as regards chorea minor, or Saint Vitus's dance, this was an evidence of very severe disorder of the nervous system, and it was absurd to suppose that ocular or other peripheral irritation was its cause. He had yet to see a single case of chorea cured by eye treatment. A different variety of the affection was what is known as *habit chorea*, in which the choreic manifestation is a twitching of the eye, the sudden elevation of the shoulder, or other similar movement. In all cases of this kind he believed that a careful examination of the eye and the nasal passages should be made. But even here the eye business had been over-done, and too many of the patients were wearing glasses.

Convulsive tic was not unlike habit chorea, but it was a much more serious affection. In this, as in other motor disturbances, the burden of proof was on those who desired to establish the etiological relation of eye trouble. Such relation might be perfectly clear in the minds of some faddists, but they have as yet entirely failed to present any evidence that would have any weight with those who had no axes to grind nor any special field of medicine to exploit.

Dr. Ward A. Holden read a paper on

THE EYE SYMPTOMS OF HYSTERIA, NEURASTHENIA AND THE TRAUMATIC NEUROSES.

He cited a number of cases to show the variety of symptoms met with in these cases, some of them simulating the signs of grave ocular disease, such as atrophy of the optic nerve. There were often found functional disturbances of the retina, pain, paresthesia, lachrymation, photophobia and fine tremor of the lids when lightly closed. After reading, the field of vision might be very limited or double. There might be a ptosis of one or both upper lids, but it was easily distinguishable from paralytic ptosis. The pupils were often nearly normal in size and reaction. The ocular muscular spasm might give rise to diplopia. In a case of traumatic hysteria with functional dimness of vision there was uni-ocular diplopia. The acuteness of vision was usually normal, but the patient sometimes made out the distant letters with difficulty. A patient might state that he was unable to read small type, yet when a plain glass, or almost any other kind, was given him he would read it with facility. There might be apparent blindness in one or both eyes. Anomalies of the visual field were most common in hysteria and neurasthenia. In some instances these were to be regarded as evidence of fatigue of the retina, and in others as psychical in origin; while in still others both causes no doubt participated.

Only rarely was there a central defect in the field. The size of the field varied from day to day. The forms of the color fields were often so bizarre that they did not resemble any known lesion. It should not be supposed that these functional disturbances were met with only in young women. They occurred also in strong men; and in conclusion Dr. Holden related a case of pure hysteria, presenting very serious eye symptoms, in one of the mounted police force of the city. The trouble resulted from a fall from his horse, and when last seen, fourteen months after the accident, the man was in perfect health. The only sign that was left of his eye trouble was a slight trembling of the lids.

THE RELIEF OF EYE-STRAIN AND FUNCTIONAL NERVOUS DISTURBANCE.

Dr. John E. Weeks said that observations regarding the relief of eye-strain and the functional nervous diseases might be made along two lines. One, which is perhaps the more extensive, is that of the results that follow the more or less complete relief of eye-strain by the correction of errors of refraction and by the correction of errors of the muscles. The other is the observation of mental disturbances which have occurred as a result of eyestrain, due to *mal-correction* of errors of refraction and to *mal-correction* of actual or supposed errors of the muscles.

The mental disturbances produced by eye-strain are chiefly those that relate to inability to perform mental work, such as conducting business affairs and performing duties which require the use of the eyes. It not infrequently happens that patients complain of loss of memory and inability to concentrate their ideas along any particular line. The sensory functional nervous disturbances that are produced by eye-strain, or, at least, that are remedied by the relief of eye-strain are headache, affecting the whole or any part of the cranium, vertigo in some cases, transient hemianopsia and other defects in the visual field. The motor functional nervous disturbances that may be caused by eye-strain are unilateral facial spasm and spasm of the *orbicularis palpebrarum*, total or partial, clonic or tonic in nature, usually affecting one eye alone, but sometimes both eyes. The motor nervous disturbances that may be alleviated in some cases by the relief of eye-strain are epilepsy and possibly chorea.

Reports of cases occurring in private practice illustrating the results of the correction of eye-strain as affecting the various conditions were referred to, and in conclusion Dr. Weeks stated that his experience had taught him that many cases of inability to perform work requiring the use of the eyes, many cases of headache and some cases of vertigo and of unilateral facial spasm can be completely and permanently relieved by correcting errors of refraction and errors of the muscles; that true migraine can be favorably influenced, but not entirely cured; that the attacks due to epilepsy can often be rendered less frequent by the relief of eye-strain, and that true chorea is influenced but little.

## Recent Literature.

*The Nutrition of the Infant.* By Ralph Vincent, M.D. Member of the Royal College of Physicians, Physician to the Infants' Hospital, Late Senior Resident Medical Officer, Queen Charlotte's Lying-in Hospital. New York: William Wood & Co. 1904.

In this little book of about three hundred pages Vincent takes up in detail both the natural and substitute feeding of infants and then considers the bacteriology and chemistry of digestion, disorders of the digestive tract and also those of nutrition. He gives a fairly complete resumé of our present knowledge regarding infant feeding. He is a most thorough believer in breast feeding and, if this is not possible, in modified cow's milk as the substitute. He is a strong advocate of laboratory feeding and is evidently one of the leaders in the introduction of the method of percentage feeding into England. This book should do much to raise the standard of infant feeding in that country and to place it on a more rational basis. We agree most heartily with almost all of the author's views on those subjects, but cannot help feeling that in order to emphasize some of his points he has made

many of his statements on mooted points stronger than the facts justify. We notice a mistake in the year in which the first Walker-Gordon Laboratory was estaolished in Boston, 1901, instead of 1891, and regret that we do not possess the Milk Commission with which he credits us. The chapters on gastric and intestinal disorder and inanition, malnutrition and marasmus are not up to the standard of the rest of the book. Those on rachitis and scorbutus are good.

*A Text-Book on the Practice of Medicine.* Designed for the Use of Students. By James Magoffin French, M.D., Lecturer on the Theory and Practice of Medicine, Medical College of Ohio; Attending Physician, St. Mary's Hospital; Consulting Physician, St. Francis Hospital for Incurables, Cincinnati. Illustrated. New York: William Wood & Co. 1903.

Dr. French has written a textbook on the practice of medicine, containing 780 pages, which he designs for the use of students, a term which no doubt may be made to include the practitioner as well as the undergraduate, and which is to be preferred to the usual double appeal to the student and the practitioner. Although this volume is somewhat less extensive than many of the recognized textbooks on the practice of medicine, it goes very far beyond an elementary treatise, and discusses concisely, but at considerable length, the important diseases included under the general heading of internal medicine.

In the preface the author remarks that "personal experience has been kept in the background, and the pleasant diversion of case reports has been entirely omitted." This omission is not altogether to be commended. Personal experience is always valuable, and we know of no better way to impress the outlines of disease on the student's mind than by a brief report of actual cases. We are inclined to think that description of disease should in the future give place more and more to an account of the actual occurrences. Conservatism in this matter, however, is still supreme, and narration of cases finds small place in the modern textbook.

The volume is illustrated both by text cuts and by a considerable number of well-executed full-page plates. In the section on the nervous system there is an unfortunate omission of diagrams and cuts, although in no other subject is a graphic representation of processes of disease more useful and more essential to an understanding of the conditions. If economy of space is desired, no better method can be employed than the substitution of diagrams for descriptions in this department. Following the main body of the book a concise chapter is added on clinical methods of examination which should prove useful and practical. The book gives ample evidence of thoroughness in preparation, and no doubt will take its place with the others as a useful guide for students, young or old.

*On Syphonage and Hydraulic Pressure in the Large Intestine.* By Ralph Winnington Leftwich, M.D., Late Assistant Physician to the East London Children's Hospital. New York: William Wood & Co. 1903.

This entertaining little book of eighty pages calls attention to the similarity of the larger intestine to a siphon, and explains many physiological and pathological phenomena from this standpoint. Emphasis is also laid upon the hydraulic principles which are exemplified in the arrangement of the ileum, cecum and colon. Syphonage and hydraulic pressure offset the large intestine's feeble peristalsis and are rendered effective by the tonic contraction of the longitudinal bands of the large bowel which hold it rigid. Erect position favors syphonage, as experience teaches.

The discussion of constipation, typhoid fever and appendicitis in the latter part of the volume is not particularly instructive.

*A Short Practice of Gynæcology.* By Henry Jellett, B.A., M.D., B.Ch., B.A.O. (Dublin University), F.R.C.P.I., L.M., Ex-Assistant Master, Rotunda Hospital; Externe Examiner in Midwifery and Gynecology, Royal University of Ireland; Examiner in Midwifery, Royal College of Physicians, Ireland; late University Examiner in Midwifery and Gynecology, Dublin University. Second edition, revised and enlarged, with 223 illustrations. London: J. & A. Churchill. 1903.

This is a book of 406 pages, well printed and illustrated but poorly bound. The author has used good judgment in handling his material, and, with a few exceptions, has included little useless matter and has brought into prominence the important topics. His plan of placing at the beginning of each section the Greek and Latin derivatives from which the different diseases and operations take their names is to be commended as making clearer the meaning of the terms.

The author leaves out extra-uterine pregnancy on the ground that this affection belongs to the domain of obstetrics; this is to be regretted.

The chapters on cancer uteri and diseases of the ovaries, also those on diseases of the pelvic peritoneum and uterine ligaments, are to be especially commended for clearness and conciseness. The figures on the different sorts of genital atresia (pages 217 and 218) are original and give a good idea of the conditions, but it is a question whether it is wise to leave out the customary account of the embryological development.

The portion of the book devoted to gynecological operations is in the main up to date and clear; the aseptic technique, however, does not reach the high standard we in America are accustomed to find in our textbooks. There is no doubt but that this book will prove popular among students and practitioners.

THE BOSTON

# Medical and Surgical Journal.

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## AN EXPLOSIVE OUTBREAK OF TYPHOID FEVER.

About five miles before reaching Hamburg the River Elbe divides into two arms, the Northern and Southern Elbe, which reunite below the city, enclosing thus the very considerable island of Wilhelmsberg, some ten square miles in area, of which a plan and a description are given by Bachmann and Rattein in a recent article (*Gesundheits Ingenieur*, p. 12, 1903). A peculiar feature of this island is the extent to which it is traversed in all directions by shallow watercourses, filled with abundant marsh vegetation. The rural population inhabiting this area are for the most part housed under very insanitary conditions, which are herein described. Among the 20,000 inhabitants, diarrhea and typhoid fever are usually prevalent every year during the summer months, but in July, 1902, in the Reiherstieg district, a violent outbreak of typhoid fever, which involved 44 families living in two double blocks of dwellings, made its appearance and occasioned in all 61 cases of illness, of which an account is given. The water-supply was at first regarded as free from suspicion, as the water for all the 44 dwellings was drawn from one tube-well of good construction, some fifty feet in depth, but the water was found on examination by the Hygienic Institution of Göttingen to be infected. It is shown that, owing to the imperfect construction of the joint of a pump by means of which the water was drawn from this tube-well, it had become possible for a leakage to take place of very filthy water from a drain which ran close by, and by this means the water had become so polluted that no less than 480,000 germs per cubic centimeter were found in the pump-shaft. After thorough disinfection the numbers sank to very insignificant proportions, and indicated that the water of the well was in itself of good quality. It was not possible to demonstrate, by actual cultivation-tests, the presence of the typhoid-fever bacillus, but the condition of the water before and after discovery of the defective joint left no doubt that the outbreak was attributable to this cause.

## THE DISINFECTION OF DWELLINGS.

In a recent paper by Kister & Mathes[1] upon the Disinfection of Dwellings, attention is directed to the increasing use of formalin, which, whether employed as vapor or spray, is gradually taking a very prominent place among the disinfectants available for use in dwelling-houses. In those cases in which it becomes necessary to undertake a very searching and complete disinfection, the use of a fluid medium, with which all exposed surfaces can be saturated, and which can be forced into all chinks and crevices, is greatly to be preferred, and hence, in addition to treatment with vapor or solution of formic aldehyde, some mechanical process of scouring with hard brushes, or rubbing down with bread, is resorted to. In the case of floors and painted surfaces, the employment of abundant scrubbing with soft soap and dilute carbolic acid is also needful. As a valuable aid to internal disinfection, the authors explain the construction and use of the portable apparatus invented by Mr. Zorn, and they give the results of certain practical tests carried out in two of the rooms of the Hygienic Institute of Hamburg, one of which was treated in the ordinary way, and one of which was disinfected by means of the above apparatus. The test-substances employed were in each case as follows: Staphylococcus pyogenes aureus, Bacterium coli, Bacillus diphtheriæ, tuberculous sputum, and spores of highly resistant potato-bacillus. The rooms were of nearly equal size, and while the one dealt with on the old system needed the work of three men for two hours and thirty-five minutes, the disinfection of the other room by means of the new apparatus took the same staff only twenty-five minutes, and involved the use of a smaller quantity of carbolic acid solution. By means of diagrams, the mode of employing the spray appa-

[1] Gesundheits-Ingenieur, March 10, 1903.

ratus is explained, and the results of the process in each room are set forth in tables. In the former case 87.5% of the germs were destroyed, and in the latter 88.2%, but the saving in time was very considerable. In neither instance was the disinfection perfect, and some later experiments herein described gave very similar results.

## PULLMAN CARS AND MONEY, ROOTS OF EVIL?

It is rumored, and we sincerely trust with authority, that the manufacturers of Pullman cars are awakening to the fact that ornateness of decoration is no longer desirable. Apparently, this change of heart has come about through a regard for the health of the passengers, rather than through merely esthetic considerations. However this may be, the reform will be welcome from every point of view. Plain severity is to take the place of the overdone ornamentation with which we are all familiar, and there can be no question that both the comfort and the health of passengers will be subserved thereby. It has long been a source of wonder to us why, in the crowded space of the ordinary car, every effort should be made to make the space seem still smaller by meretricious ornamentation, unnecessary, and therefore in bad taste.

It has been a somewhat gradual process for the public to recognize the possible dangers lurking in those situations where dust is allowed to collect in large quantities. When such convictions have finally been reached, it is the usual experience that the reformers go to extremes in their attempts to remedy the evil. While recognizing fully the possibility of danger in the ornate decorations of the Pullman car, we are inclined to think that the risk has been exaggerated.

The complete education of the public in sanitary matters is proverbially difficult. On the one hand there is the possibility of minimizing dangers, and on the other the almost equally disastrous tendency of finding danger where none exists. Our experience with tuberculosis in the last few years has been an example of just this difficulty. It has been eminently desirable to impress upon the public the danger of contagion; on the other hand the public evidently has taken the matter with undue seriousness, leading in certain states to restrictive laws which neither can nor should be enforced, and to conditions of fear which certainly do not conduce to the public health. The same may in a general way be said of bacteria of other varieties. If all that was said of these hidden dangers were true, our peace of mind would be wholly at an end. Fortunately, common sense, aided by increasing scientific knowledge, ultimately saves the day.

Commenting on the dangers supposed to exist in dirty money, the *Medical Press* makes the following pertinent remarks:

> It is really time that some check were put upon the scaremongers who daily and hourly face the public with some fresh disaster arising from the invisible evil germs that lurk in every corner of the earth, civilized or savage. Kissing, hand-shaking, hair-cutting, the consumption of unboiled water, oysters or milk, the reading of library books, all, in short, that makes life tolerable, is sternly forbidden by the anti-bacterial maniac, on the ground that the man in the street may by abstinence avoid the evil day. It would be easy to show, however, that the scaremonger, in reality the mildest of Fleet Street journalists, directs his appalling onslaught merely on popular points. Were he consistent, his range of possible microbial infection is so wide that to avoid the malevolent germs man would be no longer able to eat, drink, walk, sleep, smoke, swim, or come into contact with any object in earth, air, sky, or sea. The latest fad is that money should be disinfected. It must be at once admitted that coin in the course of circulation becomes charged with many micro-organisms, good, bad, and indifferent. Now and then it may doubtless convey the infection of disease, more especially if the owner be incautious enough to introduce it into his or her mouth. In the vast majority of cases it is harmless, and a large proportion of the population of the United Kingdom would willingly run the risks of prolonged and continuous contact with any amount of coin of the realm. If coin is to be disinfected, so should door-handles, hand-rails, omnibuses, railway-carriages, penholders, pencils in post-offices, postage stamps and a countless host of things that might act as public distributors of germs. There is more to be said for the disinfection of paper money, but even that seems to be a mere "counsel of perfection." Meanwhile, there are plenty of real microbial dangers apart from the bogus scares of the bacteria-mongers.

On the esthetic side no doubt clean money is wholly desirable, and any means tending to its wider circulation should undoubtedly be encouraged. The same is true of the ornamentation of the sleeping car. It is, therefore, desirable that physicians in general should impress upon the public, so far as may be, the desirability of care in all matters relating to personal or public hygiene, but it is also imperatively necessary that they should not magnify into positive dangers what simply are inconveniences, discomforts and esthetic annoyances.

## SOMETHING ABOUT SHOES.

While the primary object of a medical society is to stimulate interest in medical matters among its members, societies of influence can command the attention of a larger audience than that limited to their members. If deliberate consideration of selected subjects is arranged by influential medical organizations and carefully reported upon by competent critics, such reports cannot fail to have weight in the community.

Some of the work of the Boston Society for Medical Improvement, one of the oldest medical societies in the country, may illustrate this fact. The reports and meetings organized by the Society to discuss medical education, the evil effect of street dust, the health of school girls, smallpox and vaccination, the pathology of smallpox, blood pressure and surgical shock have excited much more than local interest, and have been quoted and referred to extensively.

The subjects of scoliosis, of tuberculosis and of antiseptic details have been recently carefully considered. At the next meeting of the Society (announced in another part of the Journal) the subject of "Shoe Deformities and Shoes" is to be presented. If all the members of the profession who have suffered and are suffering, or who are about to suffer from the ills due to faulty shoes attend the meeting, which is to be an open one, one to which all physicians are invited,— there will be no lack of a sympathetic audience to stimulate the speakers and to absorb information which may be of service to many people.

## MEDICAL NOTES.

Pathological Exhibit at the St. Louis Fair. — Under the general direction of the American Medical Association a pathological exhibit will be provided for the St. Louis Fair, covering the fields of pathology and bacteriology.

Endowment for Medical Education. — It is announced that Sir Donald Currie has given £100,000 to University College of London, available on its incorporation with the University of London. A new building will be erected on land which has been procured, but the exact way in which the gift will be expended has not yet been determined upon.

Measles in Philadelphia. — It is reported that there are upwards of 3000 cases of measles under treatment at the present time in Philadelphia, and that during a recent week seventeen children died from the disease. Attention is called to the fact that the disease this winter has been more serious in its results than scarlet fever, due in a measure to the popular impression that it is a trifling affection.

Bulletins of the University of California. — It is announced that bulletins of pathology are to be issued from the medical department of the University of California under the auspices of the pathological department. It is a matter of regret that original work of merit should continue to be published in special bulletins of small circulation. Excellent as such periodicals may be in themselves, their multiplication, for obvious reasons, is at the present time wholly inadvisable.

Medical Research Laboratory in Paris. — A new Medical Research Laboratory was opened in Paris on March 21, with comparatively small ceremony, Prof. Charles Richet acting in the capacity of spokesman for the Faculty of Medicine. The laboratory is built within the line of the old fortifications of Paris, and is intended especially for animal experimentation. Every care has been taken that animals may be kept under the best hygienic conditions. The laboratory is to be under the direction of the Faculty of Medicine, the city giving the ground and the Medical Faculty paying the cost of building and equipment. A considerable amount of money was also given by other persons interested.

Chicago Water Supply. — According to the *Bulletin of the Chicago Health Department* the city water is still bad, all stations showing the presence of serious contamination during the last three days of the week. Nearly every sample shows the presence of colon bacilli and an excessive number of other bacteria. This condition is becoming progressively worse, and may be expected to continue for some weeks. The supply from the Chicago Avenue and the C. H. Harrison cribs has been contaminated for more than a week; that from the other stations has been "safe" only one day each.

The number of positive reactions in the Widal test for typhoid fever is double that of last week, showing that typhoid fever is on the increase, as was forecast in the Bulletin of March 5. This, of course, will continue, especially among those who drink the contaminated hydrant water. All water at the present should be sterilized by boiling.

Medical and Dental Professions Unite on Questions of Legislation. — According to the *Medical News* the Chicago Medical Society

and the organized dental profession agree that all questions of legislation and larger public policy relating to medical and dental affairs shall be referred to a committee, to be known as the Committee on Public Relations. This Committee is to consist of ten members, five from each profession. It shall have a chairman and a secretary. Any questions of public policy or public relation affecting either the medical or dental profession, or of legislation affecting directly or indirectly either of them, can be referred to this Committee. It will be the duty of the Committee to carefully consider these questions. It will have the power to recommend either specific action or general attitude to the societies from which the members come as delegates. There shall be an annual meeting of the Committee at which organization shall be effected and continued. Other than this the meetings shall be special, and can be called by the President or by any two members. The officers shall be elected for one year. The method of election of the delegates and the length of their service shall be regulated by the societies which they represent.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon April 6, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 56, scarlatina 19, typhoid fever 2, measles 197, smallpox 0.

A Home for the Aged. — It is announced that through the will of Mrs. Julie H. Nevins, whose husband was formerly of Methuen, Mass., a home for the aged is to be built and sustained at an expenditure of one million dollars. No definite plans have as yet been made as to the site of the proposed building, or whether it will be established within the city limits or in the country. It is to be designed for the accommodation of one hundred persons.

Censors' Examination, Suffolk District Medical Society. — The censors of the Suffolk District Medical Society, officiating for the Society at large, will meet to examine candidates for admission to the Massachusetts Medical Society, at 8, The Fenway, on Thursday, May 12, 1904, at 2 P.M. Candidates should make personal application to the Secretary, and present their medical diplomas, at least three days before the examination. For further particulars, apply from 2 to 3 P.M., to L. R. G. Crandon, M.D., Secretary, 366 Commonwealth Avenue.

Massachusetts Emergency and Hygiene Association. — At the annual meeting of this association, recently held in Boston, Dr. James J. Minot, the president, spoke favorably of the training of women attendants at the Vincent Memorial Hospital, and stated that their services are greatly sought. Dr. Minot was re-elected president; Dr. H. P. Walcott and others, vice-presidents, and Dr. R. G. Loring, treasurer.

### NEW YORK.

Dispensary Building of Mount Sinai Hospital. — The children of the late Mayer Lehman, who for nineteen years was one of the board of directors of the Mount Sinai Hospital, have contributed $93,000 for the new Dispensary Building of that institution, which is to be dedicated in perpetuity in memory of Mr. Lehman.

Bequests to Hospitals. — By the will of Maximilian Schaefer, a wealthy New York brewer who died recently, $12,000 is bequeathed to charities, $7,500 of that amount being left to the German Hospital and Dispensary. Mrs. John E. Parsons has contributed the sum of $1,000 towards the permanent endowment of the New York Eye and Ear Infirmary.

A Heavy Pair. — Mrs. Chauncey Morlan, the lesser half of probably the heaviest married couple in the world, died at Huber's Museum, New York, on March 30. At the time of her death she is said to have weighed about 420 pounds, but her husband states that when she was married to him eleven years ago, at the age of twenty, her weight was 582, and that she retained this weight for over ten years. Her height was six feet, one inch. Morlan's own weight he gives at 748 pounds.

Improvement of Raymond Street Jail. — In consequence of its bad sanitary condition, President Darlington of the Health Department recently ordered the old Raymond Street Jail in Brooklyn to be vacated, and the sheriff of Kings County was consequently put to his wits' end to know what to do with the prisoners under his charge. Sufficient influence has now, however, been brought to bear upon the Board of Estimate and Apportionment to secure an appropriation of $20,000, and it is stated that for that sum the jail can be placed in excellent repair.

Public Comfort Pavilion. — In the new De Witt Clinton Park, on the bank of the Hudson between 52d and 54th streets, there is to be

erected the largest, handsomest and most expensive public comfort pavilion in the city. In it there will be baths for both sexes, in addition to the usual equipment of other public comfort stations, and the estimated cost is $50,000. The facade, 132 feet long, will be typically Italian, with a colonnade similar in construction to a pergola, 206 feet in length, which is to be erected directly opposite to it.

Deaths in February. — The bulletin of the State Department of Health for the month of February shows that there were 12,749 deaths in the state during the month, an average of about 440 per day. No previous February mortality has ever equalled this, which exceeds by almost 2,000 deaths the average for the month during the past five years. Pneumonia was the chief cause of the increase. An epidemic of influenza has also prevailed during the last three months. An outbreak of typhoid fever dedeloped in Watertown, Jefferson County, and has continued through February and March. Up to the present time about 600 cases have occurred, with 48 deaths. Smallpox, the bulletin states, exists in forty-seven municipalities in the state.

## Miscellany.

### CIRCULAR OF THE IMPERIAL BOARD OF HEALTH OF GERMANY UPON TUBERCULOSIS.

The Imperial Health Board has issued a valuable circular for popular distribution, the topics treated being:

(1) What is tuberculosis? In this portion it is stated that 100,000 persons die in Germany from this cause in each year, and one-third of all the deaths at the wage-earning period of life (fifteen to sixty years) are from the same cause.

(2) In what manner does one become infected?
   (*a*) By breathing in the bacillus arising from dried sputum, or by the minute moist drops thrown from the mouth while coughing or speaking.
   (*b*) By the food.
   (*c*) By wounds or abrasions of the skin or mucous membrane (enumerating many of the modes in which this method of infection may occur).

(3) How may one avoid infection?

(4) Advice to those who are specially exposed to infection.

(5) Advice to the sick.

(The cost of this excellent circular is 25 marks per 1,000, less than one cent each.)

### THE WATER SUPPLY OF PARIS.

Although some of the newspapers have fallen into the trap laid by the nomenclature often used in France and more generally in Germany, and have announced that an outbreak of typhus fever has occurred in Paris, the fact is, as mentioned by our correspondent early this month, that the outbreak is one of typhoid fever. It began apparently during the third week of February, and the latest returns show that the number of cases under treatment is steadily increasing. The occurrence has given rise to a lively attack by some of the Parisian journals on the body responsible for the administration of the water supply of Paris; one of the newspapers has announced its intention to placard the infected districts with a notice advising the inhabitants to boil all drinking water. On the same day the Municipal Council adopted a unanimous resolution blaming those responsible for administrating the water supply for not notifying the people of the risk they ran. This had been preceded by an announcement from the Prefect of the Seine to the effect that the recent torrential rains "had modified the régime of the water," and recommending all inhabitants of Paris to boil all water used for drinking. Bacteriological examination of the water collected in certain areas is stated to have shown that it contains bacilli which, though not enteric, are of a suspicious character. — *British Medical Journal.*

### GLYKON: THE REINCARNATE GOD ASKLEPIOS.

In the Bartlett Collection of bronze statuettes at the Boston Museum of Fine Arts is one which has considerable interest for the followers of Æsculapius. It is thus commented on in the last bulletin of the Museum:

> The small serpent with semi-human head is an object of much greater interest than would at first appear. It represents Glykon, the reincarnate god Asklepios, whose worship established about 150 A.D., flourished for a century or more throughout Asia Minor and even reached Rome. The story of the origin and spread of the cult is told with much entertaining detail in Lucian's "Alexander, or the False Prophet."
>
> This Alexander was a native of Abonouteichos, a Paphlagonian town on the southern shore of the Black Sea. Of great natural gifts, he was the apt pupil of a certain sorcerer-physician who had learned the magic art from the notorious Apollonios of Tyana. After the death of his master, Alexander found himself a partner with whom he wandered for a long period in Asia and Europe, practicing the profession of magician. Finally, at Pella in Macedonia, they bought a large tame serpent for a few obols, and, to make gainful use of his acquisition, hit upon the scheme of establishing an oracle in Alexander's native town. Accordingly they buried and later caused to be discovered, in the very ancient temple of Apollo in Chalcedon (on the Propontis opposite Byzantium), bronze tablets foretelling that Asklepios was about to return to earth and take up his abode in Abonouteichos. The citizens of that place, moved by the honor thus done them, forth-

with set about building a temple for the god, while Alexander presented himself as his divinely appointed priest. On a certain morning, fantastically apparelled, he led the people to the site of the new temple, went singing and praying down into the water that had collected in the excavation, and drew thence an egg. This broken, a small snake issued forth and twined itself about his finger. Thus was Asklepios reborn and prophecy fulfilled in the eyes of the amazed, adoring multitude. (The egg had been deposited in the mud the preceding night by the crafty priest. It was a goose's egg, with the snake substituted for its contents and the aperture closed with wax.)

A day or two later the people were admitted to a dimly lighted chamber where their priest, gorgeously attired, sat with his serpent-god's body twined about his neck and its tail reaching the floor in front of him (to such a size had it miraculously lengthened) and — greater wonder — its face, peering through the prophet's beard, seemed almost human. The body belonged to the tame snake bought at a bargain in Pella; the head the people saw was an affair of linen, cleverly fashioned and painted in some degree of human likeness, with jaws and fangs worked by means of horse-hair.

When at length the temple had been completed, the new Asklepios, as prophet and physician, gave counsel or information on any matter laid before him for a fee or one drachm and two obols (a shilling). Questions coming in sealed scrolls — with the fee — were returned, answered, with seals unbroken. (Alexander was an adept at duplicating seals, or removing and replacing them undamaged). Responses were in verse, and often ambiguous or unintelligible, in accordance with oracular tradition. The annual income from fees alone was some 70,000 to 80,000 drachms, beside that from the many gifts prompted by hope or gratitude or fear. For a great price, too, it was vouchsafed wealthy and powerful patrons to hear Glykon's response from his own mouth. The well-trained snake would sit coiled up with his head erect, as we see him in the statuette, and wearing his linen mask, which had been fitted with a tube (made of cranes' windpipes, says Lucian), into which a concealed attendant would recite the verse the astonished inquirer heard issuing from the serpent's mouth. Such an "autophonous" oracle sent a general of Marcus Aurelius to overwhelming defeat at the hands of the Parthians. The victory another "autophone" had promised if the Romans should cast a pair of lions into the Danube was won by the enemy. (This episode of the lions is commemorated on the column of Marcus Aurelius at Rome.)

In spite of conspicuous ill guessing and of some exposures of his trickery, Alexander continued successful to the end, partly owing to the protection of the greatest of his dupes, Rutilianus, a powerful senator who became his son-in-law, and whose influence augmented his prestige and assured him against the interference of Rome. The prophet even secured a change of the name of his city from Abonouteichos (Wall of Abonos) to the aristocratic Ionopolis (City of the Ionians).

The cast beside the statuette is from one of the earliest coins issued under the new title, a bronze of Lucius Verus (161 to 169 A.D.), with that emperor's bust and name on the obverse, and on the reverse Glykon with his name and that of the Ionopolitans. Coins of Ionopolis continue to show the effigy of the god at least until 252 A.D.

In the course of his account of this most successful ancient religious imposture, Lucian remarks that innumerable portraits were made of Glykon — paintings and images of silver and bronze. This little figure is apparently the first of these images to be discovered. It shows, incidentally, how well the art of bronze casting was still practiced as late as the latter half of the second century A.D.

## Correspondence.

### THE GRAPHOPHONE IN THERAPEUTICS.

March, 1904.

Mr. Editor: In Japan during the summer of 1899, a friend of mine and I hired a small island situate in the bay of Sagami, about a dozen miles south of Kamakura and a hundred and fifty yards from the mainland, upon which was a small fishing village called Sajima. The island was of about two and a half acres in extent, sacred to Teujin, the god of caligraphy, and therefore known as Teujinshima. Upon it was a single house large enough for us and our entourage, together with a shrine devoted to the memory and worship of Teujin. The whole outfit was the property of the Imperial household and came into our temporary possession in a very complicated, roundabout and Japanese fashion, the details of which are too numerous to mention. A common friend of ours came to visit us on the island. He had just returned from Formosa and was broken down from a combination of dysentery, malarial fever and rheumatism which had confined him to hospital for six months. He had been very ill and came to us in hopes that the quiet and isolation of our insular paradise might benefit him. He did not improve, but gradually grew feebler and finally was obliged to take to his bed, as we say, which in Japan means that he did not rise from the floor. With this increasing weakness there developed a constipation upon which neither Cockles pills nor Hunyadi Janos water had any effect. After a week's delay in having a movement of the bowels, my friend and I held what is known in the practice of medicine as a consultation. We decided that the case demanded the administration of an enema. We commanded and carefully supervised the concoction of an injection composed of hot water, glycerine and soapsuds, a pailful. After the injection fluid had been compounded and pronounced good, we made the discovery that although we had plenty of ammunition we had no gun. There was no syringe on the island, not even a Royal P., and none nearer than Tokyo, a distance of some sixty miles. We had a small bamboo which we fashioned into an excellent anal pipe but nothing more. It was suggested that we each blow successive mouthfuls of the injection into the rectum. This idea was rejected as being more likely to produce nausea in us than defecation on the part of the patient. There was a graphophone in the house with which we used to amuse the Japanese kids who swam over every day from the mainlaind to visit us. We were both struck with the fact that the india-rubber tubes of this machine which serve to conduct its vociferations to the ear would also convey fluid. With the help of bamboo, twine and surgical adhesive plaster we spliced the tubes together and attaching the aforesaid bamboo nozzle to one end and the tin trumpet of the graphophone to the other we had an injection apparatus of novel construction but of rare efficacy as its use proved. As the crow flies the distance between the trumpet and the nozzle was a matter of about four feet. The intricate tortuosity of the tubes, however, rendered the distance traversed by the injection one of some yards. The practical results of the use of this acoustic enema were two-fold. Upon the patient the effect was all that could be desired. Upon the graphophone, however, the effect was prejudicial in the extreme. The sounds which issued from it after its prostitution were so fecal and unfit for ears polite that we were obliged to destroy the instrument. I venture to say that this is the first and probably the only instance of the application of the graphophone as an aid to therapeutics.

Shinto.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MARCH 26, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseases. | Typhoid fever. |
| New York . . | 3,908,644 | 1,803 | 523 | 21.18 | 25.90 | 2.44 | 2.44 | .50 |
| Chicago . . . | 2,021,086 | 626 | 146 | 21.88 | 24.91 | 1.43 | 4.95 | 1.27 |
| Philadelphia | 1,407,968 | 585 | 150 | 28.41 | 21.78 | 2.09 | 5.22 | 2.96 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 236 | 62 | 25.84 | 20.76 | — | 1.28 | 1.28 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 138 | — | 26.08 | 18.11 | 2.90 | 5.80 | 6.52 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 84 | 27 | 16.66 | 25.70 | 3.21 | 2.14 | — |
| Boston . . . | 617,950 | 237 | 61 | 22.78 | 18.98 | 2.11 | .42 | — |
| Worcester . . | 136,925 | 47 | 7 | 8.50 | 14.89 | — | — | — |
| Fall River . . | 119,349 | 34 | 17 | 14.70 | 23.53 | — | — | — |
| Lowell . . . | 104,402 | 41 | 14 | 9.75 | 26.82 | — | — | 2.44 |
| Cambridge . | 100,998 | 46 | 14 | 13.04 | 15.22 | — | — | — |
| Lynn . . . . | 73,875 | 27 | — | 3.70 | — | — | — | — |
| Lawrence . . | 72,348 | 19 | 6 | 15.79 | 31.58 | — | 5.26 | — |
| Springfield . | 72,020 | 29 | 7 | 6.90 | 10.34 | 3.45 | — | — |
| Somerville . | 70,413 | 14 | 1 | 7.14 | 28.57 | — | — | — |
| New Bedford | 68,863 | 27 | 10 | 18.51 | 25.92 | — | 7.40 | — |
| Holyoke . . . | 50,538 | — | — | — | — | — | — | — |
| Brockton . . | 46,601 | 17 | 3 | 5.88 | 5.88 | — | — | — |
| Newton . . . | 39,310 | 5 | 1 | — | 20.00 | — | — | — |
| Haverhill . . | 39,061 | 8 | 2 | — | 12.50 | — | — | — |
| Malden . . . | 37,205 | 17 | 4 | 17.64 | 17.64 | — | — | 5.88 |
| Salem . . . . | 37,188 | 17 | 3 | 5.88 | — | — | — | 5.88 |
| Chelsea . . . | 36,499 | 14 | 1 | 21.42 | 21.42 | — | — | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 19 | 4 | 10.52 | 47.37 | — | — | — |
| Everett . . . | 30,209 | 9 | 1 | 22.22 | — | 11.11 | — | — |
| North Adams | 29,201 | 13 | 2 | 15.40 | 15.40 | — | — | — |
| Quincy . . . | 26,798 | 12 | 2 | — | 25.00 | — | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 4 | 1 | 25.00 | — | — | — | — |
| Brookline . . | 23,576 | 4 | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | 7 | 1 | — | 28.60 | — | — | — |
| Medford . . | 21,956 | 2 | 1 | — | — | — | — | — |
| Chicopee . . | 21,692 | 13 | 6 | 7.70 | 7.70 | — | — | — |
| Northampton | 20,314 | 5 | 1 | 60.00 | — | — | — | 20.00 |
| Beverly . . . | 15,807 | 4 | 1 | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 3 | 0 | — | — | — | — | — |
| Adams . . . | 14,745 | 0 | — | — | — | — | — | — |
| Attleboro . . | 14,561 | 5 | — | 40.00 | 40.00 | 20.00 | — | — |
| Hyde Park . | 14,500 | 2 | 1 | 50.00 | — | — | — | — |
| Newburyport | 14,478 | 6 | 0 | 33.33 | — | — | — | — |
| Woburn . . . | 14,315 | 5 | 2 | — | 20.00 | — | — | — |
| Melrose . . . | 13,819 | 7 | — | 28.60 | 14.30 | 14.30 | — | — |
| Westfield . . | 13,809 | 2 | — | 50.00 | — | — | — | 50.00 |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 6 | 0 | 16.67 | 50.00 | — | 16.67 | — |
| Revere . . . | 13,609 | 2 | — | — | — | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 3 | 1 | 100 00 | — | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 4 | 0 | — | 25.00 | — | — | — |
| Weymouth . | 11,350 | 3 | 0 | — | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 4,211; under five years of age, 1,083; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 910; acute lung diseases 978, consumption 462, scarlet fever 43, whooping cough 13, cerebrospinal meningitis 20, smallpox 9, erysipelas 20, puerperal fever 15, measles 50, typhoid fever 51, diarrheal diseases 124, diphtheria and croup 81.

From whooping-cough, New York 6, Philadelphia 1, Baltimore 1, Pittsburg 3, Boston 1, Cambridge, 1. From smallpox, Philadelphia 8, Lowell 1. From cerebrospinal meningitis, New York 13, Pittsburg 1, Providence 2, and Boston, Worcester, North Adams and Gardner, 1 each. From erysipelas, New York 9, Chicago 3, Philadelphia 4, Baltimore 1, Boston 3. From measles, New York 29, Chicago 1, Philadelphia 16, Boston 2, Lowell 1, Brockton 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,425, for the week ending March 12, the death-rate was 19.0. Deaths reported, 5,577; acute diseases of the respiratory organs (London) 235, whooping cough 169, diphtheria 65, measles 148, smallpox 6, scarlet fever 31.

The death-rate ranged from 6.9 in Tottenham to 25.8 in Preston; London 20.1, West Ham 18.1, Brighton 23.5, Southampton 13.9, Plymouth 21.5, Bristol 17.6, Birmingham 22.0, Leicester 14.0, Nottingham 21.6, Liverpool 21.9, Bolton 16.3, Manchester 23.0, Bradford 16.6, Leeds 17.6, Hull 16.2, Cardiff, 18.6, Rhondda 17.5, Merthyr Tydfil 21.5, Norwich 23.9, Handsworth 15.7.

## METEOROLOGICAL RECORD.

For the week ending March 26, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. . 20 | 29.80 | 40 | 46 | 33 | 70 | 64 | 67 | W | W | 18 | 17 | F. | C. | .05 |
| M . 21 | 30.31 | 37 | 44 | 30 | 55 | 50 | 52 | N W | S | 14 | 7 | C. | O. | 0 |
| T. . 22 | 30.04 | 42 | 49 | 34 | 81 | 100 | 90 | S E | S W | 7 | 7 | R. | R. | .08 |
| W . 23 | 29 95 | 48 | 55 | 34 | 93 | 56 | 74 | W | W | 12 | 12 | R. | C. | .16 |
| T. . 24 | 30.42 | 47 | 56 | 41 | 55 | 40 | 48 | N W | S | 10 | 12 | C. | C. | 0 |
| F. . 25 | 30.28 | 48 | 60 | 38 | 71 | 88 | 80 | S | S W | 15 | 24 | O. | R. | T. |
| S. . 26 | 29.62 | 54 | 70 | 35 | 77 | 44 | 62 | S W | W | 20 | 25 | O. | F. | T. |
| ☞ | 30.06 | | 54 | 35 | | | 68 | | | | | | | .29 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

DELAYED PUBLICATION. — The strike, among printers and pressmen, is now over. And it is hoped to issue the JOURNAL on time from April 14th.

## SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — The regular meeting of the Society will be held in Sprague Hall, Medical Library Building, on Monday, April 11, 1904, at 8.15 P. M. Dr. Edward H. Bradford will present a paper entitled "Shoe Deformities and Shoes." The paper will be illustrated by many lantern slides. Drs. Lovett, Brackett, Goldthwait and Dane will take part in the discussion. All interested are invited to attend.

ARTHUR K. STONE, M. D., Secretary.
543 Boylston St., Boston.

THE NEW ENGLAND HOSPITAL MEDICAL SOCIETY. — A regular meeting of the Society will be held at Hotel Nottingham, Boston, Mass., on Thursday, April 21, 1904, at 7.30 P. M. The meeting will be in charge of the Section on Obstetrics, Dr. Mary F. Hobart, Chairman. Paper, "Three cases of Eclampsia with Accouchement Force," by Dr. Hobart. "Modern methods of Diagnosis and Treatment of Puerperal Septicæmia," by Drs. Marion Nute and Annie Lee Hamilton.

MARION NUTE, M.D., Secretary *pro tem.*
32 Mill St., Dorchester.

## RECENT DEATHS.

JOHN METCALFE POLK, M.D., of New York, a young physician of great promise and the son of Prof. William, M. Polk, Dean of the medical department of Cornell University, died from pneumonia on March 29, in the twenty-ninth year of his age. He was born in New York City and was graduated from Yale in 1896 and from the Cornell Medical College in 1899.

STEPHEN P. TRUEX, M.D., of Brooklyn, N. Y., died on March 31, at the age of forty-eight years. He was a sufferer from cardiac disease and had lately had a severe attack of influenza. While performing an operation at the Bushwick Central Hospital he was suddenly taken ill, and died in a few minutes. Dr. Truex was born in Owego, N. Y., and was graduated from the Long Island College Hospital in 1891. At the time of his death he was attending gynecologist to the Bushwick Central Hospital, Brooklyn, and lecturer on obstetrics and gynecology at the New York Post-Graduate Medical School and Hospital.

GEORGE H. HAMMOND, M.D., of Freeport, Long Island, N. Y., died on March 29, from pleuro-pneumonia, aged fifty-eight years. For some years he had been a visiting surgeon at the Nassau Hospital, Mineola, Long Island. A son of his, Dr. Frank B. Hammond, is practicing in Brazil, South America.

PELEG WADSWORTH, M.D., M. M. S. S., died in Malden, April 2, 1904, aged sixty-nine years.

## BOOKS AND PAMPHLETS RECEIVED.

Twenty-sixth Annual Report of the Board of Health of the City of Lowell, for the Year 1903.

Twenty-fifth Annual Report of the State Board of Charity of Massachusetts. Boston. January, 1904.

# Original Articles.

## BILATERAL FACIAL ATROPHY, WITH REPORT OF A CASE AND ITS TREATMENT BY THE SUBCUTANEOUS INJECTION OF PARAFFIN.*

BY BENJAMIN T. BURLEY, M.D., WORCESTER, MASS.

The rarity of this affection, the interest in its etiology and its recent cosmetic treatment, furnish my excuse for presenting this paper.

In 1825 Parry [1] described among some cases of hemiplegia the first instance to appear in literature of unilateral facial atrophy. From that time up to 1898 Beer [12] had collected 142 cases where the atrophy was unilateral and six cases where the atrophy was bilateral. Since then, I have found previously omitted or subsequently reported 70 cases of unilateral and four (including following case) of bilateral facial atrophy.

The disease has been successively termed "proso-dys morphia" (Bergson, 1837); "trophoneurosis" (Romberg, 1846); "l'aplasie lamineuse progressive" (Lande, 1870); and "progressive facial hemiatrophy" (Eulenberg, 1875). The latter term is still usually employed, but is obviously misleading, not only because the affection is at times bilateral but also because it is common for the process to run its course within a comparatively short time and then to remain at rest. Mœbius advances the term "Circumscribed facial atrophy" to which the same exceptions cannot be taken. Even the simpler "facial atrophy," designating the special case as unilateral or bilateral would seem to be sufficient, especially as we still lack a pathological diagnosis. Before discussing the questions of etiology and treatment, I wish to present the following case:

Miss B., now twenty-three years old and single, was born normally of supposedly healthy parents. Her mother, however, died two months later of nephritis. Her father is living and well. She had no brothers or sisters. No history of chronic disease in any of the family could be elicited. She had measles and pertussis in early childhood and had frequent sore throats, once or twice with formation of a peritonsillar abscess, until almost ten years old. At eight she had her first attack of pneumonia, which ran a fairly severe course, but she made a good recovery and was well until eleven years of age (Fig. 1), when she was again a victim of pneumonia. From this attack she seemed to make a normal recovery and got about again. Her friends, however, noticed that her face instead of regaining its fulness became progressively thinner and her cheeks more sunken. Alarmed at her condition, her family and her physician withdrew her from school, kept her out of doors, and plied her with tonics, cod liver oil and prepared foods. This sort of treatment was kept up for a year and a half without apparent effect upon her face, which was now strikingly atrophic, apparently about equal on both sides, and this had happened so far as she remembered without any subjective symptoms. Pain, paresthesia and any consciousness of fibrillary twitching were absent. The rest of her body seemed to have developed normally in this period. As

* Read before the Boston Society of Psychiatry and Neurology, March 17, 1904.



Fig. 1.— Age 11, before onset of Atrophy.

she felt quite herself and was undoubtedly strong, even athletic, she continued her course at school until it was finished, except for a period when she was sixteen years old. At this time she is said to have had pneumonia again with a good recovery, no cough persisting. At sixteen years she first menstruated, but has done so regularly and normally since.

Her fourth and last attack of pneumonia was at twenty-one, and again after being very ill, she recovered fully. The last two attacks apparently had no effect whatever on the condition of her face. In spite of various and persistent treatment by electricity,



Fig. 2.— Patient just before treatment, December, 1903.



Fig. 3.—Same as Fig 2. Age 23.

massage, etc., there has been no appreciable change since she was thirteen.

The physical examination of the patient when I first saw her in November, 1903, was as follows: In general appearance, emaciated as to face. Height, 5 ft., 5 in. Weight, 130 lbs. Evidently not of nervous temperament. No stigmata of deviation found. Speech clear. No tremor of any muscles. Movements of eyes normal. No nystagmus. Pupils equal and react normally to light and distance. The skin over entire face is pale and much thinned. The subcutaneous tissues from the orbits to the chin and back to the ears are apparently entirely wanting, the play of the muscle bundles of the delicate facial muscles being plainly visible. The absence of the fat globus leaves also a marked depression in each cheek. The act of laughing causes a marked wrinkling about the mouth. The heart and arteries are normal, as is the pulsation in both carotids. Good resonance over lungs with no rales heard. Abdomen shows nothing abnormal. Quadriceps and achilles tendon reflexes are both present and normal. The superficial reflexes are normal. The muscular irritability to mechanical stimuli is slightly increased, especially in the sterno-cleido mastoid muscle. Sensibility to touch, pain and temperature was normal both for the face and other parts. The electrical excitability of the facial muscles was a little increased (probably due to lack of intervening tissue).

The action of sebaceous and sudoriferous glands of the face is not appreciably impaired.

Viewed from below the eyes looked unduly prominent on account of wasting below the orbits; whereas from above they appeared in normal position.

At the time of this examination the patient had no subjective symptoms and no physical discomfort. She was, however, becoming much annoyed by the comments of strangers, who naturally assumed that she had phthisis or some other destructive disease.

After observing the patient for two months, it was decided to employ paraffin subcutaneously to replace the lost tissue. At the first sitting 1½ c.c. of paraffin of melting point, 109.5 degrees, was injected below each malar process. Aside from a slight prickling sensation coming on occasionally for the next day or two, which was readily relieved by alcohol bathed over the areas, there was no discomfort. The subsequent swelling was slight and disappeared in twenty-four hours. Similar treatments were carried out at intervals of a week, the process of filling beneath the skin being extended outward and downward, both sides symmetrically. At the third sitting 2 c.c. were injected between the buccinator and masseter muscles on each side to replace the fat globus. In all, nine treatments were given, the last three largely to make the surface uniform. To accomplish this, small injections were made at various points. The result at the end of this time is so satisfactory that no further treatment is likely to be necessary, at least for some months. In place of the atrophied subcutaneous tissue, the patient now has a temporary mechanical substitute, namely, an inert, light but firm substance which gradually is expected to give way to new tissue formation. The natural movements of the face are surprisingly little impaired and the patient has ceased to complain of the feeling of stiffness in her cheeks. In fact, Miss B.'s satisfaction in her present over her former condition is enough to itself advocate similar treatment for other cases of this rare disease.



Fig. 4.—After paraffine injection. Before last treatment, February, 1904.

The variety of symptoms in cases of facial atrophy is well shown in the classification of Fromhold-Treu.[10] In 1893 he collected the

cases and divided them into six groups. He included in group (A) 52 typical cases involving one half of the face; in group (B) 19 cases of atrophy of certain areas of the face; in group (C) 24 cases that were in some way complicated by other symptoms or diseases; in group (D) three congenital cases; in group (E) six cases of bilateral atrophy; and in group (F) eleven cases in which the hemiatrophy was not wholly confined to the face. In spite of this variable symptom-complex there are one or two symptoms that are common to all cases.

Mœbius says, "atrophy of the skin is the only constant symptom." It is probable that he means by this all the lower layers and the fat overlying the muscles, for I have failed to find any case where atrophy of the immediately subcutaneous tisues was not either stated or implied. Atrophy of the skin and lack of underlying and supporting tissue is then characteristic. The skin undergoes a varying amount of degenerative change, usually becoming thin and pale, often discolored and pigmented.

The structure of the sebacious glands and hair is next to go and very rarely that of the sweat glands. The degeneration lacks completeness, however, for tactile sense is practically never absent in a pure case and rarely diminished. Beer found a difference in temperature over the atrophic area in 12 out of 20 cases. In 3 an increase; in 9 a decrease. A seeming high percentage of change but often slight in character.

The muscles usually escape atrophy and are prompt in their action. Their electrical excitability to both faradic and galvanic currents is normal or slightly increased. Sachs [13] reported a case showing muscular twitching, but this is extremely rare.

Atrophy of the cartilages, especially of the nose, also of the bones of the face, may occur and give rise to considerable deformity. These occurring in children are to be distinguished from congenital deformities. A fairly common accompanying symptom especially in areas supplied by the fifth nerve is neuralgia. Apparent involvement of the sympathetic is occasionally mentioned and is accompanied usually by dilated pupil, vaso-motor disturbance on that side, increased tear secretion, and cervical, as well as facial atrophy. More unusual symptoms are atrophy of one half of the tongue, and involvement of the organs of special sense. Taste was diminished in four cases. The ears were eight times affected, twice of traumatic origin. The eyes are often affected in some way or other, though aside from their retraction on account of loss of fat from the orbit their disturbance is not characteristic. There have been reported cases of narrowed field of vision, limited motility, abnormal fundi and inflammations of the whole eye. Occasionally the atrophy affects other localities on the same side. Cerebral symptoms with headache, vertigo, epilepsy and insanity have been reported in about 15% of the cases. It is not to be forgotten that even during the progress of the trouble it is usual for the patient to appear well and strong, and when the course of the disease is once interrupted the cosmetic defect becomes the chief factor.

Immediately one starts to consider the etiology of this condition he is struck with the apparently important influence of sex and age. It is characteristically a disease of childhood to which girls are more susceptible. Beer found the ratio of 57 males to 89 females, and found that over 75% of cases were under twenty-one years of age. Among 78 reliable cases the total of instances following trauma was 24%, accompanying nerve lesion 22%, showing lack of development 6.4%; accompanying skin lesion 3.8%, and presumably following infection 45%. Moreover during the first twenty years, when most of the cases occur, about 50% follow infection, while but 15% follow trauma.

Heredity seems to be without influence in etiology: Seeligmueller alone reporting a case where an aunt had some facial atrophy. More remote hereditary tendencies as to neuralgia and migraine have been reported.

The variability of anatomical location of the atrophy; the lack of definite physiological data, such as the demonstration of special trophic fibers; and the scarcity of evidence from pathological findings still leaves us groping for some general etiological factor. The accumulated evidence can, however, enable us to view the subject with greater advantage than had some of the earlier writers. Bergson [2] in 1837 offered the first theory of the disease in which he bespoke the involvement of the nerves supplying the blood vessels. Later Stilling [3] in connection with his work on spinal irritation, produced a case and a theory that the "diminished reflexion of the sensitive vascular nerves upon the corresponding vaso-motor nerves" was the cause of the atrophy. In 1846, however, Romberg [4] gave the disease more prominence by accurate description and classified it as a tropho-neurosis. This classification was given the confirmatory touch by Samuel [5] in 1860, when he published his interesting work on the trophic nerves. Observers since that time, influenced no doubt by the particular characteristics of the case at hand, have changed, disputed, or credited this theory, and the discussion as to etiology has been held open to each new writer. Lande [14] for instance, had a case in which there seemed to be little change except the loss of fat and connective tissue, and he thereupon advanced the theory of primary local affection of this tissue. Baerwinkel [6] and others placed the seat of the disease in the gasserian ganglion; others have called attention to the involvement of the seventh nerve also. Much interesting material has been written on the part which the cervical sympathetic fibers have to play in this disease, from the time of Seeligmueller, [7] the champion of the theory of the paralysis of the sympathetic, and Brunner, [8] the champion of the "permanent state of irritation of the sympathetic," down to the recent work of Barrel.[9]

The monograph of Barrel prompted by the

theory advanced almost simultaneously by Bouveyon of Lyons and Jacquet of Paris may have sufficient bearing upon the foregoing case to warrant further notice. The writer first explains the position of the inferior cervical ganglion of the sympathetic as being more thoracic than cervical, lying as it does just in front of the articulation of the first rib with its vertebral body. It, moreover, is often found fused with the first dorsal ganglion. Its bed is just over the summit of the parietal pleura in a triangular cavity, with the vertebro-pleural ligament below, the costo-pleural ligament and the small scalenus muscle outside. This relation to the pleura and lung figures significantly in the published cases. Quotations are made from physiological experiments on animals. Among others, Floresco[15] in 1899 concluded that after double section of the sympathetic "the skin, the muscular system, the central nervous system, the eye and probably the osseous system, undergo an arrest of development." Barrel then goes on to report six cases, in three of which there was cervico-facial atrophy of one side. This obviously could not be explained by a lesion of the fifth nerve alone. Further, in one of these cases the upper part of thorax and arm were involved, a condition which called attention to the sympathetic as the only communicating system for the nerves supplying these areas. In these three cases there was marked pulmonary tuberculosis, and autopsy on each case revealed the fact that the inferior cervical ganglion on the affected side had become involved in a pachy-pleuritis or cellulitis extending from the pleura. This deposit became fibrous, could hardly be removed and had evidently destroyed the function of the ganglion. In two of these cases either vasomotor, secretory or pupillary disturbance was also present, but in one case there was only the facio-cervical hemiatrophy.

Mendel's[16] much quoted case, autopsied seven years after it had been described by Virchow, showed an interstitial neuritis of the branches of the fifth nerve with degeneration of the fibers. Some of the upper root fibers as well as some cells of the locus ceruleus also showed atrophy. He conjectured from this that the upper root of the fifth nerve contained trophic fibers. Homen[17] has added an important contribution to the anatomical and pathological data. His patient in the course of a few weeks developed an hemiatrophy of the face and tongue accompanied by anesthesia of the region and paralysis of the oculomotor nerves. At autopsy a tumor of the dura was found pressing on the gasserian ganglion, the branches of the trigeminus and partially, the oculomotor nerves. Microscopic examination of the cranial nerves showed the phenomena of degeneration to be very marked in all the branches of the fifth and less marked in the third, fourth, sixth and eighth nerves. In the reported cases following trauma which affect usually some branch or branches of the fifth nerve, it is common, as in cases reported by Bechtereff,[18] Romberg, Banham[19] and others, to get, beside the atrophic disturbance, pain and a diminution of sensibility in the area supplied by the nerve, — probably the attributes of a greater or less degree of neuritis and nerve degeneration. In most of these cases where atrophy persists on top of an interstitial neuritis of the trigeminal Nothnagel admits a lesion of the superior cervical sympathetic ganglion through which pass the vasomotor fibers of the facial region. Nothnagel in this is inclined to overlook the possibility of a lesion of the inferior cervical producing a similar trophic change. Yet Seeligmueller's two cases of injury give some evidence to this effect. Case (1) was a child that had its clavicle and scapular broken in delivery. Not only was there paralysis, motor and sensory, of the right arm, but the right side of the face atrophied and the right pupil dilated. Later, remarkable improvement took place as to paralysis, but the eye and face remained unchanged. Case (2) was a lieutenant, who was struck in the neck just above the left clavicle by a bullet. The bullet made its exit at the fourth dorsal vertebra behind, crossing the path of the inferior cervical ganglion. Paralysis of the left arm occurred at once and considerable suppuration followed. The case was not seen again until nine months later when as in the former case there was found marked atrophy in the corresponding side of the face with pupillary paralysis and some vasomotor disturbance, while the brachial paralysis was fast improving.

From this evidence then and that furnished by the cases reported by Barrel; from the anatomical relation of contiguity if not of anastomosis of the sympathetic fibers with the cranial and cervical nerves, especially at the gasserian ganglion (Vulpian[26]); and from the fact that no other system of nerves is adequate to explain many of the cases of atrophy, it is natural to turn to the sympathetic system as the probable etiological factor. The argument of some writers that the absence of dilated pupil and visible vasomotor change rules out involvement of the sympathetic is hardly conclusive when we recall that these may be only special functions of the sympathetic, and that the fibers to produce them arise from certain regions of the cord. (Langley.[21])

The influence of sensory stimuli in atrophic conditions is a subject of some interest, but from clinical evidence is not of great importance. The fact, however, that "after severance of the afferent roots, the motor nerve cells of their spinal origin soon present recognizable structural change" (Warrington[22]), may prove to be significant. In fact, Dercum[23] believing the disease to be due to a "radical perversion of the afferent stimulus," recommended early resection of the various branches of the fifth nerve.

Weir Mitchell[29] in 1885 published a remarkable case of a girl twelve years old who since the age of six had shown a lack of fat tissue above the waist, the hips and legs remaining normal. He attempted to account for such a condition only on the probabilty of a separate center for

fat nutrition. On account of the accompanying analgesia in his case, he was inclined to place the center in some portion of the posterior segment of the cord.

The diagnosis of facial atrophy can usually be made at once when it is unilateral. The lack of underlying fat and the degenerated skin of one side form a contrast to the well side which can hardly be mistaken for anything but a congenital deformity. When the case is bilateral, however, a diagnosis may only be arrived at after a careful review of the history and after finding an atrophy practically confined to the face which resists all therapeutic treatment. The above reported case is one in point. Miss B. since her pulmonary infection twelve years before had developed facial atrophy. For a long time it was not remarked that the rest of her body was not similarly involved, and in the meantime she was suspected to have phthisis or other chronic disease, and received treatment accordingly. Later, treatment by electricity, massage and oily inductions was more directly applied to the face but without avail. The face still apparently belonged to a woman of twice her years. These facts occurring in an otherwise plump and athletic girl are sufficient for a diagnosis. The resemblance of this case to the second bilateral one published by Mœbius is striking.

As to the etiology in my case I can only point to one or two possibilities. It seems clear that her trouble followed a pulmonary infection, and whether this infection displayed some selective action on the nerves and tissues of the face; or whether, following the suggestion of Barrel, we might not suppose a sufficient involvement of the inferior cervical ganglia in the pleuritis to interfere with their function and cause the loss of their normal influence upon the distributing nerves to the face, will have to be left an open question.

The prognosis in this condition, once the diagnosis is made, is always uniform. The atrophy progresses, usually within a year or two of its beginning, to a certain point; and there the process ends with no danger to life and often without discomfort. It is typically, however, unaffected by treatment toward the restoration of normal tissue.

As to treatment Mœbius says, "Es gibt bisher keine Behandlung;" and this is still true as far as most mechanical and therapeutic measures are concerned. It is natural in every case, however, to give a thorough course of massage and electricity at the same time that the patient is receiving tonics and a fattening diet; and any appreciable result from these measures means an error in diagnosis. Up to 1901 this was the most that could be offered to a patient. At that time, following the idea of Gersuny[24] of injecting vaseline in different parts of the body to replace lost tissue, Luxenburger[25] treated two women from Klaussner's clinic in Munich by the subcutaneous infection of prepared vaseline. These were both cases of facial hemiatrophy occurring in girls nineteen years of age, and each had been of about three years' duration. After some months treatment by galvanization without improvement, case 1 was in the course of three weeks given fourteen injections of vaseline in different areas covering the greater part of the left half of the face. Case 2 in whom the atrophy was confined to the lower half of the face and jaw had the contour corrected by only four injections. No mishap occurred in either case and there were no disagreeable subjective symptoms. When seen one and a half months later there had been a slight shrinking of the tissue about the "vaseline depots" which were themselves harder.

Eckstein[26] last year, presented before the Berlin Medical Society another case in which unlike Luxenburger he injected a large quantity of paraffin at one sitting. The patient, a woman of fifty-four years, had had a marked atrophy of the left cheek for forty-four years. Fifteen to 20 cm. of paraffin of 56–58° C. melting point was injected at one time and the patient was discharged the next morning. After six days she returned, the face showing a slight swelling and redness of the part, but no further symptoms. No further report of the case was made.

I find also that, in the report of the Royal Society of Physicians in Vienna for Nov. 6, 1902, Schlesinger presented a similar case whose deformity had been corrected by Gersuny in six sittings with paraffin injection. More recently Moszkowicz[30] and Mauclaire[31] have carried out similar treatment in their cases. I have seen the report of no case of facial atrophy in this country treated in this manner.

The principal use of subcutaneously injected paraffin has been in the treatment of deformities of the nose, and in this manner hundreds of cases have been treated. The results show almost uniform success with careful technique and the operation is seldom attended with marked discomfort or dangerous mishap. Embolism has, however, occurred a few times as in a case reported by Pfannenstiel[27] in which a large amount was used around the rectum and the patient allowed to return home at once. The melting point of the paraffin was not reported which might probably explain the cause.

Paraffin is a hydrocarbon obtained from petroleum by distillation with a melting point varying from about 120° to 160° F. Experience has taught that the most practicable material for use has a melting point around 110°; for, if the melting point be high, injection is difficult on account of rapid cooling and the high temperature is more apt to lead to necrosis; if, however, it is near the body temperature the substance tends to spread and will not support the parts. It is common to add some oily substance to the paraffin to produce a certain melting point. The preference is for a stout all-metal syringe with fixed screw-head so that the paraffin may be forced out gradually by rotating the piston.

The consistency of the paraffin when injected should be soft and pliable so that it comes out like a white thread or comedo. With this precaution that the paraffin be not injected in

liquid form, with strict aseptic technique and with care not to inject enough in one area to cause undue tension of the tissues and consequent disturbance in the circulation, the operation is apparently without danger.

A general anesthetic is not necessary and many do not use a local one on account of the annoyance of the slight local edema. A sensitive patient, however, should have the benefit of cocaine or eucaine locally where the pliability of the tissues will not interfere with the moulding.

The discussion as to what becomes of the injected paraffin is one of great interest. Valuable histological work has been done, but as yet the closing seal of time cannot be put upon the experiments. Mozkowicz found no paraffin in the lymph vessels neighboring the injected area, and finding the paraffin globules surrounded by connective tissue cells, he concluded the paraffin was not absorbed but became encysted. Mauclaire arrives at a similar conclusion, but calls attention to giant cells which appear at the borders of the vacuoles where the connective tisue has penetrated the paraffin. The significance of the cells is not yet determined.

Morton [28] has published some interesting microphotographs of the paraffin in situ in the tissues at intervals of one, two, three and four months after injection. At the end of the first month the globules of paraffin were surrounded by a capsule of embryonic tissue. This tissue was increased at two months and new blood vessels were permeating it. At three months there was marked increase of new tissue, connective, fibrous and embryonic, with a decrease in the amount of paraffin. By the end of the fourth month the space where the paraffin was deposited was entirely filled with embryonic tissue. This the writer says, "shows conclusively that the paraffin soon disappears, whether it undergoes some chemic change or is carried away through the lymphatic system by the leucocytes remains to be settled."

Finally, I wish to express my indebtedness to Dr. James J. Putnam for his valuable counsel; and to Dr. W. G. Curtis for sending me the case and efficiently cooperating in its treatment.

The following cases of facial atrophy make, in addition to those collected by Beer (1898), a total to January, 1904, of 212 unilateral and 10 bilateral cases:

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Maragliano: Salute. Genova, 1879, xiv, 321.
Freudenberg: Aerztl. Int-Bl. Munchen, 1880, xxvii, 425.
Morton: Neurol. Contrib. N. Y., 1880, i, 94.
Boddaert: Ann. Soc. med. de Gand, 1881, lix, 40.
Payne: Tr. Path. Soc. London, 1881, xxxii, 306.
Weiss: Wien. Med. Bl. Wien, 1881, iv, 204.
Wette: Ann. d. stadt. allg. Krankenh. Munchen, 1881, 600.
Seguin: Illst. Quart. M. & S. N. Y., 1882, i, 35.
Jessop & Browne: (2) St. Barth. Hosp. Rep. London, 1882, xviii, 271.
Holland: Am. Pract. Louisville, 1885, xxi, 74.
Grashey: Ann. d. Stadt. allg. Krankenh. Munchen, 1886, iii, 149.
Mills: Syst. Pract. Med. (Pepper) Phila., 1886, v, 693.
Eve: Tr. Path. Soc. London, 1887, xxxviii, 81.
Garrod: Proc. Med. Soc. London, 1887, xi, 351.
Cartwright: Nashville Jour. M. & S., 1888, xli, 191.
Boyd: Illus. Med. News, London, 1889, 51.
Bramwell: Stud. Clin. Med. Edinburg, 1889, 139.
Osler: Am. Jour. Med. Sc. Phila., 1889, xcviii, 261.
Port: Lancet, London, 1889, ii, 1230.
Goldflam: Kron. lek. Warzawa, 1890, xi, 219.
Gosset: Union med. du nord-est, Rheims, 1890, xiv, 316.
Eperon: Arch. d'Opht. Paris, 1890, viii, 199.
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Von Ziegenweidt: Psychiat. en neurol. Baden, 1898, 474.
Höflmeyer: Munchener Med. Woch., 1898, xiii.
Gratschoff: Finska. lak. sallsk. handl. Helsingfors, 1899, xli.
Jagot: Arch. Med. d'Angiers, 1899, iii, 149.
Huber: Archives of Pediatrics., 1899, xvi.
Hoffman: (2) Neurol. Centralblatt., 1900, xxi, 999.
Jadassohn: Corr. Bl. d. Schweizer Aerzte, 1900, 404.
Roque: Ref. Gazette hebdom de Med. et de Chir., 1900, 1161.
Jacquet: Annales de Dermatologie, Aug., 1900.
Mailhouse: Jour. Nerv. & Ment. Dis. N. Y., 1901, 225.
Luxenburger: (2) Munchener kl. Woch., 1901; 1413.
Barrel: De l'hemiatrophie faciale, 1902.
Campbell: British Med. Jour., 1902, ii, 1446.
Frank: Medical Record N. Y., 1902, 13.
Körner: Zeitsch. fur Ohrenheilk., 1902, xli, 357.
Bouveyron: (2) Revue Neurologique, March, 1902.
Lewkowskij: (3) Obozsenje psichjatrji, 1902, vi.
Rothmann: (2) Berliner kl. Woch., 1902, viii, 173.
Schlesinger: Wiener kl. Woch., 1902, 1234.
Woods: Woman's Med. Jour., 1902, xii, 54.
Calmette & Pages: N. iconog. de la Salpetriere, 1903, xvi, 26.
Eckstein: Berliner kl. Woch., 1903, xxiiii.
Debray: Jour. Med. de Bruxelles, 1903, viii, 72.
Naka & Hmenomiya: Ij. Shinbun. Tokio, 1903, 816.
Loebl: Wiener kl. Rundschau, 1903, xvii,450.
Rutten: Un cas d'hemiatrophie, faciale gauche, Namur, 1903.
Zappert: (Bilateral) Wiener kl. Rundschau, 1903, 400.
Mauclaire: Revue d'orthop., Paris, 1903, iv, 511.
Mozkowicz: (3) Wiener kl. Wochensch., 1903, xvi, 33.

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[22] Warrington: Jour. Physiol. London, 1897, vol. xx.
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[24] Gersuny: Zeitsch fur Heilkunde, 1900, H. ix.
[25] Luxenburger: Munchener Med. Wochensch., 1901, 1413.
[26] Eckstein: Berliner kl. Wochensch., 1903, 530.
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[28] Morton: American Medicine, 1903, 663.
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## A MANY-PHASED CASE OF CHOREA.*

BY HORACE E. MARION, M.D., BOSTON.

Mrs. ———, age thirty-seven, died of corrosive-sublimate poisoning at 7 A.M. July 27, 1902. A victim of chorea from childhood, as will be seen later, she gradually became worse. Symptoms of dementia and melancholia, with suicidal tendencies, gradually developed. For a year or more previous to her death she had a trained nurse in constant attendance. On the afternoon of July 26, with the cunning peculiar to this class, she eluded the nurse and swallowed several corrosive tablets which were supposed to be put away beyond the reach of everybody except the nurse.

The immediate effect of the poison was to inhibit the vaso-motor nerves, almost arresting the heart's action, causing the extremities and body to become icy cold, and exciting vomiting and purging. Nothing that was done for her stayed for a moment the fatal termination. Yet for more than twelve hours physicians, nurses and husband worked constantly to relieve what in all reason ought to have been terrible suffering. She never made a single murmur nor expressed the slightest regret for what she had, by her own confession, done.

*Family History.* — Grandmother and two grand-aunts on her father's side suffered from chorea from childhood. Her father and his three sisters were victims of the same malady, — the father but slightly, the aunts much more severely, one becoming insane and one for many years bedridden and unable to feed herself.

*Personal History.* — As a child, intellectual and refined, suffering only from chorea in a mild form. Married at twenty-five; giving birth to six children in eleven years — two girls and four boys. The second (a girl) and the third (a boy) died in infancy — one of entero-colitis, the other of marasmus, both preventable diseases. The fatal termination was no doubt due largely to the increasing infirmity of the mother, who even at this time began to show evidence of beginning dementia. All the subsequent children were cared for by a nurse or an attendant. She had measles and whooping-cough after marriage. Other than this she had no illness, save her confinement, until she was pregnant with her fifth child. Early in this pregnancy she began to suffer from parenchymatous nephritis. The urine contained, most of the time, a large trace of albumen, normal blood, hyaline and granular casts. The last of April, 1898, she was seized with pneumonia, which extended to both lungs, making her desperately sick. During her convalescence she had otitis media, extending to the mastoid cells. Undoubtedly the same micro-organism was in evidence, though its presence was not demonstrated by the microscope.

Mastoid operation was performed on June 2 by Dr. Leland, and she was confined June 12. Her confinement and convalescence thereafter were uneventful. During the attack of pneumonia the chorea was much aggravated, she having practically no control of her muscles. Her chorea and mental conditions were such that she spent March and June, 1900, at the Adams Nervine Asylum. At this time she complained mostly of persistent headache, which, however, never prevented her from sleeping.

In April, 1901, she spent two weeks at the McLean Hospital for the same reason. Symptoms of melancholia became more and more pronounced. Her experience at the hospital made a strong impression upon her, and she constantly alluded to the helpless and hopeless condition of many she saw there. About this time she became interested in the Swedenborgian faith. Spent much of her time reading a book entitled "Our Eternal Homes," which alludes pleasantly and beautifully to the hereafter. So unmistakable became her suicidal tendencies that for more than a year a trained nurse was kept constantly with her.

In December, 1900, to her great delight, no doubt by reason of her feeble mental condition, and to her husband's horror, it was certain that she was pregnant with her sixth child. Her husband was much exercised as to the probable condition and fate of the offspring, and strongly pleaded that abortion might be produced. As his anxiety was certainly not without reason, I called to my assistance Dr. J. J. Putnam, who had been familiar with the case for a long time. After careful consideration, weighing the pros and cons, we were agreed that we had no right to assume that the product of this conception would prove a mental derelict and declined to countenance any interference. Gestation was uneventful, as was her confinement on Sept. 4, 1901.

In February, 1901, I removed an adeno-fibroma of the nipple which had been gradually growing since her first child and which was now very troublesome. The specimen was shown to this Society at the time, on account of its rarity.

Ever after the birth of her child until her death, as already stated, she was under most constant observation, both day and night. Chorea was always present. She complained bitterly of headache, which nothing seemed to relieve, although many nostrums and various "treatments," such as Christian Science, electro mesmerism, etc., were tried, only to be soon thrown aside. Dementia became more marked and melancholia more pronounced, until death closed the scene.

*Autopsy,* Nov. 9, 1903, by T. Leary, M.D. — Body of a woman about forty years of age; well developed; fairly well nourished. Body warm; no rigor.

Peritoneal cavity: fluid somewhat increased, otherwise normal.

*Pleurae.* — Few adhesions about apices and backs. Lungs moderately pigmented; present several nodules of superficial, lax consolidation of a deep red color,

* Read before the Obstetrical Society of Boston, December 15, 1903.

which are most abundant over back. These foci vary in size from a pin-head ecchymosis to that of a half-walnut. On section are dark red and contain free blood.

Pericardium normal.

*Heart.* — Of normal size and appearance; valves and cavities normal.

*Esophagus.* — Posterior surface shows several small elongated superficial erosions whose wedges are bordered by a zone of opaque white coagulated epithelium. These erosions are limited in great part to the lower portion just above cardiac orifice.

*Stomach.* — Organ somewhat contracted and heavy. Surface congested. Walls tremendously thickened. On laying stomach open summits of rugæ are uniformly discolored a brilliant red, and here and there the intervening sulci show round patches of reddened mucosa. Smaller punctuate ecchymoses are scattered irregularly throughout remaining mucosa. Walls vary in thickness from .4 to 1.4 cm., the greatest thickening being present beneath the rugæ.

Beginning of duodenum shows a continuation of discolored patches for 2 cm. beyond pyloric orifice. Rest of small intestine normal. In cecum and again in lower portion of sigmoid, and in rectum, black masses of pigment are found overlying and intimately attached to mucosa, which, however, shows little or no congestion.

Liver is large, injected; edges slightly rounded; on section drips some free blood; cut surface is grayish-red; opaque; markings indistinct.

*Spleen.* — Of normal size; capsule tense; consistency slightly decreased. On section Malpighian bodies indefinite; trabeculæ distinct; pulp slightly increased.

*Kidneys.* — Slightly enlarged; soft; capsule peels smoothly; surface injected and moist. On section cortex increased in thickness; vessels injected; surface opaque; pyramids injected; markings indistinct.

*Genitalia.* — Uterus of normal size. Left ovary replaced by a thin-walled oval cyst 3 x 1.5 cm., which is filled with clear serum. Right ovary contains a partially organized corpus with gelatinous contents 1 cm. in diameter, a serous cyst 1 cm. in diameter and several corpora fibrosa. Tubes normal.

*Microscopic Examination.* — Stomach: Thickening of stomach-wall is limited in great part to submucosa and sub-peritoneal connective tissue. Mucosa is completely necrotic along summits of rugæ and filled with free blood. The necrosis becomes more superficial as one approaches the sulci; but everywhere, even in what appeared grossly to be normal mucosa, the superficial cells of gland layer are very granular or necrotic. Surface is covered with a thick layer of mucus, which over rugæ is coagulated and admixed with blood. The loose areolar tissue of submucosa is widely distended with an exudate, largely serous, but more or less hemorrhagic near mucosa. Immediately about the vessels of submucosa and in muscle layers polynuclear leucocytes are abundant. Lymphatics enormously dilated.

Liver: Capillaries dilated and filled with blood, trabeculæ of liver cells standing out with unusual distinctness. Liver cells are very granular and may contain an occasional small droplet of fat.

Spleen: Marked degree of acute congestion; otherwise normal.

Kidney: Glomeruli injected; glomerular vessels show no marked changes. Proximal convoluted tubules stand out distinctly from surrounding structures, taking a heavy eosin stain. High power shows cells lining convoluted tubules to be swollen, granular, complete filling tubules and in large part necrotic. In many tubules the epithelium is completely disorganized and converted into a granular mass without nuclei. The epithelium lining Henle's loops is somewhat swollen and granular. The distal convoluted tubules are less markedly affected and the straight and collecting tubules are normal. There is nowhere evidence of the presence of lime salts in the renal tubules.

Sections of lung through consolidated portions show air spaces, including terminal bronchi, filled with recent blood. Hemorrhages appear to be capillary in origin, arising from vessels of alveolar wall. Outside of foci which were visible in gross, small capillary hemorrhages are evident here and there throughout sections. No thrombi present in vessels.

Brain: Turned over to physicians from McLean Asylum for examination.

*Anatomical Diagnosis.* — (Corrosive sublimate poisoning.) Acute hemorrhagic esophagitis, gastritis and duodenitis. Capillary hemorrhages into lungs, producing sub-pleural ecchymoses. Acute congestion with granular and fatty (?) degeneration of liver. Acute congestion of spleen. Acute degenerative nephritis with necrosis. Cyst of ovary.

### MICROSCOPICAL STUDY OF THE BRAIN OF MRS. ——— BY DR. AUGUST HOCH.

A careful study was made of sections from both paracentral lobules, from two regions of the first frontal convolution on either side, from both first temporal convolutions and from the region of the calcarine fissure on either side. Also from both anterior central convolutions. These pieces were hardened in alcohol and stained by means of Nissl's methylene blue.

It should at once be stated that there are no striking differences seen in sections from these various regions. They all present the same alterations, which may be summarized as follows:

The general architecture of the cortex is nowhere appreciably disturbed, so that any appreciable loss of nerve cells or of the intervening gray substance cannot be demonstrated.

The nerve cells are everywhere markedly altered. They are shrunken, their nuclei rather homogeneous, the cell body often presents a honeycomb appearance. While these alterations resemble in many ways that form of cell change which Nissl has described as the "chronic cell change," it is, to my mind, very unlikely that in such a case we would have such extensive and at the same time so marked changes in nerve cells without any corresponding disorder in the general architecture and without adequate changes in the glia. As a matter of fact, it has been found that a very similar appearance is seen in the cortices of many individuals who die from ordinary somatic diseases, more especially those which lead to a general stasis, and we have been able to show experimentally that this appearance is produced by the action of the alcohol on a tissue, the fluid contents of which is probably somewhat increased. I regard these nerve cell alterations, therefore, as artefacts. The glia nuclei in the lower layers of the cortex are not infrequently found to be somewhat increased, but the nuclei are not otherwise altered. They present no active stages, and the cell bodies are not abnormal except for the fact that many of them contain more pigment (bright yellow) than they would normally. The significance of this pigment is not clear to me, but the increase of the nuclei is evidently of little moment, as it may frequently be seen in cortices of individuals who die from various somatic diseases.

The blood vessels often presented somewhat crumbly looking walls and not infrequently pigment in their endothelium. The spaces around the vessels were normal and presented in no way accumulations of cells. In the vessels were seen an unusual and certainly abnormal number of polymorphonuclear leucocytes.

In a word, the changes found are of very slight importance.

There are no gross changes.

It may be thought far afield to report this case before an obstetrical society. It certainly has food for thought in many departments of medicine. The general practitioner may truly feel that his field is yet broad and that it still remains for the family physician to decide when and what specialist to call.

The obstetrician conducting a physiological process through pathological quagmires to a happy termination must feel that his calling is something more than a blind following of textbooks.

To the neurologist and alienist this case opens up a broad vista in the ultimate nerve-cell process in the neurons of the brain, of which we hope to learn much in the future from those qualified to teach.

But the great question of all, it seems to me, is sociological, — the transmissability of certain brain defects, thus bringing us face to face with that ever broadening question of marriage and the part the medical adviser should play in preventing unions the fruit of which tend to the lowering of the scale of intelligence in the coming generation. Under this head, also, is presented the question of terminating gestation.

In this particular case the future of these offsprings is yet to be demonstrated. The two older are certainly neurotic. The two younger show nothing as yet. The youngest, born when the mother was furthest advanced in her mental infirmity, is extremely bright and attractive.

## A CASE OF HUNTINGTON'S CHOREA: ITS SOCIAL ASPECTS.*

BY J. J. PUTNAM, M.D., BOSTON.

I first saw this interesting patient on Feb. 16, 1897, and give such extracts from my notes as may be useful in supplementing Dr. Marion's description.

As regards the family history, besides the repeated cases, five at least in number, which showed themselves in the two previous generations, it is to be noted that of the patient's three children who were living at the time of my examination, one was eccentric to the point of real deficiency and another excitable and otherwise neuropathic.

As for the patient herself, although she had been accounted as fairly well in childhood, yet she began even then to suffer from the nondescript headaches of neurasthenic type which followed her through life, noticeable, as she said, "any time that she stopped to think of them." Even before her marriage she began to exhibit the choreiform movements which formed one of the characteristic features of her case, although when I saw her first she was thirty-one years old, of soft and pleasing face and gentle manner, and her movements were not so obtrusive that they would have been recognized at once, by a casual observer, as abnormal; they seemed rather a sort of caricature of a somewhat affected and coquettish manner. One could easily imagine, after talking with her, what a singular charm she might easily have exerted upon an unwary lover, half a dozen years before. Her speech had a lisping quality and was somewhat spasmodic and drawling. Frequently she would conclude sentences with a prolonged ye—s, accompanied with a slight half laugh, interjected without cause. Her husband said that one of her predecessors in illness had spoken with the same mannerism.

These facts are of obvious importance, because in view of the problem which faces the community, How people should marry so as to avoid the danger of increasing the number of cerebral degenerates, it must be borne distinctly in mind that youthful neurotics are often very attractive, especially to suitors who are themselves neurotic. In such cases it can only be through a wider knowledge of early signs of disease and a recognition of the significance of family tendencies, on the part of both physicians and the laity, that this danger can be averted.

It is not to be doubted, as regards the diagnosis, that this case deserves to be ranked as an example of the affection known as Huntington's chorea. This is a well marked disorder, imminently hereditary, fatally progressive, beginning usually in later adolescence or middle life, and associated regularly with a mental enfeeblement which goes on slowly but surely, although not always to a dementia of high degree.

This deterioration has marks of its own which are fairly characteristic. At first, the mental disorder seems often rather a sort of absent-mindedness or lack of power of concentration than a true dementia. Later, the real defect becomes more prominent, but yet in spite of the gradual decline in power, and the approach of an ever-increasing apathy, attacks of excitement or depression may intervene. And so, in this instance, the first signs of weakness were a lack of initiative, of power of taking responsibility, but associated with a real willingness to help, as a child helps, and, at the same time, with a somewhat childlike appearance of light-heartedness. As time progressed the ineffectiveness became greater, and unreasonableness and lack of insight (as for example with regard to the propriety of having children) became more marked; until finally there came on the serious mental state which eventually led to suicide.

When, in the midst of this career, this unfortunate lady became pregnant for the sixth time, her husband, a man of high character and intelligence, was naturally overcome with horror at the outcome of his own indiscretion.

Dr. Marion, who had long been his friend as well as his physician, was asked if abortion was not justifiable, but decided that it was not, and in this view I entirely concurred. Fortunately, we were able to add that there was no certainty that the husband's fears would be realized, and a fair chance that the child might turn out strong and well, as has so far proved to be the case.

I should have doubted whether there was anything more to be said on the point of the justification of performing abortion, were it not that, a short time ago, having chanced to ask two friends, one a surgeon and the other a physician, both on the staff of the Massachusetts General Hospital, if they could refer me to any literature

* Read as part of the Discussion of Dr. H. E. Marion's paper before the Obstetrical Society of Boston, Dec. 15, 1903.

with relation to the matter, they both said no, but each one added that, not long since, he had been approached by a physician of eminence and reputation who wished to have an abortion done; in one case because the prospective mother was neurotic and should not be expected to care for another child; in the other because the father was a drunkard and had deserted his wife and family. It is well known that ideas of this sort are prevalent amongst the laity, but it was a slight surprise to me that they were as common in the profession as these confidences would indicate. In fact, it is hardly to be doubted that the practice of abortion, even where offspring is obviously very undesirable, is not only a crime before the law, but, historically, a survival of the practice, formerly universal in various countries, of exposing unwelcome children to perish after birth. Possibly, indeed, an advanced civilization may revive this custom as a means of improving a racial or national stock, but a satisfactory proposal looking to this end is not yet in sight. The nearest approach to this of which I know is the scheme brought forward recently by Dr. McKim of New York, according to which the state should put to death such degenerates as come under its authority. Neither of these plans has, as yet, become sufficiently popular to meet with legislative favor, and I do not believe in the right of physicians to take the law into their hands. They may, perhaps, refrain from retarding, by minutes or hours, an obviously approaching and inevitable death, but further than this their privilege does not extend, if indeed so far.

Is it justifiable to recognize the right to life of the so-called "viable" child in utero, and to deny such right to the living being that has not yet made its presence felt? I do not think so, nor does there seem to be any justification for that common distinction, though it is one which is recognized by the laws, I believe, for certain circumstances and in certain states of the Union. An interesting report, bearing on this point, was read before the State Board of Health of Michigan some years ago, in which the frequency of abortion, the present state of the public sentiment, and the barbarous and unreasonable conditions of the then existing statutes was pointed out, and a change urgently demanded.

Can the physician aid in other ways to remedy this unfortunate state of things? Obviously, yes; in the first place by calling urgent attention to the inexorable laws of heredity; next, by standing ready to consult with their patients as to the conditions under which it is right to prevent conception and as to proper means of accomplishing this end.

Is it right that marriage should be entered on with the distinct intention that no children should follow? Under most circumstances, and especially where pride or selfishness cause this custom to prevail, I think we should all say emphatically no. Yet, there are cases, some of which occur to each hearer's mind at once, where no such categorical negative is justified.

As regards means of prevention, it should be clearly understood, I think, that total abstinence is not injurious to the health, or only in the rarest cases. Whether this is the only justifiable means is another matter, and one about which the physician is bound to keep himself liberal, wise, and sympathetic, in the face of the exacting instincts and deeply rooted habits which at times make abstinence well-nigh impossible; though on the other hand it often seems far more difficult than it actually is.

As to the former matter, namely, the laws of heredity, a number of important and interesting questions suggest themselves, with regard to which the opinions of scientific men are by no means uniform.

The importance of unfavorable heredity may be considered, both with relation to the individuals concerned and their immediate families and friends, and also with relation to the community. Here, again, I will begin with the second point.

One often hears it said, and the argument is dwelt upon at great length in the book by Dr. McKim to which I have already referred, entitled, "Heredity and Human Progress," that the civilized races are in great danger of degenerating and being swamped, in consequence of the increasing tide of neurotic and defective citizens forming the outcome of marriages that ought never to have taken place. It is pointed out that insanity increases faster than the population, and neuroses of a lesser grade but belonging to the neuropathic family and therefore in a certain sense an equal menace to society, even faster than insanity, strictly speaking.

In this state of affairs the author just referred to sees no escape from general decay, except in a drastic extinction of the sources of evil, and his therapeutic recommendation is nothing less than that the state should follow the example set by some of the humane societies that care for delinquent cats and dogs, and put to death such persons as come into their hands, who, in their opinion, ought not to become the mothers and fathers of future voters. Analogous remedies have been proposed by others, and extraordinary as such schemes sound, they would, I believe, find many defenders in the community.

If the writer's premises were correct, perhaps we might feel bound to listen more attentively to his proposal, but I for one believe that they are incorrect.

Various reasons have been suggested which indicate that the increase in insanity and the neuroses is more apparent than real. Even if that is not the case, there are very cogent scientific grounds for thinking that the racial stock is not injured to anything like the extent that individual deterioration would suggest; that, in other words, the deleterious effects of such influences as the strain of the present fast mode of living, and the exposure to so many causes of domestic poisoning, especially alcohol, serious as they are for the health and happiness of individuals, are nevertheless to be classed as ac-

quired traits and as such not to be transmitted by inheritance. In the world's history there have been races of heavy drinkers, but no signs of increasing deterioration of racial stock due to that cause. On the other hand, strange as it may appear, it is, fortunately, said to be true that in these races drunkenness has regularly led to temperance, through the influence of natural selection. The germ cells vary constantly, but in obedience to causes which are wholly unknown, and they are not greatly affected, if this opinion is correct, by the diseases, the bad habits, or even the age of the possessors. The evidence is considerable that the children of the aged are as vigorous as those of the young, and that a child conceived during a period of manifest insanity is not more likely to become insane than a child of the same parents conceived before or after this period, and pregnancy is not more dangerous during a period of insanity than it would have been before. Each person must, if he is wise, estimate in advance the good and ill fortunes which are in store for himself and his children, by looking at the past and especially the immediate past, of the house with which he is about to ally himself. It is, probably, not necessary or possible to go back very far, and from that point of view it may be mentioned that even the attempt made by the breeders of cattle to improve their stock through selection have their limitations, and that their beneficial effects cannot be indefinitely extended either in time or in amount. According to Galton's law, the child derives, in general, about one-half from his father and mother, one quarter from his grandparents, one eighth from his great-grandparents, and so on, and while all sorts of surprises must be looked for and may give rise to well-grounded fears and hopes, yet they are hardly to be reckoned with in calculating the actual chances.

Marriages where either party is burdened with an inheritance like that of the subject of this paper ought, of course, never to occur. Neither ought epileptics or insane persons to marry. On the other hand, where it is a question of the milder neuroses and psychoses, or where the severer ones have shown themselves only in preceding generations, more latitude may be allowed. The thing which should decide us, looking upon the matter as we now do, as outsiders and advisers, should be the answer to the question, What gains are to be expected from a given union to offset its dangers? Putting the matter in a somewhat brutal way, one might ask, For what do we breed? Surely not for health and physical qualities alone, or even for health and strength exclusively.

I believe that we have a right to breed for genius, including under that term any quality, such as great common sense, or a fine unselfishness, which makes strongly for the public welfare, even if liable to be associated with a certain amount of bodily and nervous weakness.

I do not believe that genius is a psychosis, and although it may be true that in some cases its existence side by side with the psychoses is more than a coincidence, yet I think that even here its existence may count for infinitely more good than would be necessary to counterbalance the harm done by these psychoses themselves.

## A NEW TREATMENT FOR MORPHINE ADDICTION.

BY WILLIAM S. BIRGE, M.D., PROVINCETOWN, MASS.

Probably there has been no subject within the domain of medicine that has baffled the skill of the physician, so far as satisfactory results are concerned, and has likewise taxed the fortitude, endurance, and I might well say every particle of manhood, from a physical, mental and moral standpoint, of the unfortunate patient, as the treatment of morphine and other drug addictions.

The treatment of morphine addiction by the gradual reduction method means a period of weeks of the most agonizing form of slow torture that lies within the power of man to inflict upon his fellow; while upon the other hand the sudden withdrawal of so powerful a narcotic has always associated with it, aside from the very unpleasant nervous and mental manifestations, the danger of sudden collapse.

In perusing the medical literature on the subject of morphine addiction any fair minded physician cannot help but feel that the progress made in this particular line of work has been almost *nil*, and that the treatment of to-day, as conducted in the best known institutions throughout the country, remains much the same as it was a quarter of a century ago.

When one considers the many relapses that have followed the treatment of these unfortunates, he is almost led to feel that there is more truth than poetry in the statement that I have often heard advocated by physicians, men of brilliant minds and good standing in their profession, "Once an habitué of morphine, always one."

That the statement is overdrawn there is no doubt, but there is no question, in following up the so-called cures, that at least fifty per cent do relapse, and that, even after, sometimes, two or three attempts have been made, upon the part of the patient, to throw off the chains that have bound him so securely. In these cases the relapses occur most often where the patient has been practically free from the use of the drug for a longer or shorter period.

During an experience of several years in conducting a small sanitorium for nervous invalids I have refused to consider the acceptance of these cases, feeling that the best known methods of treatment thus far have been so far from satisfactory that I could not conscientiously undertake it.

During the past summer my attention was called to a new method of treatment that was being used, it was claimed, with remarkable success, at a private institution in one of the Southern states. Before entering into any direct cor-

respondence I made inquiries and ascertained, from some of the foremost physicians in that section, that the treatment was all that it was represented to be, and that several private institutions and one public hospital in the city had investigated the method, and had adopted it in the treatment of their own cases. I then entered into direct correspondence with the superintendent and physician in charge of the institution that claimed the discovery of this new method. I was cordially invited to visit the sanitorium and investigate fully the method of treatment, remedies used, etc. Later on, in the fall, I took advantage of the opportunity that presented itself, and spent over three weeks in daily observation of the patients under treatment, and I must say that the most skeptical could not fail to be convinced of its efficacy in such cases.

One of the most remarkable things connected with the treatment was the fact that the length of time of the addiction, or the amount of the drug used, whether two grains or fifty, made no difference with the success of the treatment, the antidotal and eliminative effects being equally efficacious, and the time required for treatment no longer.

It seems like an improbable statement to make, but it is a fact, nevertheless, and I saw it exemplified in numerous cases, that when the system of the patient is put in proper condition by a few days' (three to five) preparatory treatment, seventy-two hours suffices for the taking away entirely of the drug, and its complete elimination from the system, and this, too, without shock to the system, and without suffering or discomfort.

Among the cases that I saw treated were four physicians. We will all acknowledge, from experience, that physicians generally make bad patients, and all of these men acknowledged that they felt no pain or discomfort, and one of them returned to his home and practice the third day after treatment, making just one week from the day that he entered the institution until he left it, as he said, " A well man." He was taking twenty grains of morphine, and five grains of cocaine daily.

In none of the cases was there nausea or vomiting, and in none any persistent diarrhea. The food was taken at regular intervals, and a fair amount of sleep enjoyed every night.

The method of treatment is as follows:

A careful physical examination is first made of the patient. The quantity of drug used is still continued until time for active, or seventy-two hour treatment, begins, but if patient is using alcoholic stimulants of any kind they are discontinued or left off as soon as possible. The active treatment should not begin until three days after patient has entirely discontinued the use of alcoholics. A dose of 10 gr. of calomel is given at bed time, followed in the morning by a full dose of epsom salts. This should start up the secretions freely, and completely unload the bowels. If this has not been done satisfactorily give 5 gr. of calomel the second night, following as before by the dose of salts in the morning. In addition to the above a Turkish bath should be taken at least every second day during the preparatory treatment. When the time for the active treatment comes the usual dose of morphine is taken up to noon of that day when it is dropped for good and all. At two o'clock 5 drops of a specially prepared solution of mandragorin is given hypodermically, together with one-eighth of a grain of pilocarpin. This dose is repeated every two hours. If the symptoms of abstinence manifest themselves from lack of the morphine, the dose of the mandragorin may be increased until comfort ensues, even if 15, or sometimes even 20 drops of the solution are taken. The dose of pilocarpin remains the same until the patient is brought into a profuse perspiration, and then sufficient quantity should be given to keep the skin in a continual moisture. Usually as long as the patient perspires freely he is perfectly comfortable. As I have said before, any symptoms of abstinence that may arise can be relieved by the mandragorin. The pulse which was stimulated and quick before beginning the treatment usually becomes slower, but soft, full and regular. The above treatment is continued during the seventy-two hours with the exception of the morning dose at four o'clock which is omitted, that is, there is no medicine given between the hours of two and six in the morning. The patient is usually quiet and sleeping at this time and it is not needed. At the beginning of the second day's treatment, or before, if there is any weakness of the heart's action, a dose of one twentieth of a grain of strychnia nitrate and one eighth of a grain of sparteine is added to the hypodermic solution and given every two or four hours during the remainder of the treatment. If, as occasionally happens, the patient becomes extremely restless during the treatment a hypodermic of one-half grain of codeine, or one quarter of morphine may be given. This will at once quiet all restlessness and can do no harm, for the secretions are so active that it would be worked out of the system in a few hours. At the end of forty-eight hours the antidotal and eliminative effect of the remedies are usually complete, and there is not a vestige of morphine left in the system. This is plainly demonstrated by the fact that a dose of one eighth or one quarter grain of morphine would produce the same effect as it did before the addiction had been formed.

During the treatment light food should be given at regular intervals. It is always taken and well assimilated, the patient even craving a larger amount of nourishment than it is well for him to take for fear of overloading the stomach and causing indigestion.

After the completion of the active treatment the patient should take the hot and cold shower bath, but not enter the hot air or vapor bath cabinet. The strychnia nitrate and sparteine should be given hypodermically for three or four days afterwards, and a good nerve tonic and

sedative given for several weeks. An excellent preparation in the form of an elixir was given the patients I saw under treatment. It was composed of:

℞ Lactucarium, elix.; celery, elix.; hops, elix.; gentian, f. e.; wild cherry, f. e.; quassia, f. e.; sparteine, sulph.; ammonia mur.; hydrastis, mur.; strophanthus, tinct.; brew; mandragora offi.; ext. Signa: One teaspoonful in fourth glass of water before meals and on retiring.

In giving the mandragorin it will be found that a blonde is more susceptible to its effects than a brunette. This is common with all mydriatics, in consequence of which it is well to begin the treatment with the smallest dose mentioned, viz.: 5 drops. If the bowels should be too loose after treatment, which is not common, they are generally easily controlled by bismuth subgallate.

If after treatment the patient complains of a nervous feeling of unrest, or fidgets, one of the best remedies at our command is an occasional dose of cicutin (alk.) one-sixtieth of a grain given hypodermically.

The number of cases I saw treated during the three weeks of my stay was eleven. Of this number all went through the treatment without any suffering or discomfort to speak of. There was no shock to the nervous system, and the day following the period of active treatment they were all able to get up, dress themselves, and walk about the grounds. Some of the cases that were complete physical wrecks on entering the institution remained for a few weeks to regain their strength, others remained but a few days and returned to their homes, and resumed their occupation. Out of 50 cases that had received treatment and left the institution from three to five months previous there had been but four relapses. This certainly is a good showing, and I doubt if there is any other method of treatment that can produce like results.

There is no question but that mandragora is the only remedy thus far discovered that will completely antidote morphine, and eliminate it from the system without shock, pain or discomfort.

Mandragora officinalis is not a new remedy, but rather a very old one, and was supposed by the ancients to possess magical virtues, and this superstition is still cherished in some parts of Europe regarding its use. It seems to be isomeric with atropin, but is not converted into it by alkalies. "The sulphate and the hydrochloride or crystalline are deliquescent. A second alkaloid in much smaller amount was also extracted, of which the gold and platinum double chloride were formed. Both alkaloids had a mydriatic action."

The *United States Dispensary*, fifteenth edition, 1888, says "Mandragora is unknown as a remedy in the United States." "It was also used by the ancients as an anesthetic agent before surgical operations."

The therapeutic action and the physiological effects of mandragora are somewhat similar to that of morphine when combined with atropin, but without the unpleasant effect of that combination of drugs. Mandragora will not diminish the appetite, disturb the stomach, or constipate.

Mandragora is also a vigorous aphrodisiac, quickly restoring the weakened sexual powers of the morphine habitué; this action of the drug is so marked that its effect may be observed even though the use of morphine be still continued.

Mandragora is the nearest thing to a specific we have in the treatment of dipsomania, and almost any case of delirium tremens may be aborted by the proper administration of this remedy.

In giving this paper to the medical profession I do so not from a desire to exploit any particular remedy or method of treatment, but from a sense of duty that I owe my brother practitioners, and a desire to help suffering humanity.

That there is a gentle cure for the morphine and other drug addictions without shock to the system, suffering, or even marked discomfort is an established fact.

That this method of treatment need not extend over a long period but, under ordinary circumstances, may be accomplished in from one to three weeks is also proven.

That no bad results have ever followed this method of treatment or deaths resulted therefrom is shown by the statistics kept in the treatment of over one thousand cases in the past three years at the Homestead Sanitarium in Memphis.

My own observation and experience show that the treatment of any case of drug addiction should be in a hospital or sanitorium.

That any physician treating a drug patient during the period of active treatment should see that patient personally every two hours, and always be within easy call. This is imperative, not from any danger to the patient in the method of treatment, but that the action of the medicines may be closely observed, and the dosage increased or diminished according to the condition and comfort of the patient. If, for instance, the patient should begin to experience any discomfort, he should be relieved at once by an increase of the mandragorin; if this should not be done he would, of course, get into an exceedingly nervous condition, lose faith in the treatment and retard his own recovery. To gain the confidence of the profession in this method of treatment it should be open to the fullest investigation of any reputable physicians, allowing them, if they so desire, to be present during the entire period of active treatment of any patients they might choose to bring for treatment.

## Clinical Department.

### CONCERNING GERMAN MEASLES.

BY CHARLES W. TOWNSEND, M.D., BOSTON.

I HAVE been seeing lately a number of cases — some twenty-five or more, — of a mild eruptive disease which I have called Rötheln or German

measles. Having previously been somewhat skeptical as to the separate existence of this disease, and having expressed this skepticism in the study [1] of a mild epidemic of measles occurring in 1889, my reasons for a change of view are here noted. I am especially moved to state these reasons, for I find that some of my confreres in Boston are still skeptical of the separate existence of this disease.

The cases I refer to are characterized by a macular measles-like rash, suddenly appearing over the whole body, mostly in children, occasionally in adults, with little or no accompanying symptoms. Only in exceptional instances are there any prodromal symptoms, slight malaise for a few hours. The rash is the first thing to attract attention. In a very small minority there is slight conjunctival redness, while cough and other catarrhal symptoms are practically absent. The temperature is either normal, or slightly elevated to 99° F., rarely as high as 100° F. With a very pronounced rash, I have several times found the temperature 98.6°. In one case I took the temperature five times during the whole period of the rash, which lasted twenty-four hours, and found the highest point reached was 98.8°. The rash in this case was profuse. The child felt perfectly well through it all. The rash generally disappears in forty-eight hours, and I have known it to last only five or six hours. A rash lasting only one day is common. While the rash resembles that of measles very closely, it sometimes assumes in places, especially on the face, a diffuse erythematous character, causing us some anxiety on the score of scarlet fever. I have seen a rash that was at first macular, become diffuse over a considerable part of the body. These cases are undoubtedly at times mistaken for scarlet fever. In all doubtful cases, where the macular character of the eruption is not clear, it is better to err on the safe side and call them scarlet fever. In five cases I have seen some swelling of the face, especially about the eyes, coincident with the diffuse erythema there, the body at the same time being covered with the measles-like eruption.

Swelling of the glands in the neck and a very slight sore throat occurred in a few, both being symptoms which may occur in measles. The tongue never suggests scarlet fever in its appearance.

The description I have given differs from the description of true measles as little as the mild cases of scarlet fever with their transitory rash and absence of symptoms differ from severe cases of scarlet fever. Cases of measles exactly resembling the German measles are found in epidemics of true measles. In other words, as I said in 1890, "The symptomatology of Rötheln is not distinct from that of measles." There are several reasons, however, which lead me to think that there is a distinct disease, which is called German measles or Rötheln.

In an epidemic where there are cases of mild measles we find many, generally the majority, where the cases are characteristic, or even severe. In none of the cases I have reported, have I found characteristic cases of measles to be communicated by them. All the cases where the exposure has been from these cases are of the same very mild type.

A second and most important fact is that German measles attacks those who have had measles before and those who have not, and it is not any more severe among those who have not had measles. It is true that second attacks of true measles undoubtedly do occur, but it is hard to believe that second attacks may be so common, that, as is the case now, previous attacks afford no protection at all from this eruptive disease.

A third argument, and one of considerable force, is that the stage of incubation is generally longer in German measles than in measles, it being ten to fourteen days in measles and generally twelve to twenty-one days in German measles.

In nine of my cases where I have been able to compute this stage, I have found it as follows: Thirteen days, 2 cases; fifteen days, 1 case; seventeen days, 2 cases; nineteen days, 2 cases; twenty days, 1 case; twenty-one days, 1 case.

Another fact is pertinent, namely, that there are more adults attacked, than in epidemics of true measles. Why? Adults rarely have measles, being protected by previous cases in their youth. Adults more frequently have German measles not having had in this vicinity at least as much exposure to that disease in their youth, although they are certainly much less susceptible than children.

A final point is that the contagiousness of German measles while marked is not so extreme as is that of true measles. It is rare for other children in a family to escape if one comes down with measles, while such immunity in one or more members is not uncommon in German measles.

[1] An epidemic of measles with remarks on Rötheln. Arch. of Pediatrics Vol. VII p. 269 April, 1890.

## Medical Progress.

### PROGRESS IN PUBLIC HYGIENE.

BY SAMUEL W. ABBOTT, M.D., BOSTON.

(Concluded from No. 14, page 380.)

#### DANGERS OF DISINFECTION BY MEANS OF CORROSIVE SUBLIMATE.

Bertarelli [25] gives an account of the opinions which, at various times since Guttmann and Merke first called attention to the subject, have been expressed with respect to the possible dangers to health that might arise from the metallic mercury due to the decomposition of corrosive sublimate (mercuric chloride) when employed in solution for the purposes of disinfection. Among others, the views of Esmarch, Morner and Sjoqwist are cited and the observations of Krupin and Bordoni-Uffreduzzi on the health of members of the

[25] Zeitschrift fur Hygiene, Vol. xlii, 1903, p. 553.

staff engaged in the work of disinfection, where corrosive sublimate was in use, are discussed. In the presence of some conflict of opinions, the author has undertaken, in the course of 1900 and 1901, a series of investigations into this subject at Turin, where an excellent opportunity was afforded for the enquiry, as it has been the practice to employ for many years past a very concentrated solution of the mercurial salt (ten per mille) for disinfecting purposes. His experiments included both persons who inhabited the disinfected dwellings and those who were habitually engaged in the work of disinfection. The urine and the excreta were systematically collected and tested, and small special chambers of wood and cement were constructed for observations upon animals. The walls of these chambers were frequently well washed with the solution, and live mice were then placed in them with such arrangements for feeding as to avoid all possibilities of direct contact of the food with the walls and floors. A full account is given of the methods of testing and of the extent and duration of the experiments. The author likewise examined the air-currents passing through chambers in which the corrosive sublimate had previously been used as spray, but in no case was it possible to demonstrate the faintest traces of sublimate in the water employed for washing the air. As the general result of his investigations, he states that this substance may be employed with the utmost confidence for disinfection, and that, with proper precautions, such as are always enjoined, even the officials, who are constantly engaged in the work, run no risks of mercurial poisoning.

## Water Supply and Sewerage.

### bacterium coli as an indicator of fecal pollution. (petruschky and pusch.)

Weissenfels published in the year 1900 the results of his investigations,[27] which cast doubts upon the practical value of the coli-test, since this bacterium was found to be present in all samples of water. The authors controvert this opinion and state, as the result of very numerous experiments, that the ubiquity of bacterium coli can certainly not be established. In the case of a pure spring water, it was sometimes not possible to cultivate it from quantities even of three-quarters of a litre. In highly polluted waters, as, for instance, in river water, it was always present, and its relative abundance furnishes a good test of the degree of the impurity. The fluctuations in the extent of coli-pollution in surface waters were so great that the variations in a series of samples were more than a million-fold, and it was possible to establish four ascending degrees in a scale of impurity, which were each ten times that of the lower one. No increase took place in the coli-contents of slightly impure water, even when kept for a long time, if stored in the ice-chamber, and therefore samples sent up in the winter-time can safely be dealt with, notwithstanding the interval that may have elapsed since they were procured. The methods of conducting so-called titration-tests for the bacterium coli are described, and the results of numerous experiments conducted by Dr. Pusch are set forth in a series of tables.

[27] Zeitschrift fur Hygiene, Vol. xliii, 1903, p. 304.

### sewage purification by means of intermittent irrigation.

Oesten[28] states the problem of the purification of town sewage as a twofold one — first, the removal of the fouled water in such a way as to avoid all objections from the sanitary point of view, and, secondly, the extraction from it of the valuable manurial constituents in such a form as to be most serviceable for the production of new organisms; while a third condition may be added, namely, that this should be done with the smallest expense and on the least possible extent of ground. The author states that the modern tendency is at all hazards to satisfy this third set of conditions. The long-established practice of agricultural irrigation is being pushed into the background, though the results obtained thereby are in the main satisfactory. That system is, from the present aspect, too costly, both in regard to area, management and working expenses. Owing to this fact efforts are continually being made to obtain equally good results at a less outlay. This has led in the past to the introduction of the various precipitation processes, none of which, however, fully satisfy the conditions, and more recently to the adoption of the so-called biological or oxidation processes; but these last, while they fulfil the first of the requirements, are conspicuously inefficient as respects the recovery of the manurial ingredients. The author discusses the main principles on which the biological treatment of sewage is founded, and shows that a highly porous mass must be filled and emptied alternately with air and sewage water. By reference to diagrams, the best method of obtaining parallel results by means of a system of intermittent irrigation on a restricted area is described. In order to carry out the plan efficiently, arrangements must be made for giving rest to certain plots for a long period (not less than a year), during which time the land must be used for agriculture. Reference is further made to the possibility of utilizing the effluent or subsoil drainage-water, which, although clear and colorless, has still a certain proportion of organic matters and salts in solution. This water may be stored up in ponds for breeding fish, and the effluent will speedily become available for this purpose, owing to the luxuriant vegetation and the abundant supply of minute animalculæ which it is capable of producing.

### the existence of nitrites in drinking-water.

Dienert[29] does not regard the presence of nitrites in water as necessarily a proof of serious contamination. As the results of observations and analyses of different waters he concludes:

[28] Gesundheits-Ingenieur, May 31, 1903, p. 242.
[29] Rev. d'Hygiene, April, 1903, p. 301.

(1) That nitrites may be found in the subsoil independently of any contamination. (2) That contamination of water is not always accompanied by the formation of nitrites. (3) Certain precautions are necessary in examining for nitrites in water, since if the temperature of the air is raised during the transportation of the sample, nitrites may be found which did not exist in the water when it was collected. (4) According to the conclusions of Spiegel, any opinion as to the quality of a sample of water should be made independently of knowledge as to the existence of nitrites.

### SUPERVISION OF WATER SUPPLIES AND TYPHOID FEVER.

Fuller [30] furnishes the following suggestive figures showing the death-rate from typhoid fever in the principal cities of two populous states. In one of these states careful supervision of public water supplies is exercised under legal authority, by the State Board of Health, and in the other, no such supervision exists.

*Deaths per* 100,000 *inhabitants from typhoid fever in certain cities for the years* 1898–99 and 1900.

| Massachusetts | | Pennsylvania | |
|---|---|---|---|
| Boston | 30 | Pittsburg | 108 |
| New Bedford | 30 | Alleghany | 86 |
| Springfield | 26 | Johnstown | 83 |
| Lawrence | 25 | York | 83 |
| Taunton | 25 | Chester | 64 |
| Brockton | 24 | Lancaster | 59 |
| Chelsea | 24 | Philadelphia | 54 |
| Salem | 23 | Mackiesport | 53 |
| Fitchburg | 21 | Reading | 50 |
| Lowell | 21 | Allentown | 49 |
| Lynn | 20 | Harrisburg | 41 |
| Newton | 20 | Altoona | 33 |
| Cambridge | 18 | Wilkesbarre | 29 |
| Worcester | 18 | Erie | 28 |
| Fall River | 15 | Scranton | 23 |

(The mean death rate of the whole state of Massachusetts from typhoid fever in the five-year period, 1896–1900, was only 24 per 100,000, and the highest rate in any one of its thirty-three cities in that period, was only 39 per 100,000, and this in one of the smallest cities.)

### ENGLISH SANITARY LEGISLATION OF 1903.

The Parliamentary Session of 1903 was not very fruitful in the enactment of laws for the protection of the public health and safety. The only acts of general importance of this character were the Motor Car Act (3 Edward 7, chap. 36) which provides protection against reckless driving of automobiles, and for their registration and the licensing of drivers of such vehicles, the Housing of the Working Classes Act (3 Edward 7, chap. 39) which facilitates the adoption of the existing acts by local authorities, and makes it possible to close any house, which in the opinion of the Council is "not reasonably capable of being made fit for human habitation" or "is in such a state that its occupation should be immediately discontinued." The Employment of Children Act (3 Edward 7, chap. 45) provides for all children, or for boys and girls separately, and with respect to occupations:

(*a*) The age below which employment is illegal.

(*b*) The hours between which employment is illegal.

(*c*) The number of daily and weekly hours beyond which employment is illegal.

It also prohibits absolutely, or permits under conditions, employment of children in certain occupations.

It provides that local authorities may prohibit or regulate street trading by persons under sixteen years of age. With reference to prospective legislation, according to the *Sanitary Record Diary* for 1904, it appears probable that the General Public Health Act will be taken in hand at the present session of Parliament, and that the questions of death certification and of vaccination may come in for a share of discussion. The Conscientious Objections (Vaccination) Act expires Dec. 31, 1904, the time having been extended one year at the last session. River pollution, and the regulation of the trade in the cultivation of oysters also are likely to be taken up in consequence of recommendations which have been made regarding them.

### A UNIFORM STANDARD FOR BOARDS OF HEALTH.

The *Journal of the American Medical Association* [36] calls attention to the need of uniformity among the local boards of health throughout the United States, in regard to the matter of reporting infectious diseases, isolation and subsequent disinfection.

Inquiry of the health authorities of the principal cities shows wide diversities of opinion and practice as to what diseases should be considered notifiable, and also as to what measures should be taken to prevent their spread. Philadelphia, for example, insists on the reporting of chickenpox, since many cases of smallpox are thus detected. Baltimore, Salt Lake City and St. Louis are the only large cities which require the reporting of both measles and whooping cough.

A difference also exists as to what diseases should require the use of placards.

In Salt Lake City isolation is applied to a greater number of diseases than in any other city.

In one city "the work of the health department in disinfecting with formaldehyde has been exceedingly successful," while another city reports 'all forms of formaldehyde disinfection as a delusion and a snare."

It is exceedingly desirable that the work of local health authorities should be made more uniform, and that these diversities in practice should be brought to the attention of the National sanitary association for discussion and action.

## VITAL STATISTICS.

### VITAL STATISTICS OF ITALY IN 1901.

Bodio [31] reports the following for the year 1901, for an estimated population in that year of 32,574,563. Marriage rate 7.21 per 1,000 (persons married 14.42 per 1,000). Birth rate, 32.47. Death rate, 21.95.

[30] Journal of Mass. Assoc. of Boards of Health. Vol. 14, 1904, p. 12.

[36] Editorial, Feb. 6, 1904.

[31] Movimento della popolazione nell' anno, 1901. Roma, 1903.

Comparing the three years 1882–84 with the three years 1899–1901, the marriage rate had declined from an average of 8.05 per 1,000 in the former period to 7.24 in the latter. The birth rate from 37.80 to 33.11, and the death rate from 27.36 to 22.54. The birth rate exceeded the death rate in the former period by 38%, and in the latter by 47%, thus showing an improvement in the natural increase of the population. Illegitimate births had diminished from 7.5% of all births in 1882 to 5.8% in 1901. About one third of this class of births had been legitimized by subsequent marriage of the parents or by royal decree during the last three years. The statistics of causes of death show a marked decrease in nearly all of the infectious diseases in the past fifteen years. The deaths from small-pox had declined from 549 per million inhabitants in 1887, to 104 per million in 1901. Measles from 803 per million to 171 in the same time. Scarlet fever, from 494 to 36; typhoid fever, from 939 to 361; diphtheria, from 952 to 167; whooping cough, from 376 to 212; malarial fevers, from 710 to 416; erysipelas, from 178 to 79; malignant pustule, from 24 to 10; pellagra, from 125 to 94; dysentery, from 212 to 2; puerperal fever, from 85 to 31.

In very few countries do the figures show such marked changes in so short a period.

There was an increase in the deaths from cancer from 427 deaths per million to 526; phthisis, from 1,074 to 1,112; pneumonia, 2,154 to 2,288; kidney diseases, 255 to 376, and suicide, 49 to 62 per million.

### SUICIDES IN AMERICAN CITIES.

Hoffman [32] gives the figures of the suicides in fifty American cities with a population of fourteen and one-half millions. The years in question were the ten years 1892–1901, and the single year, 1902. The cities having the highest rate in the ten years were: St. Louis, with 25.7 per 100,000 population; Hoboken, N. J., 24.6 per 100,000; Chicago, 23.4; Oakland, Cal., 22.5; New York City, 21.2, and Milwaukee, 20.1; Cincinnati, 18.5; Newark, N. J., 17.9; Brooklyn, N. Y., 16.2; Boston, 15.9; New Orleans, 15.5. Of the fifteen cities having the lowest rate eleven were Massachusetts cities as follows: Worcester, 9.0; Lawrence, 8.8; Chelsea, 8.4; Fitchburg, 8.2; Cambridge, 8.2; Lynn, 6.6; Holyoke, 6.2; Somerville, 5.8; New Bedford, 4.6; Newton, 2.7, and Fall River, 2.7; the suicide rate for these fifty cities had increased from 12.0 per 100,000 population in 1890, to 17.3 in 1897 and 1898, and then decreased slightly to 17.0 in 1902.

By nationalities the rate was lowest among the Irish, 6.1; among native Americans, 6.8; Germans, 19.3; French, 22.0.

### REDUCTION IN INFANT MORTALITY.

Dr. R. G. Freeman [33] attributes the striking decline in infant mortality to many agencies. The general adoption of pasteurization and sterilization of milk for infant feeding is by far the most important, and applies not only to New York City, but to the whole United States. Other agencies are improved city administration, milk inspection, the Straus Milk Charity, the fresh air work of St. John's Guild, cleaner streets, asphalt pavements, new parks, playgrounds and recreation piers, improved tenements and the use of diphtheria antitoxin.

GENERAL DEATH-RATES PER THOUSAND LIVING IN DIFFERENT COUNTRIES.

Twenty-five years' average (1876–1900) and in 1901. [34]

| | England and Wales. | Scotland. | Ireland. | Denmark. | Norway. | Sweden. | Austria. | Hungary. | Switzerland. | Germany. | Holland. | Belgium. | France. | Spain. | Italy. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average in 25 years, (1876-1900) .. | 16.9 | 19.2 | 18.2 | 18.3 | 16.6 | 17.0 | 28.6 | 32.3 | 20.6 | 24.2 | 20.3 | 20.1 | 21.9 | 30.3 | 26.5 |
| 1901 ..... | 19.1 | 17.9 | 17.8 | 15.8 | 14.9 | 16.0 | 24.2 | 25.4 | 18.0 | 20.7 | 17.2 | 17.1 | 20.1 | 27.6 | 22.0 |

The highest death rate in any year was 37.4 per thousand in Hungary in 1878, and the lowest was 14.9 in Norway in 1901.

DEATH-RATES PER MILLION LIVING FROM DIFFERENT INFECTIOUS DISEASES AND FROM CANCER.

In England and London in 1901, and in Germany and in Berlin, Paris, Hamburg, and Munich in 1900.

| Diseases. | 1901. England. | 1901. London. | 1900. Germany. | 1900. Berlin. | 1901. Paris. | 1900. Hamburg. | 1900. Munich. |
|---|---|---|---|---|---|---|---|
| Smallpox . . . . . | 10 | 5 | 9 | 0 | 105 | 0 | 0 |
| Measles . . . . . | 276 | 434 | 228 | 279 | 351 | 142 | 838 |
| Scarlet Fever . . . . . | 133 | 113 | 242 | 325 | 76 | 129 | 10 |
| Whooping cough . . . . . | 313 | 355 | 342 | 197 | 81 | 146 | 102 |
| Diphtheria . . . . . | 273 | 285 | 381 | 284 | 134 | 163 | 224 |
| Cerebrospinal Meningitis . | 2 | 4 | 5 | 3 | — | — | — |
| Typhoid Fever . . . . . | 155 | 116 | 111 | 66 | 391 | 33 | 54 |
| Diarrheal Diseases . . . . | 924 | 862 | 3,381 | 3,268 | 1,137 | 2,475 | 6,189 |
| Puerperal Fever . . . . . | 64 | 48 | 51 | 58 | — | 75 | 40 |
| Pneumonia . . . . . | 1,147 | 1,333 | 1,384 | 1,413 | 1,790 | 1,206 | 262 |
| Phthisis Pul.. . . . . | 1,264 | 1,642 | 2,023 | 2,373 | 4,154 | 2,020 | 3,170 |
| Cancer . . . . . | 842 | 939 | 710 | 1,092 | 1,151 | 1,190 | 1,190 |

[32] The Spectator, Aug. 27, 1903. [33] Medical News, New York, Sept. 5, 1903. [34] Registrar General's Report, England.

The figures for cerebrospinal meningitis are not given in the returns of Paris, Munich, and Hamburg, and those of puerperal fever are not given in the Paris returns, hence the absence of figures for these diseases in the foregoing table does not imply the absence of the diseases in the places named.

PHYSICIANS, DENTISTS AND APOTHECARIES IN GERMANY.

Dr. Wehmer [35] gives the following figures for the year 1901:

Population of Germany in 1901: 34,463,377.

Number of physicians: 16,500, or 479 per million inhabitants.

Number of dentists: 1,024, or 29 per million inhabitants.

Number of apothecaries: 3,178, or 92 per million inhabitants.

## Reports of Societies.

### THE OBSTETRICAL SOCIETY OF BOSTON.

MALCOM STORER, M.D., SECRETARY.

MEETING of Dec. 15, 1903, the President, DR. J. B. SWIFT, in the chair.

DR. H. E. MARION read a paper entitled

A MANY-PHASED CASE OF CHOREA.*

DR. G. H. TUTTLE: This woman was a patient in the McLean Hospital for two weeks in the spring of 1902, and a diagnosis of Huntington's chorea was made. She represented the fourth generation after the appearance of adult chorea in the family. Her paternal great-grandmother, grandmother, a grandaunt, and three paternal aunts were choreic. Her father, who was described as of a nervous, high-strung temperament, full of energy and apt to be impetuous, was lost at sea at the age of thirty-five, so that this may be no exception to Huntington's statement that if one member of a family escaped, his descendants were ever afterwards free.

The choreic movements began at the age of twenty-eight and had existed about eight years at the time of admission. They appeared first in the face and were for a long time unnoticed by her. Even when they had become general, she appeared to have little appreciation of them. She spoke rather quickly, hurrying as she proceeded and finishing each sentence with a sharp inspiration. This was usually followed by a little laugh, which gave the appearance of a greater degree of dementia than was really present.

In general, it may be said that the choreic movements were entirely arhythmic and were irregular and confined within certain well defined limits. They were not so severe and violent as are sometimes seen in these cases, and she required no special precaution to keep her from injuring herself. They were, to a certain extent, under control of the will.

The movements of the face presented the greatest range, the most frequent being spasm of the *risorius*; at the same time the upper lip was raised. Very frequently she contorted her mouth, pursing up her lips and twisting them to right and left, and with this there was a contraction of the *corrugator supercilii*. At times she blinked. The head occasionally was pulled over to the right. Now and then the neck and upper part of the trunk were the seat of a clonic spasm. The legs would be flexed at the knee and then extended and kicked about irregularly. Occasionally there was a complete turning of the body at the hips, so that she would turn over in bed, pulling the clothes with her. The arms were least involved, though they were occasionally thrown about at random. She thought she had no difficulty in walking, but her gait, to say the least, was irregular and uncertain.

Voluntary movements were not very much interfered with. She could approximate the finger tips with a fair degree of accuracy and could pick up things perfectly well. The tongue was protruded quickly, but was fairly steady. To test her control, the pulse was taken for two minutes, during which time she was practically free from the movements, even her face being at rest most of the time. The nurse reported that when sleeping soundly they ceased entirely, but when partially awake they began again. Her greatest complaint was a severe frontal headache, which she had had for more than two years.

Her mental condition was one of moderate dementia, with marked depression of spirits. She had relinquished her household accounts and duties at least a year before admission because of illness and to avoid mental stress, and it was difficult to judge of her administrative capacity. She presented no exhilaration, no hallucinations or delusions. There was no gross memory defect, but there was a childishness in her conversation and her manner aside from the frequent laugh. She did not comprehend situations and their significance, as was shown at the time of the illness and death of her children. She was careless of exposure in the presence of the physicians and would get up and follow them out on the ward in her night-dress. In general, she showed a decided lack of perception of the fitness of things. She had suffered from the intense headaches for two years, and in a degree she appreciated her position and often told the nurse that if she failed of relief at the hospital, she had better die. She had reason for her depression and her suicide was the logical outcome.

Huntington, in reporting his cases in 1872, called attention to the occurrence of mental symptoms and the tendency to suicide. Others have spoken of irritability, violent outbursts of anger, suspicions, delusions of persecution, and exaggerated ideas; but these are merely incidental to, and symptomatic of, a progressive dementia, and are found also in senile dementia and general paralysis. In the later stages these patients show a marked dementia, with loss of memory and a general loss of intellect. The mental symptoms usually appear years after the onset of the choreic movements, though occasionally they are coincident with them. Unless from suicide or intercurrent disease, death comes from exhaustion in from ten to twenty years.

While the disease bears the name of Huntington, its essential features were given by Waters thirty years before, and to the present time little has been added to his description; that it is hereditary, that it rarely appears before adult life or after forty-five years, that it is incurable, and that it induces dementia.

Few careful autopsies have been reported and there is no uniformity in the findings. There is no doubt that various lesions may cause choreic movements if the process is a diffuse one — and perhaps some so reported are not cases of Huntington's chorea. The autopsies of Dana (1895)[1], Clarke (1897)[2], Collins (1898)[3], and Good (1900)[4] agree substantially that it is a degenerative and not an inflammatory process; that the

[35] Medicinal Kalender, Berlin, 1902.

* See page 397 of the JOURNAL.

[1] Journ. Nerv. & Ment. Dis., September, 1895, p. 565.
[2] Brain, Vol. 20, p. 22.
[3] Am. Journ. Med. Sc., Vol. 116, p. 275.
[4] Am. Journ. of Ins., Vol. 57, p. 21.

chief changes are an atrophy of the cerebral cortex with a degeneration of the ganglion cells, especially marked in the motor areas and in the frontal lobes, with an increase of neuroglia, most conspicuous where the cell degeneration is most marked; and an enlargement of the perivascular spaces, — a parenchymatous degeneration of the cerebral cortex.

Dr. Marion: As to the question when this patient first developed chorea, my impression is that it was even in childhood; that is to say, her peculiarly silly laugh and manner of saying "Yess-ss" with a rising inflection. While the second boy was certainly rather idiotic in appearance, he has improved vastly since some adenoids were removed.

Dr. D. H. Fuller: This patient came under my observation at the Adams Nervine Asylum two years before her death. Her cause for coming was entirely the suffering from her headaches. She told me that these had existed from early childhood without relief from any treatment. While at the hospital these headaches were practically constant. Her choreic movements were very little in evidence. Her hopelessness of ever getting relief from these headaches was the great cause of her depression. With us she was never suicidal. When questioned she would always reply that she was in pain, but at times it was much more severe than at others. Her silly laugh and tendency to make irrelevant remarks were the only symptoms that suggested impairment of her mental powers.

Dr. Edw. Cowles: This is a case of quite unique interest — the only one that has occurred in my personal knowledge. I have little to add to what Dr. Tuttle has said. The question of heredity is of great interest. It seems to me that in psychiatry, with more modern methods of study, less stress is being laid on heredity as an essential cause of insanity. Twenty years ago this was much insisted upon. Even the classification of mental diseases was fundamentally based upon heredity. As the symptom groups are being more carefully studied, we are coming to see that there are not so many forms of mental disease as was once thought, and most of these may occur without a hereditary cause. Heredity has, of course, some value as a predisposing condition, but the necessity of insanity following as a consequence of the neuropathic condition does not seem to be the case, except in a class which are distinctly neuropathic — the paranoias — and these are much less numerous than was supposed a few years ago. Looking at this question from the point of mental hygiene, it can be said that we can offer the hope that patients of neuropathic heredity are susceptible of improvement, and care in bringing them up may avert these troubles. This view is one that should be carefully considered by the profession. I have no doubt that many cases of insanity are induced by the fear of becoming insane. Too much is made of heredity. The laity have come to think of heredity as did the profession twenty years ago, and this is the cause of a great deal of unnecessary suffering.

Dr. J. G. Blake: While the process of lifting up is going on, the profession can do a certain amount of missionary work by discouraging marriage in cases in which there is an inherited tendency to disease by pointing out its dangers. We can create a public sentiment, which in time may produce laws to protect itself against the diseases due to the marriage of persons having diseases liable to be transmitted.

Dr. Edward Reynolds: There is extant a society in which human breeding is regulated by law, or, rather, custom. In a personal communication Lumholtz, the Australian traveler, tells me that the Australian blacks have developed a system to that end. When a boy reaches puberty he is brought before a council of the elders, and if exceptionally healthy and vigorous, he is accepted as a breeder. If, on the contrary, he is in any way deficient, an artificial hypospadias is made with a sharp clam shell, with the result that he cannot procreate. Such a practice cannot but tend to raise the average of the race.

## Recent Literature.

*A System of Clinical Medicine.* Dealing with the Diagnosis, Prognosis, and Treatment of Disease. For Students and Practitioners. By Thomas D. Savill, M.D. (Lond.), Physician to the West End Hospital for Diseases of the Nervous System; Physician to St. John's Hospital for Diseases of the Skin, London; formerly Medical Superintendent of the Paddington Infirmary; Medical Officer of the Paddington Workhouse, etc. Vol. I. Illustrated. London: J. & A. Churchill. Philadelphia: P. Blakiston's Sons & Co. 1903.

The volume before us, which is one of two, is of more than usual interest because it offers a new point of view in the presentation of the general subject of clinical medicine. We have grown accustomed to the ordinary method of textbook writing, consisting essentially in a more or less complete description of individual diseases with relatively slight attention to the underlying principles governing diagnosis. There is a strong tendency in the ordinary textbook to present a series of facts simply, rather than to appeal to the reasoning faculty of the student.

Dr. Savill has departed radically from this conception of textbook-making in the volume before us. Regarding the origin of his plan the author says that after beginning medical practice he at once began to feel the importance for diagnostic purposes of reviewing various diseases which might give rise to a patient's leading symptom or symptoms. This information he failed to find in the ordinary textbook. He therefore kept a record of his cases, derived largely from the rich material, so generally underrated, obtainable in workhouses and infirmaries. With this material he approaches his subject from the standpoint of symptomatology; he follows the sequence ordinarily adopted in the actual examination of a patient.

The first chapter gives a general scheme of examination. The general principles of disease are discussed in the second chapter, and thereafter the various symptoms and signs referable to the several organs and regions of the body are taken up with such other details as the individual subject calls for. He divides each chapter into three unequal parts, the first dealing with the symptoms which may indicate disease, the second with physical signs and methods used in their discovery, and the third, and larger portion of each chapter, to a clinical classification of the disease affecting that region, this followed by descriptions dealing with individual

diseases arranged according to their clinical relationships.

In addition to this general plan the author has introduced two special features, the first being, at the beginning of each chapter, a detailed list of symptoms and their causes; secondly, italicized paragraphs have been used to emphasize the important features of separate diseases, thereby facilitating reference and diagnosis. The author considers that the advantages of his method, thus briefly described, are that clinical medicine is approached from the positive rather than the negative side. It is opposed to the so-called "process of diagnosis by exclusion," since the reader is guided not to the least improbable but to the most probable diagnosis. He is further of the opinion that this plan gives a truer view of nature's facts than one which deals with diseases as so many separate entities, an opinion with which we are in most cordial accord.

The task which the author has set himself in carrying out this somewhat elaborate scheme is clearly far greater than that comprised in the making of an ordinary descriptive textbook. We have not as yet had occasion to put the volume to the actual test of experience, but the principles involved in its construction are certainly in the line of scholarly medical writing and stand in marked contrast to the increasingly stereotyped method of producing books.

This first volume, complete in itself, contains 702 pages, including an elaborate index, is most attractively illustrated, and printed in varying sized types to permit of ease of reference and to promote a general systematic arrangement. The first volume takes up so-called local diseases, or diseases causing local symptoms and acute specific fevers of microbic origin. A glance at the pages indicates the very great amount of work and care for detail which the author has expended in the perfecting of his plan. We welcome this volume, and shall look forward with much anticipation to its successor as a unique departure in textbook writing, and are confident that the theory upon which it is based is one which must appeal to men who prefer to study medical problems from a rational rather than from a purely descriptive standpoint. The illustrations, type and general appearance of the book, which is of convenient size, are all beyond criticism. We hope it may have a wide circulation in this country as well as in England.

*The American Year-Book of Medicine and Surgery for* 1904. A Yearly Digest of Scientific Progress and Authoritative Opinion in all branches of Medicine and Surgery, drawn from journals, monographs and textbooks of the leading American and foreign authors and investigators. Arranged, with critical editorial comments, by eminent American specialists, under the editorial charge of George M. Gould, A.M., M.D. In two volumes. Vol. I, including General Medicine. Octavo, 673 pages. Illustrated. Vol. II, General Surgery. Octavo, 680 pages. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

These two familiar volumes, with the date 1904, appear in identical form with those of several preceding years, namely, in two volumes, one devoted to advances in medicine and the other in surgery. It is of some interest that the volumes this year comprise slightly fewer pages than in 1903, owing, no doubt, not so much to a diminution in work done, as to discreet condensation of the material. There have been several changes on the staff of contributors owing to resignations of certain men previously serving in this capacity, but the new names are quite sufficient guarantee of the continued excellence of the general editorial work.

A certain innovation has this year been made in placing at the head of each chapter a brief summary of the more noteworthy advances and discoveries of the preceding year. This is an excellent plan, and no doubt will be appreciated by readers who find it difficult or impossible to read the various abstracts of the original articles in detail. The books, as usual, are adequately illustrated and printed with such a use of type that ready reference is facilitated. The work of the publishers is excellent, as we have come to expect from them.

*Uric Acid as a Factor in the Causation of Disease.* A Contribution to the Pathology of High Blood Pressure, Headache, Epilepsy, Nervousness, Mental Diseases, Asthma, Hay Fever, Paroxysmal Hemoglobinuria, Anemia, Bright's Disease, Diabetes, Gout, Rheumatism, Bronchitis and Other Disorders. By Alexander Haig, M.A., M.D. (Oxon.), F.R.C.P., Physician to the Metropolitan Hospital and the Royal Hospital for Children and Women, etc. Sixth edition. Illustrated. Philadelphia: P. Blakiston's Sons & Co. 1903.

Six editions of this much-discussed book have appeared within twelve years. In the three years which have intervened since the preceding edition Dr. Haig has found occasion to amplify his work on the classification of what he calls uric acid diseases, to rewrite in great measure the chapter on treatment and to discuss some of his investigations with the uric acid filter. The author's attitude remains radical, and might be expressed in his own words as follows: "What eleven years ago in the first edition was little more than possibility or probability is now absolute certainty, a certainty which can be made visible to the untrained and unaided eye in a few moments."

That Dr. Haig is an extremist will be generally acknowledged, and relatively few men in the profession are willing to follow him to his comprehensive conclusions. At the same time it must be acknowledged that the insistence upon the study of uric acid has been profitable and has led to a clearer conception of certain processes of metabolism and disease.

THE BOSTON

# Medical and Surgical Journal.

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## CO-OPERATIVE MEDICAL WORK.

Whatever our opinions may be regarding specialism in medical practice, it is growing each year clearer that intelligent investigation of medical matters demands the special study often of many investigators. We have before us a very striking example of an excellent type of co-operative medical research in the recently published volume on smallpox, comprising the last number of the *Journal of Medical Research.*

It is not our purpose at this time to comment particularly on the character or results of this elaborate piece of work, but rather to call attention to the fact that, under the general direction of Dr. W. T. Councilman, no less than eight men, including himself, have taken part in the various lines of study which have finally led to the completed work. It is scarcely possible that so broadly constructed an investigation could have been carried on by one man. Each, working in his own field, has added something of interest to the general subject, which in its completion presents a well-rounded discussion of the subject from various points of view. We quote this simply as an illustration of what is unquestionably coming to be the best type of medical work. The individual, no doubt, will always be able to produce results of great value, and in certain detached fields will continue, in the future as in the past, to add to the sum total of knowledge.

Many problems, however, which are particularly agitating medical men at the present time, demand the intellect and resources of many investigators directed toward a common end. If under proper leadership such united effort may be brought to bear on single problems, it cannot be doubted that results of more far-reaching significance will be reached than through the researches of individuals, however gifted they may be. Not only is this type of work desirable in our laboratories, but it may well be extended to the broad, practical clinical fields which absorb the attention of many medical men. The modern hospital, for example, with its elaborate outpatient department, subdivided more and more into sub-departments, is offering as never before a field for intelligent co-operative work. The familiar disease processes which may be seen daily at the various clinics, but about which we are still in extreme ignorance, offer a field for research which should include the laboratory as well as the clinical side.

Each department, be it surgical, neurological or laryngological, or any of the others, approaches the subject of tuberculosis, for example, from its special standpoint, and fails in many cases to recognize the far-reaching interrelationships which exist. The suggestion has been made, which appears eminently feasible, that departments of a hospital should unite toward elucidating certain of the medical problems in such a way that each could bring the data derived from its special point of view, and finally unite the results into a general conception of our present knowledge of the subject in question. Details naturally would have to be worked out in each individual case, but the fundamental principle implied in the word "co-operation" cannot be too strongly insisted upon at this time of diversified specialism. The knowledge of the specialist is invaluable. This must be generally recognized, but the knowledge of all, as never before, must be brought together into one comprehensive whole. Could this plan be carried out systematically in hospitals, as in laboratories, there is no question that much of the disrespect with which specialism is treated in certain quarters would give place to a feeling that out of it has come decided advantage to medical knowledge, looked at from the broadest general point of view.

A similar plan may with very great advantage be used in the conduct of medical meetings, as experience has amply shown. General subjects, which have wide bearings and which may be discussed by men working in different fields, always excite attention and stimulate interest as a more restricted subject could not do.

It has been an interesting evolution to observe the gradual development of the special student,

and it will be no less interesting to establish in the future the necessary relationship of this special student to investigators in collateral fields and so to the general body of men concerned with scientific medicine. We have long been convinced that specialism is but a step toward a very much broader and deeper general attitude than has hitherto been attained. This must ultimately be brought about by the completest possible co-operation.

## THE TYPHOID EPIDEMIC AT WATERTOWN, NEW YORK.

In regard to the epidemic of typhoid fever at Watertown, N. Y., mentioned in the last bulletin of the State Department of Health, an investigation conducted by Dr. George A. Soper, whose work at Ithaca as the representative of the department is well remembered, has established the fact that the primary cause of the outbreak was the polluted condition of the town water supply drawn from Black River, which carries the sewage of some thirty or more villages and of a large number of mills. The spread of the disease was due to the usual methods of secondary infection. Some wells were found to be infected and other agencies were discovered. Dr. Soper at once took vigorous measures to combat the epidemic. The over-crowded hospitals were supplemented by accommodations provided in the new high school building, and a second emergency hospital was established for cases complicated with erysipelas, of which a number had occurred. A bacteriological laboratory was instituted, and it is said to have proved extremely useful. Disinfectants of standard quality were distributed free, with cards of instruction relating to their proper and effective use. A cheap and abundant supply of good spring water was arranged for by private enterprise, and the quality of the water insured by daily analysis. The public records, which previously had been very imperfectly kept, were made complete and valuable, and a system established by which they will remain so in the future. The city was cleaned as never before, and the consequences of years of municipal negligence as fully as possible corrected. As a result of the steps taken the epidemic is now abating. According to the latest reports there are 203 cases of typhoid in the city, of which 88 are in hospital and 115 in dwellings under good oversight. A filter plant is being built which will purify the public water supply; but as the seeds of infection have been sown broadcast, great vigilance exercised through a long period will no doubt be needed to eradicate the disease.

## THE INFLUENCE OF TRAMPS IN SPREADING SMALLPOX.

Dr. Kaye, medical officer of West Riding, England, (*Journ. of the Sanitary Institute*, January, 1904), presents many instances of the introduction of smallpox, through the medium of tramps. In 1893, out of 63 towns invaded by smallpox, at least 37 owed its first introduction to tramps, and in 1903, out of 138 towns, " 100 definitely attributed the introduction to visitors of the tramp class."

In Sheffield, out of 28 importations of smallpox from November to May, no less than 21 were brought by tramps. In Huddersfield 8 out of 13 invasions were thus attributed, and in Barnley, " all of their 46 cases could be traced back to visitors of the lodging-house class."

" When once a tramp receives infection," says Dr. Kaye, " he rarely comes under official observation until he has been in close contact with numbers of his kind, who, in the meantime, have dispersed in all directions, probably carrying with them the seeds of disease, while they in turn will infect other wanderers before their own progress is checked."

The author advises that direct powers be obtained by sanitary authorities to secure the following ends:

(1) Vaccination or revaccination of any tramp *exposed* to the infection of smallpox.

(2) Disinfection of the person and clothing.

(3) Detention of the present inmates of infected common lodging houses, and refusal of new admissions.

(4) Complete closure of common lodging-houses where necessary.

The first of the foregoing recommendations is defective, in advising the vaccinations of *exposed* tramps only, since it is a very difficult matter to determine who has or has not been exposed to infection; hence it were preferable to vaccinate all tramps without exception.

## MEDICAL NOTES.

Compulsory Vaccination in Pennsylvania. — It is stated that a bill will be offered in the coming Pennsylvania legislature to provide for compulsory vaccination in the state under the jurisdiction of health boards.

College of Physicians of Philadelphia. — It is stated that at a recent special meeting the College of Physicians decided to erect a new building at a cost of approximately $250,000.

University of Pennsylvania, Department of Medicine. — The medical department of the University of Pennsylvania will conduct, as usual, a summer school in medicine. It is announced that the course will begin on the ninth of May and extend over a period of six weeks. In most instances the individual courses will be limited to ten students.

Gift to the Johns Hopkins Medical School. — Mr. John D. Rockefeller has given to the Johns Hopkins Medical School and Hospital $500,000, without conditions, to meet its expenses. It will be remembered that the hospital funds suffered severely on account of the fire which destroyed some of its real estate in Baltimore. A more beneficent gift under the circumstances could hardly have been made.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon April 13, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 50, scarlatina 12, typhoid fever 5, measles 155, smallpox 0.

The Union Label Rampant. — It is stated, and we understand correctly, that at a meeting held last Sunday in Boston the Building Trades Council refused to receive a communication from the Boston Society for the Relief and Control of Tuberculosis because there was no union label on the letter head. The letter was returned to the society unread. It has since transpired that the letter heads of one or more of the unions themselves have no union label. Such behavior as this, especially toward a philanthropic body, striving for and seeking assistance for the regeneration of the community is depressing. It emphasizes President Eliot's plea for a free democracy and illuminates his refusal of the union label.

Report of Cambridge, [Mass.,] Board of Health. — The Cambridge Board of Health in its annual report recommends that a new hospital for cases of diphtheria and scarlet fever, with a ward for the care of measles, be established. It is also recommended that a proper hospital be constructed for treatment of cases of smallpox, and also one for tuberculosis.

In general, the board feels that it is desirable that the various infectious diseases should be treated in proper buildings constructed especially to that end. Dr. Eugene A. Darling of the bacteriological laboratory reports that 75 cultures for the determination of the presence of diphtheria were made from 68 cases, and that sputum from 30 cases of tuberculosis was examined with but 4 positive results. The city laboratory was also called upon to use the Widal reaction in 18 samples of blood.

The Smoke Nuisance. — On April 12 the committee on cities gave a hearing on a bill to provide for the abatement of smoke in Boston and vicinity. Prof. C. H. Benjamin has recently contributed an article to *Science* in which he draws attention to certain fallacies regarding the necessity of smoke. He maintains, as has been done before, that smoke means waste, and that, therefore, an attempt to abate the nuisance should meet rather with the co-operation than the hostility of the factory owners and those burning large amounts of coal. Perfect combustion and the prevention of smoke are equivalent terms. The attainment of perfect combustion, which is another word for complete economy, is the problem. This is possible provided firemen are sufficiently educated to do their work with intelligence. The bill certainly should be passed without difficulty, and should meet with the hearty approval of every class in the community.

### NEW YORK.

Memorial Chapel at Lincoln Hospital. — A memorial chapel at the Lincoln Hospital and Home (for negroes), in the borough of the Bronx, was dedicated on Easter Sunday. The chapel is the gift of Miss Anna Van Santvoord, and was erected in memory of her parents, the late Com. and Mrs. Alfred Van Santvoord, at a cost of about $10,000.

Cornelius Williams, Insane. — Cornelius Williams, the negro who last autumn murdered Andrew H. Green, revered as the "Father of the Greater City of New York," without provocation and without motive, has been adjudged insane by a jury in the Court of Special Sessions and committed to the State Hospital for Insane Criminals at Matteawan. Drs. Austin Flint and Carlos F. Macdonald, representing the state, and Manson and Allan MacLean Hamilton, for the defense, all pronounced the man positively insane.

Decision Against University of New York. — After a legal contest extending over several years the University of New York has finally lost in its endeavor to retain the ownership of the Medical College Laboratory of New York City, which for some time past has been under the control of Cornell University. On April 5 the Court of Appeals at Albany handed down a decision, sustaining that of the courts below, that the university reconvey to the laboratory the property in question.

Passage of the Elsberg Bill. — The Elsberg bill, abolishing the office of coroner in New York City after the termination of the incumbency of the coroners now serving, which recently passed the state senate, was passed by the lower house of the legislature on April 8 by a vote of 80 to 30. As it will doubtless receive the governor's signature, this much needed reform, which has been secured after years of determined opposition, may be regarded as an assured fact. By the provisions of the bill the duties at present performed by coroners are assigned to a board of medical examiners under the jurisdiction of the city department of health.

Conviction for Criminal Abortion. — Dr. Edward E. Conrad who, through clever detective work on the part of the agents of the New York County Medical Society, was recently convicted of attempting a criminal abortion was sentenced on April 8 by Recorder Goff to an indeterminate sentence of not more than two years nor less than one year in state's prison. This was the first case of conviction for attempted violation of the law against illegal operations, and in pronouncing sentence the recorder stated that he would be pleased if a certificate of reasonable doubt should be obtained in order that the questions involved might be settled by a higher tribunal. Dr. Conrad will therefore probably be kept in the Tombs prison, where he is now confined, pending his attorney's appeal to the supreme court.

Mortality Report. — The weekly reports of the health department show that during the month of March the mortality in the city represented an annual death rate of 23.80, as against 22.59 in February and 19.23 in March, 1903. The death rate is therefore exceptionally high, while in March of last year it was exceptionally low for the season. The corrected rate, excluding non-residents and infants under one week old, was 22.76. Among the diseases in which there was an increased mortality were the following: The weekly average of deaths from pneumonia increased from 263.25 in February to 296 in March; of deaths from pulmonary tuberculosis, from 172.25 to 195.6; from influenza, from 24.25 to 28.2; from measles, from 17 to 29; from typhoid fever, from 8 to 9.4; and from cancer, from 49 to 51. The mortality from pneumonia reached its climax in the week ending March 5, when there were 350 deaths from the disease. Since then there has been a gradual decline in the number of deaths, and in the week ending April 2, 250 were reported. Among the diseases in which there was a decreased mortality were the following: The weekly average of deaths from diphtheria and croup declined from 54.75 in February to 40.8 in March; of deaths from scarlet fever, from 27.75 to 26.2; from broncho-pneumonia, from 118.5 to 114; from diarrheal diseases, from 48.5 to 41.6; from diarrheals in children under two years, from 38.5 to 32.4; from Bright's disease and nephritis, from 139.5 to 130. 6; and from organic heart diseases, from 118 to 106.4. During the month there was one death from smallpox.

## Miscellany.

### DR. WEIR MITCHELL IN A NEW FIELD.

In the April number of the *Century Magazine* there is begun the publication of an article by Dr. S. Weir Mitchell entitled "The Youth of Washington, Told in the Form of an Autobiography." We have all been charmed with Dr. Mitchell's fiction, and probably this article may be said to border on fiction, though abounding in historical facts. The author imitates Washington's style of writing, necessarily. Without inquiring too closely as to the success of the imitation — a most difficult task — we may say that in the main this first installment of the article has the Washingtonian quaintness, and certainly does not misrepresent the great man. Furthermore it is intensely interesting. It is embellished with an excellent portrait of the author. — *New York Medical Journal.*

### RECENT WORK ON THE "N" RAYS.

Whatever incredulity may be expressed in England in regard to the so-called "n" rays French *savants*, notably M. Blondlot who first described these emanations and M. Augustin Charpentier, are still freely contributing papers on the subject to the Académie des Sciences. The most recent development is the discovery by M. Blondlot of certain new rays allied to the "n" rays and, like them, emitted by the Nernst lamp.

For these the name " $n_1$ " rays is suggested and they exhibit the peculiarity that whereas the " n " rays increase the brightness of a suitable feebly luminous surface the " $n_1$ " rays diminish it. M. Charpentier's investigations have been chiefly directed to the physiological action of rays of both kinds. Having found, as mentioned at page 594 of *The Lancet* of Feb. 27, that the acuity of vision is augmented by the action of the " n " rays, he has tried their effect upon the senses of smell, taste and hearing. The organs of all these senses have their activity stimulated by the rays when these are brought to bear upon the nasal mucous membrane, the tongue, or the ear, respectively, and in addition to this the sense of smell can be affected by bringing a source of the rays opposite a point immediately above the glabella or, better, by placing it upon the top of the head a little in front of the bregma. Whether, as in the cases of sight and smell, the effect of greater intensity of taste and hearing can be produced by the action of the emanations upon the brain through the skull is yet undecided, but the difficulty is probably only that of localising the appropriate centers. On repeating his experiments with the still newer " $n_1$ " rays M. Charpentier found that, as in the case of the luminous screen, results opposite to those already stated were obtained, there being a general decrease in sensitiveness of the organs concerned. — *The Lancet.*

## Correspondence.

### AN UNAUTHORIZED LABEL.

New York, April 11, 1904.

Mr. Editor: Referring to my letter of Feb. 29, regarding the unauthorized use of my name on the labels of the new anesthetic " Anæsthol " (a fact which had only just then come to my notice) I herewith beg to enclose a joint communication from Messrs. Chas. Cooper & Co. and Lehn & Fink, with the request that you kindly have the same appear under " Correspondence " in the next issue of your esteemed Journal.

I hope you will do me this favor, as it will vindicate me in the eyes of such colleagues as may have seen the label and consider it wrong — as I certainly do — for a reputable physician to have his name used for commercial purposes. The enclosed notice is the outcome of a rather lengthy controversy carried on under legal advice.

Very truly yours,

Willy Meyer, M.D.

### ANÆSTHOL.

New York, March 29, 1904.

Mr. Editor: We beg to state that the use of the name of Dr. Willy Meyer of New York upon the label of the new anesthetic " Anæsthol " was introduced without his knowledge, though in entire good faith upon our part.

At his request the label has been changed and, in order to protect the medical profession against unreliable imitations, it will henceforth bear the name of Dr. Weidig, the originator of the new compound.

Chas. Cooper & Co.,
194 Worth Street, New York,
Sole Manufacturers.
Lehn & Fink,
120 William Street, New York,
Sole Selling Agents.

## RECORD OF MORTALITY

For the Week ending Saturday, April 2, 1904.

| Cities. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Diarrheal Diseases. | Typhoid fever. |
| New York . . | 3,908,644 | 1,668 | 471 | 23.20 | 22.38 | 2.39 | 2.51 | .72 |
| Chicago . . . | 2,021,086 | 576 | 128 | 22.91 | 21.52 | .69 | 4.34 | .69 |
| Philadelphia | 1,407,968 | 588 | 145 | 27.71 | 18.02 | 1.53 | 2.55 | 3.48 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 202 | 53 | 26.23 | 16.33 | 1.48 | .49 | 1.00 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 135 | — | 18.51 | 16.29 | 3.70 | 4.44 | 4.44 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 67 | 21 | 14.93 | 17.91 | 1.49 | 1.49 | — |
| Boston . . . | 617,950 | 226 | 54 | 16.37 | 18.14 | 1.32 | .88 | — |
| Worcester . . | 136,925 | 35 | 19 | 11.43 | 17.14 | — | 2.85 | — |
| Fall River . . | 119,349 | 48 | 19 | 18.74 | 27.07 | — | 8.33 | — |
| Lowell . . . | 104,402 | 32 | 7 | 15.65 | 15.65 | — | 6.25 | 6.25 |
| Cambridge . | 100,998 | 17 | 5 | 23.52 | 5.88 | 5.88 | — | 5.88 |
| Lynn . . . . | 73,875 | 31 | 7 | 12.90 | — | 3.22 | — | — |
| Lawrence . . | 72,348 | 21 | 10 | 19.04 | 19.04 | — | — | — |
| Springfield . | 72,020 | 25 | 7 | 36.00 | 4.00 | — | — | — |
| Somerville . | 70,413 | 21 | 5 | 28.57 | 19.05 | — | 4.76 | 4.76 |
| New Bedford | 68,863 | 21 | 7 | 14.29 | 14.29 | 4.76 | 4.76 | — |
| Holyoke . . . | 50,538 | 14 | 4 | 35.71 | 21.42 | — | — | — |
| Brockton . . | 46,601 | 13 | 3 | 46.20 | — | — | — | — |
| Newton . . . | 39,310 | 9 | 1 | 11.11 | 11.11 | — | — | — |
| Haverhill . . | 39,061 | 8 | 1 | 25.00 | 50.00 | — | — | — |
| Malden . . . | 37,205 | 14 | 2 | 14.28 | — | — | — | — |
| Salem . . . . | 37,188 | 17 | 4 | — | — | — | — | — |
| Chelsea . . . | 36,499 | 15 | 5 | 6.67 | 13.33 | 6.67 | — | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 11 | 4 | 18.18 | 9.09 | 9.09 | — | — |
| Everett . . . | 30,209 | 14 | — | 21.42 | — | — | — | — |
| North Adams | 29,201 | 7 | 1 | 14.30 | — | — | — | 14.30 |
| Quincy . . . | 26,798 | 4 | 4 | 25.00 | 25.00 | — | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 8 | 2 | 12.50 | 50.00 | — | — | — |
| Brookline . . | 23,576 | 6 | — | — | 33.33 | — | — | — |
| Pittsfield . . | 22,870 | 7 | 1 | — | 14.30 | — | — | — |
| Medford . . | 21,956 | 4 | 1 | — | — | — | — | — |
| Chicopee . . | 21,692 | 12 | 5 | 16.67 | 8.33 | — | — | — |
| Northampton | 20,314 | 12 | 2 | — | 50.00 | — | — | — |
| Beverly . . . | 15,807 | 5 | 1 | — | 20.00 | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 4 | 1 | — | 25.00 | — | — | — |
| Adams . . . | 14,745 | 2 | 1 | 50.00 | — | — | — | — |
| Attleboro . . | 14,561 | 4 | — | — | 25.00 | — | — | — |
| Hyde Park . | 14,500 | 8 | 3 | 37.50 | 25.00 | — | 12.50 | — |
| Newburyport | 14,478 | 7 | 2 | 28.60 | — | — | — | — |
| Woburn . . . | 14,315 | 7 | 3 | — | 57.20 | — | — | — |
| Melrose . . . | 13,819 | 2 | — | 50.00 | — | — | — | — |
| Westfield . . | 13,809 | 4 | 2 | 25.00 | 25.00 | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 2 | 0 | — | — | — | — | — |
| Revere . . . | 13,609 | 2 | — | — | — | — | — | — |
| Framingham | 12,974 | 15 | 3 | 6.67 | 20.00 | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 3 | 1 | 33.33 | — | — | — | — |
| Southbridge . | 11,716 | 3 | — | 33.33 | 33.33 | — | — | — |
| Watertown . | 11,575 | 1 | 0 | — | — | — | — | — |
| Weymouth . | 11,350 | 3 | 0 | 33.33 | 33.33 | — | — | — |
| Plymouth . . | 11,189 | — | — | — | — | — | — | — |

Deaths reported, 3,960; under five years of age, 1,015; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 894; acute lung diseases 806, consumption 454, scarlet fever 52, whooping cough 14, cerebrospinal meningitis 39, smallpox 7, erysipelas 18, puerperal fever 16, measles 51, typhoid fever 53, diarrheal diseases 102, diphtheria and croup 69.

From whooping-cough, Boston 5, Philadelphia 5, Pittsburg 2, Boston 1, Newburyport 1. From smallpox, Philadelphia 7. From cerebrospinal meningitis, New York 31, Baltimore 2, Boston 1, Worcester 2, Lawrence 1, Newton 1, Chicopee 1. From erysipelas, New York 9, Chicago 4, Philadelphia 2, Boston 3.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,425, for the week ending March 19, the death-rate was 19.7. Deaths reported 5,781; acute diseases of the respiratory organs (London) 205, whooping cough 188, diphtheria 53, measles 180, smallpox 5, scarlet fever 37.

The death-rate ranged from 8.3 in Hornsey to 31.0 in Warrington; London 18.8, West Ham 14.5, Brighton 19.0, Southampton 14.4, Plymouth 20.1, Bristol 21.9, Birmingham 24.6, Leicester 22.3, Nottingham 19.9, Liverpool 23.2, Bolton 20.5, Manchester 27.4, Salford 22.3, Bradford 18.1, Leeds 19.3, Hull 16.6, Cardiff, 18.3, Rhondda 23.0, Wigan 27.4, Tottenham 18.0, Preston 22.2.

## METEOROLOGICAL RECORD.

For the week ending April 2, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S..27 | 30.05 | 36 | 38 | 34 | 53 | 76 | 64 | N W | E | 13 | 5 | O. | O. | 0 |
| M.28 | 30.16 | 34 | 37 | 30 | 76 | 81 | 78 | N | S E | 9 | 12 | O. | O. | T. |
| T..29 | 30.28 | 34 | 43 | 26 | 50 | 57 | 54 | N W | S | 14 | 10 | C. | C. | 0 |
| W.30 | 30.42 | 41 | 50 | 32 | 59 | 48 | 54 | S W | S | 2 | 10 | O. | C. | 0 |
| T..31 | 30.36 | 36 | 40 | 33 | 78 | 95 | 86 | S E | E | 4 | 10 | O. | N. | .07 |
| F.. 1 | 30.06 | 39 | 42 | 36 | 87 | 96 | 92 | E | W | 19 | 9 | O. | O. | 1.15 |
| S.. 2 | 29.74 | 49 | 54 | 44 | 64 | 74 | 69 | S W | W | 11 | 20 | C. | C. | 0 |
| ☞ | 30.15 | | 43 | 34 | | | 71 | | | | | | | 1.22 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING APRIL 9, 1904.

E. C. TAYLOR, assistant surgeon. Detached from the Naval Museum of Hygiene and Medical School, Washington, D. C., and ordered to the naval hospital, naval station, San Juan, P. R., sailing from New York, N. Y., about April 9.

F. E. CAMPBELL, assistant surgeon. Detached from the Naval Museum of Hygiene and Medical School, Washington, D. C., and ordered to the "Constellation."

J. D. MANCHESTER, assistant surgeon. Ordered to the "Columbia," April 11.

T. N. PEASE, assistant surgeon. Ordered to the "Harford," April 14.

J. S. F. REEVES, assistant surgeon. Ordered to the "Minneapolis," April 14.

A. R. WENTWORTH, surgeon. Granted leave for one month from April 5.

L. W. BISHOP, assistant surgeon. Detached from treatment at the naval hospital, Hare Island, Cal. Ordered home and granted sick leave for two months.

## OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED APRIL 7, 1904.

VON EZDORF, R. H., passed assistant surgeon. Detailed as recorder of board of examiners that met at Washington, D. C., April 4, 1904, for the examination of candidates for appointment as assistant surgeon. April 6, 1904.

FOSTER, M. H., passed assistant surgeon. Bureau letter of March 19, granting Passed Assistant Surgeon Foster leave of absence for ten days from March 30, amended so that said leave shall be effective April 29. April 6, 1904.

ANDERSON, J. F., passed assistant surgeon. Relieved from duty as recorder of board of examiners that met at Washington, D. C., April 4, 1904, for the examination of candidates for appointment as assistant surgeon. April 6, 1904.

MCCLINTIC, T. B., assistant surgeon. Relieved from duty in the Hygienic Laboratory, Washington, D. C., and directed to proceed to Tampico, Mexico, for duty in the office of the United States Consul. April 2, 1904.

GLOVER, M. W., assistant surgeon. To proceed to Vancouver, B. C., for special temporary duty. April 3, 1904.

WARREN, B. S., assistant surgeon. Granted leave of absence for six days from April 10. April 5, 1904.

MONCURE, J. A., acting assistant surgeon. Department letter granting Acting Assistant Surgeon Moncure leave of absence for thirty days from April 1, 1904, amended so that said leave shall be effective from April 10. March 31, 1904.

### BOARD CONVENED.

Board convened to meet at Stapleton, N. Y., April 4, 1904, for the physical examination of officers of the Revenue Cutter Service. Detail for the board: Passed Assistant Surgeon A. C. Smith, Chairman. Assistant Surgeon T. W. Salmon, Recorder.

## BOOKS AND PAMPHLETS RECEIVED.

Transactions of the American Climatological Association. For the year 1903. Vol. XIX. Philadelphia.

Die Entstehung der Tuberkulose mit besonderer Berücksichtigung der v. Behringschen Lehre. Von Prof. Cornet. 1904. Reprint.

Flatulence, Meteorism and Tympanites. By Charles D. Aaron, M.D. Reprint.

Transactions of the Luzerne County, Pa., Medical Society, for the Year ending December 31, 1903. Vol. XI.

Third Annual Report of the New York State Hospital for the Care of Crippled and Deformed Children, for the Year ending September 30, 1903. Hospital located at Tarrytown, N.Y.

University of California Publications. Physiology. Further Experiments on the Fertilization of the Egg of the Sea-urchin with Sperm of Various Species of Star-fish and a Holothurian. By Jacques Loeb.

The Pathology of Leukemia. By Edward T. Williams, M.D. Reprint.

The Gazette Pocket Speller and Definer. English and Medical. Second Edition. New York: The Gazette Publishing Co. 1904.

Progressive Medicine. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., assisted by H. R. M. Landis, M.D. Illustrated. Philadelphia and New York. Lea Brothers & Co: March 1, 1904.

A System of Practical Surgery. By Prof. E. von Bergmann, M.D., Prof. P. von Bruns, M.D., and Prof. J. von Mikulicz, M.D. Vol. I. Surgery of the Head. Translated and Edited by William T. Bull, M.D., and Walton Martin, M. D. Illustrated. New York and Philadelphia: Lea Brothers & Co. 1904.

Peritomy or Peridectomy. By L. Webster Fox, A.M., M.D. Reprint.

Conical Cornea — An Historical Review together with a New Non-Operative Method of Treatment. By L. Webster Fox, A.M., M.D. Reprint.

Sarcoma of the Orbit, Report of a Case Cured by the X-ray. By L. Webster Fox, A.M., M.D. Reprint.

A System of Physiologic Therapeutics. A Practical Exposition of the Methods, Other than Drug-giving, Useful for the Prevention of Disease and in the Treatment of the Sick. Edited by Solomon Solis Cohen, A.M., M.D. Vol. VII. Illustrated. Philadelphia: P. Blakiston's Sons & Co. 1904.

Department of the Interior. Bureau of Government Laboratories. Biological Laboratory. A Report on Hemorrhagie Septicæmia in Animals in the Philippine Islands. By Paul G. Woolley, M.D., and J. W. Jobling, M.D. Manila. 1904.

Department of the Interior. Bureau of Government Laboratories. Biological Laboratory. A Report on Two Cases of a Peculiar Form of Hand Infection, due to an Organism Resembling the Koch-Weeks Bacillus. By John R. McDill, M.D., and William B. Wherry, M.D. Manila. 1904.

De la Stérilisation des Sondes en Gomme et en Caoutchouc par la vapeur et de leur conservation stérile. Par le Dr. Albert Freudenberg (de Berlin). Reprint.

Injections intra-vésicales d'Iodoforme dans le Traitement de la Cystite Ammoniacale. De l'Acide Camphorique comme Prophylactique de la Fièvre Urinaire. Par le Dr. Albert Freudenberg (de Berlin). Reprint.

Immune Sera. Haemolysins, Cytotoxins, and Precipitins. By Prof. A. Wassermann, M.D. Authorized Translation by Charles Boldnan, M.D. First edition. New York: John Wiley & Sons. London: Chapman & Hall, Limited. 1904.

Manhattan Eye and Ear Hospital Reports. No. 3. March, 1904.

Typhoid Epidemiology. By Richard Weil, M.D. Reprint.

Lectures, Chiefly Clinical and Practical, on Disease of the Lungs and the Heart. By James Alexander Lindsay, M.D., F.R.C.P. (Lond.), M.A. New York: William Wood & Co. 1904.

Air, Food and Exercise. An Essay on the Predisposing Causes of Disease. By A. Rabagliati, M.A., M.D., F.R.C.S., Edin. Third edition, greatly enlarged and almost entirely rewritten. New York: William Wood & Co. 1904.

The International Medical Annual: A Year Book of Treatment and Practitioner's Index. By thirty-two Contributors. Twenty-second year. New York: E. B. Treat & Co. 1904.

# Lecture.

## INTRODUCTORY LECTURE AT UNIVERSITY BELLEVUE HOSPITAL MEDICAL COLLEGE.

BY BEVERLEY ROBINSON, M.D., NEW YORK,
*Clinical Professor of Medicine.*

THERE are few greater pleasures, I believe, than to speak to a thoroughly sympathetic audience when one knows something and wishes to tell it. Such is my attitude towards you, young men, who are working in a great career, if properly understood by yourselves and by the public.

I come before you as Clinical Professor of Medicine. I have, therefore, to do with a big subject, well worthy of the highest ambition of the best medical man to excel in. To teach it well, one should have very many great and good qualities; to teach it as it has been taught, and is still being taught by a very limited few, one should be *facile princeps* amongst his fellows.

What are, or rather should be, the relations of clinical medicine to the different specialties and even to general surgery itself? In my judgment, it should, so to speak, embrace or include them all. Not that I mean to say that any one man can familiarize himself theoretically or practically with all that is known of these divers branches. That is simply out of the question and Utopian.

But on the other hand, the honored professor of clinical medicine should be sufficiently familiar with the different special branches to be able to give a final and wise judgment as to what to do or not to do in nearly every case, and in the event of particular interference to say at what point or time an arrest of treatment may properly be advised. This has long been my position and it remains so; only with firmer conviction as to its great usefulness to the public and to the profession.

Later, I am convinced, when real knowledge of medicine and its higher aims is more generally disseminated and recognized, individuals and families will select their practitioner as the sensible ones to-day do their business advisers. First of all on account of high personal character and absolute rectitude above and over all; then education and opportunity will be considered; then brains; then that quality of heart and hand which obliges a man to do right, and in a kindly, sympathetic way, as well as merely to think straight.

The study of clinical medicine is continuous; it never ends. New knowledge comes every day, and this has to be valued and tested, the good wheat to remain and be cultivated, the chaff to be thrown away, gotten rid of, disregarded. Therefore your motto should be with one of my old French masters, "*Le travail, le travail — toujours le travail.*" Besides, from the clinical standpoint, cases always differ. No two patients are ever precisely alike. In a sense there is no such thing as *a disease;* there is invariably a *person* affected with a disease. Thus we see that while the textbook, or the clinic may provide a description of one or many forms of a given complaint, there are other forms not touched upon; at least the program is incomplete during many long years.

Admitting, in general, we may ere very long find all the types, and familiarize ourselves with them, of various phases of a known disease, we would still have differences depending upon the personal equation, *i. e.*, habit, occupation, temperament, environment, etc., which are as variable as the features, the manners, the sympathies, the qualities of mind. Hence we see that supposing our mere diagnosis is correctly made, in so far as the recognition of a particular disease is concerned, yet the differential diagnoses may still be far from complete, and the prognosis and treatment in reality a more important and difficult subject, although often too much ignored, may rarely be exhaustively treated in individual instances.

With each successive year, I come before my class with a keener appreciation of my own limitations of knowledge, and of how little informed I am practically in certain directions; notably in the more advanced work of the microscopist, the chemist and the bacteriologist. In these lines I must turn, and do so gladly and cheerfully, to the younger generation of physicians for help and guidance. I feel fortunately that I am still appreciative and perhaps possessor of anterior knowledge of these subjects sufficient to enable me in many instances to weigh their value and determine their direct importance when applied to the estimate of a particular patient under observation and treatment.

These clinics before the entire class, and in the college building particularly, have their necessary deficiencies and limitations. In the first place, as you know, our cases are ambulent cases. They come to the dispensary, are seen one or more times by my assistant, and if they present points apparently of interest, they are later brought before the class. Frequently I am unable, in the nature of things, except for a short time or at all, to see the patient in advance; consequently, personally know them only imperfectly. I am of course speaking wholly from the medical side. The salient features of the cases, partly by reason of the information given me by my assistant, partly through my own observation before the class, are considered as carefully before you as circumstances and time permit.

On the other hand, there are numerous modifying, ambient conditions affecting each case, to which I can only refer in a few words, or am obliged to pass over in silence because of lack of accurate available knowledge.

Again, I do not believe mere physical examinations in their entirety and minutiæ can be profitably taught to a large class, by the clinical professor. This is work now assigned to section teaching in a great measure, and very properly so. In the sections with a relatively small num-

ber of students, each student has the opportunity to palpate, percuss, and auscultate, in the various disorders of the heart, lungs, or abdominal viscera, which may be seen outside of hospital wards.

Again, in a limited way, affections of eye and ear, throat and nose, genito-urinary organs and nervous system, may be observed, commented upon and treated. Don't delude yourselves and don't remain under false impressions! There is a very great deal that can be learned only in hospital wards, and in following up cases from day to day, noting changes which occur, the onward progress or arrest of disease and the treatment with alterations and modifications, which new conditions and symptoms render constantly imperative.

A word in regard to the teacher himself. Each professor has his personality; each man will teach according to his own methods and appreciations, provided, of course, he is worthy to fill the place to which he is appointed. Of course he will follow more or less closely certain fixed lines of instruction which may remain unchanged for periods of time, but while this is true, his manner of questioning or examining a patient, his mode of thought, his emphasis of special features of the disease, the importance and bearings thereof, and the conclusions theoretical or practical to be deduced therefrom, are all more or less his own. What you may and can profitably learn from one man lecturing on a given subject, you will not learn in quite the same way from another. But that does not mean to say that the instruction is not equally valuable from both.

Again, the attention is riveted in a different way upon different men. Some professors are precise, cold, deliberate; but their profound knowledge of a subject, their accuracy, their poise, their truth, make amends for coldness and it may be almost stolidity. Other men less profound, perhaps, less prone to see and dwell upon minutiæ, less well balanced at all times in forms, expressions and presentation of facts, have a great attraction in their personal teaching. They are warm and enthusiastic, filled with certain aspects of their subject, which they insist upon and illustrate in ways most taking and suggestive. Such men's teaching must be supplemented usually, to be well rounded and perfect, by the knowledge acquired from books and extensive reading at home. But they have their great value. Their enthusiasm, their honest convictions expressed in no uncertain terms, hold the class almost spell-bound for the while, and the lecture room becomes a delight and a longing. The words, the instruction of such men remain; they are rarely or never forgotten, even in after years when the college benches have been long left behind and the whilom listener has grown gray in the service of his fellow men. I take it that just here remains, and ever will, the inestimable something, the intrinsic power and worth of the spoken word over the written statement. Things written and studied in books are soon forgotten and must be studied again and again, to keep the mind awakened and refreshed. Things spoken, despite the old Latin dictum, "*litera scripta manet*," stand out clearly before the mind's eye, and in times of stress and emergency come forth like beacon lights to help, guide or direct. But in order that this may be so the teacher must always teach the truth as he understands it, unwaveringly, unflinchingly, with trust and hopefulness, in the spirit, like to that of the immortal Harvey. Ultimately, such doctrine from such a source will surely prevail; and why? because it rings true to all men all the way along the line.

A word for the general practitioner and the modern, superabundant specialist. All honor to both. But let us look for a moment at their dividing lines. The one perfecting himself in a single limited branch, the other devoted to all; the one working hard, no doubt, but with many spare hours for self, for home, for relaxation: the other the constant servant of the public in time of trouble and sorrow, of fear and panic, the guiding hand to all, when doubts and anxieties and carking care are present. He it is who carries his own and all others' burdens, and does it willingly, cheerfully, bravely, until tired out with age or disease, and even at such times is rarely known to halt or stop completely, in his Christ-like service to men on earth. He ushers them in upon it, when woeful accents of motherhood about to be make most urgent appeals and cries; he folds the hands, gives the last solace and hope, and says the last prayers with the departing spirit and the heart bereaved mourners, around the flickering lamp of life ere it goes out, many, many times, when no other mortal can, no other mortal does, the thrice holy work.

Is this man now appreciated as of old? Does Ian Maclaren's good physician of "The Bonnie Briar Bush" hold his birthright in isolated communities, or large centers of population? I fear, I believe not, except it be in rarest instances. But I also believe firmly his day will return, and none too soon. It will come back when men, true men, become less ambitious and self seeking, when accurate knowledge of medicine and its lofty aims is more widely disseminated; when worth and service have honors awarded them, when mere wealth is not a passport to high position, when greed and ill-gotten gains are no longer tolerated, and finally, when the clergy generally, high and low, preach more by real life and example, and not so much by doctrine and precept.

Here again, don't let me be misunderstood. The general practitioner, the family adviser, may be true and kind, generous, sympathetic, active, considerate of all men even more than of himself; but to be trusted and relied upon, he must have brains, tact, good judgment. And his brains must be instructed brains, brains that have seen a great deal and observed intelligently, carefully, accurately. He must, of course, be enthusiastic in well-doing, but likewise he must have a fund of common sense (that most uncommon thing of all, perhaps), to fill his thoughts and direct his

actions. He must sift and weigh things before he counsels and advises. He must not be backward in endorsing what is proven to be good and valuable; but he must be lukewarm and partially blind to fads, conceits, ill-reasoned measures to promote health, whether they come from the polypharmacy doctor, or the too daring operator, with other men's health, comfort or lives at stake.

The usefulness then of oral lectures from the veteran in medicine proceeds from the fact that he has seen many moons come and go, many ideas and practices vaunted and heralded with loud hosannas, which very soon were little thought of any more, and consequently comes to possess a prudential reserve of capital, which makes him cry a halt when others rush ahead and do, and find out later how silly and misguided they are, not to say something worse of them. While the newer demonstrations belong to the younger generation, as a rule, in microscopy, chemistry, bacteriology, skiagraphy, the older man should insist upon general conditions which govern, should bring many cases, apparently new or distinct, until properly winnowed and garnered, they re-appear under important laws over-ruling all. He it is who should point out special symptoms or the absence thereof in different cases; he it is who should estimate and assign their due importance and value in all that pertains to diagnosis, prognosis and treatment. The rational explanation of many obscure things should come to him to settle and unravel as far as may be, but not see in every defect or change of organ a local trouble to be attended to with prescription or knife, but only an indication. It is not for him to believe that the body of man is a bit of mosaic work from which here and there a piece may be left out or taken away, without injuring the entire aspect and value of the structure. Rather it is for him to show it is feeling, working, active, dynamic substance and force, which must be most carefully considered from every standpoint before the purposes of nature are counteracted, interfered with, or needlessly and harmfully controlled.

## Original Articles.

### RESECTION OF THE NASAL SEPTUM WITH REPORT OF FIFTEEN CASES.

BY LEON E. WHITE, M.D., BOSTON,

*Clinical Assistant at the Massachusetts Charitable Eye and Ear Infirmary and Assistant in Otology at Tufts Medical School.*

Having tried practically all methods for correcting nasal obstruction due to deflection of the septum and finding that recovery was slow, the pain and discomfort great, and the results not commensurate with the difficulties undergone by the patient, I commenced, two years ago, to work on a line which is now developed into what is known as "Resection of the Septum."

This operation has been extensively described by Otto T. Freer, M.D., of Chicago in two excellent articles in the *Journal of the American Medical Association*. In addition to the aforesaid writer we are indebted, among others, to Drs. Krieg, Boenninghaus and Ingals for the work they have done to bring it before the medical profession.

As this operation has not yet received the recognition it merits I wish to enumerate some of its many advantages, to refute the objections, and, as my methods differ from those I have seen described, to give a brief outline of my way of procedure, a description of the special instruments devised and a summary of my fifteen cases.

#### THE ADVANTAGES.

*First:* There is accuracy, the work being done under the eye of the operator. As every part of the deflected portion can be seen, and then removed, the position of the septum will be uniformly good. In no other operation is there such a certainty as to the result.

*Second:* Splints do not have to be worn. These at the best are a great nuisance to both operator and patient.

*Third:* Rapidity of recovery; three or four weeks as against six or eight by other methods.

*Fourth:* Lack of pain due largely to the absence of traumatism.

*Fifth:* Short after-treatment.

*Sixth:* Freedom from sepsis.

*Seventh:* Free respiration forty-eight hours after the operation.

*Eighth:* It is available for either bony or cartilaginous deflections.

*Ninth:* It creates the utmost possible space by not only straightening the septum but by reducing its thickness to that of the two layers of the mucosa.

*Tenth:* The lumen of the concave side is never lessened.

#### THE OBJECTIONS.

*First:* That it is only adapted to a limited number of cases. As I have obtained perfect results in cases where there was practically total stenosis with an involvement of both bony and cartilaginous portions of the septum it would seem as if the objection were groundless. Dr. Freer while inclined to believe, at the time he wrote his first article, which was published in March, 1902, that there might be cases not suitable for this method, says in his article of December, 1903: "Fuller experience with the resection operation for septal deflections has given me confidence that there is no variety of deviation of the septum it cannot remove in a neat and surgical manner without injury to the patient. Even anteroposterior sigmoid deflections, blocking both nares, may be dissected out from the same nostril in one operation, including both bends."

*Second:* Length and tediousness of the operation for the patient. The one and one-half hours required is possibly a little longer than is used by other methods but as the patient is in

a recumbent posture he bears it remarkably well.

*Third:* Difficulties of the operation. With the instruments that have been specially devised any skilled operator easily surmounts every obstacle.

*Fourth.* Hemorrhage. This is easily controlled with adrenalin and a large number of previously prepared cotton sticks. The question of secondary hemorrhage is no greater, if as great, as in the other septum operations.

Even though the operation does require greater skill and patience on the part of the operator, is he not highly compensated by the perfection of the result and by the comfort and speedy recovery of his patient?

### THE OPERATION.

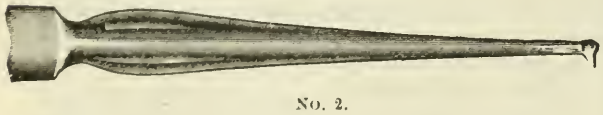
After removing the vibrissæ and cleansing the convex side of the nose it is packed with corrosive cotton pledgets saturated with a 4% solution of cocaine, fresh and recently sterilized. This is allowed to remain about one-half hour; the instruments are meanwhile carefully sterilized, and a large number of cotton applications made ready for quickly removing the little blood that may obscure the operative field. Just before commencing the operation two or three cocaine pledgets are put on the concave side that it may become anesthetic by the time the operation has reached far enough to require it. The pledgets are now removed from the convex side and the surface wiped over with a 1-5000 solution of sterilized adrenalin. This, by the way, should be used sparingly, or not at all, on the concave mucosa as it tends to lessen its vitality and thus to predispose to a local necrosis.

A vertical incision is now made, just anterior to the deflection and extending from a point as high up, or higher than its top, to a point just above the floor of the nose. When we have a simple anterior deflection, with no great thickening, this long vertical incision will be all that is required, but when there is marked thickening or when the deflection is extensive, or far back, it is necessary to make a second incision parallel to the floor of the nose, commencing just beyond and below the most prominent part of the deflection and extending forward to meet the base of the vertical incision.

Figs. 1 and 2 show the two knives I have had specially constructed for making these incisions.



No. 1.

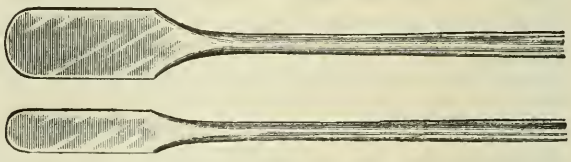


No. 2.

In one the blade is placed parallel to the handle while in the other it is at right angle. These blades are so guarded that they will cut to a depth of 1.5 mm. When a deeper cut is needed it can be made by drawing the blade through the incision two or three times. With these knives I have been able to make my incision with perfect ease and safety wherever necessary. The little bleeding that usually follows these incisions being checked, the mucous membrane is then dissected up, together with its perichondrium, over as much of the convex area as possible. For doing this I have devised two instruments which are peculiarly useful. As shown in Figs. 3 and 4 they have large handles with



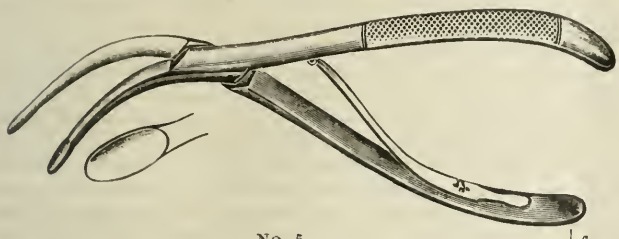
No. 3.



No. 4.

blades at an angle of 135° thus giving an unobstructed visual field. The width of the blades are respectively 5 and 9 mm. this being the only point in which they differ. The blades are quite thin, have rounded edges, and are just blunt enough to prevent a cutting of the mucosa. With these powerful instruments the cartilage can be freed from its mucosa in an incredibly short time. In those cases where only a vertical incision is required we are now ready to incise the cartilage, but in those cases where an additional horizontal incision has been made, the mucous membrane is dissected off, rolled upward and backward and, when of considerable size, is held at the top of the nose by a small pledget of cotton. Up to this time the patient has been in a sitting posture and I have used for illumination the light of a 50-candlepower electric reflected into the nose by a head mirror. From now on the operation is done with the patient reclining on a high operating table, the head resting on an adjustable section so that it can be raised or lowered as it becomes desirable to illuminate any particular part of the septum. A portable electric light placed beyond the patient's head and a little below the level of the operating table now furnishes the source of light. The next step is to incise the cartilage at the point where the deflection commences. This is done with the guarded knives used for incising the mucosa and shown in Figs. 1 and 2. I have never yet perforated the opposite mucous membrane when using these knives. The smaller of the two dissectors is now inserted through this incision in the cartilage and the concave mucosa pushed away from it over a small area and then this denuded portion is removed by my cutting forceps. With the larger dissector the mucosa is now, with its perichondrium and periosteum, lifted away as far as possible from the deflected

cartilage and bone. I find that it is important to preserve the perichondrium and periosteum as they give added life and strength to the future septum. The work of the dissector should be watched through the opposite naris so as to guard against tearing the mucosa. Great care must be exercised in removing it from the bony base of the deflection where it tends to adhere. As soon as the mucosa is separated from the deflection the concavity disappears. Having now freed the cartilage from its covering over as large an area as is accessible, it is removed piecemeal by cutting forceps which I have had specially designed for this purpose. These as can be seen in Fig. 5 are very powerful; the



No. 5.

handles are 14 cm. long and the distance from the lock to the end of the cutting blades is 7 cm. With them it is possible to remove not only the cartilage but, when necessary, a considerable area of the bone. Occasionally I find it useful to have recourse to Stacke's rongeurs, Gruenwald's forceps, or a long chisel, for the removal of the bony ledge sometimes found along the base of the deflection. A couple of ring curettes, which I have had made with stronger rings and with larger and longer handles than is usual, are also useful for removing small projecting fragments. The major part of the operation is done with my special forceps. As the size of a section removed by the cutting blades is 10 x 5 mm. it is possible to take out a large deflection in a short time, and, as the blades form with the handle an angle of 122°, one has an almost unobstructed visual field, even when working far back in the bony septum. Occasionally two or three bites have to be made at the same section of bone before it can be detached; as it is advisable to thus remove it, rather than to twist it off. The deflection having been removed, the nose is thoroughly cleansed with a warm alkaline solution and the flap replaced. It is generally wise to replace this two or three times, during the later stages of the operation, to make sure that there are no points of the deflection left that might unduly press against it, which would prevent, when healed, a perfectly straight septum.

The next step is to insert sutures, the number dependent, of course, upon the size and position of the flap; as a rule I use two to close the vertical incision and one or two on the horizontal. In some of my cases the second suture on the horizontal flap has been at a depth of 3 cm. For accomplishing this I have found it necessary to have constructed, short, strong, curved needles which can be turned within the nose, and for holding these a special pair of Alligator needle holders. (Figs. 6 and 7.) Some objections have been made to suturing the flap, one writer claiming that it is a difficult procedure and unnecessarily prolongs the operation, while other authorities, notably Krieg and Boenninghaus, go so



No. 6.



No. 7.

far as to advise one to make no attempt to preserve the lining on the concave side, as they maintain that it rolls up and cannot be stitched in place. As with the needles and needle holder mentioned one can insert three sutures without difficulty in about ten minutes, it would seem that these objections have been overcome. The advantages of the sutures are, that they keep the edges of the wound in coaptation so that, over a considerable length, if not over the entire incision, primary union can be obtained; they moreover keep the flap in place when packing the nose and prevent its curling up, which it has a decided tendency to do; in fact, it almost always seems too small for the space we desire to have it fill and I generally find it necessary to do considerable pulling in order to re-adjust it. In some of my early cases, where I did not use sutures, recovery was much slower than in later ones, as there was always a considerable area to be filled in with granulations. In some of these later cases primary union was practically obtained.

The sutures being inserted the nose is wiped out with a 1-3000 bichloride solution, powdered with Aristol and packed with 10 or 12 cylindrical plugs. These are some 5 cm. long by 5 mm. in diameter and are made from corrosive absorbent cotton, saturated with sterilized liquid albolene. To prevent too much strain on the flap, when packing, I protect it by placing the larger of my blunt dissectors against it while inserting the plugs. These are placed one above the other, close to the septum, so as to cover the flap lightly at first; then other plugs are inserted external to these, not much pressure being exerted, until there is built up, as it were, a sort of triangular barricade with the base on the septum and the apex between the middle and inferior turbinates. The last two or three plugs, the ones which form the apex, are packed in tightly so that the pressure thus obtained is evenly distrib-

uted over those forming the base of the triangle, *i. e.*, the ones in contact with the septum.

In my first cases I used iodoform gauze but found that I could not obtain with it such even pressure over the operated area as I desired and that there was considerable pain and hemorrhage accompanying its removal. When it remained in four days it was saturated with a secretion that was anything but aseptic.

In none of my cases have I found it advisable to pack the concave side, although it is recommended by some writers. At the end of twenty-four hours the three or four plugs that form the apex of the triangle are taken out, which at once relieves the patient from the discomfort of the packing without in any way disturbing those plugs lying against the wound. In another twenty-four hours the remainder of the packing is removed and the nose gently syringed, through the posterior nares, with a warm alkaline solution. The nose requires no repacking, but it is wise to have the patient wear in the vestibule for the next forty-eight hours, small pledgets of corrosive absorbent cotton which he changes frequently and removes altogether when he wishes to sleep. These for about a week are worn when the patient is exposed to dust or cold, otherwise they are omitted. The after treatment is such as may be needed to keep the nose healthy and free from crusts which usually last from three to four weeks. When the crusts have ceased to form, and the septum has become smooth, and is entirely free from granulations, the case is considered well. The results in my fifteen cases, and in all other cases I have seen reported, give this operation a much higher value than those other procedures designed to correct nasal stenosis due to a deflection of the septum. It is based on rational ideas, produces a permanent correction of the deformity and is worthy of more general adoption. My first six cases were done under much difficulty as the instruments were not then developed. Familiarity with the needs of the operation led me to design various instruments, which have been modified and changed until the ones described seem to meet all requirements. As my instrumentarium and technic were developed before I became familiar with the literature on the subject it will be found that they differ in many respects, especially in their simplicity, from those described by other writers. It has been my aim to have as few instruments as is consistent with a quick and accurate method of operating. It is very probable that other methods may have advantages over this, but experience has rendered it possible for me to do my last three or four cases with greater facility than ever before, having reduced the time from two to one and one-quarter hours.

### THE FIFTEEN CASES.

The patients were all adults, five females and ten males. Six were deflections to the right, 6 to the left, and 3 in both sides or sigmoid. Six cases were purely cartilaginous, 3 bony and 7 both cartilage and bone. Seven had thick bony bases or spurs while the remaining 8 were deflections, with little thickening above the normal, the obstruction being caused by the angularity. In one case there was absence of the cartilage over a small area, the result of a previous attempt by another operator to correct the deformity with a saw. Nine cases were angular deflections, 3 bowed and 3 sigmoid. In 10 the deflection began near the front while in the other 5 it occurred in, or just anterior to, the bony septum. There were 5 cases where the deflection measured anteroposteriorly 4 cm. or more, and in these it was necessary to remove a large area of cartilage together with a considerable area of bone. In the first six cases I had two perforations while in the last nine but one. The first two were due to a lack of proper instruments and happened at the time of the operation, the last one probably came from a sloughing of the mucosa due either to the too free use of adrenalin or to the pressure from the gauze packing. Since I have avoided the use of adrenalin on the concave side and substituted the oil pledgets for the gauze I have had no perforations, *i. e.*, in the last seven cases. The perforations were all of small size and have not caused the least annoyance to the patients. This is because their periphery consists of mucous membrane only so that there is no crusting or bleeding, as there is in those cases where the periphery is cartilaginous. It is annoying to have perforations, but, with the improved instruments and the use of the cylindrical plugs, it should be of only rare occurrence if at all. In none of my cases has there been any secondary hemorrhage. A vertical incision was made in 4 cases while in the remaining 11, horizontal ones, in addition to the vertical, were required. In 2 cases where the perpendicular plate of the ethmoid was in firm contact with the middle turbinate it was possible to free it of its mucosa with the dissectors and then to work the long, biting blades of my forceps around it and to remove the deflected area which measured over 1 cm. in diameter. In two of the angular cases the mucous membrane of the concave side was caught in a very acute angle and, as it was thin, great care had to be exercised to free it without tearing. In these cases there was almost total occlusion of the convex sides and it looked as though there would be altogether too much tissue for the future septums, if they were to be in the median line; the results were absolutely satisfactory as the tissues shrunk sufficiently to cause the septums to be straight. The lumen of the concave side was not lessened in any of my cases. This is in marked contrast to the narrowing that occurs in those operations where the redundant portions of the septum are carried over into the concave sides.

In the first of my three sigmoid cases I removed the anterior bend at one sitting and the posterior bend at another, some six weeks later. This was, however, an unnecessary procedure as I found in my two later cases that it was possible to remove both bends through one side of the nose at the same time.

In an old specific case the anterior end of the vomer for over 1 c.m. was found to be a sequestrum while the vomer adjoining this was very soft and friable to a considerable depth; convalescence however was rapid and uneventful. In none of my cases was there any damage to the nasal profile, while in two of them, where there was a decided twist in the nasal tip, the deformity was greatly lessened.

All writers on this subject are agreed that there is no danger of a depression of the bridge of the nose from the removal of so much of the septum. The septum is not a support for the nose, but

only a division between the nares. It is further claimed that the cartilage is gradually replaced, but I have not been able to verify this assertion. It would, however, be of small consequence either way, as if replaced, it would be deposited between the two mucous membranes which are in the median line and in contact. Fever did not occur in any of my cases nor was there edema or marked swelling. The results in all my cases were most gratifying. The nose after this operation, to the great surprise and delight of the patient, is neither sore nor painful, and practically the only discomfort is that of the packing which obstructs the breathing for two days. It is not necessary to use enough cocaine to cause any heart depression or faintness and my patients have all been able to go home as soon as the operation was completed. It is not unusual for them to express sympathy for the operator as he seems of the two to be the more exhausted. There is so little reaction after the operation that patients do not as a rule need to be confined to their beds. When circumstances make it rather compulsory they are permitted to return to their work the second day after the operation; a week's rest, however, is always advisable. For three or four weeks the operated naris is more or less obstructed by crusts so that respiration is not as good as it will be eventually. It is important that the general condition of the patient should be carefully watched, his hours of rest and recreation inquired into and tonics prescribed if circumstances warrant their use.

In reply to several inquiries as to the use of my instruments in the sub-mucous operation on spurs let me add that they are useful. The knives and dissectors readily free the spur from its mucosa and then with either the long chisel or the forceps shown in Fig. 5 it can be easily removed. The objection to the saw is, that it does not readily take hold of a denuded bony spur and is liable to injure the flaps. Many so called spurs will be found on careful examination to be but the more or less thickened apices of deflections and to obtain good results it is wise to resect these protruding sections.

Note. The instruments illustrated in this article are manufactured by Messrs. Codman & Shurtleff, Boston.

## SOME CLINICAL OBSERVATIONS ON THE CARE OF SEPTIC WOUNDS.

BY ARTHUR L. CHUTE, M.D., BOSTON.

There is a wide diversity of opinion as to the best method of dressing septic wounds. For some years I have taken a particular interest in this subject, and have watched a considerable number of septic wounds under various sorts of treatment with the idea of determining if possible which method gives the best results. My observations have been entirely clinical, and have been directed particularly toward the following points; the desirability of the moist antiseptic dressing as compared with the sterile gauze dressing; the effect of the so-called "antiseptic poultice," and the result of the use of antiseptic irrigating fluids and antiseptic baths on septic wounds. In so far as my observations have gone they have been practically a comparison of the aseptic, with the moist antiseptic treatment of septic wounds.

The chief advantage which most of its advocates claim for the moist antiseptic dressing, when applied to septic wounds, is its supposed bacteriacidal power. Its ease of application, and the slight grade of aseptic skill required, are, I think, seldom, if ever considered as its great advantages.

We know that by the intelligent application of antiseptics we can render an operating field surgically sterile, even though we cannot, as recent investigators teach, render it sterile from a bacteriological standpoint. We also know that in all sorts of recent wounds, we can, by antiseptic irrigation, remove infectious material, or render it inert. Perhaps a natural conclusion is, that if antiseptics can prevent sepsis when applied to recently infected wounds, they must necessarily be of value when applied to wounds already septic.

I feel confident that we have just reason to doubt the accuracy of this conclusion. When a septic process is under way, I believe the application of antiseptics has no parallel to their application in the conditions spoken of above.

In the instance of the healthy skin or of a mucous surface, we have the organisms on the surface, in the loose upper layers, in the glands or their ducts. In the recently infected wound the organisms are lying free and have not yet begun their growth in the tissues. In both cases the antiseptic can reach and destroy, or exert its inhibitory influence upon such organisms as are not removed mechanically. In a septic wound the conditions are wholly different; the organisms which are actually doing the damage are in the tissues, and the application of an antiseptic, particularly one like corrosive sublimate which is precipitated by albuminous substances, has little chance of reaching them.

Several commonly observed clinical phenomena, seem to me to give us reasonable ground for doubting the penetrating power of antiseptics when applied to septic wounds. The wall surrounding a focus of suppuration becomes, as soon as it is opened, an excreting rather than an absorbing surface. This is shown by the decreased absorption of toxins and the consequent fall of temperature, as well as by the tremendous amount of detritus which these wounds often pour out. It is true that we occasionally see absorption of carbolic acid or iodoform from the surface of wounds; these instances are, however, relatively rare. In my observation this absorption has usually occurred, not in septic wounds, but when these substances have been used either in recent aseptic wounds or on granulating surfaces. In both of these conditions there is a much greater power of absorption than in septic wounds which are essentially excreting surfaces,

trying to rid themselves of organisms and inflammatory products. The fact that a mono-infection easily becomes a poly-infection does not necessarily mean that the surface of a septic wound has any considerable power of absorbing chemical substances. Another point against the absorption, or if there is absorption, against the efficacy of antiseptics in these wounds, is the fact that the signs of infection first disappear in the periphery of the red, indurated area surrounding a septic wound. If antiseptics had any considerable influence on this process, we should expect the area nearest the wound would be the first to clear up, as it is most intimately in contact with the antiseptic. A third reason, to me very conclusive, is that in my personal observation, septic wounds treated aseptically clear up quite as soon as when treated antiseptically.

For the above reasons I believe the antiseptic dressing, when applied to septic wounds, fails in the only advantage which in theory it possesses over the aseptic dressing, and that it exerts no appreciable bacteriacidal action.

A dressing for a septic wound should secure three things: it should give protection from infection from without; it should drain the wound well; it should stimulate as far as possible the proliferation of healthy granulations.

As far as the matter of protection goes, neither the moist nor the sterile dressing has any conspicuous advantage over the other. Both are efficient.

When one considers the question of drainage, the septic cavity which is packed with sterile gauze is much more efficiently drained than that treated by a moist dressing. At the very outset the absorbing power of dry gauze is naturally greater than that of moist gauze; even when that part of the dressing which comes in contact with the wound surface is pretty well saturated with discharge, the absorbing power of the dry gauze remains greater, if the dressing contains anything like an adequate amount of it.

The most conspicuous advantage, however, which dry dressings have over moist dressings, when used in septic wounds, is in the rapid production of healthy and vigorous granulations. Under the use of sterile gauze a septic wound rids itself of its infection and becomes practically an aseptic wound quite as quickly as under the moist antiseptic dressing. Not only this, but the granulations are more healthy and vigorous.

The ease and rapidity with which a wound rids itself of sepsis when unhampered by antiseptics often permit of the employment of secondary suture. In large wounds, one may by this means materially shorten the convalescence. The great advantage, however, of secondary suture is not in saving a few days in the convalescence, but in permitting the closer approximation of the fascial planes in large wounds involving the abdominal wall, or in other situations where a weak scar is particularly undesirable. If a septic wound is to be allowed to fill by granulation, this process requires less time under the aseptic dressing due to the increased vigor and power of proliferation which granulations have, when unhampered by chemical irritants.

This more vigorous production of active granulations under the use of sterile gauze seems to depend on several factors: the mechanical stimulation of the gauze, the dryness which a properly applied gauze dressing brings about, and the absence of the depressing effect of antiseptics.

The mild aseptic irritation caused by dry sterile gauze seems to be just sufficient to stimulate a wound to its utmost in the throwing off of inflammatory products and producing of granulations. It is very difficult to tell just how much is due to the stimulative action of the gauze, and just how much is due to the dryness of the wound. Dryness of a wound seems to be a condition which is particularly favorable for the production of healthy granulations. The presence of any amount of discharge makes granulations dull and sluggish, as can be easily demonstrated by covering any healthy granulating surface with some non-absorbent dressing. That the gauze is in itself an active stimulant can be demonstrated by the rapidity with which a small slough will brighten up when gauze pressure is brought to bear upon it. That chemicals depress the vigor of granulations is, I think, shown by the dull, sodden, bluish appearance which bright granulations often show after soaking in an antiseptic solution. If, as we are so often told, the normal salt solution is the only fluid which does no injury to healthy cells, we need hardly wonder that antiseptic solutions harm cells whose vitality has already been lowered by a septic process.

An accurate comparison of the results gotten by these two methods of treatment is very difficult, as it is hard to say that any two septic wounds are identical as regards the question of healing. So far as outward appearances go, wounds may be very similar, but when one attempts to take into consideration the sort of organism, the virulence of the culture, together with the resistance of the patient, the problem is a complicated one, and an accurate comparison becomes a very difficult matter. From watching the course of a considerable number of septic wounds, with this point in view, I am convinced that we are unable to affect, by any application of antiseptics, such pus organisms as are in the tissues; that we must depend entirely on nature to rid the tissues of these organisms, and that the presence of antiseptics on granulations is detrimental to their vigor, and therefore to the rapidity with which a wound becomes healthy. In dealing with septic wounds, we can make the conditions such as are most favorable for the wound to *rid itself* of its infection, but we cannot in any way exert a direct bacteriacidal action on organisms in the tissues.

Some things which are of importance in helping a wound to rid itself of infection are: making it of such shape that it can be properly dressed, which means in a general way having the mouth

wider than the bottom, and avoiding so far as possible anything like a flask-shaped wound; protecting the wound from secondary infection by carrying out any operation aseptically and doing dressings in an aseptic manner; providing suitable drainage so that the granulations are not depressed by the waste products which the wound excretes; using mechanical stimulation to urge the granulations to their greatest reparative effort. My experience has been, that the dry sterile dressing meets these indications better than the moist antiseptic dressing.

By an "antiseptic poultice," I refer to a warm moist dressing, usually wet with a solution of corrosive sublimate or creoline, which is covered with some impermeable material to retain its heat and moisture. This dressing I have found open to the same charge of inefficiency from the bacteriacidal standpoint as the moist dressing, while its debilitating effect on the granulations is greater. Both these objections, however, I think are of minor importance when compared with a real danger which the antiseptic poultice sometimes possesses. This danger consists of a partial masking of the true condition of affairs. In a certain proportion of cases, the use of such a poultice brings about a marked dermatitis, often accompanied by considerable edema. This dermatitis may mask, to a considerable extent, the real progress of the disease. Lymphangitis, if present, is not so noticeable as it would otherwise be. The brawniness due to the dermatitis hides, or makes it more difficult to tell accurately, what is happening deep in the tissues. Pain is occasionally so much lessened by the antiseptic poultice as to give a false sense of security. This is most marked in septic processes in loose tissues. This analgesic action is probably partly due to the action of the heat and moisture, yet when carbolic solution or allied substances are used, a part may be due to the anesthetic properties which carbolic acid shows when applied to the skin. I have seen several instances in which I feel confident that a septic process has been allowed to extend much further than it otherwise would have been allowed to do, had it not been for this masking of conditions, brought about by an antiseptic poultice.

Certain mild infections, which look as though they would go on to suppuration, resolve under the use of the antiseptic poultice. In these instances we are prone to credit the poultice with bringing about resolution. I have seen a number of similar infections disappear under simply a dry dressing, infections which in every way have resembled the processes I was accustomed to see disappear under the use of the antiseptic poultice, and as I supposed, as a result of it. The claim that the heat is of value is untenable, for as ordinarily used the poultice is soon reduced to the temperature of the part, so that the part is no warmer than when covered with a dry dressing. I have been unable to convince myself that the antiseptic poultice expedites the separation of sloughs. As this process of casting off depends on the proliferation of granulations, anything which enfeebles them is more likely to lengthen the process. That it is at times a somewhat more comfortable dressing, I think cannot be denied.

When a septic wound is of a proper shape, and is properly dressed, it should rarely be necessary to irrigate it. The little discharge left after the removal of the dressing can be wiped off with sterile gauze. There may be instances where it is unwise to make the sacrifice of tissue necessary to have a wound of proper shape for gauze drainage. In these instances irrigation may be necessary in order to mechanically remove the collected discharge. The material used should be salt solution. Peroxide of hydrogen is open to a particular criticism to which the other irrigating fluids are not. Beside being no more effective as an antiseptic as regards organisms in the tissues, and beside acting as an irritant to the granulations, its gas-producing power may make it an actual spreader of sepsis, when used in cavities which are not widely open. This is particularly true in loose tissues. I recall especially a case of suppuration in a fat abdominal wall, in which the vigorous use of peroxide greatly prolonged and apparently spread the suppuration.

The objection to the antiseptic bath is that, like the application of antiseptics to wound surface by other means, it does not harm the organisms in the tissues, while it does enfeeble the granulations, thereby lengthening the reparative process. The bath simply cleanses the wound surface; this can be done more quickly in other ways and without depressing the vigor of the granulations.

While I have found dry sterile gauze the best routine dressing for all actively suppurating wounds, there are conditions where other dressings are indicated. The old indolent surface of which the varicose ulcer is a type, is one of these. In these cases the surface is very sluggish and needs a more powerful stimulant than sterile gauze. If one does not curette away the fibrous tissue base, strongly stimulating applications, such as iodoform, balsam of Peru, boracic powder and the like, are undoubtedly preferable to simple dry gauze. The more active antiseptics, however, have the disadvantage of acting more as depressants than as stimulants. When a septic wound has been reduced to a healthy granulating surface, and we are seeking to encourage an epithelial covering, ointments are indicated, as the changing of gauze injures the delicate ingrowths of epithelium.

There are some points in the aseptic care of septic wounds which deserve particular mention. The first object to be sought in a septic wound is to convert it into one which is, clinically speaking, aseptic. To get the quickest result in this respect it is necessary to keep the wound as free as possible from discharge. To do this the dressing should be changed whenever it becomes pretty well saturated. This may mean in large wounds changing the dressing at shorter intervals than daily for a time after operation, and applies to the outer absorbent part of the dressing, not

as a rule to that part lying in contact with the wound surface. McBurney [1] emphasizes the importance of this, as well as the general importance of treating septic wounds aseptically. With most septic wounds daily dressings are sufficiently frequent; in occasional cases a more frequent change is of benefit.

In dressing a wound care must be taken that the gauze is not packed in so firmly as to actually interfere with drainage. On removing the gauze from a wound cavity, it is desirable to make pressure near the margins while one watches to see if any drop of pus appears on the granulations. This is to guard against overlooking any pocket which is not being properly drained. If the wound is not dry on the removal of the dressing, it should be wiped dry before this pressure is made. The use of a head mirror is often of help in inspecting deep cavities such as those left after opening an abscess about an appendix. When there are sloughs to separate, or places where the granulations are gray or flabby, increased pressure should be made at these points, as the dressing is being replaced. When the whole wound surface is bright, the gauze should be packed in loosely, it should, however, come in contact with the whole granulating surface, that the wound may be kept as dry as possible. When a wound is covered with red, healthy granulations the time of healing may be reduced by secondary suture. This is only worth while in relatively large wounds. The simple device of strapping a wound with gauze strips and collodion applied in such a way as to bring the surfaces together, is occasionally sufficient to make them adhere. It always lessens the time required for a wound to fill in. It is probably unnecessary to say that in dressing all septic wounds the general aseptic technique should be carefully followed in order to avoid a poly-infection.

The conclusions which I have drawn from purely clinical observations on a considerable numoer of septic wounds are as follows: dry sterile gauze dressings are far preferable for the dressing of septic wounds because they, by their greater power of absorption, most efficiently drain the wound, and by their slight mechanical irritation and comparative dryness make the granulations more active and allow us to take full advantage of nature's reparative power, while moist dressings and antiseptic baths and irrigating fluids have a depressing effect on the granulations; moist dressings are, however, indicated when one cannot obtain sterile dressings or cannot depend on the aseptic skill of the persons who are to apply the dressings. "Antiseptic poultices" are not to be preferred to sterile dressings and there is at times a danger in their use; in case irrigating fluids are necessary, when from some unusual reason we are unable to make a wound of such shape that it can be properly dressed, sterile salt solution should be the irrigating fluid used. One should avoid peroxide of hydrogen since in partially closed cavities or loose tissues its gas production may make it a spreader of infection; the use of dry sterile gauze meets the indications in the routine treatment of the great majority of septic wounds better than any other material.

I wish to acknowledge my indebtedness to Dr. J. W. Elliot who was the first to direct my attention to the importance and advantages of asepsis, rather than antisepsis, in the care of septic wounds.

[1] N. Y. Med. Journ. 1902, vol. 75, p. 493.

## Clinical Department.

### REMOVAL OF CALCULUS IN THE URETER BY A NEW METHOD.

BY EDGAR GARCEAU, M.D., BOSTON, MASS.,

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MRS. M. L., thirty-four years old, married, was first seen on July 21, 1903. She had been in the most excruciating agony for a whole week, during which time she had made ineffectual efforts to pass a stone, impacted in the course of the left ureter. As this was not the first attack of the same nature, and as she had seen stones, passed on previous occasions, there was no doubt about the diagnosis at first glance. On examination there was no difficulty in detecting a very large stone situated fully 9 cm. from the entrance of the ureter into the bladder. It could just be reached with the examining finger.

The patient's condition was serious. She had reached the limit of endurance and immediate surgical interference was imperative.

Although the stone was well back in the vagina behind the uterine artery it was thought best to attempt its removal by a vaginal operation because it seemed that it could be more quickly removed in this way. On examining under ether it was seen that removal by a simple incision of the vaginal vault would be fraught with considerable difficulty on account of the distance of the stone from the vaginal outlet; especially if there should be a hemorrhage, which seemed not unlikely to happen as the patient had just been delivered of a child only six weeks before and the parts were in a very congested state and very soft. It occurred to me that if I could push the stone down into the vagina and keep it there while the vagina was being incised, the stone would serve as a guide upon which to cut. I tried to do this by pressing down through the abdominal walls, but it was not satisfactory; the stone slipped. The thought then occurred to me to incise the anterior cul-de-sac, push back the peritoneum between the bladder and the uterus as far as the broad ligament, then evert the broad ligament backwards, with the tip of the finger, catch the stone with the tip of the finger crooked at the last joint, force it down and towards the vaginal outlet, cut upon it with a very small incision, and finally squeeze it out. If there were hemorrhage it could be easily controlled by pressure from above with the finger, and sutures could be passed without trouble. Hemorrhage from vessels of the anterior cul-de-sac was not to be feared as it could be easily controlled.

The operation was performed as planned without the least difficulty. With the Péan retractors, which are used in performing vaginal hysterectomy, the anterior cul-de-sac was quickly opened, the peritoneum pushed back, and the broad ligament everted. The stone was found with ease and was pushed down into the vaginal vault, where it was delivered through a

very small incision. Immediately upon delivery the vaginal incision was closed with silver wire sutures, which took in the walls of the ureter. Some hemorrhage occurred in the anterior cul-de-sac, and as it was not desired to take any more time a few clamps were left on the vessels. A gauze drain was put in. The whole operation took ten minutes, and the stone was delivered in five minutes. The convalescence was not remarkable and there was no fistula. The ureter has remained pervious since the operation for both ureters have been catheterized since. The stone was a very large one and it could not possibly have been passed *per vias naturales*. It weighed in the dry state 7 dg. and it was 1 cm. long and nearly 1 cm. wide at the widest part. It consisted of phosphate of lime.

At the time this operation was done I was not aware that Doyen* had originated an almost similar operation for the removal of stones in the ureter. Doyen's operation, however, differs in a number of essentials. He incises the anterior cul-de-sac, and the ureter is exposed in the cul-de-sac. Then the stone is removed *through the cul-de-sac* itself and *not* through the vaginal wall. The operation terminates by suture of the ureteral walls and a drain is left in the cul-de-sac. Doyen's operation must take a great deal of time on account of the technical difficulties, and a fistula must be more serious in the anterior cul-de-sac than in the vagina, should one result. The advantages of the operation as performed upon my patient are obvious. The technique is simple. Hemorrhage is under perfect control. It is very rapid. I feel certain that very high stones can be pushed down and brought within reach. If fistula results the consequences will not be as serious as they are when the sacral, the rectal, or the Doyen method is employed, and operations for fistula are easier through the vagina than through the other routes mentioned. The ureteral and the vaginal walls can be sutured *en masse* with success. As the ureter in these cases is always dilated, this suturing is less difficult than it appears on first sight. If it leaks subsequently, the leakage will take place between the stitches and no harm will result. Of all the advantages gained, that with reference to time is the most important. These patients are almost always desperately ill, and time is an element sometimes not sufficiently considered.

## Medical Progress.

### REPORT ON PATHOLOGY.

BY JOSEPH H. PRATT, M.D., BOSTON.

#### THE PATHOLOGICAL ANATOMY OF PARATYPHOID FEVER.

Wells and Scott [1] report a fatal case of paratyphoid fever. Only four other instances have been recorded in the literature although nearly a hundred cases of the disease have been recognized during the past six years. The chief clinical features in the case studied by the writers was the continued fever which reached 104° on the day of admission to the hospital. The pulse was somewhat accelerated and dicrotic. A few rose spots appeared on the abdomen and the spleen was palpable. Intestinal hemorrhage occurred early in the disease. The patient died during the fifth week of illness. Agglutination tests with the typhoid bacillus were negative. Unfortunately the reaction of the blood with paratyphoid bacilli was not tested. At the autopsy a paratyphoid bacillus was obtained from the spleen and kidney and there can be little, if any, doubt that the case was one of paratyphoid infection. The organism produced a terminal alkalinity in milk and hence belongs in group $\beta$ of Buxton's classification, although the authors place it in group $\alpha$.

The spleen weighed 400 gm. and was very soft. The lymphatic apparatus of the intestine was not involved and the mesenteric lymph nodes preserved their normal size. Numerous irregular superficial ulcers were found in the ileum just above the ileo-cecal valve. There was no infiltration around the ulcers and they resembled those of dysentery much more than those of typhoid. Similar ulcers occurred in the case reported by Lucksch. Intestinal lesions were absent in the three other fatal cases.

The absence of proliferation and phagocytosis in the lymph nodules, which Mallory has shown to be the characteristic intestinal changes in typhoid fever, as well as the absence of any involvement of Peyer's patches in paratyphoid fever indicate, as the authors state, that there is some essential if obscure biological difference between the typhoid and paratyphoid bacilli.

The anatomical picture of paratyphoid fever is that of a septicemia associated with splenic enlargement and occasionally with non-specific ulcers in the intestine.

#### THE GENESIS OF BLOOD PLATES.

The opinion held by many pathologists that blood plates are products of red blood corpuscles is largely based on the observations of Wlassow made in Ziegler's laboratory some years ago. This investigator found that when blood was treated with a solution of mercuric chloride (saturated aqueous solution of mercuric chloride 10 parts, distilled water 50 parts) there were quickly formed from the erythrocytes red bodies with sharp outlines which gradually became transformed into colorless structures resembling blood plates. Other reagents acted similarly on the erythrocytes. Wlassow observed that these bodies like the blood plates were stained with certain aniline basic dyes and he regarded the two as identical and claimed that this experiment showed that the blood plates are not independent cellular elements of the blood but are formed from the erythrocytes.

Sacerdotti [2] states that the bodies described by Wlassow are not blood plates and morphological differences exist between the two struc-

* H. Morris. Surgical Diseases of the Kidney and Ureter. London. 1901, Vol. II, page 530.

[1] Journal of Infectious Diseases, 1904, i, p. 72.

[2] Anatomischer Anzeiger, xvii, p. 249.

tures, although they appear similar at the first glance. The little knobs on the erythrocytes are never flattened, while the blood plates are flat. The former are homogeneous and frequently tinged with hemoglobin and thereby differ from the blood plates which present a granular appearance and are always colorless. Another difference was shown by treating a microscopical preparation prepared by Wlassow's method with a dilute solution of acetic acid, preferably a 5% solution. The small globular knobs and the red blood corpuscles vanish while the blood plates remain and their granular appearance becomes more distinct.

Sacerdotti performed another experiment. He defibrinated blood, in order to remove all the blood plates and then mixed the blood with sublimate solution. After the small globular bodies were formed acetic acid was added. The erythrocytes and globules disappeared and nothing remained which bore any resemblance to blood plates. If the action of the acetic acid was studied under the microscope it was seen that Wlassow's globules first swelled, gradually paled and finally disappeared. The erythrocytes were more resistant and for a time a crater marked the site of the dissolved knob. With such differences in form and nature existing between Wlassow's bodies and the plates, how can the view be entertained, says the author, that the blood plates are derived from the erythrocytes?

Schneider[3] under Arnold's direction has repeated Sacerdotti's experiments. When a drop of blood is mixed with Wlassow's fluid changes in the erythrocytes occur with great rapidity. At the moment of contact the erythrocytes become smaller and globular. They lose their elasticity entirely and appear completely fixed. A few of the fixed elements appear as bell-shaped bodies with a concavity on one side. The author does not agree with Weidenreich that the normal form of the erythrocytes is bell-shaped. The majority of the erythrocytes appear as spherical structures. A portion of many of the corpuscles is finally granular and colorless or faintly tinted with hemoglobin. The chief mass of the hemoglobin is collected at the other pole of the erythrocyte where the peculiar little knob is attached. This little body is usually spherical. If two are present they are rarely of equal size. They vary from one fifth to one third of the size of the erythrocyte. Most of the bodies contain hemoglobin and are homogeneous. Transitions were seen between these and quite colorless, slightly granular forms. Some were only attached to the erythrocyte by a thread-like connection, but no free bodies were seen, such as Maximow has described. Schneider calls attention to the fact that both Wlassow's bodies and blood plates stain similarly with methyl violet and gentian violet. But he agrees with Sacerdotti that the plates resist the action of dilute acetic acid while the structures formed from the erythrocytes by the mercuric chloride solution are quickly dissolved. Schneider points out that red blood corpuscles have been shown to contain nucleoid material and he asserts that a part of the erythrocyte is not dissolved by the acetic acid but remains as a shadow and concludes from this that Sacerdotti's experiment does not prove that blood plates cannot be formed from the erythrocytes.

On agar preparations, prepared by Deetjen's method and containing 2 to 10% Na Cl, the author states that blood plates are formed in large numbers from the red blood corpuscles and that some resist acetic acid. As the result of his studies he concludes that the blood plates are not independent cells but simply cell derivatives. The great majority of the plates of normal blood according to Schneider arise from the erythrocytes, but some are derived from the leucocytes. Most of the plates possess nuclear substance, which can be demonstrated by certain staining methods and the nuclear substance is the cause of their resistance when brought in contact with dilute acetic acid.

[3] Virchow's Archiv., 1903, clxxiv, p. 294.

### AN EXPERIMENTAL STUDY OF THE SO-CALLED FATTY DEGENERATION.

Fischler[4] arrives at the following conclusions based on a study of the fat in kidney infarcts experimentally produced in rabbits.

The appearance of visible fat in cells, as well in the so-called fatty degeneration, as in fatty infiltration is dependent not alone upon a certain condition of the cell, but upon factors outside of the cell.

Some circulation must be maintained although it need not be complete, of the blood, lymph or diffusion stream, or fatty metamorphosis will not occur.

The most essential condition for the appearance of fat is the life of the cell. Dead cells do not undergo fatty metamorphosis. The experiments summarized in this study add nothing to the support of the theory that fat can originate from the cell proteids. Without doubt the presence of fat within the cell can be due to a great variety of conditions.

### THE DIAGNOSTIC VALUE OF BLOOD CULTURES.

Hecktoen[5] records a case in which the concurrence of scarlet fever and typhoid fever was observed. The patient was suddenly taken ill with nausea, headache and pain in the limbs. Deglutition became difficult and painful. On the day following the onset a rash developed on the neck and body and spread to the face and extremities. When admitted to the hospital on the fourth day of the disease there was a deep subcuticular flush with raised points. The tongue had the "strawberry" appearance seen in scarlet fever and the tonsils were swollen. A culture from the blood made the next day yielded a pure growth of the typhoid bacillus and the blood gave a positive Grünbaum-Widal reaction. Typical scarlatinal desquamation occurred. The temperature fell to normal about the twenty-first day. The clinical features seem distinctive

[4] Virchow's Archiv., clxx, p. 100.
[5] Medical News, 1903, lxxxiii, p. 580.

of scarlet fever but, as the author admits, absolute evidence as would be furnished by the demonstration of the causative agent is lacking. The occurrence of desquamation is regarded as strongly supporting the diagnosis of scarlet fever. Two cases of typhoid fever associated with early angina and erythema were observed in which there was no exfoliation. In both instances the typhoid bacillus was obtained from the blood during the first week. The author emphasizes the almost constant presence of the typhoid bacillus in the blood in the early stages of the disease and the importance of blood cultures to settle promptly the diagnosis of typhoid fever in such puzzling cases as the ones reported.

### OBLITERATION OF THE SUPERIOR VENA CAVA.

Although compression of the superior vena cava is not very uncommon in cases of aortic aneurism and mediastinal tumors, instances of complete obliteration of the vessel with the establishment of collateral circulation are, according to Osler,[6] very rare. In a search of the literature he found only twenty-nine cases of complete obliteration of the superior vena cava.

I. Thrombosis due to disease within the vein, 10 cases. Simple phlebitis seemed to have been the cause of the thrombus formation in 8 of these; one was a propagated thrombus from the periphery (Duchek), and one was due to tuberculous endophlebitis (Banti).

The majority of the cases belonged in the second class.

II. Disease outside of the vein, 19 cases, grouped as follows: (*a*) tuberculosis, 4 cases; (*b*) mediastinitis, 4 cases; (*c*) aneurism, 4 cases; (*d*) syphilis, 3 cases; (*e*) periaortitis, 2 cases; (*f*) carcinoma, 1 case; (*g*) fibroma, 1 case.

Osler divides the cases clinically into two groups. In one group after years of completely effected collateral circulation and good health the symptoms set in acutely. In the other group the symptoms of venous obstruction are constantly present although the individual may enjoy a fair measure of health.

Osler reports an instance of occlusion of the superior vena cava from compression by enlarged mediastinal lymph nodes in Hodgkin's disease and another case in which the diagnosis of fibroid obliteration of the superior vena cava was made during life. The second case presented many interesting and unusual features. When first seen the patient complained of dyspnea and swelling of the neck. There was gradual distention of the superficial thoracic and epigastric veins. The case was regarded during the first year as probably one of intra-thoracic tumor, but the absence of all signs of aneurism and of enlargement of the lymph nodes, the negative result of the x-ray examination, the slow course of the disease, led to the correct diagnosis. Symptoms of phthisis pulmonum developed and tubercle bacilli were found in the sputum. At autopsy the left jugular, both innominate veins, and the upper portion of the superior vena cava were found converted into a dense thick cord. The superior vena cava was patent within the pericardium from the point where it received the dilated azygos vein to the heart. There was tuberculous caries of the last cervical and the two upper thoracic vertebræ. The fibrous tissue about the diseased portion of the spine was continuous with that about the innominate veins.

[6] Bulletin of the Johns Hopkins Hospital, 1903, xiv, p. 169.

### THE RELATION OF MYELIN TO FATTY METAMORPHOSIS.

According to Kaiserling and Orgler,[7] myelin drops resemble fat morphologically only. They are stained light gray by osmic acid, never coloring as intensely as fat. With sudan III and scharlach R they assume a red hue. The osmic acid preparations of myelin, unlike fat, are decolorized by xylol, chloroform and oil of bergamot. They differ from fat in being double refractive. In hardened tissues the double refraction of the myelin is lost. These myelin droplets were found in fatty metamorphosis of the cells of intima of arteries, particularly the aorta, in an amyloid kidney, and a great white kidney of chronic Bright's disease, in the epithelial cells of the pulmonary alveoli, in pneumonia and tuberculosis, and in the bronchial secretion, also in the corpus luteum of the ovary and in the cortex of the adrenal and the retrogressive metamorphosis of the thymus gland.

Myelin granules were not found in the heart, in fatty infiltration of the liver, in the normal fat deposits of the body, in colostrum, in functioning mammary glands, or in four cases of fatty metamorphosis of the kidney.

Schmidt and Muller obtained from the myelin drops of the sputum protargon, a highly complex body, but not a fat. By the breaking up of protargon, lecithin and cerebrin are formed.

### ORIGIN OF EOSINOPHILIC LEUCOCYTES.

Opie[8] has made an experimental study of the eosinophile cells in the blood and tissues of guinea pigs and the relation of these cells to nutrition. This investigation lends support to Ehrlich's view that the eosinophiles are derived wholly from the bone marrow.

In the mucosa of the intestinal tract and air-passages and in other tissues of the guinea pig occur eosinophilic polymorphonuclear leucocytes identical with those of the blood. In the bone marrow alone mononuclear eosinophiles are found. These undergo mitosis, and transition forms between them and the eosinophiles of the blood can also be demonstrated in the bone-marrow. When the eosinophiles of the blood become increased the number of eosinophilic myelocytes was far greater than normal and proliferation of these cells was more active. The blood vessels of tissues in which accumulation of eosinophiles occurred contained in certain instances a demonstrable increase in the eosinophile leucocytes.

[7] Virchow's Archiv., clxvii, p. 296.
[8] American Journal of the Medical Sciences, 1904, cxxvii, p. 217.

Starvation caused a diminution in the number of eosinophiles in the blood. A temporary loss of weight was accompanied by an increase while a gain in weight led to a decrease of the eosinophiles.

### THE PRIMARY ACTION OF THE TUBERCLE BACILLUS.

Baumgarten has maintained that the production of miliary tubercles and diffuse tuberculous tissue is the result of a direct irritation by the tubercle bacillus of the fixed cells of the part. This irritation causes the cells to proliferate.

According to Weigert's well-known theory such an explanation would not be tenable. The cause of the proliferation of the cells should be sought rather in an injury to the tissue which removes the inhibitory force that normally holds in check the power of growth of the cells. Neither Baumgarten nor the other writers have concerned themselves with the existence of such a primary injury.

Wechsberg [9] studied this problem in Weigert's laboratory. Suspensions of tubercle bacilli were injected into the ear veins of rabbits. The animals were killed at different periods ranging from six hours to twelve days and the lungs hardened and sectioned.

At the end of six hours the blood-vessels showed in places a loss of their endothelium as well as a marked destruction of their elastic fibers. Groups of bacilli lay in the lumina of the vessels surrounded by polynuclear leucocytes. After twenty-four hours epithelioid cells were found. The destruction of elastic tissue was the more extensive the longer the duration of the infection.

Wechsberg concludes that the tubercle bacillus destroys the fixed cells and the intercellular tissue by its toxic action. It then injures the new formed cells so that they are unable to produce connective tissue and blood-vessels. The formation of giant cells indicates that the protoplasm of the proliferated cells is only injured in part. Finally the new formed cells become entirely destroyed and the stage of caseation is reached.

Recently an elaborate monograph on the mode of action of the tubercle bacillus has been written by Herxheimer,[10] one of Weigert's assistants. It is, in a sense, a continuation of the study begun by Wechsberg. Tubercle bacilli suspended in fluid were injected into the trachea of rabbits and guinea pigs. The animals were killed at different intervals, from one-half hour to seven weeks after the injection. The staining method, which gave the best results, was a combination of Weigert's elastic tissue stain and anilin-water-methyl-violet. The tubercle bacilli were colored blue and stood out sharply upon the red background.

(1) Stain the sections in lithium carmine several minutes.

(2) Differentiate in 1% hydrochloric acid alcohol several hours.

(3) Stain in Weigert's elastic stain one hour.

(4) Wash rapidly in acid alcohol.

(5) Differentiate quickly in 96% alcohol.

(6) Stain in anilin-methyl-violet several hours in the cold.

(7) Differentiate in acid alcohol and in 96% alcohol.

(8) Dehydrate in absolute alcohol.

(9) Clear in xylol.

(10) Mount in balsam.

In order to remove the violet color from the celloidin, the sections after treating with absolute alcohol were dipped in an alcohol-ether mixture which dissolves away the celloidin.

The bacilli, as soon as they reached the lung, were taken up by epithelial cells lying free in the alveoli and by cells still attached to the alveolar wall. Desquamation of the epithelial cells soon followed the ingestion of the bacilli. At the same time the bacilli exert a destructive influence upon the elastic fibres. A result of the injurious action upon the cells and the intercellular substance is a proliferation of the fixed elements, a growth of epithelium occurs as well as of endothelium and connective tissue cells.

### TUBERCULOSIS CONVEYED BY BOOKS.

A careful study has been made by Mitulescu [11] in Koch's Institute in regard to the possibility of the spread of tuberculosis by means of library books. A large number of old, soiled books, chiefly works of fiction, were examined. Of the books which had been in use over two years, one third were infected with tubercle bacilli. The pages were frequently stuck together by filth and the retained moisture prevented the tubercle bacilli drying. On clean paper drying quickly killed them. None of the books in use less than two years harbored tubercle bacilli, and the covers of the infected books were free from these microorganisms. The presence of the tubercle bacilli was determined by inoculating guinea pigs. The pages and covers of the books were thoroughly cleaned with saline solution, the washings centrifugalized and the sediment injected into guinea pigs.

### CHRONIC MYOCARDITIS IN CHILDREN.

Acute myocarditis may develop into chronic myocarditis, or the latter condition may develop independently of the acute process. The acute infectious diseases are the most frequent cause of acute myocarditis, and on account of the greater frequency of these diseases in children, acute myocarditis is more common among them than adults. But it is far from common, even among children. In the autopsy records of the Children's Hospital in Vienna during the last ten years are only five cases of acute myocarditis; three followed diphtheria, two occurred after apparently trivial superficial ulcerative processes, in which other signs of sepsis were lacking. Observations at the bedside indicate that acute myocarditis, especially after diphtheria, is not rare, and recovery occurs even from the

[9] Ziegler's Beiträge, 1901, xxix, p. 203.
[10] Ziegler's Beiträge, 1903, xxxiii, p. 363.
[11] Zeitschrift fur Hygiene, 1903, xliv, p. 397.

severe forms. Under what condition chronic myocarditis is established we do not know, but it is certainly one of the rarer diseases in childhood, and plays a far less important rôle than in the cardiac pathology of adults. This is probably due to the freedom from arterio-sclerosis which so frequently in later life cripples the power of the heart; and chronic alcoholic intoxication, with its resulting injury to the heart, rarely has to be considered.

Two cases are reported by Zuppinger.[12] In the first, signs of acute myocarditis developed during diphtheria, and death occurred from chronic myocarditis six weeks later, with symptoms of cardiac insufficiency. The left ventricle measured 2 cm. in thickness. It was dilated and in the wall were many areas of fibrous tissue. In the second case there was great hypertrophy and dilatation and a mural thrombus was situated at the apex of the right ventricle. At this point the wall contained fibrous tissue, but it was not demonstrable elsewhere. The boy aged ten had an attack of measles four years before and pneumonia one year after the measles.

THE NATURE OF PERNICIOUS ANEMIA.

Bloch [13] has been able to add no experimental evidence in support of the modern theory, so widely held, that pernicious anemia is the result of absorption of toxins from the alimentary tract. Injection of fecal extracts into animals caused only slight anemia. A special toxicity of the urine or blood serum in pernicious anemia could not be demonstrated.

The buccal lesions which Hunter regards as an etiological factor are secondary to necrosis from subcutaneous hemorrhage and hence without significance.

## Reports of Societies.

### THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated meeting, March 14, 1904. The President, Thomas E. Satterthwaite, M.D., in the chair.

Dr. Robert Coleman Kemp read a paper entitled

OBSERVATIONS ON DILATATION OF THE STOMACH AND ON GASTROPTOSIS,

which was illustrated by colored diagrams made from forty cases in the Manhattan State Hospitals, Ward's Island. It had unfortunately too often been the habit, he said, to depend on the examination of the stomach contents alone, and to neglect the investigation of the motor functions and the position of the stomach itself. The latter is necessary in order to arrive at a correct prognosis and undertake proper treatment.

*Atony of the Stomach.* — This must necessarily first occur before dilatation of the stomach is produced. Atonia gastrica may be defined as a loss of tone or contractile power in the muscles of the stomach, so that the organ becomes distended and does not contract about its contents, with a resulting motor insufficiency. While the dilatation of the stomach in gastroptosis is disputed by some, his own observations have shown that dilatation does exist, and with it, necessarily, a varying degree of motor insufficiency.

*Dilatation of the Stomach.* — Boas has demonstrated that an apparently dilated stomach may really be in a condition of compensatory hypertrophy. It may, therefore, be stated that as long as the functions of the organ are normal, the condition met with cannot be regarded as pathological. In dilatation the lesser curvature maintains in general its relation to the diaphragm, and this is the differential point between dilatation and gastroptosis. A number of forms of acute dilatation have been described. The first is the result of acute inflammation of the gastric mucous membrane. It is uncertain whether it depends on pyloric spasm or paralysis of the gastric muscles, or on both these causes. The second is a post-operative dilatation, following abdominal section especially. It would seem to be due to some shock of the sympathetic system, either from the operation or the anesthetic, or possibly, later, from uremia or sepsis. Among the other types of acute dilatation mentioned were the following: In typhoid fever; during attacks of migraine and just preceding epileptic seizures in certain instances; during the course of pneumonia and other pulmonary diseases; in convulsions in infants and young children from over-loading the stomach; in attacks of pseudo-angina pectoris from indiscretions in diet.

*Chronic Dilatation.* — Over-feeding and chronic indigestion are undoubtedly causes of dilatation of the stomach in infants and young children. Holt believes intestinal putrefaction exciting convulsions in young children to be an important factor in the production of epilepsy. Dr. Kemp regards acute dilatation of the stomach with convulsions as an equally powerful factor, when frequently repeated, in producing the convulsive habit, and thinks that some cases of epilepsy can certainly be attributed to this cause. Moreover, chronic dilatation of the stomach is itself one of the causes of intestinal putrefaction and disturbance. Among other etiological factors of chronic dilatation are chronic gastritis, atony of the stomach, rapid bolting of food, spasm of the pylorus due to gastric ulcer, and benign and malignant pyloric stenosis. Each case should receive the special treatment called for by the existing condition. Dr. Kemp washes out the stomach often only in cases in which there is chronic gastritis with the production of considerable mucus, or where there is much retained food with fermentation.

*Gastroptosis.* — If gastroptosis exists, some enteroptosis necessarily accompanies it. The determination of the position of the stomach, in order to secure the best kind of treatment, is of great importance, and trans-illumination of the stomach he considers the ideal method for accurate diagnosis. The treatment consists in the following measures:

(1) The correction of the functional derangement of the stomach by appropriate diet and medication.

(2) Regulation of the bowels.

(3) Mechanical support to increase the intra-abdominal tension, such as (*a*) various silk abdominal supporters; (*b*) bandages (as the Van Valzah-Hayes method); (*c*) Gallant's corset; (*d*) Rose's plaster belt. He had seen some brilliant results from the last named. Recently he had employed for this belt rubber plaster and moleskin. The sweat evaporates through it on account of its loose texture, and it can be worn for quite a long time with practically no irritation.

*Cases at the Manhattan State Hospitals, Ward's Island.* — The drawings Dr. Kemp presented were made from forty epileptics in these institutions. The anatomical regions were marked out in blue pencil

[12] Archiv. fur Kinderheilkunde, 1903, xxxv, p. 381.
[13] Deutsches Archiv. fur klin. Medizin, lxxvii, nos. 3 and 4.

on the abdomen of each case, and during trans-illumination of the stomach the outlines of the organ were drawn in color. These markings were reproduced in the diagrams shown. Thirty-four of the patients were females. In 16 there was gastroptosis, in 16 dilated stomach, and in 2 the stomach was in normal position. In the 6 males there were 5 dilated stomachs, while in 1 the stomach was in normal position.

*Comparative Methods of Locating the Position of the Stomach.* — Having stated that the standing posture was in general the most favorable for examinations, he spoke of changes in the position of the stomach due to ingesta. In the books it is stated that the empty stomach lies for the greater part of its extent beneath the ribs on the left side, entending a short distance below them, that when partially full it descends midway between the ensiform process and the umbilicus, and that when full it comes to within a few finger breadths of the umbilicus. All this is true when the subject is in the dorsal position, since the suspensory ligaments of the stomach are relaxed, and as the organ fills up it gradually gravitates downward. In the standing position, however, as can readily be shown, the stomach, even when empty, at once descends to the full length of its suspensory ligaments, and its lower border is as a constant level, or within almost an inch of the same, whether the organ be full or empty.

*The Stomach Whistle.* — To demonstrate this Dr. Kemp devised a simple instrument known as the "stomach whistle," which consists of a rectal tube of small calibre with a whistle in the end. To it is attached an ordinary aspiration bulb without valves. The tube is inserted, the finger placed over the open end of the bulb, and a single bulb-full of air forced into and aspirated out of the stomach by short and intermittent contractions. This entirely eliminates the possible chance of distending the stomach with air, and the organ remains practically empty. A stethoscope is placed over the abdomen, and the point of greatest intensity of sound is marked by a cross with a colored pencil. The tube is pushed in and out, and various points of sound are marked. The lowest is the lower border of the stomach. If gastro-diaphany is then performed, it will be found that the lower margins absolutely correspond. This is also a further evidence of the accuracy of the latter method.

Various methods of locating the stomach were tried on the same cases and, as a check, trans-illumination was employed as the last procedure in each instance. (1) Inspection was tried many times, but without success. (2) Carbonic acid gas often failed, and it was found impossible to regulate the amount of gas produced by the sodium bicarbonate and tartaric acid. (3) By administering small quantities of these drugs, with the patient standing, it is possible in a certain number of cases to map out approximately the lower margin of the stomach by listening with the stethoscope to the sound of the effervescence. (4) Inflation with air is advised by many authorities. The method may, however, sometimes cause great discomfort. It is liable to overdistend the stomach, and may even be a source of danger. On many occasions what was apparently stomach becoming protuberant on the abdominal wall was shown by trans-illumination to be intestine forced out laterally and forward by the stomach. (5) Simple percussion in various positions. (6) Auscultatory percussion. (7) Reichmann's auscultatory percussion rod. (8) Inflation with water seems to be a fairly good method, as it is easier to differentiate between dulness and tymphanites than between the different forms of tymphanites. (9) Inflation of the intestines with air is inaccurate. If water is employed, it acts as an enema. (10) The ideal method is trans-illumination, originally devised by Einhorn. As an improvement in technique Dr. Kemp has of late employed fluorescent media. By means of these he has found it possible to trans-illuminate the stomachs of fat subjects, which were formerly unsatisfactory, and, in general, the trans-illumination is increased nearly one half. As a matter of scientific exactness Dr. Kemp suggested the infusion of radio-active saline solutions into animals and also their hypodermatic use. The experiments made, however, showed no results from the standpoint of physiological medicine, and at present he felt that such solutions have no therapeutic value whatever.

### THE CONSULTANT'S POINT OF VIEW.

Dr. William H. Thomson said that on account of the limited time at his disposal, he would confine his remarks to the relations of the stomach to certain auto-infections which seem to be chiefly caused by changes in the tone and motility of the stomach walls, which changes appear to be closely connected with the etiology of some common nervous derangements. In the first place, he thought it might safely be assumed that when a nervous disorder is intermittent in its attacks (the patient being in the intervals quite free from any of its symptoms), the disease is one due not so much to a neurosis as to a toxemia, since it is only toxemias which furnish us with examples of the curious phenomena of intermittency in nervous symptoms. Thus the poison of a uremia kind may be present in the blood for many days before we have the sudden explosion of uremic convulsions, while attacks of gouty asthma develop only now and then, though the blood state which occasions them may have been long present. So he had no doubt that the great majority of the attacks of epilepsy are primarily due to, and are manifestations of, a toxemia. Nervous symptoms dependent upon organic changes in nerve tissue are never intermittent, and while it is true that in some cases of epilepsy there is a persistent source of irritation in the form of an organic intra-cranial change produced by traumatism or by some analogous cause in the form of a localized lesion on the brain surface, yet even here the attacks are intermittent, which could not possibly be the case if the traumatic irritant were the sole and primary cause of the epilepsy. In any affection which is the result of true organic lesion in nervous texture the resultant symptoms never really intermit, however much they may remit in the degree of their manifestation. Therefore, even in traumatic epilepsy something else besides the standing local irritation is required to develop the convulsive paroxysm, and that something is most certainly one of the forms of toxemia.

He had no doubt that toxemia alone suffices to cause most of the attacks in so-called idiopathic epilepsy, and that our progress in the understanding of this most serious disease and its treatment will be chiefly along the lines of the demonstration of blood poisons, their origin and nature, and how best to counteract them. He believed that in time a case of prolonged epilepsy may acquire an organic basis, on the general principle that every nervous function which is not original to the cerebral cortex, but is acquired, has an anatomical basis there after the function has been acquired. Having illustrated this by a reference to the great cortical function of speech, he said that the well known facts in regard to this prove that the brain cortex is peculiarly plastic to repeated excitation of the same kind, so that in time it thereby becomes anatomically organized to subserve certain functions. He did not see, therefore, why we should not infer that every specific cortical function is similarly organized by habit.

Now apply this principle to nervous pathology. In the brain-training period of life, that of childhood, when the cortical centers are being organized by habit to perform specific functions, an abnormal or diseased habit is being contracted by the special and selective operation of some blood-poison on a special cortical area. All nerve-poisons are characterized by their selective properties. There is no one of them which acts on the whole nervous system; even the most widely acting of them affecting only certain nervous functions. Hence it is only consistent with general law that some poison, habitually formed and habitually charging the blood, may in time, by repeatedly acting on the same cortical area, finally cause an anatomically organized area of morbid activity, without the need of postulating any congenital malformation to account for this morbid habit, as has been done by Dr. M. A. Starr. While not denying that congenital malformations may in some instances be the origin of epilepsy, it may be inferred that the great majority of epilepsies are acquired, rather than congenital, and acquired most easily at the time of life when nervous habits of all kinds are most easily acquired, namely, childhood. Hence the extreme practical importance of preventing epileptic attacks from becoming habitual, and, in order to accomplish this, of making every possible effort to discover the exciting causes of the attacks.

No one can doubt that one of the most common of these exciting causes has its origin in auto-infection, especially from the gastro-intestinal tract. Dr. Thomson said his criticism of the current views of the mechanism of an epileptic attack was that it is looked upon as a primary discharge of cortical motor cells. But no motor cell ever discharges itself; it is invariably in response to some afferent excitation, first, that any such discharge can occur. So, the beginning of an epileptic attack is always on the afferent side; and when we seek for causes of undue afferent excitability it is only in toxemias that we find the most conclusive illustrations. Having cited the phenomena observed in tetanus and strychnine poisoning, he said these facts had led him to attach great importance to every means which will enable us to be more precise in our examination of the organs most concerned in causing auto-infection. Gastric atony and dilatation, for example, always imply not only deficiency of muscular power, but also qualitative changes in the normal gastric secretions; and we should never forget that, besides this primary function to cause digestion, all digestive secretions are powerful antiseptics, so that deficiency or perversion of these, of itself, disposes to self-poisoning. He had taught for years, and was criticized for doing so, that the sensory disorder migraine was not due to a neurosis, but to a toxemia; and it was a satisfaction to find now that it too is definitely connected with changes in the stomach walls which our modern methods of exploration enable us definitely to recognize. All measures, therefore, which improve our means of diagnosis he welcomed from the general standpoint of the practitioner, who has to prescribe not only for stomach and intestinal disorders, but for a great variety of derangements in distant organs, such as neurasthenia, melancholia and epilepsy — not to mention various painful affections, from neuralgia to so-called muscular rheumatism, whose origin after all is generally due to perversions in the functions of the great food channels of the body.

### GASTRO-DIAPHANY (TRANS-ILLUMINATION OF THE STOMACH).

Dr. Max Einhorn said that in practicing gastro-diaphany it was advisable to have the stomach empty, except for a glassful or two of water. The great advantage of this method is that it affords an opportunity of examining the stomach in the natural state, and not when it is over-filled or is abnormally distended with gas. A great many mistakes have been made in consequence of the over-distention of the organ with gas produced by effervescing mixtures. This method is also attended with some dangers, and a death has been reported from it. By the use of gastro-diaphany the examiners can observe not only the area of the water, but also the outlines of the stomach. It is undoubtedly a good method, but it is rather an elaborate one, requiring a dark room, an electric battery and a special apparatus. It is particularly serviceable for gastroptosis and when tumors are present. When there is a tumor, we can by means of it determine upon which curvature of the stomach the growth is situated. In some instances also we are able to discover the presence of a tumor which is not as yet distinguishable by palpation. Dr. Einhorn, however, did not think gastro-diaphany should replace other methods. For the general practitioner the most servicable method is the production of a splashing sound when the stomach is partly filled with liquid. This, he believes, affords the most accurate means at our disposal of ascertaining the situation of the stomach and also the outlines of the organ. He would, therefore, place it first as a means of diagnosis.

### DILATATION OF THE STOMACH

was discussed by Dr. George R. Lockwood, who said: If a stomach in the morning fasting state habitually contains food remains, or if it contains according to our present lights an amount of gastric juice exceeding 100 cc., it may reasonably be assumed that pyloric obstruction exists, no matter what the actual size of the stomach may be. The main thing is that the stomach is unable to properly empty itself — the actual size of the organ has nothing at all to do with it and affords only corroborative evidence. We find large stomachs that are not to be considered "dilated," since they are adequate in a muscular sense and empty themselves as they should. We also find stomachs of normal or diminished size which are muscularly inadequate and do not empty themselves as they should. Such is usually the case with pyloric cancer. They may be regarded clinically as dilated stomachs, although they are not dilated. The term dilatation is therefore an unfortunate one. If we regard the term as synonymous with "pyloric obstruction" or "motor inadequacy" we will not go so far astray.

To determine absolutely the actual size of the stomach we need to locate the lower curvature, the upper curvature, and the overlapping of the stomach area to the right of the median line. The lower curvature can be readily made out in the great majority of cases. The results of gastro-diaphany have to me been most misleading, and I have of late excluded the method from the list of available means for diagnosis and have placed the gastro-diaphane on the same shelf as the sphygmograph — agreeable playthings, to show to students, but not of practical value. Boas' test of passing a stiff tube and palpating it as it lies along the greater curvature is apt to be misleading, as the stiffness of the tube, as used by Boas, is calculated to depress the lower curvature and make it seem lower than it really is. Such a procedure, moreover, is not devoid of danger. To me the most accurate results have been by inflation, combined with palpation and inspection; next in order of value is the area of succussion sounds obtained. With an oblique light

shining back of the recumbent patient, the shadow outline can usually be distinctly seen. If the upper curvature is not observed descending on inspiration, with the respiratory descent of the greater curvature, the diagnosis of an enlarged stomach can be made with reasonable certainty, and gastroptosis excluded. Inflation should regularly be practiced by pumping air into the stomach through a tube, and not by the use of effervescing powders. In cases where such an inflation is inadvisable, a moderate inflation by effervescing powders may be made, and light percussion, preferably by auscultatory stroke percussion, employed. By noting changes in note before and after such inflation, colon tympany need not be mistaken for gastric. The area over which succussion sounds are heard affords very reliable evidence as to the position of the lower curvature. This sign is fairly accurate, provided there be no liquid in the transverse colon. Tapotement in the cecal region will determine this point. The absence of succussion means very little, as tympanitic distention of the stomach with gas may cause the succussion sounds to absolutely disappear. It is not the place here to enter into a discussion of the value of succussion as a sign of atony; it is sufficient to call attention to its usefulness as a test for the location of the lower curvature.

In normal cases the gastric tympany rarely extends beyond 6 cc. to the right of the median line. An extension of this tympanitic area to 8 cc., or more, to the right affords fair presumptive evidence of enlargement. The detection of the upper border of a normally located stomach is almost an impossibility. Consequently the exact vertical dimension can rarely be determined. The estimation of the exact size is further rendered difficult by displacement downward of a dilated stomach, which so frequently occurs, or its assumption of the vertical position. As a further aid to diagnosis I would call attention to the significance of the enteroptotic habit. If the costal angle is less than 90%, if the right kidney be palpable, if the liver and colon are not displaced, the location of the lower curvature of the stomach is of no diagnostic value whatever. The mistakes in diagnosis, to my mind, depend on two errors: (1) In basing a diagnosis on the location of the greater curvature alone, forgetting that it might be a gastroptosis alone, or a displacement co-existent with a dilatation. (2) In making a diagnosis of dilatation from the size of the stomach alone; the sole sign of dilatation that is accurate being the detection of food remains or of contained secretion in a fasting stomach. No diagnosis, therefore, can be made without careful and, if necessary, repeated examination of the gastric contents in the fasting state.

GASTROPTOSIS

was discussed by Dr. Achilles Rose. He thought the term "gastroptosis" unfortunate, and preferred "gastroptosia," which, correctly translated, means abdominal ptosis, not necessarily ptosis of the stomach alone. The word "gastroptosia," he said, was a good term, for all writers appeared to agree that there is, as a rule, not one abdominal organ alone descended, although one may be more displaced than the others. Gastroptosia also had the advantage of including the relaxation of the abdominal walls. He explained that a feminine noun which ends in *sis*, *psis* or *xis*, as the second component, remains unchanged when the first component is a preposition, as, for instance, proptosis, periptosis, diagnosis; but if the first component is not a preposition, then in composition the ending is changed into *ia*, as apraxia, eupraxia, hierognosia. The tone, the activity of the abdominal muscles, aids in retaining the abdominal organs in their physiological position. Relaxation of this apparatus forms a factor in gastroptosia, and it is the first factor we have to consider in therapy. Gastroptosia is identical with relaxation, or, what means the same, atonia. Gastroptosia is atonia gastrica. Those who have used the latter term in the sense of motor insufficiency of the stomach have caused much confusion, since atonia gastrica may exist without motor insufficiency. Motor insufficiency is the disproportion between the capacity of the muscular forces of the stomach and the demand on these forces for labor. Such insufficiency may occur under certain circumstances in a healthy stomach, as when the mass of the ingested food is too large, or the nature or condition of the ingesta unsuitable. Atony may cause insufficiency, or, in turn, may be caused by insufficiency; but it may exist without insufficiency when the resistance at the pylorus is subnormal.

Gastroptosia is never present without dilatation. Gastroptosis depends on relaxation, and relaxation of the fibers of muscles means elongation of the fibers; therefore relaxation is, *eo ipso*, dilatation. Of practical importance is the relation between gastroptosia and gastric and nervous symptoms. It is now generally recognized that many cases which were formerly classified as neuroses are instances of gastroptosia with gastric and nervous symptoms. All forms of anomalous gastric secretion may be associated with gastroptosia, and, as the very exact investigations of Dr. Graham Rogers in the Manhattan State Hospital have demonstrated, relief from anomalous secretions and motor insufficiency may promptly ensue after gastroptosia has been relieved.

In the treatment of gastroptosia the principle to be kept in view is relief from relaxation, and, first of all, from abdominal relaxation, by means of mechanical support of the abdominal walls. This can best be given in most instances by strapping in the way that has been suggested by Dr. Rose. Very often strapping alone, without any other treatment, will restore the secretory and motor functions of the stomach to a normal state. He did not mean to say that medical treatment was to be excluded in any case, but without the mechanical support all medical treatment might prove unavailing. Gastroptosia may play a part in diseases of the organs of respiration and circulation. In illustration he quoted a case reported by Dr. Groddeck of Baden Baden, in which an elderly gentleman with organic heart disease, who had for years suffered from attacks of vertigo and unconsciousness, was successfully treated by proper attention to his enormously distended abdomen. The reduction of the size of the belly, although it did not of course cure the diseased myocardium, was followed by cessation of the attacks mentioned. The size, the weight, of the belly having been reduced, the work of the heart was materially relieved, relieved to such an extent that even the imperfect contractions were sufficient to supply the brain with the necessary quantum of blood. Dr. Rose said he could cite just as striking examples from his own practice, or he might refer to a patient he had seen under examination before a medical society. Everyone present studied the auscultatory and percutory signs, but not a single physician took notice of the most remarkable pronounced gastroptosia existing. They all spoke of various remedies to improve the circulation, but not one had an idea of the most important of all the remedies called for in the case, the support of the abdomen. Mangelsdorf found that every attack of migraine was accompanied by acute dilatation of the stomach and that repeated attacks of the disorder led in the course of years to permanent change in the tonicity of the stomach. He also discovered that a relation existed between

epilepsy and gastroptosia. Many observations during the last few years have shown that gastroptosia deserves much greater consideration than has been accorded to it.

THE SURGEON'S POINT OF VIEW.

Dr. George E. Brewer said the cases for operative interference could be divided into three classes: (1) Malignant disease. (2) Benign disease, such as ulcers and, very rarely, tumors. (3) Spasm, when surgical, rather than medical, aid is required; the condition having gone beyond the point when efficient relief can be afforded by medicinal remedies or mechanical support. In gastric ulcer it is universally conceded that one of the most essential requisites of successful treatment is rest, and there can be no question that in many instances a gastro-enterostomy affords an opportunity for the healing of the ulcer better can than be secured in any other way. The spasmodic conditions produced by ulcers can also be promptly remedied by surgery. The operations for the relief of the various forms of benign disease show a very low rate of mortality. In conclusion Dr. Brewer made a suggestion as to the importance of the early recognition and early surgical treatment of dilatation in the "cancer age." We are now, he said, making much earlier diagnoses of carcinoma than formerly. This is largely due to laboratory methods; but even these do not give us the diagnosis in time to do a really radical operation. Whenever, therefore, a person at the cancer age has a sudden onset of digestive trouble, or a sudden increase in such trouble previously existing, suspicion should at once be aroused. An early exploratory incision is attended with a minimum of risk, and if malignant disease is discovered, it can be treated while the affected area is still very limited and glandular involvement has not as yet occurred. Only thus can we get at the disease at a time when it may be thoroughly eradicated, and by the adoption of this plan we are now beginning to show excellent results.

Dr. Sinclair Tousey read a paper on

THE RELATION OF THE X-RAY AND RADIO-ACTIVE SOLUTIONS TO EXAMINATION OF THE STOMACH.

He said he had repeatedly determined the presence of cancer of the stomach by the use of the x-ray alone. At present he is inclined to rely, in stomach work, more upon the fluoroscopic than upon the skiagraphic examination. Sometimes a tumefied anterior wall or pyloric extremity can be quite positively made out with the fluoroscope, and be merely indicated with a reasonable degree of probability by a skiagraph. In other words, a tumor of the stomach is almost transparent to the x-ray, and, being in constant motion during respiration, is better studied directly. Simple dilatation of the stomach and gastroptosis, without the presence of a tumor, would scarcely be capable of demonstration by the x-ray under ordinary circumstances; and it was with a view to the diagnosis of these conditions that his experiments were undertaken. All his work with radium and radio-active solutions, both in the laboratory and in the treatment of patients, has been with radium of 20,000 radio-activity, and the amount used in each instance was 1 dgm. The radio-active solution was prepared by immersing such a quantity of radium enclosed in a hermetically sealed glass tube for four weeks in 16 oz. of normal saline solution contained in a stoppered glass jar. The fluorescent solutions employed are made in accordance with suggestions from Dr. Kemp.

Dr. Tousey then proceeded to enumerate his observations up to the present time. Among them are the following: (17) In human subjects to whom radio-active solution was given subcutaneously or by the mouth no disturbance of any kind was produced. (18 and 19) Radio-active solutions were injected into a cat and a rabbit, in the lumbar region, every day or two for a week, without producing any symptoms. In the case of the cat there was at first a slight looseness of the bowels, which was thought to indicate that the injection was too large and which disappeared after the amount had been produced. (20) A dog weighing about 12 pounds was etherized and radio-active solution injected through the left femoral vein. The right common carotid artery had been opened and connected with a mercurial manometer registering the blood-pressure upon a kymograph. At first 30 cc. was given very rapidly, and the same quantity was added after an interval of five minutes. The only effect noted was a slight rise in blood-pressure when the infusion was begun. (21) A rabbit was killed and the abdomen opened. The contents of the stomach were partially removed and the organ was then filled up with a mixture of radio-active and fluorescent mixtures. The pylorus and cardia were ligated and the abdomen sewed up. When the animal was examined by the x-ray in the dark, with all visible light from the x-ray tube excluded, no fluorescence was visible to the naked eye; but with the fluoroscope the stomachic region seemed very transparent and could be mapped out exactly. An x-ray picture was then taken with the animal prone upon the table, and, as may be seen, it shows the outline of the stomach in a brilliant manner. The stomach was then emptied of all contents, and another picture taken under precisely the same conditions.

The conclusions reached were as follows: (1) Radio-active and fluorescent solutions are innocuous when given by the mouth or subcutaneously.

(2) They do not produce, either singly or in combination, sufficient fluorescence to be of value in the examination of the stomach without the use of some additional light to excite their fluorescence.

(3) They will in some cases be of the very greatest assistance in the x-ray diagnosis of stomach lesions.

(4) They will in some cases be of value in the x-ray treatment of stomach lesions.

## Recent Literature.

*Anatomy Applied to Medicine and Surgery.* By D. E. Mundell, B.A., M.D., Professor of Applied Anatomy, Faculty of Medicine, Queen's University, Surgeon to Kingston General Hospital. Kingston: The British Whig. 1903.

This small volume of 492 pages is designed to place before the student in a practical way knowledge of human anatomy. In addition to descriptions of anatomical relations, there is added where called for certain practical surgical and medical matters pertaining to the various regions of the body. The volume is almost devoid of illustrations, which is always regrettable in the consideration of a science of this character. It shows also signs of hasty preparation and somewhat careless proofreading; a long list of errata is printed, which does not add to one's confidence in the thoroughness of revision of the text. The binding and type are adequate, but not up to the standard of modern book-making.

*A Dictionary of Medical Science.* Containing a full explanation of the various subjects and terms of Anatomy, Physiology, Medical Chemistry, Pharmacy, Pharmacology, Therapeutics, Medicine, Hygiene, Dietetics, Bacteriology, Pathology, Surgery, Ophthalmology, Otology, Laryngology, Dermatology, Gynecology, Obstetrics, Pediatrics, Medical Jurisprudence, Dentistry, Veterinary Science, etc. By Robley Dunglison, M.D., LL.D., late Professor of Institutes of Medicine in the Jefferson Medical College of Philadelphia. New (twenty-third) edition, thoroughly revised, with the pronunciation, accentuation and derivation of the terms, by Thomas L. Stedman, A.M., M.D., member of the New York Academy of Medicine. Imperial octavo volume of 1224 pages, with about 600 illustrations, including 85 full-page plates. Philadelphia and New York: Lea Brothers & Co. 1903.

When a book has reached its twenty-third edition, it seems hardly necessary to speak in its commendation. Of the various medical dictionaries published within the period of the active development of medical science, none has been more progressive than this. When one considers that at the present time about two new terms daily are added to medical terminology, it is apparent that the work of the lexicographer is peculiarly exacting, and that a new edition means not merely a repetition of the preceding one with certain alterations, but a very extensive addition to the subject matter, with the coincident exclusion of words and terms which have become obsolete.

The revision has been undertaken by Dr. Thomas L. Stedman, and certainly shows evidence of most assiduous care. The illustrations are numerous and excellently reproduced. The definitions are full and often explanatory. In general we commend this book, as we have its predecessors, as a complete and satisfactory epitome of medical progress. The volume before us is provided with a thumb-letter index, which, although not essential, facilitates ease of reference. The printing of such a book is peculiarly difficult, but it has been most satisfactorily done by the publishers.

*Quiz-Compends.* No. 1. A Compend of Human Anatomy. By Samuel O. Potter, M.A., M. D., M. R. C. P. (Lond.), formerly Professor of the Principles and Practice of Medicine in the Cooper Medical College of San Francisco. Seventh Edition, revised and enlarged. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1903.

This is one of the best known of the Quiz-Compends, a type of book which apparently is giving place to others of somewhat more inclusive character. As a collection of facts briefly stated, the book is of value. As a means of studying human anatomy it clearly has its shortcomings. This, its seventh edition, requires no special comment on our part.

*A Manual of Operative Surgery.* By Sir Frederick Treves, Bart., K.C.V.A., C.B., LL.D., F.R.C.S. New edition, revised by the author and Jonathan Hutchinson, Jun., F.R.C.S., Surgeon to the London Hospital, etc. In two volumes. Vol. II. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1904.

Only a few months have elapsed since the appearance of the first volume of this new edition, a review of which was recently published (Boston Medical and Surgical Journal, Vol. cxlix, 740, 1903). The volume now under consideration (Vol. II) completes the work. Like its companion volume it is an ornamentally made book. It is an octavo of 824 pages with upwards of 470 illustrations. An index of names and subjects for both volumes is appended. It is classified by "Sections," which describe the surgery of special regions and organs, and are designated as Plastic Surgery (which includes cicatricial contractions, harelip, cleft palate, webbed fingers, congenital defects of the bladder and urethra and ruptured perineum); Operations on the Neck; Abdomen (including the female pelvic organs and kidney); Hernia; Bladder; Scrotum and Penis; Rectum; Head and Spine; Thorax; Breast.

The same general characteristics noted in Vol. I are also present in this volume. Anatomical points are given and instruments required enumerated, the steps of the special operation stated and the after-treatment described. The illustrations are numerous and as a rule well chosen. English, American, French and German methods are freely quoted. The advance in special surgery since the publication of the former edition is strikingly evident as one studies this new edition.

Generally speaking the character of the work is excellent, the subject fully treated. The section on the Abdomen is one of the features of the book which attracts attention. That dealing with Genito-Urinary Plastics is interesting and instructive. In Hernia the author's description of the characteristics enabling one to identify the "sac" in a strangulated hernia is an excellent statement of the actual conditions presented to the operating surgeon. It gives practical, accurate facts which will be of some practical assistance in these difficult emergencies, and not time-worn, oft-quoted, glittering generalities.

The book will well repay a careful study.

In regard to the "making" of the book, the type and paper of this volume, as in Vol. I, attract attention and cause favorable criticism. The gilded edge and uncut leaves, however, although they may be considered artistic and a refinement in book making, are by the busy operating surgeon liable to be regarded as inappropriate elaborations of a professional tool. The latter surely is a time-killing feature, and an extra burden to an anxious brain seeking information by the most direct route.

*Progressive Medicine.* Vol. I. March, 1904. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. 337 pp. Illustrated. Philadelphia and New York: Lea Brothers & Co.

The first number of the sixth volume of this periodical publication appears in somewhat altered form from its predecessors. Hitherto the volumes have been bound in stiff cloth covers. This volume has paper covers, which permits of rebinding to suit the subscriber's particular taste and also reduces the price. This series is one of the best epitomes of medical progress published in the English language. Its frequent publication permits of a somewhat more complete review of medicine and surgery than is possible in those volumes which appear at wider intervals. Surgery of the head, neck and thorax, infectious diseases, diseases of children, laryngology and rhinology and otology are discussed in this volume. These subjects are reviewed in the usual thorough-going fashion which we have come to expect in this periodical.

*Clinical Pathology of the Blood.* A treatise on the General Principles and Special Applications of Hematology. By James Ewing, A.M., M.D. Second Edition. Revised and Enlarged. Illustrated. New York and Philadelphia: Lea Brothers & Co. 1903.

We have already commented favorably upon the first edition of this book (Journal, July 4, 1901, p. 23). The second edition which has recently appeared does not in general differ in appearance from its predecessor. The intervening years have been, however, prolific in work on the general subject of the blood. This work the author has incorporated into the new edition, a task requiring the study of about four hundred new articles or monographs. The plan adopted in the first edition of appending bibliographical lists to the various chapters is followed in this, with the addition of these new articles. We are glad to see a reversion to the scientific method of bibliographical references, which have been so largely omitted from recent textbooks. It is certainly true, as Dr. Ewing implies, that works without bibliography are of relatively little value in the task of discriminating between authorities requiring consultation of original sources, and he has, therefore, adhered to his plan of appending very complete bibliographical lists.

Certain changes have been made in the chapters on technique, the serum test for blood and the subject of crioscopy. The morphology of blood cells, leukemia and the essential features of Ehrlich's immunity theories have been incorporated. Four new plates and other figures have also been added. The book is an excellent one, clearly the work of a scholar, and this being said, it requires no further criticism than we have already given it.

THE BOSTON

# Medical and Surgical Journal.

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## SPECIALIZED SURGERY.

Progress in surgery, as in other branches of scientific work, apparently depends in great measure upon wide experience along certain definite lines. The field of operative surgery has expanded to such a degree during the last decade that it is no longer possible for any single individual to gain the knowledge which is essential to progress in all branches. In surgery, therefore, as in the whole domain of medicine, we find a greater and greater tendency toward specialism, which unquestionably has its distinct advantages as well as its individual drawbacks. It is of the advantages, however, that we wish to speak.

It is clear to the most casual observer that if any one man is to attain wide surgical experience in the treatment of the diseases of certain organs or structures, he must be given the opportunity to study and operate upon more cases than would in the natural course of events come under his jurisdiction. This is, perhaps, particularly true of two great fields in surgery which are apparently at the present time exciting wide interest among surgeons; namely, surgery of the stomach and surgery of the central nervous system. These at least will serve as examples of the matter to which we wish to call attention.

In the ordinary hospital service, even of our largest institutions, it is not possible that sufficient patients with diseases of the stomach, upon whom operation is desirable, can be collected to demand the careful study of a large number of surgeons. The result is that energy is wasted, that if operations are attempted they are done

rather as a part of a general surgical service than as a special investigation, with the very natural result that less enthusiasm and interest are developed than would be the case were a larger number of patients available. It is, therefore, unfortunate that some arrangement may not be made by which those men who are particularly interested in this or other lines of surgical work may not have a somewhat exclusive privilege as regards certain types of cases. If we are as a community to produce work of originality, it is clearly essential that one man or a group of men particularly interested should devote themselves for a longer or shorter period of time to distinct lines of work, and should be encouraged in every possible way to accomplish results of importance. This can only be done by liberal co-operation, and it may be self-sacrifice.

The other subject which we have used as an example is that of the surgery of the central nervous system. Here again it is manifestly impossible, even in a very large community, that cases sufficient in number should appear at our various hospitals to permit of division of labor consistent with wide personal experience. Unquestionably there are certain men in every community deeply interested in the surgical bearings of the serious and discouraging disorders of the central nervous system capable of palliation or relief by surgical means. It is no less true that at our large hospitals the interest which any one man may have is checked by the fact that he has small opportunity to apply what knowledge he has, or to extend his knowledge of the operative treatment of these conditions. This again is naturally due to the fact that the cases are not concentrated in the hands of one or several deeply interested men, but are scattered throughout the service of many surgeons whose interest is lessened because of the rarity of the disease as it comes into their individual experiences. On the other hand, if it were possible that all cases of cranial or spinal surgery, coming to one of our large hospitals for operation, could be concentrated into the service of a few men, it is clear that an experience would be gained which is now absolutely impossible, and also that the hospital in question might well look for results of significance from the work of the surgeons so placed. That such a plan is possible, and that it may be fraught with advantage, not only to the particular surgeon who undertakes the work, but also to the institution which he represents, is sufficiently evident from recent happenings in other cities. If cerebral surgery is to be done at all, it should be undertaken with the enthusiastic belief that results of positive importance may be attained through devotion to the various technical details involved, and not approached from the pessimistic point of view which is far too current among medical men.

The foregoing remarks naturally apply to all those branches of surgical work in which the number of patients is insufficient to give requisite experience, and particularly that sort of experience which may give origin to new ideas, new methods and a well elaborated technique. Our contention merely is that in all such branches of surgical work opportunity should be given for the greatest possible attainment of useful knowledge, and this we believe may be accomplished only by dividing the cases as they enter our hospitals. We are quite aware of the difficulties involved in any such plan, nor is it in the least our purpose to discuss ways and means. The fact, however, remains that progress lies along some such line as that suggested, and the principle of specialization as applied to certain groups of cases is certainly a prerequisite to original surgical work. It need hardly be said that many of the surgical lesions requiring operation are so frequent that no such division of cases is called for. Of this we are not speaking. Our contention merely is for the profit to be had from grouping unusual cases in the hands of a few men rather than dissipating them in the hands of many.

## REPORT OF THE MASSACHUSETTS GENERAL HOSPITAL.

The ninetieth annual report of the trustees of the Massachusetts General Hospital, a pamphlet containing 256 pages, similar to the many which have preceded it, is before us. The trustees report that no new buildings have been erected either at the McLean Hospital or at the Convalescent Home in Waverley. At the General Hospital in Boston, on the contrary, there has been an unusual activity in construction and in improvements. Among these are a new ward for children, improvements in various of the old wards, a new relief ward, and the fitting out of a room for the installation of a Zander apparatus.

Naturally the most notable addition to the new buildings was that for out-patients which covers 69,600 square feet. In connection with this out-patient department, which so far as our knowledge goes stands unique in hospital construction, there has been opened the Weld ward, given up largely to treatment of diseases of the

skin, but also providing two beds each for the department of neurology and the department of laryngology. Each year in the history of this hospital has been marked by some definite improvement or further facility for the treatment of the sick, but we are inclined to think that the wide-reaching significance of a really worthy building for the treatment of out-patients will be among the most influential factors in the development of the hospital of the many improvements which have preceded it. Prophecies in such matters are possibly fallacious, but it is quite impossible to conceive that this new building can ever fail to be sufficiently commodious for the purposes for which it was designed.

During the year 1903, 5341 patients were treated at the hospital as against 5199 for the previous year, with an average weekly cost per patient of $16.45 as compared with $17.16 for 1902. About 200 more patients were received in the out-patient department than in the preceding year. The average stay of patients in the hospital during the year was nineteen days as against seventeen days in the preceding year. At the McLean Hospital slightly fewer cases were treated in the year under consideration than in the preceding one. The weekly cost of maintenance of patients in this department of the hospital was about $2.00 more than in the preceding year.

During the year 1903 there was a somewhat unusual number of changes in the visiting staff, among the more important of which were the retirement of Dr. Charles B. Porter and the resignation of Drs. James C. White and William L. Richardson. Dr. John T. Bowen was appointed senior physician to out-patients with diseases of the skin in place of Dr. James C. White. Drs. C. L. Scudder and James J. Minot were respectively made visiting surgeon and visiting physician to the hospital. The retirement of Dr. Edward Cowles from the superintendency of the McLean Hospital led to the appointment of Dr. George T. Tuttle as superintendent to fill the vacancy.

The report of the visiting staff is largely given over to a consideration of the advantages to be derived from the new out-patient department. The plan recently inaugurated of employing as paid lecturers for the Training School for Nurses two graduates in medicine has entailed naturally an increased expense to the school, which has been more than justified by the results obtained. Reference is also made to the significant discovery of Dr. J. H. Wright that the disease known as "Aleppo Boil" is due to a protozoön. In the report of the McLean Hospital Training School for Nurses Dr. Edward Cowles' well known pioneer work in instituting adequate nursing for the insane is well commemorated in his own words which we append:

My retirement from the hospital at the end of this year closes my immediate relations with the school, but cannot change my interest in it, nor in those whose names are borne in the long list of its pupils; my memories of their faithfulness and loyalty and the never-failing sense of mutual personal respect and friendly esteem are treasures that cannot be lost. These have another value in the assurances they give of interest, sympathy and good wishes, professionally and personally, among all who have been members of this company of workers and helpers in this great service for the relief of mental illness. It was the support given by the nurses that made possible, in large measure, my own share in this work, and no words of acknowledgment of it can adequately express my grateful appreciation.

## MEDICAL NOTES.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, April 20, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 47, scarlatina 21, typhoid fever 9, measles 189, smallpox 0.

A Bequest to the Yale Medical School. — By the will of the late Mrs. Henry Farnam of New Haven, Conn., the Yale Medical School receives a legacy of $54,500, as an addition to its general endowment fund.

Dinner for Professor Ehrlich. — Drs. W. T. Councilman, H. C. Ernst and Theobald Smith gave Professor Paul Ehrlich a dinner on the evening of April 19, among other guests being President Eliot and Professor Richards of Harvard College and Drs. Meltzer and Dunham of New York.

Anthrax in Lynn, Mass. — The recent death of a workman in Lynn from anthrax calls attention to the fact that during the past three or four years there have been in the neighborhood of fifteen cases of the disease in that city, of whom it is said that the great majority died. The matter is certainly deserving of careful investigation and study.

Lectures on Integrative Action of the Nervous System.— Prof. Charles S. Sherrington, M.D., of the University of Liverpool, is to give the Silliman lectures for 1904 at Yale University on the above subject. There will be ten lectures.

Lecture on Experimental Therapeutics. — Professor Paul Ehrlich, director of the Institute for Experimental Therapeutics at Frankfort, gave an informal address in German at the Harvard Medical School Wednesday evening, April 20, on "Pharmacology and Experimental Therapeutics."

The Stillman Infirmary. — The corporation of Harvard University announces an additional gift of $25,000 from Mr. James Stillman. Mr. Stillman had previously contributed $50,000, and that, with the very recent gift, will make possible the construction of a ward for contagious disease. The new buildings will be erected adjoining the present one on land which was secured sometime ago.

Prevention of Blindness at Birth. — The Massachusetts Association for Promoting the Interests of the Adult Blind has published a leaflet on the prevention of blindness at birth, giving directions for treatment which may be carried out by the laity. The leaflet calls attention to the fact that inflammation of the eyes in new born infants is a contagious disease which must be treated early and vigorously under a doctor's direction, and the statement is made that in England about thirty per cent of pupils in the schools for the blind lost their sight through neglect or wrong treatment of the disease.

### NEW YORK.

Resignation of Prof. W. T. Bull, M.D. — At a meeting of the Board of Trustees of Columbia University held April 11 it was announced that Dr. William T. Bull had tendered his resignation as Professor of Surgery, to take effect June 30, 1904. The resignation was accepted and a resolution was adopted expressing regret at Dr. Bull's retirement. The students, it was stated, would still have the opportunity of attending his clinics at Roosevelt Hospital. Upon the recommendation of the Medical Faculty, Dr. George E. Brewer, Professor of Clinical Surgery, was given a seat in the Faculty of Medicine. Dr. Edward L. Trudeau, of Saranac Lake, N. Y., having resigned as a member of the board of trustees of the university, Dr. T. Matlack Cheesman was elected as his successor.

A Tuberculosis Cottage Hospital. — By a gift from Mrs. Andrew Carnegie a tuberculosis cottage hospital is to be established under the auspices of the Speedwell Society for Sick and Convalescent Children. Many of the children cared for by this society, which was organized two years ago, are taken from the New York Post-Graduate Hospital, and it has been the practice to send the patients to Morristown, N. Y., where they are boarded in private families under the supervision of a competent physician and a matron who visits them each day. The reason for establishing the special hospital is that most of the families object to taking children suffering from tuberculosis. The site for the institution has not as yet been determined upon, but it will probably be at no great distance from New York.

Practicing without License. — Acting upon information furnished by Dr. J. McP. Scott, Secretary of the Board of Medical Examiners of Maryland, the New York County Medical Society has caused the arrest, on the charge of practicing medicine without due qualification or license, of "Drs." Charles Conrad and J. White Bushnell, who have been advertising extensively and doing a quack business under the style of The Platen Institute, Incorporated. It appears that Conrad wrote to Dr. Scott seeking a license to practice in Maryland, and in the course of his letter he stated that he held a diploma from the "Vetus Academia Physio-Medica," an institution, the founder and president of which he announces himself to be in his advertisements and circulars. He also acknowledged that he was not licensed in any state.

Interference with Health Department Nurses. — Some of the trained nurses employed by the health department to look after the children of the public schools having reported to President Darlington that they had been interfered with in the performance of their duties by the school principals, Dr. Darlington requested Superintendent Maxwell of the department of education to take some action in the matter. As a result, the superintendent has addressed a communication to all the principals, in which he calls attention to the fact that friction has developed and points out that the nurses were assigned to look after the children sent home by the medical inspectors, in order that the children might get back to school as soon as possible. The letter goes on to say: "In many cases, were it not for such attention the children would not

be given proper medical care, and prolonged absence, necessitating the intervention of the truancy department, would result. It will be seen, therefore, that the nurses, if given proper opportunity, will aid the principals in maintaining a high percentage of attendance. You are requested therefore to co-operate with these nurses in the proper discharge of their duties. If questions of authority arise, please communicate with me, and I will endeavor to adjust matters satisfactorily with the department of health."

Annual Report Department of Health. — In his annual report, just submitted to the Governor, Dr. Daniel Lewis, Commissioner of the State Department of Health, says that the most conspicuous feature of the sanitary condition of the state during 1903 was the epidemics of typhoid fever at Ithaca and West Seneca, near Buffalo, and he points out that similar conditions to those which prevailed at these places menace the health of many municipalities, as well as of various summer resorts which are patronized by citizens of other states beside New York. Many millions of dollars, the Commissioner asserts, are annually lost to the people of the state through preventable diseases. "If the monetary value of a human life is assumed to be $5,000," he says, "the deaths from but five of the preventable diseases during 1903 represent a loss of $94,000,000. These figures seem appalling, and yet millions upon millions can properly be added to this sum, in loss of wages, expense of the care of the sick, and many other expenses incidental to the management of these epidemic and infectious diseases." The deaths from the five diseases referred to were as follows: Pulmonary tuberculosis, 13,194; diphtheria, 3,056; typhoid fever, 1,665; scarlet fever, 1,057; smallpox, 41; total, 18,992. Dr. Lewis says that the paltry $20,000 a year which is available for the purpose of a systematic supervision of the water supplies, sewer systems and drainage is quite inadequate to meet the required conditions and enforce the law. A new bureau of water supply and drainage in the Health Department is recommended, and immediate action is urged, since a serious epidemic now in progress (at Watertown) has exhausted the available funds. In the report of the cancer research laboratory which accompanies the Commissioner's report it is stated that the past year has not been characterized by any marked discoveries which can be safely announced to the world, but has been marked by a steady, earnest and laborious study along the lines of investigation. The vital statistics of 1903 show a state death-rate of 17.6 and a birth-rate of 21.8.

## Miscellany.

### THE INOCULATION OF APES WITH SYPHILIS.

Reference has already been made in the *British Medical Journal*[1] to the successful inoculation of a female anthropoid ape with syphilis by Metchnikoff and Roux. Lassar of Berlin has also apparently succeeded in producing the disease in another anthropoid ape.[2] The animal in this case was a male between four and five years old. The inoculation was carried out somewhat in the same manner as in Metchnikoff's experiment. Scarifications were made in the skin of the forehead in several places, and the secretion taken from a primary sore rubbed in. This was also done upon the lips. In addition, in this case small pockets were made in the skin of the forehead and ears, and minute portions of the chancre inserted into them. All the inoculations were made on the same day. No inoculation was made upon the genitals. The primary sore referred to above was an untreated extragenital chancre of several weeks' duration, situated on the arm of a man who had become infected in the operation of tattooing. This patient also undertook the care of the ape, since, in the event of the experiment proving successful, scratches or bites inflicted by the animal would naturally be fraught with danger to any person not himself suffering from the disease. In order to ensure that the material did not get rubbed off, the ape was kept rolled up in a sheet for an hour or two after the operation. The various sites of inoculation healed in forty-eight hours without disturbance, and in fourteen days two apparently characteristic lesions appeared on the forehead. These were still quite evident when the animal was exhibited at a meeting of the Berlin Medical Society held six weeks later. In this case, as in Metchnikoff's, definite secondaries followed — namely, papular rashes on the soles of the feet, the palms, the brow, and round the anus. Cervical adenitis was also present, and the front of the scalp became bald. In the Paris experiments, it will be remembered, the virus of more than one patient was used, and secondary as well as primary material was employed, the primary material being applied to the genitals, and the secondary to the forehead. Further, the inoculations on the genitals were performed on two separate occasions, five days intervening between them. The resulting chancre appeared on the genitals (clitoris). Thus in both experiments it is extremely interesting to note that the inoculation was effected by means of primary virus. — *British Medical Journal.*

[1] *British Medical Journal*, October 3, 1903, and February 27, 1904.
[2] *Berl. klin. Woch.*, December 28, 1903.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, APRIL 9, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Erysipelas. | Typhoid fever. |
| New York . . | 3,908,644 | 1,895 | 611 | 24.75 | 25.12 | 3.69 | .53 | .42 |
| Chicago . . . | 2,021,086 | 562 | 128 | 20.45 | 22.59 | .71 | .36 | .89 |
| Philadelphia | 1,407,968 | 597 | 132 | 29.81 | 19.43 | 2.17 | .50 | 5.02 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 229 | 66 | 23.57 | 13.53 | .44 | .44 | .87 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 149 | — | 32.98 | 17.45 | 3.35 | 1.34 | 7.38 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 64 | 15 | 18.74 | 25.00 | — | 1.56 | 1.56 |
| Boston . . . | 617,950 | 223 | 52 | 17.73 | 17.48 | 1.77 | 1.34 | .45 |
| Worcester . . | 136,925 | 45 | 14 | 4.44 | 20.00 | 2.22 | — | — |
| Fall River . . | 119,349 | 36 | 14 | 27.77 | 13.88 | 2.78 | — | — |
| Lowell . . . | 104,402 | 33 | 14 | 12.12 | 18.18 | — | — | — |
| Cambridge . | 100,998 | 28 | 4 | 17.85 | 21.42 | — | — | — |
| Lynn . . . . | 73,875 | 22 | 5 | 4.54 | 4.54 | — | — | — |
| Lawrence . . | 72,348 | 16 | 5 | 25.00 | 12.50 | — | — | — |
| Springfield . | 72,020 | 19 | 2 | 26.31 | 21.05 | — | 5.26 | — |
| Somerville . | 70,413 | 27 | 5 | 22.22 | 25.92 | 3.70 | 3.70 | — |
| New Bedford | 68,863 | 32 | 12 | 18.75 | 21.87 | — | 3.12 | — |
| Holyoke . . . | 50,538 | 16 | 8 | — | 6.25 | — | — | — |
| Brockton . . | 46,601 | 20 | 7 | 30.00 | — | 5.00 | — | — |
| Newton . . . | 39,310 | 6 | 1 | 16.67 | 16.67 | — | — | — |
| Haverhill . . | 39,061 | 23 | 2 | 8.70 | 8.70 | — | — | — |
| Malden . . . | 37,205 | 7 | 1 | — | 42.90 | — | — | — |
| Salem . . . . | 37,188 | 20 | 6 | 15.00 | 30.00 | 5.00 | — | 5.00 |
| Chelsea . . . | 36,499 | 16 | 2 | — | 12.50 | — | — | — |
| Fitchburg . . | 36,335 | 14 | 1 | 14.28 | 21.42 | — | — | — |
| Taunton . . . | 34,577 | 16 | 2 | 18.75 | 43.75 | — | — | 6.25 |
| Everett . . . | 30,209 | 7 | 4 | 14.30 | — | — | — | — |
| North Adams | 29,201 | 6 | 0 | 33.33 | 16.67 | — | — | 16.67 |
| Quincy . . . | 26,798 | 10 | 3 | 10.00 | 20.00 | — | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 5 | 3 | 20.00 | 20.00 | — | — | — |
| Brookline . . | 23,576 | 5 | — | — | 20.00 | — | — | — |
| Pittsfield . . | 22,870 | 12 | 2 | 16.67 | 16.67 | 8.33 | 8.33 | — |
| Medford . . | 21,956 | 12 | 1 | — | 33.33 | — | — | — |
| Chicopee . . | 21,692 | 12 | 6 | 33.33 | — | 8.33 | — | — |
| Northampton | 20,314 | 9 | 1 | 11.11 | 11.11 | — | — | — |
| Beverly . . . | 15,807 | 4 | 1 | — | 50.00 | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 5 | — | — | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | 4 | 1 | — | — | — | — | — |
| Hyde Park . | 14,500 | 5 | 2 | 40.00 | 20.00 | — | — | — |
| Newburyport | 14,478 | 4 | 1 | — | — | — | — | — |
| Woburn . . . | 14,315 | 2 | — | — | — | — | — | — |
| Melrose . . . | 13,819 | 9 | 1 | — | 33.33 | — | — | — |
| Westfield . . | 13,809 | 3 | 1 | 33.33 | 33.33 | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 4 | 3 | 25.00 | 25.00 | — | — | — |
| Revere . . . | 13,609 | 2 | — | — | — | — | — | — |
| Framingham | 12,974 | 0 | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 4 | 2 | — | 25.00 | — | — | — |
| Southbridge . | 11,716 | 3 | 2 | 66.67 | — | — | — | — |
| Watertown . | 11,575 | 0 | — | — | — | — | — | — |
| Weymouth . | 11,350 | 5 | 1 | — | 20.00 | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 4,247; under five years of age, 1,143; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 995; acute lung diseases 925, consumption 467, scarlet fever 45, whooping cough 9, cerebrospinal meningitis 35, smallpox 7, erysipelas 26, puerperal fever 17, measles 66, typhoid fever 61, diarrheal diseases 144, diphtheria and croup 104.

From whooping-cough, New York 5, Chicago 1, Philadelphia 1, Pittsburg 2. From smallpox, Chicago 1, Philadelphia 5, Pittsburg 1. From cerebrospinal meningitis, New York 29, Somerville 2, and Boston, Worcester, Brockton and Southbridge 1 each. From erysipelas, New York 10, Chicago 2, Philadelphia 3, Baltimore 1, Pittsburg 2, Providence 1, Boston 3, New Bedford 1, Springfield 1, Somerville 1, Pittsfield 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,425, for the week ending March 26, the death-rate was 18.7. Deaths reported 5,469; acute diseases of the respiratory organs (London) 195, whooping cough 200, diphtheria 46, measles 176, smallpox 6, scarlet fever 32.

The death-rate ranged from 8.7 in Wildensen to 30.0 in Stockton-on-Tees: London 18.4, West Ham 15.2, Brighton 20.6, Southampton 19.5, Plymouth 24.2, Bristol 15.0, Birmingham 23.3, Leicester 14.7, Nottingham 19.3, Liverpool 19.8, Bolton 20.5, Manchester 24.3, Bradford 19.8, Leeds 19.9, Hull 16.8, Cardiff 16.9, Rhondda 21.3, Merthyr Tydfil 12.2, Hornsey 9.6, Warrington 24.8.

## METEOROLOGICAL RECORD.

For the week ending April 9, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S.. | 3 | 29.94 | 36 | 43 | 29 | 49 | 46 | 48 | N W | N W | 18 | 12 | C. | F. | 0 |
| M. | 4 | 30.24 | 39 | 52 | 26 | 36 | 38 | 37 | N W | W | 9 | 12 | C. | C. | 0 |
| T.. | 5 | 30.15 | 50 | 64 | 37 | 38 | 32 | 35 | N W | N W | 12 | 6 | C. | C. | 0 |
| W. | 6 | 30.16 | 46 | 50 | 42 | 42 | 78 | 60 | N E | E | 7 | 4 | C. | O. | 0 |
| T.. | 7 | 30.04 | 48 | 55 | 40 | 81 | 88 | 84 | E | S E | 4 | 2 | R. | F. | .13 |
| F.. | 8 | 30.20 | 47 | 54 | 40 | 67 | 89 | 78 | N W | E | 3 | 11 | C. | O. | 0 |
| S.. | 9 | 29.86 | 42 | 44 | 39 | 92 | 98 | 95 | N | N E | 14 | 8 | O. | R. | .59 |
| ☞ | | 30.08 | | 52 | 36 | | | 62 | | | | | | | .72 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## RECENT DEATHS.

DR. PHILIP BISSELL, of the resident staff of the New York Hospital, died at the hospital from pneumonia, on April 13. He was twenty-seven years of age, and a graduate of the medical department of Columbia University in the year 1902.

## SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.— The Society will meet in Sprague Hall, Medical Library Building, on Monday, April 25, 1904, at 8.15 P. M. Subject, Aciduria (Acetonuria) Associated with Death after Anesthesia. Papers and reports of cases on this subject will be presented for the Staff of the Children's Hospital by Drs. Brackett, J. S. Stone and Low.

ARTHUR K. STONE, M.D., Secretary.
543 Boylston St.

SUFFOLK DISTRICT MEDICAL SOCIETY.— There will be a meeting of the Section for Obstetrics and Diseases of Women in Sprague Hall, Boston Medical Library Building, 8, The Fenway, Wednesday, April 27, 1904, at 8 P. M. Papers, Dr. E. L. Twombly, "Conservative Surgery of the Uterine Appendages with Especial Reference to the Ovaries." Dr. Henry O. Marcy, "The Technic of Wounds Incident to Laparotomy."

W. H. GRANT, M.D., Secretary.
DANIEL H. CRAIG, M.D., Chairman.

## OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING APRIL 14, 1904.

GREENE, J. B., passed assistant surgeon. Granted extension of leave of absence, on account of sickness, for sixty days from February 25, 1904. April 2, 1904.

WARREN, B. S., assistant surgeon. Granted extension of leave of absence for one day. April, 11, 1904.

WARD, W. K., assistant surgeon. Granted extension of leave of absence for four days from April 7. April 8, 1904.

STILES, C. W., chief of Division of Zoology. Detailed to attend meeting of Medical Association of Mississippi at Jackson, Miss., April 20–22. April 12, 1904.

GREGORY, G. A., acting assistant surgeon. Granted leave of absence for three days from April 12. April 12, 1904.

JACKSON, J. M., acting assistant surgeon. Granted leave of absence for five days from April 20. April 12, 1904.

RODMAN, J. C., acting assistant surgeon. Granted six days' leave of absence from April 12. April 9, 1904.

### BOARD CONVENED.

Board convened to meet at Stapleton, N.Y., April 18, 1904, for the physical examination of an officer of the Revenue Cutter Service. Detail for the Board: Surgeon Preston H. Bailhache, Chairman. Passed Assistant Surgeon A. C. Smith, Recorder.

## BOOKS AND PAMPHLETS RECEIVED.

Aseptic Duties of a Surgical Nurse or Dresser. By John O'Conor, M.A., M.D. Buenos Aires.

# Herter Lectures.[1]

BY PROFESSOR PAUL EHRLICH, M.D., LL.D., FRANKFURT, GERMANY.

## LECTURE I.

## THE MUTUAL RELATIONS BETWEEN TOXIN AND ANTITOXIN.

*Abstract.*

### INTRODUCTION.

The importance of practical and theoretical study of immunity. Influence of the side-chain theory. Cellular origin of antibodies. Relations between the constitution and distribution of chemical substances and their pharmacological action. Complexity of apparently simple functions.

Opposing views. Criticism of their experimental basis eliminates errors and reverses their significance. Importance of hypothesis to scientific advancement. Heuristic value of theory of immunity. Utility of succinct nomenclature and symbolic representation (algebra, chemistry).

### HISTORY OF SIDE-CHAIN THEORY.

Studies upon the localization of various dyes and their relations to cellular chemistry (methylene-blue, neutral-red). Production of immunity with poisonous proteids; independently of Behring (ricin, abrin, robin). Immunity not only bacterial, but a general principle. Quantitative studies on augmenting immunity and determining its degree. Older obscure conceptions of the relations between antitoxin and toxin (union, destruction, cell-protection). Experiments in vitro eliminate obscurities of those on animals. Chemical nature of union demonstrated. Warmth and concentration hasten union.

### TOXOIDS.

Difficulty in applying purely chemical conceptions in the case of diphtheria toxin. Law of equivalence apparently violated. Definitions of immune unit; technical toxin-values, lethal dose ("Dosis lethalis"), limit zero ("Limes nuli" = Lo), limit death ("Limes Tod" = L †). Different lots of diphtheria toxin though neutralized by a single immune unit contain different numbers of lethal doses. Investigation shows that upon standing the diphtheria toxin loses toxicity, but retains undiminished its affinity for antitoxin. The toxin molecule is quantitatively transformed into non-poisonous toxoid. Chemical illustration (anilin and sulphanilic acid). The simplest explanation of toxoid formation rests upon the assumption that the toxin-complex contains two groups of different functions: *a*. Haptophores, by which the complex enters into chemical unions; *b*. Toxophores, which occasion toxic action. Behring's objection, exemplified in hydrocyanic acid, not justified, because of the simple constitution of that poison. Complex organic compounds have repeatedly been shown to contain groups which confer definite properties upon the whole molecule. Anesthesiophore function of the benzoyl group in cocain; functions of the chromophore and auxochrome groups in dyes; color reactions of proteids due to definite groups (tyrosin, tryptophan, etc.). Evidence of this complex character of toxins also furnished by studies of hemolysins and bacteriolysins, which have their origin in the union of an amboceptor and complement and are analogous to toxins, the amboceptor representing the haptophore and the complement the toxophore group. Kyes' studies on cobralecithid.

### SIDE-CHAIN THEORY.

*Haptophore Group.* — The conception of the duplex nature of toxins, etc., forms the basis of the side-chain theory. Views regarding protoplasm. Fundamental nucleus and side-chains (receptors). These receptors subserve normal assimilative processes which are of synthetic character. Only those substances can be chemically incorporated with the protoplasm (assimilated), which possess a grouping most closely related to some constituent of the cell, fitting into its constitution as a key into a lock. The toxins represent, to a certain extent, toxic foodstuffs. It is mere chance whether they encounter suitable receptors in the cells of a particular animal species or not, as is shown by the irregularity in the action of given toxins in the animal kingdom (botulism). Elaboration of the side-chain theory. The antitoxins are receptors, produced in excess, and liberated from the cells. Appearing in the fluids they unite with the toxins for which they have specific affinity and thus protect the cells which have receptors of similar affinity from damage (analogy to lightning-rods). Not only toxins, but also toxoids, call forth antibodies. It is therefore chiefly the haptophore group which causes the cell-reaction, yielding antibodies by occupying the specific receptors. It is doubtful whether this cell reaction is purely regenerative. The great disproportion between the amount of toxin introduced and the quantity of antibodies obtained points to a concomitant cell-stimulation (Bindungsreiz of Wassermann). This is supported by the fact that a single immunization with suitable bacteria (*e. g.*, cholera) or toxin (*e. g.*, that of diphtheria) may induce an abundant production of antibodies.

### EVIDENCE IN FAVOR OF THESE THEORETICAL CONCEPTIONS.

(1) The demonstration of specific receptors in organs susceptible to a particular poison. Wassermann's experiments: union of tetanotoxin with cerebral tissues. Disproof of opposing views of Behring and Besredka. Locking of native and experimental hemolysins by susceptible erythrocytes.

(2) The demonstration by Pfeiffer that during the latent period, before free antibodies appear in the serum, they may be obtained from the

[1] Delivered before the Medical Department of Johns Hopkins University April 12, 13, 14, 1904.

bone-marrow with salt solution (loosely bound, partially liberated receptors).

(3) Demonstration of the presence of receptors produced and fixed in definitely localized tissues. Increased abrin-locking by the immunized conjunctiva (Römer).

(4) Local production of specific precipitins for maja-albumin after intraocular injection (v. Dungern).

(5) All attempts to produce antibodies with alkaloids, antipyretics and antiseptics have failed. These substances do not enter into the composition of the protoplasm, they encounter no suitable receptors and therefore fail to call forth a specific antigenetic reaction.

### TOXOPHORE GROUP.

The toxophore group need not necessarily be simple but may comprise various constituent groups which may be identical or different. Illustrations from alkaloidal chemistry; strychnine contains two oxygenated radicles both of which produce convulsions, and the drug owes its extraordinary toxicity to a combination of the two. Substances of the filicic acid series are active in proportion to the number of filicic butanon groups they contain. Ricin probably contains two toxophore groups, one agglutinating erythrocytes, the other causing its general toxicity. Three varieties of toxoids may be obtained from ricin, one non-toxic but agglutinating, one toxic but not agglutinating; both of these are incomplete toxoids.. The third, complete, is neither toxic nor agglutinating (Tarobi). Tetanotoxin and diphtheria toxin also appear to contain various toxophore groups. In the former there may be a lethal toxophore group and a morbific group; and in the case of diphtheria we may have to distinguish between complexes which cause the chronic effects and those occasioning acute manifestations. It is possible that certain partial groups act more powerfully on certain animal species than on others, and this may explain the observations emphasized by Behring that modified toxins meet with a range of susceptibility in the animal kingdom different from that of the original, unmodified toxin. Of practical importance is the question whether for the rapid production of antitoxin it is more advantageous to use only toxoids, or whether the presence of partial components of the toxophore groups exert a more favorable cell-irritation.

The action of the toxophore groups is generally slow. Since the intravenous injection of toxins is rapidly followed by their locking in the tissues and disappearance from the blood, the incubation-period, which in the case of diphtheria *toxones* may last for weeks, can only be explained by the slow action of the toxophore complexes. This is further exemplified in the hemolysins. Other factors may enter into the production of a period of incubation (studies of Hans Meyer and of Roux on tetanus). It is difficult to express definite views regarding the mode of action of the toxophore groups. Hueppe's hypothesis; experimental evidence wanting.

### RECEPTORS. SUSCEPTIBILITY TO TOXINS. RELATIONS TO METABOLISM.

The receptors of the cells are constituents of the protoplasm possessing a certain independent individuality, as is shown by the possibility of causing their augmented reproduction. In respect to the toxins they act as localizers or condensers and may from an infinitely dilute solution occasion a concentration of toxins in particular cells similar to the concentration of picric acid which takes place when wool is immersed in a dilute solution. Susceptibility to toxins may be divided into the following varieties:

(1) Great susceptibility. Toxophilic receptors exclusively in vital organs. Antitoxin production very difficult because of damage to cells, only possible through use of toxoids (guinea pig or mouse and tetanus).

(2) Slight susceptibility because of wide distribution of toxophilic receptors in indifferent tissues, *e. g.*, connective tissue, which lock the greater part of the toxins, and thereby protect more important tissues (fowl or rabbit and tetanotoxin).

(3) Insusceptibility, though toxophilic receptors be present, because toxophore groups do not act on protoplasm. Abundant production of antibodies. Rare condition (crocodile and tetanotoxin).

(4) Insusceptibility through lack of toxophilic receptors. Numerous examples clearly established (crotin, arachnin, specific hemolysins).

Definite receptor-complexes are associated with definite forms of metabolism. Uniform metabolic processes imply uniform receptor-complexes and therefore a uniform susceptibility to toxins (diphtheria toxins and guinea pigs; tetanotoxin and mice). Individually varying functions reveal themselves in extraordinarily variable susceptibilty (*e. g.*, crotin and rabbits). The embryonic erythrocytes of chicks possess no receptors for arachnolysin and are therefore not destroyed by this toxin. Immediately after hatching, the development of susceptible erythrocytes begins.

The study of the receptors has been of particular importance in elucidating the processes of assimilation. Former methods applied to damaged cells were not sufficiently refined. Isolated receptors obtained by immunization make an accurate study of assimilation and katabolism more approachable. The reproach brought forward by some controversialists that the theory of receptors should also explain regeneration is extravagant. It is an advance to be able to isolate certain wheels in the complex mechanism of the assimilation-processes and to ascertain their utility. The actual motive power is not revealed and the problem of regeneration of living matter will long remain unsolved.

The demonstration that erythrocytes possess extraordinarily numerous and various receptors

is particularly important. It indicates that these corpuscles, in addition to their function as oxygen-carriers, play an important rôle in metabolism in storing intermediary bodies.

Investigation has been greatly aided by a knowledge of the receptors, since they can be used in the analysis of animal and vegetable poisons to separate them into partial-toxins having different haptophore groups. Thus it is possible by specific locking with specific antibodies to analyze snake poison into neurotoxic, endotheliotoxic and two hemotoxic components. Of the latter, one agglutinates, and the other, through the formation of lecithid, hemolyses the blood (Meyer, Flexner, Kyes). Similar analyses of tetanotoxin and diphtheria toxin are possible. The method is a great advance in a most difficult field of research.

### CONCLUSION AND PRACTICAL FORECAST.

The immunization industry which has for its aim the production of sera of highest potency, has made marked progress. Sera of much higher antitoxic value than have hitherto been obtained will be the result. The knowledge that the immunity reaction is reduced by too highly toxic treatment of the animals is spreading. An effort is being made to restrict this immune reaction to tissues of slight vital importance (connective tissue) and to protect vital organs from injury. In this direction are the methods of immunization with toxin and antitoxin injected separately or after admixture. Thus an apparently neutralized toxin may cause antitoxin production (Park). This is due, as will be explained in the next lecture, to the presence of ultra-toxoids.

Progress in the production of curative sera is to be expected only when it becomes possible to obtain antitoxins of greater avidity than those now procured. That this is theoretically possible is shown by the investigations of Kyes who demonstrated that through the immunization of rabbits with cobra-lecithid it is possible to obtain an antibody of considerably higher avidity than that obtained by Calmette with cobra-venom in horses (antivenin). The selection of particularly favorable animal species and the use of toxins of least avidity or ultra-toxones will, most probably, bring this problem much nearer its final solution.

## LECTURE II.

## PHYSICAL CHEMISTRY *V.* BIOLOGY IN THE DOCTRINES OF IMMUNITY.

### *Abstract.*

### INTRODUCTION.

Physico-chemical investigations of Arrhenius and Madsen concerning the application of physical chemistry to the study of toxins and antitoxins. Their belief that tetanolysin is a uniform substance possessing only a weak affinity to its antitoxin and that its neutralization occurs in accordance with the law of Guldberg and Waage. Attack upon my doctrine of plurality of toxic constituents. Favorable reception of these opposing views in certain scientific circles lacking special competence in sero-therapeutical questions. Protest against the attempt of these authors to claim exclusive priority in the development of these questions. The path of biological investigation — the method of partial neutralization of toxins — followed by them was first opened and by long years of work developed by me. The contention that my investigations represent merely an application of Thomsen's principles in his study of affinities between strong acids and bases is incorrect.

Equally unwarranted is the reproach made by these authors that my investigations are inaccurate and have been conducted without sufficient consideration of sources of error. The most important of my results have been confirmed by them, especially as regards the existence of toxoids and their occurrence with varying degrees of avidity, as "prototoxoids," "syntoxoids." On the contrary, the researches of myself and collaborators have been conducted with the utmost precision and care without consideration of cost or time. Nor can I admit that I have violated the principle of choosing the simplest possible explanations. Such explanations received always my first consideration and, as in the case of diphtheria-toxin, gave place to more complex ones only when the experimental results made this necessary.

### POINTS OF DEPARTURE. METHODS AND RESULTS OF PARTIAL NEUTRALIZATION.

It was to be determined whether in the production of toxoids a change in avidity for antitoxin occurred. The only available method for this was that of partial saturation or neutralization. A prerequisite of this method is the exact determination of the test-constants, viz., the simple fatal dose, and the Lo and the L† doses, which have reference to the immunity unit (I. E.), and each of which may be the starting point of the investigation. It is then determined by how many fatal doses the toxicity of a given quantity of toxin, as for example the Lo dose, is lessened by its mixture with a fraction, say one tenth, of the immunity unit of antitoxin. Then with another mixture containing a larger amount of antitoxin a second determination is made, and so on. If the toxin were a single substance of uniform composition and the antitoxin possessed for it a strong affinity, like that between hydrochloric acid and potassium, the quantities of toxin which disappear or are neutralized in these mixtures would be in direct ratio to the quantities of added antitoxin. In fact, however, the process of neutralization takes places after a quite different scheme, as is shown by a glance at the exhibited charts.

It is advantageous to present these experimental results in graphic form, and for this different methods are available:

(1) The original, designated by me as the "spectral" mode of representation, which shows step by step the extent of diminution in the number of toxic doses effected by a definite small quantity of antitoxin, to wit, 1-200th of the immunity unit (which quantity I have called the "combining unit"), in the different zones of neutralization.

(2) The "linear" method, employed by Arrhenius, in which the quantities of antitoxin added are represented on the abscissa, and those of the active toxic doses present on the ordinates, is merely another form of graphic representation which has no advantage over the former. On the contrary this method chosen by Arrhenius, which is based upon estimation of the dissociation constants, is objectionable, because the graphic line corresponds only in its middle part with the values actually found, and toward the beginning and the end shows considerable deviations. Moreover its construction rests upon false premises.

### INTERPRETATION OF THE PHENOMENA OF NEUTRALIZATION.

From the exhibited charts it is apparent that by employing the Lo mixture three different zones can be distinguished in the spectral mode of representation. In the first zone one combining unit of antitoxin removes on the average either one half or one entire lethal dose. As there is reason to assume that in the case of an ideal, absolutely pure toxin one combining unit removes exactly one lethal dose, the foregoing result indicates that in this zone (1) pure toxoid, or (2) pure toxin, or (3) a mixture of equal parts of toxin and toxoid, designated by me as "hemitoxin," is neutralized. The existence of hemitoxin is possible only in case the toxoid has precisely the same avidity as the toxin; from this it follows, as I have from the beginning assumed, and as Arrhenius has confirmed, that in the transformation of toxin into toxoid no change in avidity occurs.

Pure toxoid occurs often in the form of a prototoxoid, which possesses a stronger avidity for antitoxin than all other components of the toxin and thus manifests its presence by the fact that to the solution of toxin containing it a certain quantity of antitoxin can be added without lessening in the slightest degree the toxicity. The existence of prototoxoids has been recently denied by Arrhenius as a result of his recalculations of toxins studied by Madsen. His criticism, however, is certainly not applicable to a toxin which has been continuously tested by me, nor to another investigated with the utmost precision by Theobald Smith. Furthermore, prototoxoids have been positively demonstrated in the case of other poisons and analogous substances, ferments, agglutinins. Inasmuch as no change of avidity occurs in the formation of toxoids, the demonstration of prototoxoids points to the existence of a partial toxin of strong avidity — "prototoxin."

The second zone in the spectrum is of relatively short extent and is characterized by the fact that one combining unit removes only a fraction — one fifth to one tenth — of the lethal dose. This is the zone of decisive significance for Arrhenius's hypothesis.

The third zone I call the "toxone-zone." Toxone is one of the primary products of secretion of the diphtheria bacillus, possessing the same haptophore group as the toxin, but of far less avidity, and in the process of partial neutralization entering, therefore, last into combination with antitoxin. Its toxophore group differs from that of toxin, being incapable of producing acute effects, cutaneous necroses, death. Toxone is responsible for the diphtheric paralysis occurring between the fourteenth and thirtieth day in guinea pigs. Mixtures of toxin and antitoxin in which all the toxin-components are neutralized, while only the toxone remains unneutralized, produce in guinea pigs, without any local or general lesion, the phenomena of diphtheric paralysis.

### PHYSICO-CHEMICAL OBJECTIONS AND THEIR REFUTATION.

Arrhenius by following a plan of experimentation introduced by Danysz has shown in the neutralization of ammonia by boric acid, that if 1 part of boric acid lessens the hemolytic effect of a given quantity of ammonia by 50%, the subsequent addition of 2, 3, 4 parts causes a further diminution of only 16.7, 8.3 and 5% respectively. It would be absurd to conclude from these experiments that ammonia is not a single substance but is composed of several constituents of various degrees of toxicity, of which those with the strongest chemical affinity are first neutralized. Arrhenius, therefore, concludes that inasmuch as the neutralization of tetanus-toxin proceeds in the same way it is superfluous to assume the existence of different components and sufficient to assume a single, uniform toxin with weak affinity for its antitoxin.

In reply I may state that at the outset of my investigations I was led to assume a strong affinity between toxin and antitoxin. This opinion in the first place was supported by the experiments of Dönitz and of Heymann who demonstrated the extraordinary rapidity with which diphtheria toxin introduced into the circulation combines with the toxophile receptors in the tissues, which must therefore possess a high degree of avidity. The protective and curative properties of the specific serum indicate that the antitoxins possess at least as strong avidity as the tissue-receptors. Furthermore, the therapeutic experiments of Dönitz on the animal body and of Madsen on red corpuscles prove that the toxin when once bound becomes so firmly fixed that the specific serum after a time fails to produce any curative effect. This indicates that after fixation of the toxin secondary, chemical modifications transform the primary, labile combination into a stable one.

The large interval between the values of Lo and L† seemed to oppose the acceptance of a strong affinity between toxin and antitoxin. Designate by D the amount of toxin which represents the difference between L† and Lo. From chemical examples it can be easily shown that with poisons of strong avidity the value of D must correspond exactly to one simple fatal dose, whereas with poisons of weak avidity D may be much larger. At last, however, I succeeded in finding a toxin in which D was precisely of the theoretic value 1. Thereby it was in principle shown that toxin and antitoxin unite with strong affinity, and the great variations (from 0–300%) in the value of D presented by different specimens of toxins could be referred to the presence of toxone. Not until I had found this toxin did I come forward with my theory, which I believe to have been framed with due care.

What then is the evidence advanced by Arrhenius in favor of the view that toxin and antitoxin are actually substances of weak avidity? The biological facts which speak against this view are either entirely ignored by the authors or set aside under arbitrary assumptions of an inexact investigation. The sole support is the tetanus-curve, concerning the value of which I shall speak presently. Experimental investigation should in the first instance have attacked this question.

The entire calculation and reasoning of the authors proceed from the assumption, adopted by so prominent an authority as Professor Nernst, that neutralization of toxin and antitoxin is an interchangeable or reversible reaction. If it can be shown that the process is not a reversible one, then the basis is withdrawn from all the reckonings and deductions of Arrhenius. Unaccountably Arrhenius has presented no experiments upon this point, but Dr. v. Dungern has taken up the subject by applying the procedure used by Danysz for other purposes of successive additions of toxin to antitoxin. By way of example the processes in the production of acetic ether may be selected. Mix 1 equivalent of alcohol with $\frac{1}{3}$ equivalent of acetic acid, allow the mixture to stand for a length of time and then add $\frac{2}{3}$ equivalent of acetic acid (mixture A); at the same time mix simultaneously 1 equivalent of acetic acid and 1 equivalent of alcohol (mixture B). It is self-evident that the state of equilibrium, when two thirds of the added substance have been transformed, is reached sooner in A than in B. If the two mixtures are examined at a time when equilibrium is established in B, both liquids have of course the same composition. Before this point is reached, however, the transformation is advanced further in A than in B. If we assume in this example that acetic acid corresponds to toxin, alcohol to antitoxin and the ester to the neutral antitoxin-toxin mixture, it is readily seen that by the addition of acetic acid in two periods the mixture A is deprived of toxicity sooner than is the control B with simultaneous addition.

Von Dungern's experiments were made with a diphtheria poison of which the Lo dose was 0.6 ccm. and the L† dose 0.78. To 1 immunity unit of antitoxin he added first one third of the Lo dose — 0.2 toxin, and after twenty-eight hours determined the fatal dose of toxin. It was found that this mixture after the addition to it of only 0.39 ccm. of toxin was fatal to guinea pigs. Thus in accord with Danysz's previous observations, it was demonstrated that an increase of toxicity appeared when the toxin was added in two portions, since under these conditions the L† dose was reduced from 0.78 (in the case of simultaneous mixture) to 0.59. (If antitoxin was added in successive fractional portions of the immunity unit to the toxin solution the L† dose of course remained 0.78.) From his experiments von Dungern concludes:

(1) The union of diphtheria toxin and antitoxin does not proceed in accordance with the ammonia-boric-acid scheme.

(2) The observed phenomena of combination are explicable only upon the assumption of a complex constitution of the diphtheria poison.

(3) The facts find their best explanation in the action of a toxone and epitoxonoid. Epitoxonoid is present in considerable quantity in toxic broth. The immunizing action of apparently completely neutralized toxins can thereby be explained.

(4) Constituents of the diphtheria poison with weak affinity after combining with antitoxin may eventually become so firmly bound that this union can be only incompletely broken by toxin of stronger avidity. The strength of the combination is of significance for the action of antitoxin.

(Demonstration of the relations by schematic charts.)

At my suggestion Dr. Sachs has undertaken the same experiments with tetanolysin. In one experiment 0.02 ccm. tetanus serum served as the immunity unit. This neutralized completely 0.3 ccm. (Lo dose) of a definite toxin solution, while a mixture containing 0.7 (L†) toxin effected complete hemolysis. By adding to the serum the Lo dose (0.3) and again after twenty hours adding more toxin the L† dose was found to be reduced to 0.45. It is consequently demonstrated also for tetanolysin, which is the axis of Arrhenius' investigations, that the premises underlying his entire calculations and construction of graphic curves are inapplicable. Hereafter the linear representation of the calculated values of toxins, as demanded by Arrhenius for all cases, must be rejected wherever the phenomenon of Danysz is present.

Also from the purely physico-chemical point of view, as I am authoritatively informed, the conceptions of the authors present numerous vulnerable points which will soon be exposed by competent authority. I confine myself here to the presentation of certain opposing arguments of a biological nature, and begin with tetanus.

Tetanolysin, on account of its ready decomposability and the difficulty of conducting hemolitic experiments with absolute accuracy, is ill adapted for precise determinations of the kind

under consideration. Neutralization experiments with this substance encounter on the one side the Scylla of incomplete union and on the other the Charybdis of destruction of the poison.

It is incomprehensible that the calculations should be based on the assumption that the toxin consists of molecules of poison with uniform composition. On the contrary, it is highly probable that specific toxoids are present, which, of course, must enter into the calculation as well as the toxins. The amount of toxoid was, however, unknown and indeed at present is indeterminable. To escape from this dilemma Arrhenius, as he has kindly informed me, assumes that the production of toxoid results from an equable weakening of all the toxic molecules. Thus the toxic solution would not be a mixture of dissimilar components. This assumption must be rejected on general grounds (examples) and is disproven by the demonstration of prototoxoids, as well as by the investigations of Tarobi on ricin-toxoids.

It is likewise incomprehensible that Arrhenius should leave entirely out of account the tetanophilic receptors of the red corpuscles and make no calculation of the amount of poison fixed by the corpuscles. These anchor no small part of the simple dissolving dosis, which is the dominating factor in the experimental procedure.

Even upon the assumption of a toxin of uniform composition the calculation of the state of equilibrium must, therefore, take into consideration three factors capable of combining with antitoxin — toxin, toxoid and receptor.

To meet these objections, which might easily be augmented, Arrhenius has scarcely anything of a positive character to offer save the tetanolysin table No. 19, which corresponds fully with the theoretical calculation. It must here be emphasized that in contrast with a large number of unsuccessful results this favorable one was secured but once. I have lately become very skeptical as regards the demonstrative value of this curve, inasmuch as both of Madsen's diphtheria curves, which on account of their correspondence with the calculation was published as a complete refutation of my conceptions, have since been shown to be erroneous. I communicated by letter to Professor Arrhenius that the numbers underlying these curves were in entire harmony with my conceptions, and I was astonished to be informed that a recalculation occasioned by my criticism showed that a part of the figures underlying the construction of the curves were wrong. Without my letter Madsen's curves would probably have stood for decades as an argument against my views. At any rate these considerations demonstrate that from erroneous figures, curves in entire harmony with the theory may be constructed.

At present there are no satisfactorily demonstrated facts which warrant the application of Arrhenius' conceptions to the diphtheria toxin. It may be mentioned that an extensive investigation by Morgenroth has positively overthrown Madsen's assumption that the toxone-effect is merely an expression of the action of toxin modified by antitoxin.

The large variations of the dissociation-constants, as determined by the calculation, necessitate the assumption of an extraordinary multiplicity of poisons, whereas my conceptions are satisfied by the acceptance of a much smaller number.

It is unnecessary to have recourse to further arguments when I mention in conclusion that my views furnish a far better explanation than those of Arrhenius of numerous facts in the domain of toxins, such as the process of spontaneous enfeeblement of toxins, their passage into a state of stability, the reduction of the toxone zone, the capacity of completely neutralized poisons to produce antitoxin (Park) by means of von Durgern's epitoxonoids. I am convinced that what I have established through long years of work concerning the nature of the diphtheria poison will withstand the Northern storm and with the course of time prove itself to be real and vital.

## LECTURE III.

## CYTOTOXINS AND CYTOXIC IMMUNITY.

*Abstract.*

Development of our knowledge concerning bacteriolysins and cytolysins. Bacteriolysins (Pfeiffer's phenomenon in cholera) and their mode of action. Agglutinins (Gruber, Durham and Widal). Cytolysins (Belfanti, Metchnikoff, Bordet, von Dungern, Landsteiner).

Importance of this domain constantly increasing. Literature of recent years almost too great to master.

The hemolysins especially suitable for theoretical studies; they made it possible for me to explain quite simply the manner in which these substances arise, and the mode of their action.

### MODE OF ACTION OF AMBOCEPTORS AND COMPLEMENTS.

The interpretation of Pfeiffer, Metchnikoff and Bordet's demonstration of the participation of two substances in producing bacteriolysis was made clear by means of absorption experiments and experiments at low temperatures. Establishment of the amboceptor theory. The amboceptor (the specific product of immunization) unites by means of one haptophore group with the receptor of the susceptible cell, and by means of another haptophore group with the complement. The complement has one chemical group suitable for union with the amboceptor, and another, the zymotoxic complex — which causes the injury to the cells. Bordet's opposition; his theory of " sensitization."

For the theory of direct union (between cell-receptor, amboceptor and complement) the following evidence may be given:

(1) Demonstration of well-established chemical analogues.

(2) The side-tracking of complements by an excess of free amboceptors, as was proved in the case of bacteriolysis by Neisser and Wechsberg, and firmly established by Morgenroth for hemolysins by the employment of anti-amboceptors.

(3) The existence of products from the breaking down of amboceptors — amboceptoroids (Wechsberg, Muller, Mereschi), which no longer are anchored by the cell, but still are able to divert complements. The amboceptor, then, acts like a dye-mordant. The complete hemolysin forms thus an analogue of a toxin, in which one part, the amboceptor, corresponds to the haptophore group, the second part, the complement, to the toxophore group.

The complement, contrary to the conception of Bordet, is not a simple unit, but is made up of a great many partial-complements, which side by side and simultaneously become attached to the amboceptor. Accordingly the amboceptor contains a whole series of complementophilic groups, and not a single one, as was at first supposed. The diverse amboceptors which can belong to one animal species differ specifically only in those haptophorous groups which are concerned in the union with the cell, while they are identical, or at least very similar, as far as their complex complementophilic component is concerned.

Proof of the multiplicity as opposed to the unit of complement can be brought:

(1) By the method of partial absorption.

(2) By the selective destruction of single partial-complements.

(3) By the demonstration of anticomplements which inhibit only a certain part of the complement action.

(4) By the evidence brought forward by Metchnikoff, that by the disintegration of microcytes or of macrocytes, at least two complements arise, which differ in their effects, one producing hemolysis, the other bacteriolysis.

In each individual instance of lytic action it is not necessarily the whole series of complements, but only a certain fraction of them (the dominant complements), which is concerned.

### THE THEORY OF AMBOCEPTORS.

Amboceptors are cell products. In the protoplasm of cells, in addition to the simple receptors which give rise to antitoxins, there are more complicated receptors, which serve in the absorption of the more complex albuminous molecules. Two varieties of these receptors are to be distinguished:

(1) Receptors of the second order, which, in addition to their anchoring, haptophore group, possess a chemical complex, which is distinguished by its power to set going coagulative processes, and which is generally quite resistant to heat. As the result of immunization with cells or albuminous material, receptors of this order appear in the serum as coagulins or agglutinins.

(2) Amboceptors arise from receptors of the third order, which are concerned with the fixation and assimilation of the very largest food-molecules. For the katabolic changes of these molecules there are needed a whole sequence of processes, which can only be carried out by a multitude of fermentative agents such as the complements. Corresponding to this conception these receptors possess a multitude of complementophilic groups. The reason why these adjuvant groups do not actually occupy the receptors — which would present the simplest solution — may be looked for in their extraordinary lability, which may render necessary a continual rehabilitation and renewal of the fermentative apparatus. This view is favored by the fact that such an arrangement does exist in the case of the receptors of the second order, whose agglutinophore complex, as has been mentioned, is relatively stable.

The purpose, however, of protecting these complements from destruction would not be attained if the affinity of the complementophilic groups were such that the complements were continually being absorbed by the receptors. From the teleological point of view a most wonderfully well adjusted mechanism controls the complement-absorption, for by union of the haptophore group with a nutrient molecule the avidity of the complementophilic group of the receptor is so augmented as to permit its combination with a complement. This is then a sort of economy which enables the labile ferment to reach the cell at exactly the favorable moment for its utilization. The proof of the actual occurrence of this increase in avidity is furnished by "Bordet's phenomenon," in which a selected material, after it is laden with amboceptor, is able to remove complement suitable for itself and also for all other combinations.

Amboceptors can be produced by immunization which are specific antibodies for a great number of albuminous materials, and it is to be hoped that the study of these amboceptors will give us a much clearer view than we can now obtain, into the process of assimilation.

We must suppose that those parts of the protoplasm which are bearers of the receptors of the second and third orders must be completely immune to the destructive action of the zymotoxic groups of the complements. Although it is impossible with the means at our disposal to bring forward direct proof of the spatial separation of these particles of protoplasm, yet we are forced to believe that such a separation exists, from the circumstance that complements are able to destroy their own cells if they are artificially brought into relationship with certain other constituents of the cell. This is effected with extreme ease by the aid of cytotoxic amboceptors, which can be readily produced for nearly all kinds of cells. Thus the erythrocytes of a sheep, which are laden with specific hemolytic amboceptors, will show no sign of injury so long as they are suspended in normal salt solution, but they will be dissolved at once upon addition of the very same serum which was removed from the sheep with the erythrocytes. Thus the most

important agents of the body economy are turned into most deadly weapons if brought into a false relation to the protoplasm. In an analogous manner Kyes has shown that lecithin, the existence of which in the envelope of the red blood corpuscles preserves their integrity, undergoes, in the presence of the cobra-amboceptor, an intracellular displacement — heterotopy — which is a condition leading to the destruction of these corpuscles by the venom.

PLURALISTIC CONCEPTIONS.

The cells are complexly constructed systems. Each of them possesses an extremely great number of separate components which from a purely theoretical point of view are capable of producing an equally great number of specific reaction products. It is probable that each morphologically different cell constituent — protoplasm, nucleus, cilium, etc. — is capable of producing a serum specifically antagonistic to this particular structure, which serum in turn may be made up of a whole series of partial components (*cfr.* Theobald Smith's investigations of antibodies directed against the flagella and body substance respectively of bacteria).

Review of the conditions which lead to the result that the number of specific antibodies produced by immunization is usually much smaller than the number of different antigenetic substances inoculated. Deficiency of suitable receptors in the immunized species of animal; insufficient formation or insufficient shedding of these receptors; protection against auto-intoxication (*horror autotoxicus*).

Description of methods for demonstrating phenomena of plurality. Crossed absorption experiments and employment of anti-amboceptors. Examples from hemolysis. von Dungern's attempt to separate an antigenetic group common to two substrata for the production of a single, isolated anti-serum. An immune serum in the former restricted sense of absolute specificity does not exist, we can speak only of the specificity of *one* amboceptor type for *one* definite causative substance (antigen). Since, however, the immune sera contain a great number of different fractional components, which in turn can occupy a correspondingly great number of receptors, furthermore, since not the whole number of receptors of any one cell are peculiar to this cell, but a variable number of them are also common to other nearly related cells, we must conceive that a serum produced by immunization with a certain type of protoplasm, while it exercises its chief action against this protoplasm, also exhibits its action upon a whole series of other substrata of protoplasm. The more closely related the receptor apparatus of two immunity-producing agents is, the more completely do the sera produced by them correspond in their action.

It is possible at this time to refer only to certain topics from the extensive domain pertaining to the pluralistic conceptions.

(1) The controversy over alexins. These, formerly supposed to be simple units, correspond to a very great number of different agglutinins and amboceptors. These normal substances, destructive to the cell, may arise homologously (for example, the colilysins), or heterologously (cholera-amboceptors in the goat; trypanosomacides of human serum). An aim of therapeutics should be the obtaining in serum not only of complements but especially of the powerfully curative amboceptors of normal organs.

(2) Alterations in the receptor apparatus of the blood corpuscles and their relations to the isolysins. R. Koch's studies of isolysins in coast fever.

(3) Determination of philogenetic relationship. Uhlenhuth's and Wassermann's blood test.

(4) Relationship between the virulence of bacteria, the receptor apparatus, and the development of immunity (Welch, Walker, Hamburger, Pfeiffer, Wassermann).

(5) Practical results from the production of bactericidal sera.

## Original Articles.

### TREATMENT OF PROSTATIC HYPERTROPHY.

The following papers on the general subject of "The Treatment of Prostatic Hypertrophy," were read at a meeting of the Section for Surgery, Suffolk District Medical Society, March 2, 1904.

### Surgical Anatomy of the Prostate.

BY L. R. G. CRANDON, M.D., BOSTON,

*Assistant in Surgery, Harvard Medical School; Third Assistant Visiting Surgeon, Boston City Hospital.*

The normal prostate is classically and well described as a chestnut-shaped body adjoining the neck of the bladder, inclosing the first part of the urethra. The urethra runs nearer the anterior than the posterior aspect of the gland, that is, about .7 cm. from the former and .9 cm. from the latter, but it varies. The narrow end or apex of the prostate is directed downward and forward to within 1.5 cm. of the symphysis, to which it is connected by thickenings of pelvic fascia. The posterior part or base is close to the rectum, through which it may be felt, about 6 cm. above the anus. Its measurements are about 3.5 cm. across at its widest, *i. e.*, bilaterally; 3 cm. from base to apex, and about 2.5 cm. in thickness, *i. e.*, in the direction of the urethra. The weight of the normal prostate ranges from 13.6 gm. to 21.4 gm., the average being 18 gm. These limits are not strict. A sheath derived from the rectovesical fascia incloses the prostate and contains the prostate veins. This capsule is fairly distinct. The rectal surface shows two grooves which meet in front and indicate the course of the seminal ducts. The gland presents a lateral lobe on each side of the base, and a middle portion or isthmus which is included between the ejaculatory ducts and the neck of the bladder.

The prostatic urethra, about 3 cm. long, is



FIG. 1. Nerve-plexus between prostate and rectum; mostly non-medullated fibers.

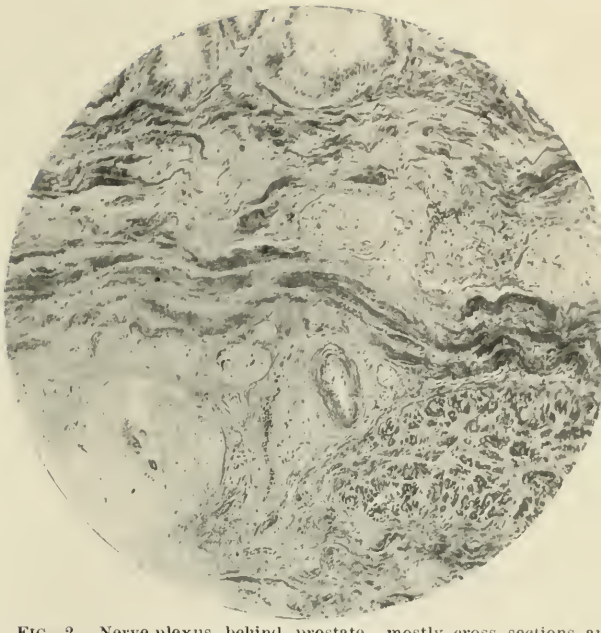


FIG. 2. Nerve-plexus behind prostate — mostly cross sections a largely of sympathetic origin.



FIG. 3. Nerve ganglia in recto-prostatic plexus.

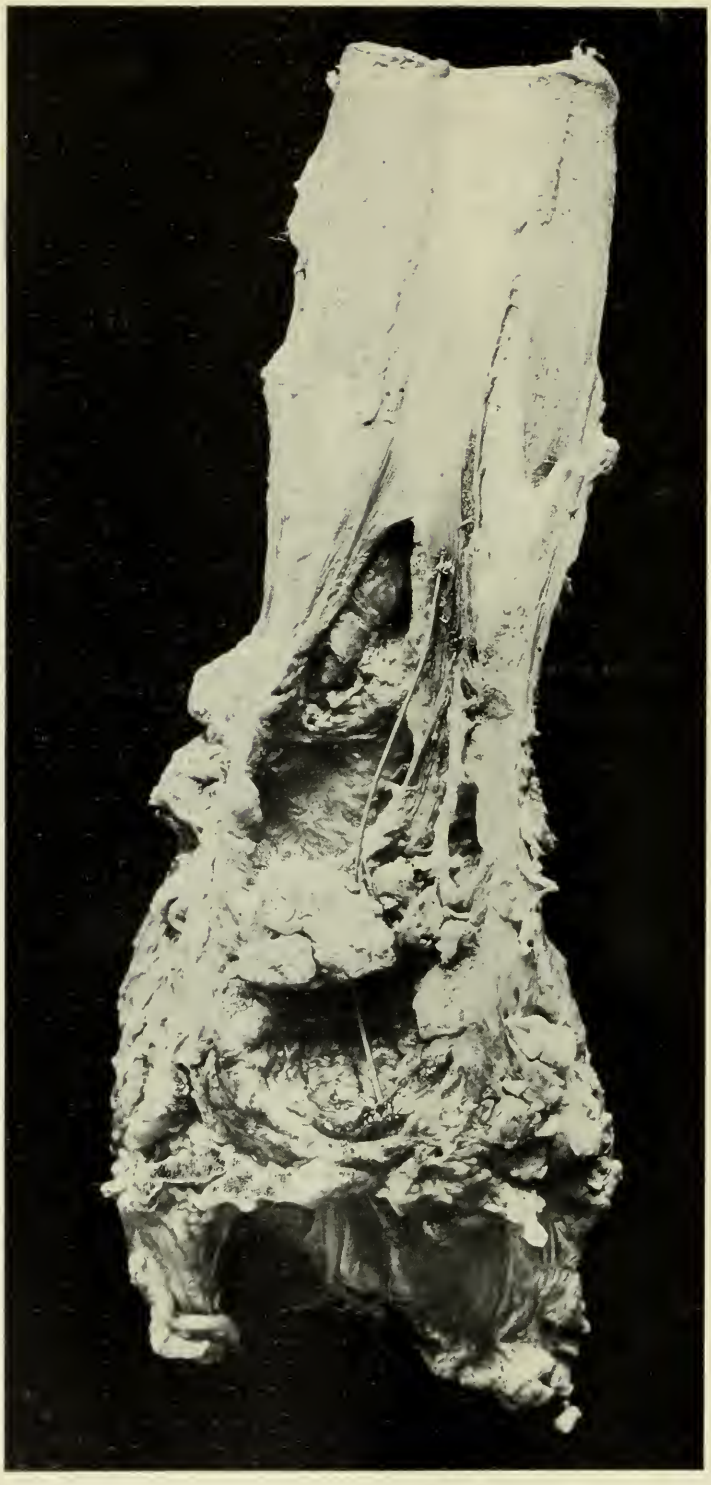


FIG. 4. Straw shows where the urethra was before perineal prostatectomy by "combined operation." Specimen removed post-mortem, three days after operation.

dilated in its middle, where there arises from its floor the verumontanum (Colliculus seminalis, Caput gallinaceum). The ejaculatory seminal ducts, passing forward from the seminal vesicles, traverse the lower part of the prostate and empty into the urethra by two slit-like openings on or very near the crest of the caput. The prostatic ducts empty through the wall of this portion of the urethra by from 12 to 20 openings, most of them on the floor of the urethra in a fossa on each side of the caput, called the prostatic sinus. The two largest prostatic ducts empty at the caput just behind the mouths of the ejaculatory ducts. In the middle line, close in front of the orifices of the ejaculatory ducts, in the forward part of the caput is the prostatic utricle. This is a blind pocket, about .8 cm. long, extending upward and backward beneath the isthmus.

Histologically speaking, the prostate normally is made up of smooth muscle-fibers, of rather cellular connective tissue, and of true gland-tissue in the proportions roughly of 1: 1: 2, together with more or less elastic tissue.

The principal anatomical points of the prostate which are of importance to the surgeon are, (1) its nerve supply; (2) its relation to the urethra; (3) its relation to the peritoneum.

*The nerve supply of the prostate* is derived from the inferior hypogastric plexus which in its turn has sympathetic origin from the superior hypogastric plexus and central origin from the sacral nerves and ganglia. Filaments from the inferior hypogastric plexus come to surround the posterior or rectal aspect of the prostate in a fine meshwork of relatively large nerves and many ganglia. The double origin of these nerves is clearly shown when they are stained for axis-cylinders (Pal-Weigert). (Figs. 1, 2.) The medullated or central nerve-fibrils stain black and take up about $\frac{1}{20}$ to $\frac{1}{10}$ of the total cross-section. The ganglia are fairly large (Fig. 3). This is the network of nerves mostly of sympathetic origin, which must be torn through in a perineal prostatectomy.

*The relation between the prostate and the urethra* is not only intimate from the passage of the urethra through the body of the gland, but the mucosa of the urethra is closely bound to the prostate by the ejaculatory ducts and the prostatic ducts which empty into the urethra and thereby attach urethra to prostate by from 14 to 22 points of adhesion. In a strict anatomical sense, therefore, the normal prostate may not be removed without tearing the urethra. That this anatomical condition is rendered much worse to the surgeon by the changes of the sclerosis of age and inflammation is shown by this specimen (Fig. 4).

*The relation between the prostate and the peritoneum* is variable. In measuring the distance from the depths of the rectovesical pouch to the central point of the perineum it was found in 20 cases to vary between 5 and 9 cm. and increases when the bladder is full. In perineal prostatectomy the lacerations may be found from $\frac{1}{2}$ to 2 cm. from the peritoneum, and virulent infection of this pouch, without macroscopic injury, has been demonstrated in at least two fatal cases, to my knowledge.

## The Gross Pathology and Mechanism of Prostatic Obstruction.

BY ARTHUR L. CHUTE, M.D., BOSTON.

The frequent, painful feeble and usually incomplete emptying of the bladder seen in elderly men, which we term prostatic obstruction or prostatism, is not dependent on any single lesion of the prostate, either when considered from the point of view of its gross or its microscopical pathology.

The etiology and pathological histology of these changes in the prostate and of the changes secondary to the urinary obstruction are of great interest; they are, however, for the most part beyond the scope of this paper and do not so intimately interest us as do the gross anatomical changes. These gross changes are what we have to deal with in our operative attempts to relieve prostatic obstruction, and the success of our attempts will depend largely on our knowledge of them.

Mere general enlargement of the prostate, as shown by digital examination, does not necessarily produce prostatism, even a considerable increase in size may be symptomless; on the other hand a marked degree of obstruction and even complete retention may occur with a prostate which shows little if any appreciable enlargement. To have symptoms it is necessary that the changes in the prostate be such as to produce an obstacle to emptying the bladder. This obstacle is usually situated at the vesical neck or entrance to the prostatic urethra. Occasionally obstruction has been caused by the jutting of an enlarged lateral lobe into the prostatic urethra in such a way as to occlude it by lateral pressure; instances are also recorded where a small prostatic out-growth has blocked the lumen of the urethra in its course, but as a rule the obstruction is at the bladder outlet. The changes occurring in the shape and distensibility of the prostatic urethra are undoubtedly contributory; it is, however, very doubtful if in most instances they are the chief element in causing the urinary obstruction.

Whatever the conclusions of the pathologists and those particularly interested in the etiological aspect of the question, we have clinically two types of disease — First, the type characterized by a small, hard, fibrous prostate, which has the outward appearance of being of inflammatory origin, and second, the type in which the gland is enlarged, softer than in the first type, often irregular or lobulated on digital examination. The latter is usually spoken of as hyperplastic, adenomatous, fibro-adenomatous, or fibro-adenomyomatous, depending upon the relative proportions of the various constituents which different observers have found.

In the small fibrous prostate, the obstruction in a few cases seems to be due purely to the infiltration about the vesical end of the prostatic urethra, and the decreased distensibility of it. This destroys its normal funnel-shaped entrance and offers a difficulty to passing urine. If this condition is progressive the resistance becomes greater than the bladder can overcome, even with its compensatory hypertrophy, and we have a residual urine and the formation of a slight bas-fond. This places the already weakened bladder at a still greater disadvantage, since now the outlet is not at the lowest part of the organ. The repeated and unsuccessful attempts of the bladder to completely empty itself lead to further muscular atrophy and fibrous infiltration of its walls which lessen the expulsive power of the organ. This may be steadily progressive and is not necessarily attended with subjective symptoms other than frequency and diminution in the size and force of the stream. In an uninfected bladder the overflow of distention, or complete retention due to some purely circulatory change, may be the first real sign the patient has that something is radically wrong. With these fibrous prostates there is often an outgrowth at the urethral opening.

The second type of obstruction is characterized by a considerable enlargement of the prostate. There seems reason to believe that this may at times be a hyperplasia, though in the greater number of instances it is a benign neoplasm. The enlargement of the gland may be general or the growth may affect one lobe or part more than another.

With a general enlargement of both lateral lobes the extension will be upward to a greater or less degree. Extension downward is prevented by the firm triangular ligament, while the pubic arch prevents extension forward. There is opportunity for extension backward toward the rectum and this usually takes place to a considerable degree, but the lack of resistance in the direction of the bladder, together with the fixation of the bladder end of the urethra, leads commonly to an extension into the floor of the bladder. This encroachment of the prostate carries with it the urethral opening and raises it above the lowest part of the bladder, producing a condition in which the bladder cannot completely empty itself without extra work. This leads in time to a residual urine. Once we have a residual urine, a vicious circle is established, which in the natural order of things will be slowly progressive. This applies to all cases of prostatic obstruction. A symmetrical growth of the lateral lobes may, at the same time that it extends backward into the bladder, roll forward so as to embrace the anterior surface of the prostate, producing a projection into the bladder not unlike an os uteri. As there is more prostatic tissue below the urethra than above, the posterior lip of this projection is usually the larger. Variations in these last two types produce the so-called "horse-collar" obstructions.

In another arrangement both lateral lobes extend into the bladder and an off-shoot from one lobe bulges up under the trigone. These three globular masses about the bladder outlet may so dilate the prostatic urethra as to convert it into a cavity which holds more or less urine.

In obstruction by hypertrophied lateral lobes the prostatic urethra is elongated and is shown on cross section as a vertical slit. There is atrophy of the mucous membrane and the submucous tissue. The urethra will show a marked lateral deviation if one lobe encroaches more than the other. It will not show so marked a prostatic curve as in the cases with the median obstruction. The lateral pressure on the prostatic urethra is probably not so important a factor in producing the obstruction as the raising of the bladder outlet, though where one lobe presses so sharply as to cause a lateral deviation of the urethra it may add a considerable element to the obstruction.

The irregular forms of prostatic growths are found in the greater number of cases of obstruction. They are usually adenomata, and produce obstruction in direct ratio to their proximity to the bladder neck. Thus a considerable adenoma in the outer part of a lateral lobe will cause less obstruction than a smaller one nearer the urethral opening. These irregular growths show an almost infinite variety. A growth from one lateral lobe may extend into the bladder and an off-shoot project forward under the trigone in the form of a middle lobe. If sessile, it raises the bladder outlet, if pedunculated, it may form a valve. These out-growths from the lateral lobes may appear in other positions than under the trigone. In a patient on whom I operated a few days ago a pedunculated adenoma from the left lateral lobe had formed a very thick flattened valve, hinged on the left and a little above, completely closing the bladder outlet and making the patient wholly dependent on a catheter for more than two years. As the greater bulk of prostatic tissue is below the urethra these outgrowths commonly appear behind the urethral orifice, but are by no means confined to this position.

Beside these several variations which are the outcome of growths derived from the lateral lobes there are growths arising from glands which are not supposed to be anatomically connected with the prostate. These usually take the form of a middle-lobe obstruction.

There are glands which have a similar structure to prostatic tissue, and which have been found by some observers with considerable frequency *in* the mucous membrane at the trigone and outlet of the bladder. It is supposed that certain sessile and pedunculated growths take their origin from this tissue.

Certain other foci of glandular tissue, supposed to be aberrant bits of prostate gland, have been found *under* the mucous membrane in the region of the bladder outlet, and are considered to be the probable cause of some instances of third-lobe obstruction, and also as the cause of some cases of obstruction by a posterior lip or Mercier's bar. In theory, growths which project into the

floor of the bladder and have muscular fibres in front of them are derived from the lateral lobes; those that have muscular fibres behind them are supposed to be derived from the glands in the mucous membrane or from centers of aberrant prostatic tissue.

An important element in prostatic obstruction and one which, in its time of appearance may precede all inflammatory phenomena, is the occurrence of enlarged tortuous veins about the bladder outlet. These veins increase the frequency and pain of urination and are a common cause of hemorrhage; sometimes they undgero attacks of phlebitis and become thrombosed. They are supposed to play an important part in the causation of nocturnal frequency. Their engorgement is usually the determining factor in sudden retentions coming on after fatigue and exposure. Instances have been reported in which these veins have formed hemorrhoidal masses which have played an important part in obstructing the bladder outlet.

The back pressure due to urinary retention is an important factor in the changes secondary to prostatic obstruction. To it is largely due the thinning, trabeculation and sacculation of the bladder walls. Under this back pressure the ureteral openings become distended and incompetent, permitting a dilatation of the ureters and kidney pelves, while the pressure on the kidney substance leads to an interstitial process.

When by any of the above mentioned means the obstruction has become such that the bladder does not completely empty itself, conditions are most favorable for urinary infection. The urinary stasis destroys to a large degree the resistance of the bladder, and renders it almost certain that the entrance of organisms will be followed by cystitis. Cystitis, though not a necessary result of prostatic obstruction attended with residual urine, occurs in a large proportion of cases, and plays a large part in producing the classical picture. With its advent the seriousness of the condition is much increased. This infection of the bladder usually takes place by way of the urethra and is due most often to catheterization, although it is supposed that at times the infection takes place through the intestinal and bladder walls, or by way of the kidneys. The cystitis makes the bladder more irritable, the edema increases the obstruction to urination, while the infiltration diminishes the expulsive power of the bladder walls. If the ureteral orifices are incompetent the infection spreads to the kidneys, producing on its way a ureteritis and possibly a peri-ureteritis. In the kidneys a pyelitis develops, sometimes a pyelo-nephritis, and occasionally foci of suppuration are found in that organ. It is hard to over-estimate the importance of urinary infection.

The retained ammoniacal urine makes stone in the bladder a very common complication, especially in long standing cases. Where these stones are in a bas-fond or in pockets, the classical symptoms are often lacking and their diagnosis difficult. Their recognition is important from the standpoint of therapeutics.

Some recent work of Wallace[1] is of great interest on the much discussed point whether in hypertrophy of the prostate this organ develops a distinct capsule. He finds that adenomatous prostatic growths are often surrounded by a laminated layer of tissue which allows of their easy enucleation. He demonstrates with apparent conclusiveness that this is not a thickening of the true fibrous capsules of the prostate, but that it is formed from prostatic tissue surrounding the growth, which has been compressed as the growth has increased in size. This capsule varies in thickness and is densest where the pressure is greatest. In the walls of this pathological capsule Wallace has found glandular elements, which he believes are the remains of the compressed prostatic tissue. This capsule has the greatest surgical importance. Upon it depends the feasibility of enucleation, the probability of being able to spare the prostatic urethra and the possibility of a recurrence after enucleation.

A review of the gross pathological lesions found in prostatic obstruction demonstrates very clearly that no one operation is equally adapted to all cases, that our hope for better results lies in the more accurate diagnosis of the obstructing lesion in the individual case, and the selection of the operative procedure best calculated to meet its requirements.

## Choice of Operation for Prostatic Hypertrophy.

BY F. S. WATSON, M.D., BOSTON.

No one method has established an exclusive monopoly in the surgical field of prostatic operations. The last twenty years' experience has eliminated from the list, a number of operative procedures devised for the treatment of this malady and its consequences and left us the following from which to choose:

(1) The palliative operations of perineal and suprapubic drainage.

(2) The Bottini operation.

(3) The total removal of the hypertrophied masses by various perineal operations and their modifications.

(4) The same by the suprapubic and the combined operations.

(5) The indirect, or sexual operations of castration and vasectomy.

The primary factors determining the choice of one or another of several surgical procedures, all having the same object in view, are —

(1) Their relative dangers.

(2) Their relative limitations.

(3) The character of their respective results.

### Operative Dangers.

These are of two sorts. (1) Those to which the patient is exposed in a general way, and they

[1] Brit. Med. Journ, 1903, Vol. i, p. 764, and 1904, Vol. i, p. 259.

are shown by the mortality attending the performance of the various operations. (2) Those which are in a greater or less degree peculiar to one or another of the operations, and these we learn by the study of the causes of death in the fatal cases in connection with each particular method of operating.

In order to determine these factors, I have collected and analyzed 2,600 cases in which various kinds of operations have been done. This series does not include all the cases reported, by any means, but may be taken as a fair presentation of the experience in the operative treatment up to the present time.

In calculating the mortality, only such deaths as occurred within two months after operation have been considered as operative deaths. All deaths occurring within this period which were clearly due to other causes than the operation have been excluded. All those in which there might be a doubt as to whether the operation was the cause of death or not, were counted as operative deaths.

Briefly summarized, the mortality percentages of the various methods which are represented in the series, are as follows:

| Method of Treatment by Catheterization | Cases. | Deaths. | Mortality. |
|---|---|---|---|
| Rovsing | 126 | 10 | |
| Casper | 51 | 3 | |
| Watson | 30 | 3 | |
| | 207 | 16 | 7.7% |
| Palliative Operations. Drainage | 146 | 49 | 33.0% |
| Partial Prostatectomies | 133 | 13 | 10.2% |
| Total Removals — *Perineal* | 530 | 33 | 6.2% |
| Total Removals — *Suprapubic* | 243 | 28 | 11.3% |
| Bottini | 1,164 | 69 | 6.3% |
| Castration | 210 | 34 | 16.2% |
| Vasectomy | 252 | 21 | 8.3% |
| | 2,678 | 247 | |

Two hundred and seven cases treated by the catheter in the ordinary way have been included for the sake, so far as possible, of allowing a comparison of the operative methods with this one.

It will be seen that the mortalities of the Bottini and the perineal operations are the lowest of all the methods, and that they are practically the same as compared with each other. So far as this factor is concerned, therefore, they are on an equal footing, and are both preferable to the other methods.

The high mortality of the palliative operations — 33% — does not represent deaths due to the operations *per se*, but is owing to the fact that the majority of the patients were in a dangerous condition at the time, and catheter treatment being for one cause or another impossible, and something to relieve suffering being imperatively demanded, the only course open was that of the operations for drainage. Another purpose of the palliative operations has been that of improving the patient's condition in order to enable him to support a more radical procedure.

And finally these operations have been employed as final measures, the surgeon being content if he has succeeded in securing a reasonable degree of comfort for his patient by means of drainage. This Sir Henry Thompson used to advocate many years ago and reported some cases in which the patients had lived on in comfort for a long time with suprapubic drainage.

The high mortality of castration together with the uncertainty of its results has displaced it from favor recently, after it had been welcomed with strong hopes that it might prove the royal road to successful solution of this difficult problem; the same has been true of vasectomy in a great degree, and the profession has, after according these two methods a very fair trial, once more become faithful to its former methods of treatment by means of the three operative procedures, the Bottini, the perineal and the suprapubic radical operations. These three only will therefore be dealt with in what follows.

### DANGERS MORE OR LESS SPECIAL TO EACH OPERATION, AS SHOWN BY ANALYSIS OF CAUSES OF DEATH.

The four factors, uremia, sepsis, shock and pulmonary complications, account for all but a very small number of deaths, and are therefore the only ones included in this analysis.

| | | |
|---|---|---|
| Bottini | 27.0% | Uremia |
| Perineal Operations | 35.0% | Uremia |
| Suprapubic Operations | 34.0% | Uremia |
| Bottini | 52.0% | Sepsis |
| Perineal Operations | 17.8% | Sepsis |
| Suprapubic Operations | 8.6% | Sepsis |
| Bottini | 5.0% | Shock |
| Perineal Operations | 21.4% | Shock |
| Suprapubic Operations | 30.0% | Shock |
| Bottini | 8.0% | Post-Operative Pulmonary Complications |
| Perineal Operations | 17.8% | Post-Operative Pulmonary Complications |
| Suprapubic Operations | 22.0% | Post-Operative Pulmonary Complications |

Uremia is, as we know, the most serious danger in connection with prostatic operations, but there is not enough difference in the percentages of deaths due to it attaching to any one of the methods as compared with the others to give it value in determining the choice between them.

The largest share of danger from sepsis belongs to the Bottini operation, which on the other hand has a minimal proportion from shock and post-operative pulmonary complications, while the contrary is true of the other two methods.

### LIMITATIONS OF THE INDIVIDUAL OPERATIONS IMPOSED BY LOCAL CONDITIONS.

The following are the limitations to the employment of the *Bottini operation:*

(1) Inability to obtain a good cystoscopic view of the bladder beforehand.

(2) A contracted thick-walled bladder.

(3) A large middle lobe extending far up into the bladder.

(4) Inability to enter the bladder with the instrument.

There is but one obstacle to the performance of the *perineal operations.* It is the same as that numbered three under the Bottini operation above.

The *suprapubic operation* is made difficult by the presence of a contracted thick-walled bladder, or one that is adherent to the posterior surface of the symphisis pubis.

The following objectionable features attach to the Bottini operation:

(1) Insufficient drainage of the bladder.
(2) Liability to secondary hemorrhage.
(3) Liability to epididymitis and orchitis.
(4) The necessity of performing the operation more than once in a considerable proportion of the cases. (13% of those in which the reports were accurately given had to have the operation repeated.)

In the performance of the perineal operations there is greater liability of injuring the membranous urethra and the rectum, and resulting urinary incontinence and recto-urethral fistula, than in the other two methods.

### IMPROVEMENTS IN TECHNIQUE WITH REFERENCE TO THE CHOICE OF OPERATION.

The recent "boom" — if one may use the vulgar term with reference to this subject — which has recently carried the operative treatment of this malady forward so rapidly, especially in France, has been due to two things, chiefly, (1) the more careful selection of the cases, and (2) the improvement in technique. We have said all that is needed with regard to the first; it only remains therefore to speak of the second. The improvements in the technique have been made principally in connection with the perineal operations, and in these the two features which have been made better are (1) The removal of the hypertrophied masses with less injury to the parts included in the operative field, and (2) making the gland more accessible.

In the performance of the perineal operations the latter is accomplished by downward pressure above the symphisis pubis or by the use of one or another of the various forms of tractors, or by the drawing down of the gland by the tips of two fingers in the rectum as was done by Celsus when cutting for stone. Personally, except in very fat subjects, I have always found the suprapubic pressure, either alone or in combination with the use of the finger tips in the rectum, sufficient and a satisfactory means of bringing the gland within reach. There is one objection to the use of tractors having metal blades, which is this: It is at the time when one is separating the most distant parts of the intravesical projections from their attachments that the greatest traction is required, but it is also at that very moment that it is dangerous to apply it, for it is then that the resistance which has up to that time been opposed to the tractor blade by the hypertrophied lobe when still fixed to its surrounding structures is taken away, and if care is not taken the instrument's blade is very liable to tear through the bladder and urethral coverings of the lobes and cause extensive destruction of them.

By whichever of these various means the individual surgeon learns by experience he can best accomplish the purpose, that one is the best for him personally to use.

With regard to the other features of the perineal operations, there are the following things to be considered: (1) The incisions of approach to the gland. (2) The incisions of its capsule. (3) The manner of removing the hypertrophied lobes by which the least injury is inflicted upon the ejaculatory ducts and the urethra, and by which the danger of hemorrhage may be avoided.

These things are accomplished by employing the incision which gives the most open field of operation. This incision is the crescentic cut which passes transversely across the perineum in front of the anus from one ischial tuberosity to the other, and is that introduced by Celsus in his lithotomy operation. It has been modified by carrying an additional cut forward from its center in the median line of the perineum and known as the inverted Y incision. The original cut is sometimes pitched more sharply into the form of a V inverted, which gives enough room usually, but less than the inverted Y incision. This incision has been reproduced several times under different names, but so far as I am aware, it was first applied to the removal of the prostate by Leisrink in 1882.

The ejaculatory ducts may be avoided by, (1) making an incision of the capsule in the median line, opening the urethra well back, in order to avoid so far as may be the membranous urethra, which is one of the most important parts to protect, and then effecting the removal of the gland in two or three portions according as there are bilateral, or bilateral and median hypertrophies present, the lateral lobes being reached, exposed and enucleated from the lateral aspects of the prostatic urethra. Or, (2) by making two parallel incisions in the capsule, one on either side of the median line (not opening the urethra) and just outside each of the ducts. The enucleation is then carried on through first one and then the other of these cuts.

Hemorrhage is avoided by keeping within the outer capsule or sheath of the gland.

### RESULTS.

Freudenberg considers the patient *cured* so far as the local conditions are concerned, when he has not more than 50 cc. of residual urine and can but for that amount empty the bladder freely, painlessly and spontaneously. He classes, however, under the single heading of "good results," the cases cured together with those in which marked benefit has followed the operation.

The latter custom is certainly lacking in accuracy, for it permits a wide divergence of opinion as to what degree of improvement shall be considered as sufficient to allow cases to be included in the class of "good results." However, for the sake of uniformity and comparison, I have, in analyzing this present series, adopted the same standards and applied them impartially to all the operations with respect to the use of the terms "cure" and "good results." Analyzed

with these restrictions imposed, the following things are shown:

| | | | | |
|---|---|---|---|---|
| Bottini's Operation | Cured 30.4% | Good results | 84.4% |
| Perineal Operations | " 60.0% | " " | 88.0% |
| Suprapubic Operations | " 66.0% | " " | 90.0% |

The proportion of accidents which are shown to have been associated with one or another of the operations is as follows:

In a series of 267 Bottini operations there were 31 or 11% of failures recorded, and incontinence of urine resulted in 7 or 2.6% of them.

In 59 cases reported by Willy Meyer in which the Bottini operation had been performed by him, there were 6 in which epididymitis and 2 in which orchitis occurred. In one of the former suppuration ensued, also in one of the latter, while in another of them there was gangrene of the testicle. Perineal abscess and urinary infiltration occurred in 4 cases owing to the membranous urethra having been injured. In one other case the rectum was injured and recto-urethral fistula resulted. Altogether, then, there were more or less serious complications in 22% of the series.

In 245 cases of perineal operations, there were 2 in which the peritoneum was opened — 7 in which urethro-rectal fistula resulted — and 9 in which incontinence followed the performance of the operation. Altogether 7.2% of accidents.

A small proportion of incontinence and of persistent fistulæ only ensued upon the performance of the suprapubic operation. Altogether about 6% of accidents occurred in connection with it.

### CONCLUSIONS.

It will be readily conceded that the following surgical axiom is a sound one.

Of a number of operations all having the same object in view, that one is to be preferred, other things being equal, which accomplishes the object as completely as any other, with the least destruction of tissues involved, and with the greatest safety to the patient.

There can be no doubt but that the above ends are best attained by the perineal operations when done in accordance with their best technique; this fact has been amply demonstrated with regard to the relative dangers, the relative limitations and the relative effectiveness of the results obtained by the three methods we have had under consideration. It is consequently the method of choice. This is not to say, however, that it is the only operation which should be used. On the contrary, both the suprapubic and the Bottini have a well defined place. The former is the operation to be preferred in cases in which a very large middle lobe makes the perineal operations especially difficult. The Bottini operation is to be preferred to either of the others if the patient's condition is such as to expose him to the danger of shock or post-operative pulmonary complications; and finally if one or another of the limitations to the performance of the Bottini operation is present, or there is too grave a general condition of the patient to warrant the employment of the Bottini, and if something must be done to relieve him, we will perform a palliative operation for drainage. The nature of the local conditions we shall have determined beforehand by means of the cystoscope.

## Results of Operations upon the Prostate, Massachusetts General Hospital,

*From Jan. 1, 1892, to July 1, 1893.*

by hugh cabot, m.d., boston.

This period has been selected because prior to 1892 operations upon the prostate were few and far between and the cases operated upon since July, 1903, are too recent to be of any value as showing results. It is hardly necessary to indicate that in considering these statistics they should not be treated as comparable with the results of any one operator. They represent the results of many operators, both experienced and inexperienced, and they also represent in many cases the results of operation done under conditions so desperate as to give little hope of a successful issue under any method of treatment. Up to within a very few years the cases selected for operative treatment were always the unfavorable ones and must not, therefore, be compared with the results of operations upon cases of election. No selection has been made; all cases have been tabulated; and the results may be taken as showing the most unfavorable aspect of the question.

Table 1. This table deals with the mortality of three operations. In the first group were placed the cutting operations upon the prostate; in the second, operations done with the Bottini electrocautery, and in the third group the results of castration. This latter group was added to show that an apparently trivial operation upon men of this age is attended by considerable mortality. In calculating the mortality the number of operations and not the number of patients has been taken. Thus in some cases three operations, separated by an interval of months or years, had been done upon one patient, thus considerably affecting the mortality if only the number of cases had been considered.

TABLE I.

| | Number. | Av'age Age. | No. Deaths | Mor'ity |
|---|---|---|---|---|
| Cutting Operations | 53 | 63+ yrs. | 9 | 17.0% |
| Bottini Operations | 8 | 61+ yrs. | 0 | 0.0% |
| Castration | 34 | 66.7 yrs. | 5 | 14.7% |

This table gives a fair idea of the mortality of cutting operations in a general hospital during the last ten years. That very much better results may be obtained at the present time by individual operators may be taken for granted. The number of Bottini operations is too small to give any proper idea of the mortality, and the operation will certainly carry with it a quite noteworthy death rate.

Table 2. This table deals with the results as far as they can be collected. No case was entered as a result that was not seen or heard

from at least one year after operation. Cases were regarded as cured when they were symptomatically well and either regarded themselves or were regarded by their physicians as cured. No attempt was made to apply the absolute test that the patient should completely empty his bladder at normal intervals. Cases are marked "relieved" when their condition is much better than that prior to operation, but when some frequency or a small amount of residual urine keeps them from being regarded as cured.

TABLE II.

RESULTS OF CUTTING OPERATIONS.

| | Cases Heard From. | Well. | Relieved. | Same or Worse. |
|---|---|---|---|---|
| Number | 36.0 | 11 | 6 | 8 |
| Per Cent. | 69.3 | 44 | 24 | 32 |

From this table it appears that about two thirds of the cases operated upon by all methods were improved by the operation. The remaining third were in most cases not essentially worse than before operation, though in two cases their present condition was distinctly more uncomfortable than before operation.

Table 3. In this table I have attempted to compare the results of partial operations with those of complete operations. By partial operations are meant those in which only a portion of the prostate was removed. This was generally a third lobe, removed by the suprapubic route. In some cases a considerable amount of tissue was taken, in others only a small pedunculated growth was removed. The complete operations were largely done either by the combined method, suprapubic and perineal (Alexander), or by one of the modifications of the perineal method.

TABLE III.

RESULTS OF CUTTING OPERATIONS.

| | Well or Relieved. | Same or Worse. |
|---|---|---|
| Partial Operations | 57% | 43% |
| Complete Operations | 83% | 17% |

This table shows that the complete operation has given much better permanent results and there are no cases recorded as the same or worse which were not at least as well as before operation. All the cases that were made worse by operation were partial operations.

Table 4. In this table I have grouped all the patients who entered the hospital for treatment of enlarged prostate during the ten years from 1892 to 1902. It will be of interest as showing the number of cases recorded as surgical, that is, requiring surgical treatment. It is also interesting as showing the point of view in regard to the cases suitable for operation and as indicating the waves of surgical opinion which have passed over this community. It will be noted that the statistics reflect very accurately the opinion of the general practitioner in the surrounding country as well as that of the hospital surgeon. Thus during the years 1894 and 1895 the operation of castration was being advised and patients were evidently sent to the hospital for that purpose. The following two years show the reaction which followed the failure of this operation to do all that was claimed for it. The years 1898 and 1899 show the impetus given to prostatic operation by the free discussion of Alexander's combined method which followed his paper read here on that subject. The year 1900 shows a temporary reaction, while the following two years show the influence of the belief in perineal prostatectomy and the increased use of the Bottini operation.

TABLE IV.

| Year. | '92 | '93 | '94 | '95 | '96 | '97 | '98 | '99 | 1900 | '01 | '02 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total No. Cases | 4 | 6 | 13 | 28 | 3 | 17 | 37 | 43 | 24 | 36 | 27 |
| No. Operated | 1 | 1 | 4 | 10 | 1 | 4 | 23 | 17 | 7 | 19 | 13 |

If the year 1903 had also been added to the list the tendency to operate upon more cases out of the total number submitted would be still more obvious as the records of that year show very clearly the influence of perineal prostatectomy.

In closing I would say that I have collected these cases at the request of the surgical staff, and think that some credit is due them for their willingness to allow their cases to be thus roughly grouped together since they give a very unfavorable idea of the condition of operative surgery if taken at their face value. It is to be hoped that the limitations of such a series of statistics will be borne in mind and that they will be allowed only such weight as they deserve and that no attempt will be made to draw definite conclusions from such a small series of cases.

## The Use of the Cystoscope in Determining What Operation is Advisable in Prostatic Hypertrophy.

BY F. C. BALCH, M.D., BOSTON.

Few people would care to decide what operation was advisable in prostatic hypertrophy from a cystoscopic examination alone, but in connection with the other methods of examination commonly used it often gives us very valuable information as to how we should proceed with the case. Usually the examination is easily made without the use of a general anesthetic, as the use of cocaine takes away nearly all the pain. The urethra must be large enough to admit the instrument and the bladder must be capable of holding about five ounces of fluid without trying to expel it. The absence of these two conditions may make general anesthesia necessary as may also extreme sensitiveness of the prostate, as for instance where there is much ulceration. The view of the prostate may save us in some cases from serious mistakes. Thus in a recent case where the Bottini operation had been advised the cystoscope showed the growth in the prostate to be cancerous and a suprapubic operation was advised instead. Until comparatively recently the use of the cystoscope has been a difficult proceeding requiring very careful manipulation and often failing to demonstrate conditions which operation later proved had existed. Improvement in the older instruments and the

invention of new ones has greatly simplified the process and made it certain that in almost all cases we can see conditions as they actually exist. For the examination of the prostate the Kollman is a very satisfactory instrument. It gives a large, clear field and has the great advantage that even in a very dirty bladder or one in which there is considerable hemorrhage the fluid can be removed and returned again so quickly that we are sure of a transparent medium. All this can be accomplished without removing the tube from the bladder. As the insertion of a catheter or an instrument is often a cause of hemorrhage in these cases it will be readily appreciated that it is an advantage to be able to do all our washing without further irritation to the urethra than is involved in the primary insertion. It has the disadvantage that in certain forms of prostate it is not possible to see the whole of the mass, but it is perfectly practical to see enough of the tumor to decide what operation is advisable. It is not a catheterizing instrument, but catheterization is very rarely necessary and is usually not advisable in old men with hypertrophied prostate. The question of whether blood or pus is coming from either kidney can usually be determined by the examination of the fluid as it comes from the ureter. In many cases of enlarged prostate the distortion of the bladder is such that a ureteral catheter cannot be inserted.

After our examination there are many factors which must influence us in our choice of operations, such as the patient's condition, age, condition of kidneys, etc., but as far as the cystoscopy goes one can say that in that form of enlargement when there is a thickened ring about the internal meatus or a thick posterior lip the case is a very favorable one for the Bottini operation. Where the obstruction is from a ball valve it is very questionable whether the Bottini operation would succeed whereas the suprapubic route affords easy access to the growth. In the case of the pedunculated tumor it is very doubtful whether the cautery blade would hit it at all as there is no form of cauterizing instrument wherewith we can see just what we are burning. Again there is the chance that the pedicle might be cut through and the tumor left in the bladder. Where the obstruction is on one side only we can easily see where the cut should be made. If we find on examination that the growth is not so much intravesical as back toward the rectum, one of the operations for enucleation would be the operation of choice, other things being equal.

In a word the value of the cystoscope as an aid in operation is more apparent when the galvano-cautery is to be used than when the more radical operation of enucleation of the prostate is intended. It is, of course, a great help in all cases to know just what the condition of the bladder is and whether we have to deal only with an enlarged prostatic gland or some complication in combination with it, such as a stone or some tumor of the bladder wall.

## A Brief Resume of the Present Status of the Treatment of the Enlarged Prostate.

BY ARTHUR TRACY CABOT, A.M., M.D.,
*Surgeon to the Massachusetts General Hospital.*

It would be hard to name any other surgical problem which has led to such differences of opinion or has been approached by such diverse attempts at solution as the management of the enlarged prostate. A simple enumeration of these will give a good bird's eye view of the subject.

CATHETERIZATION — OCCASIONAL AND HABITUAL.

False Routes { *a.* Suprapubic (Hunter McGuire)
{ *b.* Perineal

Prostatomy — Incision of Obstruction { *a.* Perineal
{ *b.* Per urethram (Bottini)

Prostatectomy { Partial { Suprapubic
{ Perineal
{ Complete { Suprapubic
{ Perineal

Orchidectomy — Vasectomy
Ligature of Iliac Artery

While experience has led to the rejection of a number of these methods, those now most in vogue are of such comparatively recent adoption that it would be presuming to suppose that we have yet reached the final solution of the problem.

The very great recent advances in methods of exact diagnosis and in operative technique have, however, put the subject on a much sounder footing than ever before. We begin to feel firm ground under us, and we can stand erect and look about us to see where we have reached and whither next.

The two things that the prostatic patient wishes to know when comparing a future catheter life with the chances of a prostatectomy are, the risk of the operation, and the probability of an effective and lasting removal of obstruction. The cases are still too few, and the time elapsed in many of them too short, to give us all the data we could wish for the answer of these questions.

The statistics collected for this meeting, as well as the results presented in the accumulating literature of the subject, seem to show that the complete removal of the prostate may be expected, in the majority of cases, to restore the power of voluntary urination. Perineal prostatectomy may now be done with so little disturbance of the prostatic urethra and of the voluntary sphincter of the bladder that we may expect in all but the most exceptional cases to avoid the distressing incontinence which followed many of the earlier enucleations of the prostate, both intravesical and perineal. By the use of Young's tractor, the prostate is brought down so close to the surface of the perineum that the incision of the capsule and the enucleation of the gland are carried on under the operator's eye. By this improvement in technique, the danger of the operation has been greatly diminished, and many patients who would formerly have shrunk from subjecting themselves to the risks and uncertainties of a suprapubic prostatectomy and

would have clung to the troublesome and annoying catheter, now can hear a frank statement of the mortality rates of perineal prostatectomy and cheerfully prefer that risk to the tyranny of the catheter with its more remote, but still very real, dangers.

I have been asked to say a few words this evening upon the treatment of prostatics with the catheter. There is not time nor is there need to rehearse here the details of catheterization, often so difficult in these patients. It is equally unnecessary to dilate upon the care with which one of these patients should be introduced to the catheter life.

I shall, perhaps, best employ the few minutes at my command by a consideration of the conditions under which at the present time, a resort to the catheter may seem preferable to an operation for the removal of obstruction. It happens not infrequently, that the disease runs an insidious course and is first discovered when the kidneys, and perhaps the heart and vessels too, are already seriously affected. Under these conditions, the dangers of an operation are enhanced, and if the patient is made reasonably comfortable with the catheter, it may be better to temporize in this way for the short time remaining to him of life. Even in these cases, however, it is often possible to do a Bottini operation under cocaine anesthesia and thus restore a reasonable power of urination with a minimum of operative risk. When these advanced prostatics have already reached a degree of renal insufficiency so great as to have led to a decided state of uremia, evidenced by nausea, vomiting, somnolence or great restlessness, they are not in a condition to bear operative interference. Such patients may be greatly benefited by the judicious use of the catheter.

In a recent paper, I have shown that by constant drainage through an in-lying catheter, the function of kidneys already seriously disabled may be restored, and patients in a pronounced uremic condition may be brought back to a state of health in which they can safely undergo operations which would have been almost certainly fatal if done during the existence of uremia. In very fat men with large prostates, the depth of the perineum and of the suprapubic approach add greatly to the difficulties of the operation; and as such patients do not bear operations well, it may be the part of good judgment to introduce them to the catheter life, rather than to subject them to the unusual operative risk that their condition entails. It is hard to decide upon the best course for such cases, and the results are so often unsatisfactory that, whichever method of treatment we choose, we are likely to regret that we did not select some other. Lastly, there will be a certain number of patients with hemorrhagic diathesis, with diabetes, or with some other complicating disease that prohibits any operation that can possibly be avoided, and in which we shall fall back upon the catheter as a "*pis aller*."

The catheter will also continue to play an important rôle in the immediate relief of cases of sudden complete obstruction. To the majority of other prostatic patients we may properly, I think, recommend a consideration of operative treatment. We can tell them that in proper hands they may undergo a prostatectomy with a mortality risk of between five and ten per cent., and that the chances are about nine to one that this operation will bring relief of their condition. We must also not forget to state to them that the risks of a catheter life, while more remote, are very real, for the chances of pyelitis, of epididymitis and of prostatic abscess are not inconsiderable. There will doubtless be many patients who will still shrink from operation and prefer the uncertain perils of the catheter life. It is my feeling, however, that as we become more and more able to give confident assurance of good functional results after operation, the community will gradually be educated to regard a prostatectomy with a degree of favor approaching that which they now show for appendectomy. We shall then get our cases earlier, before the kidneys have begun to suffer, and old age will be robbed of one of its serious terrors.

If the above considerations have led us to select an operation for one of our patients, the next step is to determine what that operation shall be. As I have indicated in my earlier remarks, in some patients too feeble, and with organs too unsound to bear a dangerous operation, a Bottini done with cocaine anesthesia, may be possible. The functional results of this operation are much less certain than after the more extensive prostatectomies, and the operation will, therefore, be kept for occasional use, rather than as an operation of choice in any but very rare cases. When a prostatectomy is decided upon, we have the choice between a partial prostatectomy done through the bladder and a complete prostatectomy done either suprapubically or through the perineum. When a complete prostatectomy is planned, my own personal preference is very strongly for the perineal route.

It has been my experience to find the perineal operation more exact in what it accomplishes, and, therefore, less dangerous and more sure of procuring a good functional result. When the prostatic urethra is torn in the operation, it is usually in its outer part and along its floor. The roof of the urethra is preserved and keeps the membranous portion of the canal in proper relation with the deeper portion of the prostatic urethra. I have found that a few stitches of cat-gut attaching the membranous urethra to the deeper parts are often useful in greatly diminishing the rent which has to be closed by granulation. The fact that the whole prostatic urethra can be removed, and that a good functional result is often thus obtained does not absolve us from the attempt to preserve the canal as far as possible. As a matter of fact, a certain proportion of the cases in which the gland is somewhat blindly shelled out have lacerations of the urethra which leave flaps that act as valves, hindering or preventing micturition. The gradu-

ally accumulating evidence as to the completeness and permanency of the functional result is so favorable to the complete prostatectomy, that this is properly selected as the operation of choice in all suitable cases. It is well, however, not to forget that a thorough removal of the third lobe will in many cases accomplish as good a restoration of function as the complete removal of the gland. I have seen this demonstrated in cases that I have watched for years. The operation leaves a cleanly cut surface at the internal urethral orifice, which is not favorable to the infiltration of urine; forms no pocket in which urine collects and stagnates, and, in short, leaves a wound which heals rapidly. This operation, therefore, is by no means one which should be neglected, and will be often found wholly efficacious. The cases in which it will have its most rational use are those in which the bladder is opened for other cause, such as the removal of a sacculated stone, and this condition of the prostate found. The removal of the third lobe under such circumstances adds little or nothing to the danger of the operation, and offers a very fair chance of restoring the power of urination.

## Prostatectomy. — Spinal Anesthesia.[1]

by F. B. Lund, M.D., Boston.

John E. Jones, sixty-two years old; married; carpenter by occupation, was seen at the Out-Patient Department of the Boston City Hospital, by Dr. F. C. Cotton, the latter part of December, 1903. His previous history was unimportant, until five years ago, when he began to have difficulty in passing his water, and scalding, and frequency of micturition. He had sounds passed five or six times, with no relief of symptoms, and after that gave up treatment. During the intervening years his scalding had grown worse and his stream had diminished in size, so that it now dribbled rather than ran. The frequency had increased greatly, so that he had to get up fifteen or twenty times a night, passing only a teaspoonful at a time. He had had one or two attacks of retention and had been catheterized, when he presented himself at the Out-Patient.

Dr. Cotton found the bladder much distended, containing about two quarts of septic urine. He was catheterized, and his bladder was washed, but the cystitis did not improve.

On Jan. 2, 1904, he was admitted to the service of Dr. H. L. Burrell, who kindly placed him in my care. Examination showed that he had arterio-sclerosis of the radials, and a systolic heart murmur, heard best in the sixth space below the apex. He had a tracheitis and his voice was quite hoarse. He had a slight cyanosis of the lips, and conjunctivæ. He was seen in consultation by Dr. John L. Ames, who thought the heart murmur was due to an old organic lesion, and on examining the lungs found nothing abnormal. He suggested that, on account of the possibility of a latent process in the lungs, it might be wiser to wait a while before subjecting him to anesthesia. It was brought out that on account of his heart murmur he had once been refused by a life insurance company, but was subsequently accepted by another company.

[1] Patient shown at the meeting of the Surgical Section of the Suffolk District Medical Society March 2, 1904.

Examination of the urine showed specific gravity, 1020 acid, a trace of albumen, considerable pus, and squamous epithelium. Rectal examination showed a moderate uniform enlargement of both right and left lobes of the prostate.

He was put on daily bladder irrigations, and the condition of the urine improved somewhat. The catheter, however, was introduced with difficulty, and the bladder did not drain satisfactorily. Therefore, on the 8th of January a suprapubic cystotomy under local anesthesia was done. The incision was made down on the bladder without much difficulty, but on catching up the bladder walls, and attempting to examine the bladder with the finger, so much pain was caused that there was involuntary muscular contraction. An examination of the interior of the bladder could not be made. As, however, further operative procedures were contemplated, no prolonged attempt was made to make such an examination.

A drainage tube was placed in the suprapubic wound, and under treatment by bladder irrigations his general condition improved considerably, but the tracheal irritation continued. He did not seem a good subject for general anesthesia. Therefore, on Jan. 20, a partial prostatectomy was done under spinal anesthesia, as follows:

At 11.15 A.M., a hollow needle, five inches long, of No. 19 steel tubing, was introduced between the third and fourth lumbar vertebræ into the spinal canal, the patient lying on his side on the table, with the spine flexed. Clear cerebral spinal fluid began to flow at once, and a sterilized glass syringe, containing three-tenths of a grain of powdered cocaine, was attached to the needle. On withdrawing the piston, about two drams of spinal fluid entered the syringe, dissolving the cocaine, and was at once injected into the spinal canal. After covering the puncture with collodion dressing, the patient was placed in a lithotomy position, and the perineum was prepared as usual in preparation for a perineal section, perineal prostatectomy, according to Young's method, being the operation which was proposed. At the end of five minutes after the injection it was noticed that the pouring of ether on the perineum and rectum caused no pain, although the patient felt the shaving and knew what was being done to him, the process was not painful.

At the end of seven minutes a perineal section was made, and the dissection carried on according to Young's method, until the uretha had been opened and Young's tractor introduced. It was then found that the tractor did not bring the prostate well down into the field, which may possibly have been due to certain anatomical peculiarities of the case, or because the muscles were not relaxed by anesthesia. Determining to aid the use of the tractor by pressure from above, a sound was introduced, and on the point of this sound the suprapubic wound, which had almost closed, was reopened. Then, with the finger in the bladder, examination showed that there was a very large pedunculated middle lobe, which fell forward, so as to occlude the vesical opening of the urethra, and it became evident that this lobe was the chief if not the entire cause of the obstruction. As this could be very well reached from above, it was determined to remove this lobe through the suprapubic opening, which was done by incising the mucous membrane over it, and enucleating it with the forefinger passed through the suprapubic incision, the operator being aided by a pressure of two fingers of the other hand, which was gloved, introduced into the rectum, and lifting up the prostate. The enucleation was a difficult one, as the lobe seemed very firmly attached. After considerable effort it was accomplished, however.

During this procedure the patient suffered some pain, but it was not nearly as marked as what he had gone through during the suprapubic cystotomy under cocaine. The whole operation lasted forty minutes. The patient did not struggle, or make more than slight complaint. He aided the operator by changing his position when requested and during the whole proceeding a constant conversation was kept up between the operator and the patient.

As soon as the lobe was removed the patient asked to see the specimen. He was in excellent condition. Had hardly any rise of pulse, and absolutely no shock. After washing out the bladder, a tube was tied in through the perineal wound, and a strip of gauze passed in the suprapubic wound to the base of the bladder. It was not thought advisable to remove the lateral lobes, as the passage of the finger into the urethra through the suprapubic opening showed that the prostatic urethra was apparently not compressed by the lateral lobes. The patient's pulse was somewhat rapid the night after the operation, and he was somewhat flushed, but his general condition was excellent, and at no time did he show symptoms of shock. The gauze was removed from the bladder the afternoon of the operation, and the bladder washed out three, four or five times daily.

On the second day after the operation the patient sat up in a chair for an hour, and after that he was up out of bed for more or less of the time every day. The tube was removed from the perineum on the fourth day. The urine came through the suprapubic opening until the 7th of February, when he began to pass a little through the penis. He has to pass his water only two or three times during the night, and passes twelve ounces to a pint at a time. He says he is feeling better than he has for twenty years, and is able to pass a good forcible stream. On Feb. 29, he returned to the Out-Patient, and is very comfortable and satisfied so far as the results of the operation are concerned. He now has about an ounce of residual urine.

The method of spinal anesthesia adopted in this case is that recommended by Morton, of San Francisco, and has the advantage of not increasing the amount of fluid in the spinal canal. The cerebral spinal fluid is sucked into the syringe, dissolves the powdered cocaine, and is immediately replaced in the canal. Morton, in a paper read before the American Medical Association, states that he has used the method 673 times without a failure of analgesia, and 60 of these operations were above the diaphragm. He states that, during the past year it has been tried by most of the surgeons in the country for operations below the diaphragm, and by many of them given up on account of objections of various kinds. It has been used in a few thousand cases, but not enough to establish its safety as compared with general anesthesia. Its analgesic properties cannot be doubted for operations on the lower extremities.

Of the 673 cases which Dr. Morton stated he has treated, there was only one fatality which could in any way be attributed to the use of the anesthesia, and that, he thinks, can hardly be attributed to it, from the condition of the patient and the post mortem findings.

The case was that of a strangulated umbilical hernia. The woman weighed three hundred pounds, had a very weak heart, was semi-comatose at the time of the operation, having been unable to take a reclining position for several days. The patient died during the operation, after the removal of fourteen pounds of pendulous omentum, and at the time the intestine was reduced. It would seem that this death would have occurred in any other method of anesthesia.

Among the operations for which Morton has used this method of anesthesia are amputations of the breast, empyema, enucleation of the eye, mastoid operations, abscess of the antrum, etc.

It seems to me that with such a record as this the method will prove of value in cases where a general anesthetic is contra-indicated on account of diseases of the lungs or kidneys. It ought to be of value in operations on the larynx or about the mouth, where there is danger of blood entering the air passages. Morton states that the great advantage to be gained in operations about the buccal cavity can hardly be appreciated until tried.

For some years the writer has been in the habit of operating upon strangulated herniæ, in which constant vomiting is present, under local anesthesia by infiltration with cocaine solutions. This method, while far preferable to a general anesthetic, has been rather tedious to the operator, and in certain cases, painful to the patient.

The experience with this case of prostatectomy was so successful as to lead to the belief that these injections will prove a much more satisfactory method than local infiltration anesthesia for this class of operations, and it is the writer's intention to give it a trial in the future. It was certainly surprising in this case to be able to carry out the more or less forcible manipulations attendant upon enucleation of the prostate through a suprapubic incision upon a conscious patient, who is able, to a certain extent, to aid the operator, to change his position when required, and whose first inquiry when the prostate was removed was to be allowed to see what had been taken from him. The entire absence of vomiting and the consciousness of the patient made the immediate after-care of the patient extremely easy. There was even no nausea. The patient's condition for the first two days was better than the writer has noted in a case of prostatectomy.

In regard to the bearing of this case upon the question of prostatectomy aside from the anesthesia, it certainly shows a favorable result, temporarily at least, by the removal of the obstructing middle lobe, and that for relief of the symptoms it is not always necessary to remove the lateral lobes. The writer further believes that it is better in the majority of cases to remove the entire prostate. Whatever method is employed, pains should be taken to damage the urethra and vesical mucous membrane as little as possible. If this point is attended to, free drainage provided, and frequent and copious irrigation practiced in the after-treatment, the writer believes that prostatectomy will give satisfactory results and a low mortality.

# Reports of Societies.

## SUFFOLK DISTRICT SOCIETY.

### Section for Surgery.

### DISCUSSION.

A meeting of this section was held on March 2, Dr. F. B. Harrington in the chair; on the subject of

### THE TREATMENT OF PROSTATIC HYPERTROPHY.

Dr. B. Tenney: Two years and a half ago, a man of forty-six came to me with a story of inability to pass urine for six weeks, and some slowness of urination preceding this. He was able to pass a good-sized soft rubber catheter without difficulty, but was beginning to feel some irritation as a result of its use. Rectal examination showed a prostate very little above normal size and of uniform shape. With a cystoscope a small median projection could be seen which acted like a ball valve. Two or three years before this, I had been practicing ureteral catheterization on the male subjects in the dissecting room of the Harvard Medical School, and had been using an open tube of my own devising. Through this tube I found on one subject a projection almost exactly like the one which the patient presented.

It occurred to me that I could destroy this projection, using a long cautery point through an open tube, and I had one made up for me by Codman & Shurtleff which I have here. It is a tube 28 French and seven inches long, with a curve and conical end to facilitate introduction. The convex side of the curve has been cut away so as to leave an elliptical window which is apparently circular when seen from the expanded end, and an obturator has been fitted to close this opening.

The patient came to my office, had his urethra and bladder cocainized and took the knee-chest position on my examining table. The introduction of the tube was easy and the small tumor came into plain view with the help of a head mirror. With a rather heavy cautery point bent to a right angle with the shaft I made three furrows about one-fourth inch deep in the lobe. There was no bleeding, less complaint of pain than one often hears when dilating a stricture, and the patient rode some four miles to his home in a street car. Three hours after the cauterization, he passed his urine without the assistance of a catheter. Six months ago I examined him and found no symptoms of any trouble, no night urination, and less than a drachm of residual urine.

This procedure has, of course, a very limited application, but it worked so happily in this case that I thought the Section might be interested to see the instruments with which it was accomplished.

Dr. Paul Thorndike: I came here this evening hoping to hear two points in the treatment of prostatic hypertrophy discussed. First, the role of the catheter in such cases and, second, the range of usefulness of the Bottini operation.

(1) The rôle of the catheter. Dr. Cabot has summed up this question in a few words, and though his summary is not one which I should have made, it is certainly more nearly like my own than I should have been willing to admit a few months ago. He gives the catheter a place in the therapeutics of this affection only in those somewhat exceptional cases when, for some reason or another, no operation either radical or palliative is proper. I have always believed, and I am not yet quite prepared to change my views, that all prostatics should be made comfortable with a catheter if such palliation is, and so long as it is, possible and efficient; and that then, at the moment when the use of a catheter becomes an abuse, operation of some sort is indicated. I am quite aware that such a catheter life results in an infection of the bladder with all its possible consequences in many or most of the cases within a comparatively short time, but I also know that such infections do not by any means always persist, that they do clear up often, and that such catheter patients become acclimatized to the use of the instrument, and are progressively less liable to subsequent infections as the months and years go by. Therefore, while recognizing the dangers of a catheter life, and while realizing that our knowledge of both radical and palliative operations has enormously decreased their dangers and has increased their efficiency in the last two or three years, I am still inclined to give the catheter a larger place in prostatic therapeutics than Dr. Cabot has assigned to it to-night; and I say this with a full recognition that the accumulating experience with operations, both radical and palliative, may in the next few years change all this and may gradually push the routine use of the catheter out of the category of prostatic therapeutics.

(2) The range of usefulness of the Bottini operation. For a number of years I have believed and have frequently stated that prostatectomy, aiming at a radical removal of the obstructing masses, is always the operation of choice in prostatic cases. That is to say, I believe that when once an operation has been decided upon the procedure selected should be a prostatectomy in all possible cases; and that partial removals or palliative procedures like the Bottini operation should be held in reserve for such cases as are unfit for the more severe and more complete operation. I have, however, up to the present time, believed that in the large variety of cases presenting themselves for relief, the greater number were unfit subjects for a complete prostatectomy and that most of this unfit class were best treated with a Bottini operation. I do still believe that a very large range of prostatic cases are more fit for a Bottini operation with all its uncertainties than for the more severe procedure. The operative experience of the last two or three years has made such enormous changes for the better in both the technique and efficiency of prostatectomy and has rendered the complete removal of the gland so much safer than it was a short time ago that the field for the Bottini operation is steadily growing smaller; and now that spinal anesthesia has been shown possible and efficient for prostatic work, so that the dangers of the general anesthetic may be eliminated from our prostatectomy mortality statistics, it seems certain that the range of usefulness of this procedure will steadily increase and that the complete operation is gradually pushing the less radical procedures to the wall just as it is the routine use of the palliative catheter.

I was much impressed a short time ago, in talking with two surgeons of large experience with the Bottini operation, to have them both tell me that they were doing more and more prostatectomies and fewer and fewer Bottini operations, and that spinal anesthesia was largely instrumental in making this change in their choice of operation. So that while I believe that a Bottini operation with a proper preliminary cystoscopy is safe enough and accurate enough to continue to hold a large place in our scheme of prostatic operating, I also believe that the improvement in our knowledge of and technical skill with prostatectomy is diminishing its dangers and is increasing its efficiency so rapidly as to render this operation more than ever our first choice in all possible cases.

Dr. G. S. Whiteside: I recently saw a man, whose

case was one of those mentioned in Dr. Hugh Cabot's table, as being in a worse condition now than before prostatectomy was done. He was operated on at the Massachusetts General Hospital, three or four years ago, the entire prostate being removed by the combined suprapubic and perineal methods. He has no residual urine because he has very little control over the sphincter muscle; the bladder now remains empty all the time. He wears a rubber urinal. He tells me that when he is in the recumbent position, he does not so often pass his urine involuntarily but that, nevertheless, this accident is liable to occur at least once in the course of the night. Otherwise his health is good. Cystoscopy shows the reason for the incontinence. The entire prostatic and membranous portions of the urethra have been converted into a cicatricial tube, preventing the compressor urethræ from acting as it should do. I have also seen several other cases which have been operated on by various surgeons, in none of which has the operation been a complete success. Some have cystitis, in spite of the fact that no residual urine can be demonstrated. I presume the successful cases operated by other surgeons would go back to those who successfully operated upon them rather than come to me.

We are undoubtedly educating the public and ourselves to earlier and more radical operations for enlargement of the prostate, as Dr. Harrington has just said. There is, however, a class of cases which I have frequently seen, but about which I should like some advice from those more experienced than I. Given a man, about forty-five to fifty-five years old, in good general health, with sound heart, sound kidneys and apparently normal arteries, whose urine contains neither albumen nor casts, is acid and free from pus. This man can entirely empty his bladder at all times. He complains of slight nocturnal frequency, occasional burning sensations deep in the perineal region, and a feeling of uneasiness after micturition. On examination, such a man will show an enlarged, soft, boggy prostate as felt by rectum. It encroaches somewhat upon the lumen of the bladder and the mucous membrane over it is somewhat thickened and contains many abnormal blood vessels. All of these facts are plainly seen on cystoscopic examination. There is, however, no obstruction to the outflow of urine. Several such cases have come to my notice during the past five years and in three, at least, I have had the opportunity to examine them with the cystoscope once a year, and to note a gradual but surely progressive increase in the size of that portion of the prostate which projects into the bladder. What are we to do for these cases? Are we to employ palliative measures which give relief but no promise of cure, or are we to do an early prostatectomy in view of the fact that they will probably need to have it done later when their general condition may not be as good? They do not want to be operated upon; they do not feel sick; their difficulties are annoying but slight. Shall we wait for the signs and symptoms of obstruction before advising surgical interference?

Dr. J. G. Mumford: The following case of a death following prostatectomy is instructive and worth reporting:

Mr. A. F. C., age sixty-three, consulted me in September, 1902, regarding frequency of micturition. He was a large, heavy, phlegmatic man of previous good health and moderately addicted to alcohol. He gave no venereal history. He had no distressing symptoms, but was annoyed by having to pass urine every two hours at night, and every three hours in the daytime. He had a residual of seven ounces. At that time urine was normal in color, acid, specific gravity 1017 with the slightest possible trace of albumen, and no sugar. The sediment, amorphous phosphates, an occasional bladder and epithelial cell, an occasional leucocyte, an occasional small round cell; rare abnormal blood corpuscles and rare calcic oxalate crystals. The prostate presented large, firm, lateral lobes, each apparently the size of a pigeon's egg. The situation was explained to the patient and the advisability of prostatectomy was urged. He preferred, however, to lead a catheter life, which he did for a year.

Until July, 1903, he was very comfortable, passing his catheter twice daily and having his bladder irrigated occasionally. Under this treatment the urine cleared up, and on July 21 showed nothing whatever abnormal. A week after this date, however, the patient developed complete retention, but was able to keep comfortable by catheterizing himself every six hours.

In August he consulted me again and stated that he had decided to have an operation done, electing a well-known Boston surgeon and friend of my own, in whom I have great confidence, to do the work for him. I was myself present at all consultations and at the operation, and approved of all the subsequent proceedings which were carried out in a most workmanlike manner. The surgeon decided, as is his custom, to divide the operation into two sittings, securing drainage by a simple suprapubic cystotomy at first; ten days later removing the prostatic lobes by the combined method.

On Aug. 17, the supra-pubic drainage was established. At this time exploration with the finger in the bladder discovered two large lateral lobes, the left being the more prominent internally. Its consistency suggested malignancy, but it was well encapsulated and there was no sign of metastasis. The patient rallied well from the operation and ten days later was in excellent condition, with a normal urine passed by urethra and a fairly sound heart action.

On the 27th of August he was again etherized and a secondary operation undertaken. On removing the drainage and making bimanual examination, it was found that the two enlarged lobes had very greatly diminished in size during the preceding ten days, so that they felt but slightly larger than normal. My notes state that the right lobe was not abnormal, the left lobe appeared to be a punky mass of connective tissue about the size of a walnut. This collapsed on being opened through the perineum; drainage was established and the patient did well for two or three days, when his kidneys began to show involvement and gradually became severely affected. Nine days after the operation he died with suppression.

It might be asked why the secondary operation was done when the first operation had so greatly relieved symptoms as to enable the patient to pass urine freely by urethra. It was the opinion of my consultant and myself that the second operation should not have been done; but as the patient greatly feared cancer of the prostate, and as we could not deny its possibility, he insisted upon the removal of the small remaining nodule, and we felt ourselves forced to yield to importunities which were really commands, although contrary to our better judgment.

The striking lesson in this case is that in certain forms of enlarged prostate due to a chronic inflammatory process, simple drainage may suffice completely to relieve symptoms.

The presumption is that our patient was one of a numerous class in which a long antecedent gonorrhea was the cause of the difficulty.

## Recent Literature.

*Gynecological Nursing.* By Netta Stewart, Sister in the Extra-Mural Gynecological Wards of the Royal Infirmary, Edinburgh. With a preface by Sir Halliday Croom, M.D., etc. pp. 174. New York: William Wood & Co. 1903.

This little book represents in an authoritative way gynecological nursing as practiced in the Royal Infirmary, Edinburgh. In the preface the author acknowledges her indebtedness to such well-known gynecologists as Dr. Barbour, for help and instruction, and Dr. Berry Hart, for reading the proofs.

The book is clearly and concisely written, the arrangement of the subjects is logical and there are several especially good chapters, notably those on the use of the catheter, on the use of the cantharides blister and on gonorrhea. From the standpoint of the English gynecologist there is little to criticize in this work; to the American such terms as bidet, jaconet, Higginson's syringe and swabs sound unusual, but they are for the most part explained by the illustrations.

As representing a system of gynecology there is much to criticize from an American view point. The author congratulates herself that the era of passing the catheter by touch rather than by sight has passed away; she does not seem to realize that the era of false modesty and unnecessarily painful manipulations still exists in Edinburgh. On page 2 it is stated that, "no young girl or unmarried woman is examined by inspection of the external genitals or by the vaginal method, unless under an anesthetic," and on page 66, speaking of a cystoscopic examination, "this examination being of such a nature that exposure is unavoidable, the patient is anesthetized."

The nurse is instructed to tampon the vagina and to remove uterine and vaginal gauze packing without the use of instruments, a procedure unnecessarily painful for the patient and difficult of performance even in the hands of the skilled gynecologist. In discussing the preparation of a patient for a bimanual vaginal examination no mention is made of the necessity for loosening every band about the waist, without which no proper diagnosis can be made. The rubber glove does not appear in the book, and, although the aseptic technique is, in the main, excellent, it is difficult to see why in preparing for plastic operations the advice is given to boil the instruments half an hour, while in preparing for an abdominal operation they are to be boiled an hour. In the after-care of a case of perineorrhaphy the nurse is told to give a warm antiseptic vaginal douche twice daily, and after each douche she should carefully dry the vaginal walls with "the index finger of the right hand, round which a thin layer of sublimated wool has been wound," a proceeding not only excessively painful for the patient but meddlesome to a degree, as tending to separate and infect the lips of the wound.

Another source of discomfort, the old plan of keeping the bowels constipated for a week after this operation, apparently still obtains in Edinburgh.

The portion of the book on nursing in abdominal surgery is more modern in tone and is, on the whole, good, although here also the Spartan methods of preparatory and after-care, common in this country fifteen years ago, still hold sway in modified form. The book presents a handsome appearance, being printed in large type on heavy, glazed paper and bound in green cloth.

*The Treatment of Fractures, with Notes upon a Few Common Dislocations.* By Charles Locke Scudder, M.D., Surgeon to the Massachusetts General Hospital. Fourth edition. Thoroughly revised. Philadelphia, New York and London: W. B. Saunders & Co. 1903.

This is the fourth edition of this work since 1900, a period less than four years. Again one is called to comment on the energy and activity of its author in this special line of surgery and the popularity of his book. As formerly, it is still intended to serve as a guide to the practitioner and student in the treatment of fractures of bones. As before, its striking features consist in the graphic, precise manner in which the actual condition of fractured bones are presented by anatomical description, clinical symptoms, reproductions of photographs and skiagraphs; also in the details of treatment and especially of apparatus. The chapters on the application of the Röntgen ray to fractures, the employment of plaster of Paris, and the ambulatory treatment of fractures still attract attention. In this edition (still an octavo) the number of pages has been increased from 488 to 534, and the illustrations from 645 to 685. Many "half-tones" are introduced, increasing the effectiveness of illustration. Additions have been made to the text in various places. Radiographs of the epiphyses at different ages will greatly facilitate the study of these lesions.

A chapter on the common dislocations is a new feature of the work. Also many of the former tracings of x-ray prints of fractures are replaced by half-tones of the actual negatives.

The book may well be said to represent the best modern treatment of fractures.

*Plain Hints for Busy Mothers.* By Marianna Wheeler, Superintendent of the Babies' Hospital, New York, since 1891, and author of "The Baby." 54 pp. New York: E. B. Treat & Co.

The publishers in their announcement state that this little handbook is intended as an aid to mothers whose means are limited and who must care for their own babies, at the same time attending to their housework. Looked at even from this point of view, this book is not at all satisfactory. Viewed from a medical standpoint, it is not worthy a serious consideration. The directions as to feeding are in many respects bad. The English is execrable.

THE BOSTON
# Medical and Surgical Journal.

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## INTERCHANGE OF MEDICAL TEACHERS.

We have from time to time commented on the increasingly intimate relations which are coming to exist between men of science in this and in foreign countries. The custom of inviting distinguished foreigners to deliver lectures in this country has steadily increased during the past few years. Professor Ehrlich, for example, has recently concluded such a course of lectures at the Johns Hopkins Hospital, and Professor Sherrington is about to begin an elaborate course under the auspices of the Silliman foundation at Yale University. Last year, it will be remembered, Professor Welch went to England for a like purpose, as well as Professors James, Royce and Wendell in recent years, and many other instances might be mentioned of the interchange of ideas brought about by such visits of men from other countries.

The relative ease of communication between this country and Europe, together with the increasingly greater uniformity of work being done in the two countries, has naturally brought about a closer relationship than has hitherto existed. It is unquestionably of great value to learn the differences in method, as well as the actual results of research, of those working in other countries but in allied fields. Not only is this stimulating to the investigators themselves, who find a willing audience for their results, but it is also of much significance in stimulating increased interest among men engaged in similar work.

The healthy rivalry, which the intimate personal acquaintance with each other's work produces, is certainly salutary. It would be well if in our large institutions of learning it were possible to so extend this plan that the student body, as well as those further advanced in their studies, might also have the benefit of foreign ideas. The suggestion has, in fact, been made by President Eliot of Harvard University that an actual interchange of professors might be arranged in various branches of research to the end that for a considerable period of time, extending over months or perhaps a year, students might be brought under the influence and direct teaching of foreigners. We are under the impression that at the present time in the academic department of Harvard University two such interchanges have been made, which permit the residence of foreign instructors at the university for an academic year, providing in exchange two men for the institutions from which they came.

It occurs to us, as at least a possible plan, that the same method might be adopted in medical institutions. Obviously, the difficulties would be great in providing for the long continued residence of a practicing physician in a foreign country, but in many of the theoretical branches of medicine it would certainly be possible for teachers in foreign universities to spend a year in this country, during which they would be expected to give to the widest possible audience the results of their methods of investigations. There can be no question, judging from the experience we have already had, that the occasional infusion of new ideas from foreign sources into the routine of the medical curriculum would be highly stimulating to students as well as to teachers, and that an enthusiasm might thereby be aroused for special branches of medical work which is now too often dormant. Whether or not so radical a departure might be made, we are convinced that the closer the interrelationship between universities in Europe and America the more comprehensive will be the products of their work.

We are not aware that Germany has ever extended a particularly friendly hand to American investigators in medical lines, but there can be no question that the time is not far distant when this barrier will be removed and the same hospitality extended to the work of our competent investigators as we have long extended to theirs. Recent events lead us to think that this time is near at hand.

## INTERMEDIATE REPAIR OF THE INJURIES OF CHILDBIRTH.

A prominent obstetrician and gynecologist, the author of one of our most popular text-books, recently wrote: "If every woman were given

the attention she ought to receive after childbirth, three fourths of the diseases of women would disappear."

The present practice of the profession is to repair injuries of the perineum immediately after labor, if the patient's condition permits; the patient being across the bed, often in a poor light and the assistance at hand meagre, injuries of the anterior vaginal wall and cervix are left to nature with the possibility of the subsequent development of cancer and other uterine diseases, or to a secondary operation months or years afterwards.

Dr. B. C. Hirst of Philadelphia and Dr. L. R. Dickinson of Brooklyn, two distinguished obstetricians, have adopted a different plan in their clinics with most successful results. They point out that immediately after delivery the birth canal having been subjected to great trauma, especially in difficult cases where the injuries are most extensive, the tissues are swollen and distorted so that it is impossible to recognize landmarks. An expert obstetrician and pathologist who made frozen sections of a woman dying five minutes after delivery was unable to make out the position of the os externum in the sections. It is likewise difficult to obtain a correct understanding of the condition of the anterior vaginal wall, injury to the muscles and fascia of which result later in cystocele.

Immediately after delivery the patient has been through a more or less severe strain and it is out of the question to subject her to a prolonged examination on a table in a proper light, and for the same reason, a properly performed operation with an anesthetic is inadvisable. Besides there is apt to be much bleeding and the tissues are so bruised that they do not well hold sutures.

On the other hand, months or years after labor chronic hyperplasia has thickened the lips of a torn cervix, partial cicatrization has taken place and cysts have formed in the unhealthy tissues; the vaginal walls have sagged, permitting displacement of bladder or rectum and there is present atrophy of the muscles from disuse. Small wonder that operations undertaken at this time are so frequently unsuccessful in restoring the parts to a normal condition.

From five to ten days after delivery hemorrhage has ceased, the vulva is still relaxed permitting easy access to the vagina and cervix and the patient has recovered from the shock attending labor. Now she can be placed on a table in a good light, she can be thoroughly examined and, if necessary, anesthetized and operated upon with suitable assistants and preparations just as in the usual secondary operations. The tissues are soft, the needle passes easily, and accurate opposition can be secured. Ten days after labor granulations appear and these must be removed with the curette. Previous to this time the torn surfaces need only to be freshened by wiping them with a piece of gauze held in a forceps in order to obtain primary union.

The practice of repairing all the injuries of childbirth during the puerperal convalescence it may be argued is impracticable because it is too much trouble, the remuneration would not be sufficient and it would not be tolerated by many patients. The same arguments could be urged against almost any advance in medicine, and, if valid, would stop all progress. The plan has been carried out with the most satisfactory results in Dr. Hirst's private practice and in the University Maternity in Philadelphia during the past year and in Dr. Dickinson's practice in Brooklyn for several years.

To the mind of the unprejudiced observer there is something illogical in neglecting two thirds of the injuries of childbirth and in repairing in a slipshod manner only the injuries of the perineum. It is within the realm of possibility that in the not distant future the parturient woman will demand that her accoucheur shall be equipped to diagnosticate and repair all the injuries which she may receive during labor and that these shall be attended to during the puerperal convalescence.

## CESARIAN SECTION AT THE BOSTON LYING-IN HOSPITAL.

THE report of the Boston Lying-In Hospital for its seventy-first year contains an interesting statement in regard to Cesarian section at that institution. According to this report, the most notable event during the hospital year which has closed has been the successful performance, for the fiftieth time in the history of the hospital, of the Cesarian section. The first performance of this operation at the Boston Lying-In Hospital was on July 15, 1894, a little less than ten years ago. The operation had been performed but rarely in this country, and the successful result obtained in this case was regarded as an important achievement in obstetrical practice.

During the ten years the Cesarian section has been performed 55 times in the hospital, and notwithstanding the fact that in several of the

cases the operation was resorted to under adverse circumstances, the result has been fatal to the mother in only 5 cases, the remaining 50 patients having been discharged well from the hospital. By a coincidence, 50 children were born and discharged well, and there were 5 fatal cases of children, including one still-born. In but 2 of the whole 55 cases was the result fatal to both mother and child. In 5 cases the operation was performed upon the patient for the second time at the hospital and in one case for the third time.

The operation has been performed 10 times during the past year, and in all these cases the children were successfully delivered, and there was but one fatal result among the mothers.

The progress — if it be not more properly termed the revolution — which this hospital has thus prominently assisted in bringing about in the practice of obstetrics and in the saving of life in the time of maternity, instances the value of its work. The entire community has shared in the benefits of the experience and skill which have been acquired in the hospital.

Incidentally it may be remarked that the general work of the hospital during the past year has been larger than that of any preceding year. The total number of patients treated and attended was 2,519, being 90 in excess of the record of last year, the largest previous number.

The 654 patients treated in the hospital were afforded 10,618 days' treatment, and to the 1,865 patients attended in their homes 27,975 visits were made.

Financially, receipts and expenses have about balanced each other, but needed repairs and improvements are restricted and increased donations are earnestly desired.

## A PROPOSED NEW BELLEVUE HOSPITAL.

The city recently made an appropriation of $75,000 for securing plans for a new Bellevue, as well as new Harlem and Fordham hospitals and the enlargement and improvement of Gouverneur Hospital, and on the occasion of a lecture delivered by Dr. Brannan in Havemeyer Hall, Columbia University, on April 22, the architects, Messrs. McKim, Mead and White, presented the drawings and plans proposed for these institutions. If these plans are approved, the city of New York will for the next ten years be building in instalments at Bellevue the greatest hospital in the world. The cost of the new Bellevue Hospital is placed at $11,000,000, not including an electric light plant estimated at $1,000,000, nor the expense of condemning the East River block between 28th and 29th Streets, just north of the present hospital site. That block, which will make the grounds cover three whole blocks in all, is now in process of condemnation. Neither does the $1,000,000 include the filling in of a large strip to be taken from the East River. The United States War Department, by special action, has consented to the extension of the bulkhead line so that it will include enough space to make a rectangle out of the three blocks. At present the Board of Estimate and Apportionment has been asked for $702,000 to erect the first pavilion, and it is expected that this sum will be appropriated before long. There are to be twelve pavilions in all, and in the center of the buildings will be a great dome, in which ample accommodations for the large house staff will be provided. Fresh air, plenty of it all the time, Dr. Brannan regards as the main thing in a modern hospital, and in no other institution, he says, has this idea been carried out as it will be in Bellevue. Special attention will be paid to the lighting and ventilation of the wards, and, in addition to a multitude of balconies, there will be enormous roof gardens, to which many elevators will run. At certain points on the roof will be glass-inclosed sections, and for bad weather these covered areas will be capable of extension.

## MEDICAL NOTES.

A Departure in Advertising.—A tea planters' company of Paris is offering an insurance policy for one month against death by accident to prospective purchasers, of a quarter, a half and one pound of tea.

The American Confederation of Reciprocating Examining and Licensing Medical Boards. — A meeting of this association will be held at the Great Northern Hotel, Chicago, Tuesday, May 24. Hitherto eleven states have entered into the confederation, and it is hoped that a still wider interest will be taken in the meetings of the society.

Centenarians. — The following persons are reported to have lived beyond one hundred years: Mrs. Donald Macdonell of Glengarry, Ontario, has died at the reputed age of one hundred and six. Denneth McGillivray, also of Ontario, died at the age of one hundred and one years. Tom Fitzgerald, reputed the oldest man in Munster, Ireland, reached the age of one hundred and six.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, April 27, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 59, scarlatina 11, typhoid fever 6, measles 167, smallpox 0.

Models of the Group of New Buildings of the Harvard Medical School. — A very excellent model of large size in plaster by John Evans of the group of new buildings of the Harvard Medical School has been forwarded to St. Louis for the Louisiana Purchase Exposition.

Appointment of Dr. James B. Shea. — The mayor has appointed Dr. James B. Shea as a member of the Boston Board of Health, in place of Edwin L. Pillsbury, whose term is expiring. Dr. Shea has been connected with the department since 1888, but this appointment comes as a promotion.

Addition to the Lynn Hospital. — A new ward for the Lynn Hospital was opened last week. This new ward building consists of a main ward and fourteen private rooms, giving space for thirty-three beds. On the second floor is a small ward for children. A surgical dressing room is also provided.

Cambridge Visiting Nurses Association. — A visiting nurses association has been established at Cambridge, Mass., under the charge of Miss Read of the Waltham Training School. $5000 is required for the first year's work. At a recent public meeting of the association Dr. Henry P. Walcott spoke of its prospective work.

The Massachusetts Humane Society a Distributor of Useful Information.— The Massachusetts Humane Society has issued and has for distribution a booklet giving instructions how to save drowning persons, how to restore persons apparently dead from drowning, and what to do in other cases of emergency. There is always a growing demand for this sort of literature at this season of the year.

Worcester City Hospital. — According to the recently published annual report of the trustees of the Worcester City Hospital, it appears that the number of patients admitted to the hospital was 2,955, which was 528 more than last year, a gain of 21%, as compared with 13% last year. The number of accident cases treated, but not admitted to beds, was 482, against 516 last year. The proportion of minor accident cases treated is annually becoming smaller, owing, probably, largely to the establishment of emergency hospitals by corporations and individuals.

NEW YORK.

Hospital Saturday and Sunday Association. — The distributing committee of the Hospital Saturday and Sunday Association met at the mayor's office on April 23 to distribute the undesignated fund of the collection for 1903 and '04. Owing partly to a stormy Hospital Sunday and partly, no doubt, to the times being less prosperous than last year, the general collection declined from $83,000 to $75,000, and the undesignated fund, from $68,000 to $64,000.

Officers of New York County Branch State Medical Association. — At a meeting of the New York County branch of the State Medical Association held April 18 the following officers were elected: president, Dr. Francis J. Quinlan; first vice-president, Dr. H. A. Dodin; second vice-president, Dr. S. Busby Allen; recording secretary, Dr. W. R. Stone; corresponding secretary, Dr. J. J. Nutt; treasurer, Dr. Charles E. Denison. Dr. Alexander Lambert, the retiring president, was elected to the executive committee.

Death of Mrs. Elizabeth Morton. — Mrs. Elizabeth Morton, the widow of Dr. W. T. G. Morton of Boston, died on April 21 at the Hotel Martha Washington, New York, from pneumonia, following a long previous illness. She was born in Farmington, Conn., in 1826, and was married to Dr. Morton in 1844. No recognition of any sort from the American Government ever came to the widow, although the reports of six congressional committees during her husband's lifetime had recommended an appropriation of several hundred thousand dollars in acknowledgment of the benefit derived from ether anesthesia during the civil war. Two of the five children surviving Mrs. Morton are Dr. William James Morton of New York and Dr. Bowditch Morton, now practicing in Monterey, Cal.

Quarterly Report of Health Department. — The condensed quarterly report of the Bureau of Records of the Health Department for the last three months of 1903, just issued, shows that during the quarter the mortality in the city represented an annual death-rate of 17.45 as against 16.62 for the corresponding period. The corrected death-rate (excluding non-residents and infants under one week old) was 15.67, as against 15.74 in 1902. The estimated population was 3,732,703, and as the average number of deaths for the corresponding quarter of the

preceding five years, upon an estimated population of 3,448,567, gave a death-rate of 17.82 per 1,000, there was a decrease of one third of a point. The noteworthy increases found in comparing the deaths in this quarter with the preceding quinquennial average of the corresponding quarters were among the diseases affecting adults and old people, as follows: Apoplexy, 77; organic heart disease, 105; pneumonia, 426; Bright's disease and nephritis, 102; pulmonary tuberculosis, 96. There were 782 more deaths between the ages of five and sixty-five, and 270 more at sixty-five and over. Diphtheria and croup showed an increase of 50, and measles 12 above the quinquennial average. The decreases noted were in whooping-cough, 39; acute bronchitis, 99; malarial fever, 28; typhoid fever, 50; influenza, 40; and under five years of age, 127.

Illness among Physicians at Bellevue. — A number of the house staff of Bellevue Hospital have recently been suffering from illness as a result of the overwork and strain attendant on the crowded condition of the hospital, in addition to the totally inadequate accommodations for the physicians. Two of them are stated to have contracted tuberculosis, and Dr. Brannan, president of the board of trustees, is in receipt of a letter from Dr. Haven Emerson offering to furnish a list of at least 20 Bellevue internes who have developed that disease in the past. For the 43 physicians now living in the hospital there are only 16 rooms, and in some cases there are 4 and 5 in a room together. As to the crowding of the wards, the average number of patients applying in a day is 250, and of these the average number admitted is 125. In order to accommodate these at all, an average number of 125 must be discharged each day. The strain upon the physicians is unremitting. There is perhaps no hospital anywhere in which such a variety of acute cases, requiring constant attention, is treated, and every discharge must be signed by the attending and the house physician or the attending and house surgeon. On the grounds of the hospital there was erected during the past week a portable pavilion for the open air treatment of tuberculosis. It is 16 feet, 6 inches by 33 feet in its dimensions, and is designed to accommodate 12 patients. The roof is made of canvas, having adjustable ventilating traps, and over it there is a canvas fly, leaving a space of about 18 inches, by which arrangement a free circulation of air is readily secured. The building can be taken down and re-erected on another site in a short space of time.

## RECORD OF MORTALITY

For the Week ending Saturday, April 16, 1904.

| Cities. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Erysipelas. | Measles. |
| New York . . | 3,908,644 | 1,785 | 533 | 25.43 | 25.93 | 3.13 | .28 | 1.90 |
| Chicago . . . | 2,021,086 | 616 | 136 | 21.91 | 18.00 | .97 | .32 | .16 |
| Philadelphia | 1,407,968 | 570 | 153 | 20.20 | 13.75 | 1.96 | .56 | .70 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 191 | 45 | 27.21 | 12.04 | — | — | — |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 155 | — | 29.68 | 18.70 | 1.29 | 1.93 | .64 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 85 | 19 | 20.00 | 14.11 | 1.41 | — | — |
| Boston . . . | 617,950 | 204 | 58 | 22.05 | 22.54 | 1.96 | 2.45 | 1.96 |
| Worcester . . | 136,925 | 36 | 14 | 11.11 | 13.88 | — | — | — |
| Fall River . . | 119,849 | 51 | 19 | 15.69 | 27.45 | 1.96 | — | — |
| Lowell . . . | 104,402 | 29 | 6 | 10.34 | 6.89 | — | — | — |
| Cambridge . | 100,998 | 30 | 8 | 23.33 | 16.67 | 3.33 | — | — |
| Lynn . . . . | 73,875 | 13 | 2 | — | — | — | — | — |
| Lawrence . . | 72,348 | 24 | 8 | 20.83 | 37.49 | — | 4.16 | — |
| Springfield . | 72,020 | 28 | 5 | 17.85 | 14.28 | — | — | — |
| Somerville . | 70,413 | 12 | 2 | 8.33 | 16.67 | — | — | — |
| New Bedford | 68,863 | 20 | 7 | 10.00 | 15.00 | — | — | — |
| Holyoke . . . | 50,538 | — | — | — | — | — | — | — |
| Brockton . . | 46,601 | 14 | 6 | 21.42 | — | — | — | 14.28 |
| Newton . . . | 39,310 | 9 | — | — | 22.22 | — | — | — |
| Haverhill . . | 39,061 | 7 | 1 | 14.30 | 14.30 | — | — | — |
| Malden . . . | 37,205 | 6 | 1 | 16.67 | 16.67 | — | — | — |
| Salem . . . . | 37,188 | 18 | 6 | 16.67 | 5.55 | 5.55 | — | — |
| Chelsea . . . | 36,499 | 16 | — | 18.75 | 6.25 | 6.25 | — | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 7 | 0 | 28.60 | 28.60 | — | — | — |
| Everett . . . | 30,209 | 13 | 4 | 15.40 | 15.40 | — | — | — |
| North Adams | 29,201 | 8 | 3 | 37.50 | — | — | — | — |
| Quincy . . . | 26,798 | 8 | 2 | 25.00 | 12.50 | — | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 11 | 1 | 27.27 | 9.09 | — | — | — |
| Brookline . . | 23,576 | — | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | — | — | — | — | — | — | — |
| Medford . . | 21,956 | 5 | 1 | — | 60.00 | — | — | — |
| Chicopee . . | 21,692 | 7 | 4 | 42.90 | 28.60 | — | 14.30 | — |
| Northampton | 20,314 | 7 | 2 | 14.30 | 14.30 | — | — | — |
| Beverly . . . | 15,807 | 5 | — | 20.00 | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 4 | 0 | — | 50.00 | — | — | — |
| Adams . . . | 14,745 | 3 | 0 | — | — | — | — | — |
| Attleboro . . | 14,561 | 3 | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 6 | 1 | — | 33.33 | — | — | — |
| Newburyport | 14,478 | 6 | 3 | 16.67 | 16.67 | 16.67 | — | — |
| Woburn . . . | 14,315 | 5 | — | — | — | — | — | — |
| Melrose . . . | 13,819 | 3 | — | — | 33.33 | — | — | — |
| Westfield . . | 13,809 | 6 | 3 | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 4 | 0 | — | 25.00 | — | — | — |
| Revere . . . | 13,609 | 3 | 1 | — | 33.33 | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 4 | 4 | 50.00 | 25.00 | — | — | — |
| Southbridge . | 11,716 | 4 | 2 | 75.00 | — | — | — | — |
| Watertown . | 11,575 | 1 | 1 | — | — | — | — | — |
| Weymouth . | 11,350 | 1 | 1 | 100.00 | — | — | — | — |
| Plymouth . . | 11,189 | — | — | — | — | — | — | — |

Deaths reported, 4,043; under five years of age, 1,062; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 963; acute lung diseases 850, consumption 378, scarlet fever 51, whooping cough 15, cerebrospinal meningitis 53, smallpox 6, erysipelas 21, puerperal fever 13, measles 49, typhoid fever 69, diarrheal diseases 108, diphtheria and croup 89.

From whooping-cough, New York 8, Chicago, Philadelphia, Baltimore, Boston, Springfield, North Adams and Gardner 1 each. From smallpox, Philadelphia 5, Pittsburg 1. From cerebrospinal meningitis, New York 45, Baltimore 2, Providence 2, Boston 1, Worcester 1, Southbridge 2. From erysipelas, New York 5, Chicago 2, Philadelphia 4, Pittsburg 3, Boston 5, Lawrence 1, Chicopee 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,425, for the week ending April 2, the death-rate was 18.7. Deaths reported 5,464; acute diseases of the respiratory organs (London) 212, whooping cough 234, diphtheria 71, measles 211, smallpox 8, scarlet fever 32.

The death-rate ranged from 8.4 in Walthamston to 28.6 in Rochdale; London 18.8, West Ham 16.3, Brighton 19.8, Southampton 15.3, Plymouth 20.1, Bristol 18.4, Birmingham 24.5, Leicester 13.5, Nottingham 18.4, Liverpool 22.6, Bolton 19.6, Manchester 24.5, Bradford 18.5, Leeds 20.7, Hull 14.0, Cardiff 16.3, Rhondda 16.2, Merthyr Tydfil 22.9, Hornsey 9.0, Wildensen 11.0, Stockton-on-Tees 21.0.

## METEOROLOGICAL RECORD.

For the week ending April 16, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S..10 | 29.61 | 54 | 66 | 42 | 94 | 50 | 72 | S W | S W | 10 | 6 | O. | C. | .78 |
| M..11 | 29.76 | 50 | 55 | 44 | 68 | 60 | 64 | S W | W | 4 | 8 | O. | C. | .06 |
| T..12 | 29.74 | 48 | 57 | 40 | 89 | 65 | 77 | S E | S W | 13 | 11 | R. | C. | .30 |
| W..13 | 29.88 | 40 | 48 | 33 | 52 | 41 | 46 | W | N W | 16 | 12 | C. | C. | 0 |
| T..14 | 29.99 | 36 | 42 | 30 | 49 | 36 | 42 | S W | W | 6 | 12 | C. | C. | T |
| F..15 | 30.06 | 42 | 51 | 32 | 48 | 57 | 52 | W | S | 12 | 9 | C. | O. | 0 |
| S..16 | 29.79 | 35 | 40 | 30 | 100 | 58 | 79 | N | N W | 12 | 7 | N. | C. | .25 |
| ☞ | 29.83 | | 51 | 36 | | | 62 | | | | | | | 1.39 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## RECENT DEATHS.

ROBERT MCLELLAN READ, M.D., M.M. S.S., of Boston' died in Santa Barbara, Cal., April 21, 1904, aged fifty-five years.

LORENZO J. KOHNSTAMM, M.D., up to the time of the beginning of his illness a very successful New York practitioner, died at the Manhattan State Hospital, Ward's Island, on April 18. He was forty-two years of age, and a graduate of the medical department of the University of the City of New York in 1888.

## SOCIETY NOTICES.

THE TRI-STATE MEDICAL SOCIETY OF IOWA, ILLINOIS AND MISSOURI.—This society will meet in St. Louis, June 15, 16 and 17.

W. B. LA FORCE, President.

ASSOCIATION OF AMERICAN PHYSICIANS.—The nineteenth annual meeting of the Association of American Physicians will be held in the New Willard Hotel, Washington, D.C., on May 10 and 11, 1904.

AMERICAN CLIMATOLOGICAL ASSOCIATION.—The twenty-first annual meeting of the Association will be held in the Banquet Room of the Aldine Hotel, Chestnut Street, above 19th, Philadelphia, June 2, 3 and 4, 1904.

GUY HINSDALE, M.D., Secretary.

## OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING APRIL 21, 1904.

BROWN, B. W., passed assistant surgeon. Granted leave of absence for two days from April 25. April 19, 1904.

BLUE, RUPERT, passed assistant surgeon. Granted leave of absence for three days from April 19. April 18, 1904.

GREENE, J. B., passed assistant surgeon. Relieved from duty at Havana, Cuba, and directed to report to the medical officer in command at New York (Stapleton) for duty and assignment to quarters. April 20, 1904.

HOLT, J. M., assistant surgeon. To report to medical officer in command at San Francisco, Cal., for duty and assignment to quarters. April 20, 1904.

MCLAUGHLIN, A. J., assistant surgeon. Granted leave of absence for four days from April 20. April 20, 1904.

WARREN, B. S., assistant surgeon. Granted extension of leave of absence for one day from April 17. April 20, 1904.

ASHFORD, F. A., assistant surgeon. Leave of absence for ten days from March 28, 1904, granted Assistant Surgeon Ashford, amended so that said leave shall be for eleven days. April 19, 1904.

ALTREE, G. H., acting assistant surgeon. Granted leave of absence for five days from April 19. April 19, 1904.

BAILEY, C. W., acting assistant surgeon. Granted leave of absence for eleven days from April 22. April 20, 1904.

DUKE, B. F., acting assistant surgeon. Granted leave of absence for six days from April 18. April 18, 1904.

MARSH, W. H., acting assistant surgeon. Granted leave of absence for five days from April 26. April 20, 1904.

MONCURE, J. A., acting assistant surgeon. Department letter of March 31, 1904, granting Acting Assistant Surgeon Moncure leave of absence for thirty days from April 10, 1904, amended so as to read thirty days from April 12, 1904. April 20, 1904.

ILTIS, G. W., pharmacist. Granted leave of absence for twenty-five days from May 5. April 14, 1904.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING APRIL 23, 1904.

E. P. STONE, surgeon. Detached from the "Mayflower," and ordered to the naval academy.

J. C. PRYOR, passed assistant surgeon. Ordered to the naval hospital, Newport, R.I.

R. C. HOLCOMB, passed assistant surgeon. Detached from the naval hospital, Newport, R.I., and ordered to the "Mayflower."

C. E. STRITE, acting assistant surgeon. Appointed acting assistant surgeon from April 13, 1904.

C. H. T. LOWNDES, surgeon. Detached from the naval academy, and ordered to the "Chesapeake."

C. M. DE VALIN, passed assistant surgeon. Detached from the "Rainbow" and ordered to the "Albany."

J. P. TRAYNOR, assistant surgeon. Detached from the "Albany" and ordered to the "Rainbow."

W. F. ARNOLD, surgeon. Retired from active service April 19, 1904.

## BOOKS AND PAMPHLETS RECEIVED.

A Manual of Clinical Diagnosis by Means of Microscopical and Chemical Methods, for Students, Hospital Physicians and Practitioners. By Charles E. Simon, M.D. Fifth edition, thoroughly revised and enlarged. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1904.

A Bill to Increase the Efficiency of the Medical Department, United States Army, Together with Endorsements by the Secretaries of War and the Brief of the Surgeon General, showing the Necessity for Legislation. February, 1904.

On Disease of the Heart due to Over-Indulgence in Alcoholic Drinks. By W. Hale White, M.D. Reprint.

Some Observations on the Movability of the Apex of the Heart. By W. J. Pettus, M.D. Reprint.

The Value of Ureteric Meatoscopy in Obscure Diseases of the Kidney. A Study in Clinical and Operative Surgery. By E. Henry Fenwick, F.R.C.S. Illustrated. London: J. & A. Churchill. 1903.

Twenty-eighth Annual Report of the Managers and Officers of the New Jersey State Hospital at Morris Plains for the year ending Oct. 31, 1903.

Elements of Water Bacteriology with Special Reference to Sanitary Water Analysis. By Samuel Cate Prescott and Charles Edward Amory Winslow. New York: John Wiley & Sons. London: Chapman & Hall, Limited. 1904.

Anesthesia in Dental Surgery. By Thomas D. Luke, M.B., F.R.C.S.E. Illustrated. New York: Rebman Company. 1903.

Manual of Clinical Microscopy and Chemistry. Prepared for the use of Students and Practitioners of Medicine. By Dr. Hermann Lenhartz. Authorized Translation from the Fourth and Last German Edition, with Notes and Additions by Henry T. Brooks, M.D. Illustrated. Philadelphia: F. A. Davis Company. 1904.

A Study of Normal and Pathological Conditions of the Bursæ of the Neck, with Special Reference to the Subhyoid Bursa. By Willis S. Anderson, M.D. Reprint.

Intratracheal Injections: Experimental and Clinical Study of their Value in Diseases of the Lungs. By Willis S. Anderson, M.D. Reprint.

Translations of the Obstetrical Society, of London. For the year 1903. Vol. XLV. Part IV, for October, November and December.

Le Malattie Dei Paesi Caldi loro profilassi ed igiene con un'appendice: La Vita Nel Brasile. Dott. Carlo Muzio. Illustrated. Milano: Ulrico Hoepli. 1904.

# Original Articles.

## CONTRIBUTION TO THE ETIOLOGY OF IDIOCY AND IMBECILITY.

BY WILLIAM N. BULLARD, M.D., BOSTON.

The following cases have all been taken from the Neurological Clinic of the Children's Hospital of Boston. All the earlier records were taken and written by me personally; the later ones under my supervision. In addition I have personally interviewed one or both of the parents in a considerable proportion of the cases. The trustworthiness of the statements has always been carefully weighed. The positive ones may almost invariably be accepted as true; the negative ones very generally. In the large proportion of cases I have found the parents, when personally questioned, willing to answer the truth — as I believe — to the best of their ability.

In examining the results obtained in this investigation the cases naturally fall into two great groups:

I. The Congenital — those in which the affection has occurred previous to or during labor.

II. The Non-Congenital — those in which the patient has acquired the condition from some cause acting after birth.

We cannot always with certainty determine to which of these classes a given case belongs, especially where several factors may have contributed to produce the result. Doubtful cases or cases in which there is not a strong probability in favor of one class or the other have not been counted.

Out of the whole number of cases examined (258) there are 176 in which this can be determined more or less accurately. Of these 113 were congenital; 63 were non-congenital or acquired cases. The large proportion of the cases in which the condition was acquired after birth was a surprise. It is, however, quite certain that the greater number of those cases which were not counted for want of definite data belong to the congenital class because the cause is much more evident when it occurs after birth. A hemiplegia or other paralysis or a sudden mental defect following or accompanying an acute illness strikes the attention of any one who is present.

We will consider first the etiology of the non-congenital cases because it is much simpler than that of the congenital. The causes which act to produce idiocy and imbecility in children after birth are trauma and disease.

*Trauma.*— It is so well-known that patients are apt to attribute any affection or disease to an accident or injury that all experienced observers are accustomed to take this tendency into account and not permit themselves to be led astray by any general history or belief.

We have placed the following cases under this heading:

1. (12) Father has phthisis. Mother healthy. Three children, patient second child; others healthy. Labor normal. Never ill previous to accident. Is now three years old. Had a fall five months ago, striking the frontal region. Did not lose consciousness. One month later forgot how to talk. Six weeks ago first convulsion which was unilateral and lasted one hour, shortly followed by another lasting two hours.

2. (67) At seventeen months fell and struck head; convulsions for eighteen hours and left hemiplegia.

3. (81) Labor not severe; dry birth. No illness. Fell at seven months striking back of head; unconscious all day, afterwards fretful. One month later convulsions.

4. (85) Four children; patient third; others healthy. Labor easy, not remarkable. Is seven years old. Well till two years ago when she fell downstairs. No trouble at the time but a month later became confused and incoherent.

5. (102) When three years old fell off piazza, was unconscious fourteen days and had convulsions, aphasia and right hemiplegia. Father died of tuberculosis. There were two children, the patient first; the second died of meningitis when six years old.

6. (172) Parents healthy. Six children; one died of cholera infantum; others healthy. Labor normal. Fell from baby carriage when thirteen months old and then stopped walking until two and a half years old. No other apparent cause for condition.

7. (173) Had one convulsion attributed to teeth when three months old. Otherwise well previous to fall out of hammock when four years old.

8. (210) Seven children; others healthy; patient 4th. Had one convulsion with influenza during dentition. Otherwise bright and active. When five years old fell six feet, striking head.

These eight cases seem with much probability due to trauma. There are in our series four more cases in which trauma is a doubtful cause.

1. (24) Fell and cut head when five years old. Trouble began at six years. Parents healthy. Patient was 9th child. Eleven children; 6th, 7th, 10th and 11th died in infancy; others healthy. Labor normal. No other cause known.

2. (190) Only child. Labor easy. Fall at five months. Convulsions at one year.

3. (213) Patient is a city charge. There is no definite history but those who have the care of patient state that the condition was said to be due to injury.

4. (238) Five children; patient first; others healthy. Labor not remarkable. Born at eight months. Injury to head when two years old. Nothing wrong noticed until it was found when five years old that she could not learn at school.

Out of 63 non-congenital cases we have, therefore, 8 or about 13 (12.69) per cent., probably traumatic, and if we add the 4 doubtful ones we have 19%.

*Disease.* — The following cases are considered as due to disease:

1. (6) Patient born of healthy parents. Was the seventh child. Labor easy, natural. When eleven months old had an acute disease apparently encephalitis and two months later right extremities were found paralyzed, and child became feeble-minded.

2. (26) Parents healthy. Patient fourth child. Labor normal. Born at full time; blue at birth. When eighteen months old had measles, then varicella followed by meningitis and then convulsions.

3. (38) Affection followed cerebro-spinal meningitis.

4. (45) Affection followed meningitis.
5. (46) Affection followed measles.
6. (52) Measles followed by diplegia.
7. (101) Cholera infantum at eighteen months and twenty months. After cholera infantum spastic diplegia. Previous to this had been bright and healthy and had had no illness except pertussis at eleven months.
8. (103) Labor normal. Severe illness between one and two years old followed by strabismus.
9. (111) Cerebro-spinal meningitis at twenty months was the cause.
10. (122) Healthy until measles at ten months.
12. (131) When nine months old attack of convulsions with right hemiplegia. Meningeal hemorrhage? Family history negative. Four children, patient second; others healthy. Labor instrumental.
13. (143) Affection dates from the age of four years when patient had an acute illness of four weeks' duration with left hemiplegia.
14. (148) Meningitis at two years.
15. Well previous to scarlet fever at three and a half years, from which became deaf and dumb.
16. (156) Well till meningitis at nine months.
17. (159) Well till fifteen months old when she had an illness (called German measles) with fever and convulsions.
18. (175) Well till nine months old. Then convulsions and left hemiplegia.
19. (189) Well previous to measles when a year old. One month after the measles convulsions, and again one month later left hemiplegia.
20. (200) Convulsions and spastic hemiplegia at the age of two years followed by pertussis.
21. (211) Affection followed meningitis at four years.
22. (244) Pregnancy and labor normal. Well until pneumonia when seven weeks old, followed by convulsions.[1]

The above are with strong probability or with practical certainty due to disease which has occurred since birth. In addition there are a number of cases in which post-natal disease is the most probable cause but in which the evidence is not as strong as in those described. Of these there are thirteen. I shall not describe them in detail but mention three taken at random as examples.

(106) Healthy at birth. When six weeks old was ill for one month with convulsions (meningitis?) and the trouble began at this time. The family history is negative and labor was normal. Is blind, dumb and probably deaf.

This case might fairly be placed in the previous class.

(124) Parents healthy. Four children; patient third; others healthy. Labor normal. Walked at one year. At this time became feverish, had convulsions and became feeble-minded.

Here again the evidence is fairly strong in favor of post-natal disease.

(129) The feeble-mindedness in this patient seems to have come on after rheumatic fever when three years old: the first convulsions occurred when three years and three months old. Family history negative. Labor probably normal.

[1] In each case the feeble-mindedness is supposed to have come on at the time of the convulsions.

We have two cases also in which there is a slight predominance of evidence in favor of this cause.

The nature of the disease which produces the feeble-mindedness or idiocy is not always plain. That it is intracranial is evident. Sometimes the cerebral or meningeal symptoms occur alone or essentially so, and sometimes they seem to be concomitant with and forming a part of some acute disease, most frequently one of the exanthemata. In our first twenty-two cases the initial affection was classed as follows:

Encephalitis and meningitis, 6; meningeal hemorrhage, 1; cerebro-spinal meningitis, 2; acute illness usually with intracranial symptoms, 4; measles, 4; scarlet fever, 1; German measles (?), 1; pertussis, 1 (2); pneumonia, 1.

(We have also another case in which the probable cause is pertussis.)

In the case of those in which the cause of the idiocy was probably but not so certainly due to post-natal disease the character of the primary disease is essentially the same.

Encephalitis, 2; meningitis, 1; cerebro-spinal meningitis, 3; sunstroke, 1; acute illness, 2. (One not more fully described, one with intracranial symptoms); rheumatic fever, 1; pneumonia, 1; diphtheria, 1.

*Congenital cases.* — These number only 113.

The congenital cases are to be divided into intranatal and prenatal. The former, those occurring during labor; the latter, those having their onset during pregnancy before labor begins. It is so often impossible to determine even with probability whether a given case belongs in one or the other group that I shall not attempt to give figures but will offer such evidence as we have in the hope that hereafter with further material more definite conclusions may be drawn.

The longer I study these cases the more I am inclined to attribute them in the great majority rather to a prenatal than to an intranatal cause. This view is based more on the pathology of the cases than on their clinical history. The large proportion, however, of peculiar or unusual circumstances in labor in this class (congenital cases) suggests that labor and its attendant conditions has a distinct bearing and is at times at least the exciting cause.

The only clinical evidence of intranatal causation is: (1) The direct history of an accident or injury with visible signs, such as fracture or depression of the cranial bones. Even this is not certain proof that the cerebral condition was not pre-existent. Depression of the cranial bones during labor does not necessarily involve any intracranial injury, and a serious intracranial lesion is required to produce the conditions under consideration. We have in our series no cases of this character. (2) The occurrence of unconsciousness, convulsions or other acute cerebral symptoms immediately on birth suggests intranatal lesion.

The following cases have presented this condition:

1. (8) Patient third child. First died of spinal meningitis; second healthy. Parents healthy. Labor severe; lasted four hours; no instruments used. The cord was round the child's neck and he was asphyxiated. He cried for eighteen hours after birth.

2. (56) Mother had pains for four to five weeks before delivery. Labor pains severe for seven hours. Patient was blue when born and was unconscious for three hours after delivery. Head was much out of shape.

3. (74) Placenta previa. Child asphyxiated. Had "spasms" for three days after birth.

The next case is more doubtful: the cause may have been prenatal.

4. (99) When six months pregnant, mother while carrying coal upstairs felt something crack but had no further symptoms. Labor severe; pains for twenty-two hours, severe for ten hours; forceps used; patient asphyxiated. This patient had a right hemiplegia involving the face at birth and the left lower extremity was also affected. For seven days after birth refused to nurse.[2]

Whatever may be the part played by the processes of labor and delivery in these cases, it would seem from our records that there was a much larger proportion with difficult or troublesome delivery among the congenital than among the non-congenital. This cannot be due to the placing of those cases in which the labor was difficult among the congenital because we have counted as acquired only those in which we had a distinct history of trauma or disease.

In the twelve cases in which the lesion causing the idiocy or imbecility was most probably intranatal there was only one in which the labor was easy, and in this case (105) the child was said to have been asphyxiated. There was one case also of breech presentation (205) and one of twins (233). The other cases were as follows:

1. (8) Patient asphyxiated: cord around neck. (See above.)
2. (11) Patient asphyxiated. Waters broke two days before birth.
3. (56) (See above.)
4. (66) Severe; forceps were applied for three hours.
5. (74) (See above.)
6. (99) Labor severe; forceps; asphyxiated.
7. (100) Labor severe; twenty-six hours; forceps; difficulty in delivering body and child asphyxiated.
8. (170) Forceps delivery; mother having convulsions at the time (eclampsia).
9. (231) Pelvic obstruction.

In the 26 cases in which labor was a probable cause, but in which the degree of probability was not so great as in the preceding 12, we find that 17 were noted as severe, hard, difficult or long; 2 as medium. Breech presentation occurred in 3 cases and foot presentation was reported in 4 more. Twins occurred once and once there was a three months' fetus present when patient was delivered. Placenta previa occurred once and once there was obstetric paralysis.

We have, besides the above, 42 cases in which the cause was probably prenatal, excluding those in which heredity or inherited syphilis might exist. In these the character of the labor was unknown in 2. In 32 it was normal, one of these cases being twins, and in two others we have only records that forceps were used but no more definite statement — these were classed as normal. Six cases were noted as hard or severe; in none were forceps used; one child was said to have been asphyxiated; others no report.

If we compare the cases in which labor was a possible or probable cause with those in which the affection was supposed to be acquired we find a marked difference in the character of the labor. We have 12 cases of trauma and 41 of disease making 53 of acquired imbecility. Labor was reported normal in every case of trauma, except two in which its character was unknown. There was one case of twins. In the cases in which post-natal disease was considered the cause the labor was normal in 33 cases; unknown in 2; instruments used (no further information), 1; hard, severe, or very severe, 5, in one of which the mother had convulsions, forceps used in 3 of these; not used in the other two. In one of these child reported asphyxiated (this was the one in which the mother had convulsions); in 3 not asphyxiated; in one not reported.

Therefore out of 39 acquired cases labor was normal in all but 5, and in none of these does it seem to have been dangerous or really beyond natural limits except in the one in which the mother had eclampsia and the child was asphyxiated.

Out of the 38 cases in which the cause of idiocy was probably or very possibly intranatal we find that in 18 cases forceps were used; in 10 cases presumably of presentation of the head, forceps were not used; in 8 cases the presentation was breech or foot and in 2 cases it was not known whether or not instruments were used. Out of 36 cases, therefore, forceps were used in 18 — just one half.

I have not been able to find in these cases any evidence of injury from the forceps. It seems very probable that in cases of intranatal origin the affection is as liable to be caused by prolonged pressure on the head during delivery as by any injury from forceps. We have not sufficient data as yet to draw any certain conclusion but it is certainly possible that delay in the use of the forceps tends to produce this affection quite as much or more than their skillful employment.

Passing now to the prenatal causes, the only objective ones are the injuries which occur during pregnancy to the mother or child. When first obtaining the histories in these cases the importance of the conditions during this period was not realized and no special inquiries in this direction were made. Consequently we have only a small number of cases (39) in which we have records in relation to the conditions during pregnancy. In many cases probably only notes were made when there was something to call special attention to the maternal condition at that time. Out of those 39 cases in which definite statements were recorded we find that

[2] It is difficult to estimate the value of the term asphyxiated in these cases. We cannot distinguish from the history between those cases in which there was serious trouble and those in which the difficulty was slight.

the pregnancy was noted as normal or perfectly normal in 11. In 10 there was a history of much worry on the part of the mother during pregnancy, sometimes induced by the death of a relative; sometimes from other causes. In one of these cases it was noted that there was worry and fright, and we have two more cases with the history of a severe fright to the mother during pregnancy. There were 9 cases in which the mother had a more or less severe fall including one in which she was knocked downstairs, and in these the element of fright was often included. There were 2 other cases of trauma making 11 in all. There were 3 cases of illness of the mother at this time, one of heart disease, the mother dying three days after delivery; two of grippe. There were two cases also in which the mothers were very weak during pregnancy but with no definite disease, and one case was specially mentioned in which the mother was overworked in a factory.

I consider this at the present moment really the most important group for investigation from the standpoint of causation. In the first place because fewer statistics have been obtained in regard to the conditions which exist during pregnancy in this class of cases, and secondly because we need much more detailed knowledge of the value of the causes which are assumed or suggested as of influence in this direction during this period. We have no definite data to show us what probability there is that prolonged worry or anxiety at this time produce definite cerebral results; we do not know what significance to attach to a fall or other injury during pregnancy, when, as in most cases, no definite clinical symptoms follow. We are still almost wholly in the dark in regard to the diseases of the fetus or child before birth and how such diseases may affect the central nervous system. We can gain only a dim perception of these things from such knowledge as we possess of the causation of non-development of the fetal brain or of monstrosities.

I have purposely refrained throughout this paper from referring to the pathological conditions which may exist in these patients, but I must state here that there is strong evidence in many cases of affections of this class from the pathological standpoint that the disease occurred or began at some period previous to labor. If, therefore, we hope to diminish the number of the feeble-minded or idiotic children we must seek among other causes those which act previous to labor and determine whether or not they are remediable.

*Heredity.*— It is somewhat difficult to decide how large a part heredity plays in the causation of feeble-mindedness and idiocy but there can be little doubt that it is a potent factor in a considerable number of cases.

It is a matter of slight importance as regards results whether the inheritance be direct or what is sometimes, though incorrectly, termed indirect, whether the disease or affection appear in the immediate or collateral ascendants. The character of the inheritance is of more importance. We have reason to believe that where one of the parents is feeble-minded the offspring is more likely to be feeble-minded than is the offspring of healthy parents. We know that epileptics are liable to beget epileptics, and we believe that a person in whose family a non-traumatic epilepsy exists is more liable to epilepsy than one whose family is free from epileptic taint. In the same way we believe that where there is an epileptic taint in the family, feeble-mindedness is more probable. As to the importance of other diseases or affections of the central nervous system we must for the present take an undecided position and await further evidence. The relation of tuberculosis to feeble-mindedness is still doubtful. There is no sufficient evidence that it tends in any way to its production.

Besides these affections which are liable to run through or infect a family we have certain affections or conditions acquired by the parents which have unquestioned effect upon the offspring. The principal of these are syphilis and alcoholism.

In considering our own cases we find that in 183 in which the health of the parents was recorded, in 137 they were both reported healthy. In nearly all these cases we are justified in the presumption that the family history was negative, though this is actually stated in only 34. There are also 5 cases in which while the parents were healthy there was a poor heredity.

Descending to detail we find one patient whose father was imbecile; two whose mothers were of poor mental development, and two from the same family who had a cousin that was not bright. We find no cases in which either parent had epilepsy, but one patient had an epileptic uncle and another an epileptic cousin; while in a third case a paternal cousin died in a fit and 6 of the father's family had brain trouble. Besides these cases there was one in which the mother had hysteria and one in which the mother some time later committed suicide. One patient had an insane aunt; one had two uncles who died as infants in convulsions.

Out of these there are only three in which either of the parents was seriously affected and two more in which the mother had some indefinite nervous affection which might or might not have a bearing on the etiology of the affection in the child. We have seven with a history of nervous disease of more or less importance in the collateral members of the family. I should attach considerable weight to the existence in these of imbecility or epilepsy; much less to the presence of other affections of the nervous system. Too many children die of convulsions to make such an occurrence of more value than a possible indication of some tendency to cerebral weakness and hyperexcitability which would have but an indirect bearing on the affection of the collaterals.

Syphilis appears to play a smaller part in the production of feeble-mindedness than was formerly suspected. The following cases, 11 in

number, are those in which it was present or there were reasonable grounds for suspicion. There are only 4 in which the father was known to have syphilis. It is plain, however, that the mere fact that the father has or has had syphilis is not sufficient to determine that this is the cause of idiocy in the offspring.

SYPHILIS.

1. (188) Fourth child. Labor normal. Pregnancy normal. First, second, third children healthy; fifth and sixth stillborn. Sleepy for twenty-four hours after birth. Internal strabismus.
2. (189) Cretin. When two months old snuffles and trouble with throat. Four pregnancies, patient first; second and fourth miscarriages.
3. (92) Father had syphilis. Mother alcoholic. Pregnancies six; patient fifth; second a miscarriage at two months from fall. Sixth had imperforate anus; others healthy.
4. (94) Labor severe, instrumental. Father does not live with mother. Mother healthy. Children two; patient second; first had snuffles, died eighteen months, tonsilitis.
5. (49) Father syphilis. Mother healthy. Labor long; instruments. Twelve pregnancies, patient twelfth. First, miscarriage at six months from lifting. Second healthy; third died two and a-half years old of brain trouble; fourth, died, diphtheria; fifth healthy; sixth miscarriage at seven months, cause unknown; seventh healthy; eighth, ninth, tenth, eleventh, miscarriages at seven months, cause unknown.
6. (44) Father drinks and has deserted wife; mother healthy. Pregnancies six; four children all died young from icterus neonatorum. Sixth miscarriage due to variola. Patient is the first.
7. (43) Hydrocephalus. Snuffles as a baby; skin peeled off; intestinal trouble. Born at seven months. Eight pregnancies, patient eighth. Sixth and seventh stillborn; fifth clubfoot; first to fifth inclusive healthy; but second died at seventeen months of cholera infantum.
8. (29) Cicatrices on soft palate and tonsils with stenosis. Patient is third child. Five children; fifth stillborn from worry, others healthy. First child has ulcerated lymphatic glands in the neck. Frontal bones very prominent. Parents healthy.
9. (23) Snuffles. No eruption. Parents healthy. Labor natural. Pertussis with diarrhea at one year to which is attributed present trouble. Four children; first stillborn; second patient; others healthy.
10. (21) Labor natural. Spinal trouble at nine months; plaster jacket. Hydrocephalus at two years. Father syphilis fifteen years, but last symptoms after pregnancy of patient. Mother has uterine trouble. No other children.
11. (3) Father has syphilis. Labor natural; third child.

Alcohol in the parents undoubtedly plays an important part in the causation of the troubles we are considering — partly probably by direct action upon the tissues and constitution of the offspring, but largely indirectly through the exposure of the mother to injury, fright or worry during pregnancy. We find seven cases — one doubtful — in which this was a factor in the condition. There are two points to be mentioned in relation to alcohol as a cause.

On the one side is the difficulty of obtaining exact information on this subject; on the other, the fact that alcoholism is frequently combined with syphilis, and the effects of the two cannot always be distinguished. I believe, however, that in these cases by means of direct personal interviews with the parents the first difficulty has been reduced to a minimum.

The amount of alcohol taken is of great importance. It is only in cases of excess that any essential influence is to be feared. The question of alcoholic condition of the parents at the time of coition is of much importance, but this can unfortunately rarely be determined.

We find in our statistics only eleven cases in which an alcoholic history was obtainable.

1. (18) Father alcoholic.
2. (38) Father drinks steadily but not to excess; mother's brother alcoholic.
3. (39) Father alcoholic.
4. (44) Father drinks; has deserted wife; possible syphilis.
5. (61) Father alcoholic. Mother drinks a little.
6. (68) Father very alcoholic; mother alcoholic; patient has hydrocephalus.
7. (160) Father alcoholic; has deserted wife.
8. (185) Father alcoholic.
9. (251) Father drinks at times.
10. (90) Father alcoholic.
11. (92) Father has syphilis; mother drinks.

Lastly, we come to what is in my opinion an exceedingly important cause of feeble-mindedness on which sufficient stress has not been laid. This is maternal uterine disease. How often this acts we do not know. It seems to me possible that many otherwise unexplained cases are due to this. I find fifteen cases in which this cause is suggested. Frequent miscarriages may be due to this as well as to syphilis or other causes.

Attempted abortion undoubtedly also plays a part in the causation. It is not probably a very frequent cause. It is a cause which it is difficult to detect because it is almost the only one about which the parents under the most favorable circumstances cannot be expected to tell the truth.

While not discussing in this paper the pathological conditions existing in these patients I will note that we find among the 258 cases 11 cases of hydrocephalus as follows:

1. (No. 21) See syphilis. Father acquired syphilis eleven years preceding birth; the last symptoms (throat) came on after wife was pregnant with patient. Father does not drink. Mother healthy except for uterine trouble; has been married five years; no signs of syphilis. Patient is only child. No miscarriages. Labor easy, natural. Patient had spinal trouble (caries) when nine months old and wore a plaster jacket. When two years old was ill; stupid for two days and after this hydrocephalus was noticed. Is now three and a half years old.
2. (No. 39) See alcohol. Father alcoholic, healthy; mother healthy. Patient is an only child. No miscarriage. Labor not remarkable. Hydrocephalus first noticed when three months old.
3. (No. 43) See syphilis. During second month of pregnancy father disappeared and was never found; much worry during pregnancy. Labor easy; was born at seven months. Eighth pregnancy. Sixth

and seventh children stillborn at term. Hydrocephalus noticed while a baby.

4. (No. 35) Patient eight years old, has spastic diplegia. Has webbed fingers, hypospadias and hydrocephalus. He was the fourth pregnancy. The first and second were miscarriages at three weeks; third, a healthy child, died when nine months old of cholera infantum. Labor long and difficult; child had the cord around his neck and was asphyxiated; no forceps used. Had convulsions at birth. Parents healthy. One uncle epileptic. Tuberculosis on paternal side. Maternal grandmother died of phthisis.

5. (No. 57) Spastic paraplegia. Hydrocephalus. Mother well during pregnancy. Labor difficult. Feet presented. Child born while mother was standing and fell striking head on floor. Cried from birth. Convulsions when a year old. Ten children, three dead; others healthy. Patient ninth.

6. (No. 68) See alcohol. Father very alcoholic. Mother alcoholic. When three months old had spinal meningitis with hydrocephalus.

7. (No. 73) Parents healthy; labor normal. Hydrocephalus followed pneumonia when nine months old. Fifteen children; patient fourteenth; others healthy; six dead, two at birth, one when eleven days old, the other three of diseases having no bearing on patient's condition. Patient had meningitis when two years old.

8. (No. 78) Convulsions came on when six months old, followed by hydrocephalus. Had been bright previously. Parents healthy. Labor severe; forceps not used. Five children; first died when sixteen months old, of hydrocephalus; second has hip disease; patient fourth; third and fifth healthy.

9. (No. 91) Parents healthy. Five children; patient second; others healthy. Labor normal. Pneumonia when seven months; mumps at nine months.

10. (No. 108) Father subject to rheumatism; mother not strong. Two children; patient second; other healthy. Labor not severe; born at eight months; feet presented; was asphyxiated. Never healthy; convulsions frequent during dentition. When one year old cholera infantum and hydrocephalus.

11. (No. 133) Parents healthy. Six pregnancies; first died when a year old of pneumonia; second not strong, drags feet; third does not speak, rickets; fourth, patient; fifth miscarriage at three months, cause unknown; sixth healthy. Patient has rickets. Had cholera infantum at three months; otherwise well.

12. (No. 225) No family history. Labor hard. Forceps not used. Only child. Convulsions at three months. No other illness.

The statistics in this paper can only be considered preliminary to those which I hope may be obtained in the near future. Anything which may tend to the prevention of feeble-mindedness and idiocy is of the highest importance and I desire to turn the attention of all those who may have the opportunity to observe or investigate facts bearing on the etiology of these cases to the great value of such facts if properly recorded and published.

## A SIGMOID BAND OF UNUSUAL ORIGIN. OPERATION — RELIEF.

BY ARTHUR L. CHUTE, M.D., BOSTON, MASS.

The following case presents an intestinal band of very unusual etiology. While it would seem as if the literature must contain similar examples, I have been unable to find any.

In December, 1898, I saw a woman of twenty-two in her first labor. When seen she had been having more or less severe labor pains for nearly twenty-four hours, and was pretty well exhausted. A much moulded head was found arrested just below the brim of the pelvis. The patient was delivered immediately by a moderately difficult forceps operation. She had an afebrile and apparently normal convalescence. Her bowels were confined for a few days, because of repair of the perineum. When the patient had been about for some days, there developed a fissure of the anus for which the sphincter was dilated and the patient again discharged, her bowels moving regularly and without pain.

About a month later I was again called and found that the patient had had no movement of the bowels for seventeen days. Her abdomen was slightly distended but neither tender nor tympanitic; she had had no vomiting. The over-loaded bowel was relieved by enemata. Then for several weeks a large number of the usual cathartics were tried; at first with result, but gradually they all lost their efficacy. The patient even took for a few days two-drop doses of croton oil without effect. On one occasion she took, on her own initiative, five drops of croton oil which gave her very severe abdominal cramps but no dejection. In conjunction with the use of the cathartics, regulation of diet was carefully attended to, and abdominal massage was also tried; for some time electrical stimulation was used, but all without result. Except after a powerful cathartic there had been no pain; distention was variable but never excessive. There was a tender spot some three or four inches below the umbilicus and to the left of the median line, yet nothing could be felt at this point.

After the over-dose of croton oil, cathartics were given up. The patient took a daily enema and had a dejection almost immediately afterward. After the first gush of bowel contents all forced attempts at defecation were useless, and there was the feeling that the more she strained the tighter the obstruction became. It was noticed that only a small part of the injected water was returned, and that for an hour or two afterward the patient passed large quantities of very clear urine.

The condition remained unchanged, and in November, 1899, I opened the abdomen by a median incision, expecting to find some trouble in the pelvis. None was found and I closed the abdomen without making as extended a search as I should have done. The convalescence was uneventful. For a few days before leaving the hospital the patient had a daily dejection following seventy-five-drop doses of fluid extract cascara, given three times a day; however, on returning home her condition became as before.

In January, 1900, this patient became pregnant for the second time and delivered herself at term, after a moderately hard labor. The convalescence was afebrile.

From December, 1899, until February, 1902, the patient did not have a single natural dejection. In February, 1902, I sent her into a hospital for observation. At first she was fed large quantities of bulky food and given neither cathartics nor enemata. Two or three attempts of this sort showed its futility, as at the end of forty-eight hours she would have a violent headache and begin to vomit. Various cathartics in small doses produced no effect; in larger doses they caused vomiting and griping abdominal pain. Nothing but an enema would bring about a dejection. When given an enema of a quart, quantities varying from 8 to 14 oz. of stained water containing fecal masses

would be returned within a few minutes. The rectal tube, passed as high as possible, failed to recover the rest of the water. After each enema the patient would pass for an hour or more a greatly increased quantity of colorless urine. It was found that an enema of a few ounces acted quite as well as a larger one, and that after the first gush of bowel contents, straining accomplished nothing; also that enemata if repeated before a number of hours had passed produced no result.

General examination of the patient was negative except that the blood count showed a slight anemia, and that the urea was low — about half the normal. The patient's abdomen was slightly distended, everywhere soft and no masses could be felt. There was the same tender point below and to the left of the umbilicus. There was no visible peristalsis. Pelvic examination showed no abnormality. Rectal examination showed nothing except inability to introduce any instrument further than 6 or 7 inches. The instrument would then cause great pain and refuse to advance under the use of justifiable force.

I opened the abdomen for the second time in March, 1902. The omentum was lightly attached to the abdominal wall at two or three points along the old incision. When these were separated a considerably enlarged sigmoid came into view. A band between 2 and 3 mm. in diameter and 4 inches long arose from the free border of the sigmoid some 6 or 8 inches above the floor of the pelvis, and was attached to a point on the abdominal wall to the left of the median line. Its point of attachment to the abdominal wall corresponded to the place that had been tender. At a point a little above this band an appendix epiploica was attached to the omentum by a slight adhesion. These bands were tied and cut. The pelvis showed no adhesions. The sigmoid above the band seemed distended and thinned, instead of thickened, as one would expect to find it, in a segment of intestine that had been attempting for some years to overcome a not impassable obstruction.

Convalescence was uneventful. With moderate doses of laxatives the bowels moved daily, on several days she had more than one dejection. In the first three months after operation she had a dejection daily and used enemata but twice. When last seen, a year after operation, her bowels had moved daily, with one exception. She still depended on laxatives but required a smaller dose.

This case belongs to the general class of sigmoid adhesions causing chronic obstruction. Its greatest interest is in the etiology, though the nature of the band (an appendix epiploica) is not of common occurrence. The mechanism of the occlusion and its duration also present points of interest.

The fact that this patient had been well previous to her confinement, the absence of a febrile convalescence, the appearance of symptoms soon after her confinement, and the finding of no adhesions about the uterus, ovaries or tubes, lead to the conclusion that the band must have been the result of some injury received during labor. It seems probable that during delivery an appendix epiploica, or possibly the sigmoid, received some injury to its peritoneal coat, presumably by being caught between the edge of the pelvic brim and the child's head, or the edge of the pelvis and the forceps, and that this abraded surface became adherent to the abdominal wall during the few days the bowels were confined after delivery.

Sigmoid bands arising from mechanical injury during labor are very unusual. In a quite extended search of the surgical and obstetrical literature I have been unable to find a similar instance. Large numbers of bands have been reported following uterine sepsis and inflammation of the pelvic organs, and a number of cases are reported in which the sigmoid has adhered to malignant growths of either the uterus or an ovary, also a few in which the adhesion has been to cysts. In men this type of adhesion is rarer than in women. The usual causes in men are: disease of the appendix, dysenteric ulcers, tuberculous peritonitis and injury. These same causes may of course produce the condition in women.

In spite of the fact that these bands usually arise as a result of inflammatory processes or new growths, the many instances of post-operative bands, and the fewer cases in which bands have followed contusions of the abdomen, point to the probability of any injured or abraded peritoneal surface as being a sufficient cause for an intestinal band. Fagge, Franklin, Schwyzer, Kempe and Brown, Riedel and Kalloch all report instances where adhesions have followed non-penetrating injuries of the abdomen.

Several things make it more probable that the band in this patient developed from an injured appendix epiploica rather than from an injury to the serous surface of the sigmoid. The position of the band was above the point where the sigmoid crosses the pelvic brim; it was also on the free border which would be away from the bony edge. Also, the clubbed end of an appendix epiploica renders its incarceration between the pelvic brim and the descending head much easier than that of the smooth surface of the sigmoid. The position of the band, diametrically opposite the mesentery, and the absence of any scar on the intestine, also point to the probability of the band being of this origin. Had a bit of the circumference of the intestine been caught we should have had a condition like a Richter's hernia and undoubtedly attended with symptoms at the time. Bands which are the result of appendices epiploicæ forming adhesions are not very common. However, Ribes and Daniel, Dun and Riedel report such instances. In one of Riedel's cases the nature of the band was confirmed by microscopical examination.

As regards the mechanism of the obstruction in this case, the pull of the band apparently caused an incomplete occlusion by kinking at its point of attachment to the sigmoid, making it difficult, but not impossible, for bowel contents to pass. The inability of the lower segment of the sigmoid and the rectum to empty themselves without the help of an enema is not easily explained, except on the ground of some inhibitory reflex. Cabot reports a man of fifty-four in whom there were adhesions from the sigmoid to the bladder and pelvic wall, and in whom there was inability to empty the rectum without in-

jections, although in his patient, as in mine, the obstruction was not sufficient to entirely prevent the passage of feces into the rectum.

The length of time which some of these bands have existed before giving serious trouble is quite remarkable. In one of Cabot's cases symptoms first appeared thirty years before the time of operation. Watkins reports a patient who had symptoms for eight years, Rosenwasser one for six years, Treves, Elliot, Lotheisen, Riedel and Downes report cases in which the symptoms have covered shorter periods.

Constipation gradually increasing in obstinacy is the symptom which is most frequently seen in these cases of kinking of the sigmoid by bands. Tenderness in the left iliac fossa is common, though the seat of tenderness has varied with the point of attachment of the band. Occasionally defecation has been painful. The amount of distention varies but is usually moderate. Visible peristalsis is not common. Pain and vomiting are usually seen only during intercurrent attacks of complete obstruction, which are not uncommon in the course of these cases. Gurglings and attacks of diarrhea are not often mentioned. In a large proportion of cases examination has shown nothing more than local tenderness.

In making a diagnosis, the history of an abdominal operation, previous attacks of appendicitis, puerperal sepsis or pelvic inflammation is of the greatest aid. With such a history obstinate constipation, not affected by the usual treatment, particularly when accompanied by tenderness in the lower abdomen, should lead to a consideration of the probability of the obstruction being mechanical. In the light of the reported case, and that of Cabot, the ability to secure dejections by enemata, when large doses of cathartics persistently fail, may be a diagnostic sign of some value.

A study of the reported cases of chronic obstruction by bands or adhesions to the sigmoid shows that many of these patients, though having had symptoms for years, have been supposed to be suffering simply from particularly obstinate constipation, until such time as an acute and often fatal obstruction has taken place.

These bands are especially apt to bring about an acute obstruction during pregnancy or the puerperal period, and their diagnosis at this time is attended with particular difficulties.

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## Clinical Department.

### MASSACHUSETTS GENERAL HOSPITAL.

Clinical Meeting of the Staff, Treadwell Library, Feb. 12, 1904.

In the absence of the President, Dr. H. H. A. Beach took the chair.

Dr. R. G. Wadsworth read a paper on "The Ultimate Results in some Gynecological Operations at the Massachusetts General Hospital." This paper was published in full in the Journal for March 24, 1904.

#### DEVIATION OF THE NASAL SEPTUM.

by A. Coolidge, Jr., M.D., Boston.

A symmetrical nasal septum is an exception rather than the rule. When the deviation interferes with the normal functions of the nose it is of course desirable to correct it, provided this can be done with a fair chance of a successful result. Deviations are so varied in form and extent, and the access to the seat of operation is through so small an opening that it is only in recent years that any satisfactory or even promising methods of operation have been established. The problem is a peculiar one. A perpendicular plate of cartilage is inserted into a perpendicular plate of bone along three quarters of its edge, while the remaining quarter projects outwards to form the external nose. In infancy the septum is relatively small; after the second dentition it begins to grow in relation to the surrounding structures, and this growth in the white race is especially marked in a forward direction. It pushes outwards the external nose, both the nasal bones and the cartilaginous bridge. To appreciate this it is only necessary to compare the profiles of children with those of their parents. It is a matter of common observation that most of us have asymmetrical skulls, and it is easy to imagine the effect of even a slightly asymmetrical development upon this thin perpendicular plate of mixed cartilage and bone, held firmly in a bony frame, trying to grow forward. That it should twist and bend is almost to be expected, and although it may do so in many different ways there are a few general principles which are worthy of notice. In addition to varying curves of the septum as a whole, the first thing to be expected would be a bending along the weak

points, that is the synchondroses of the cartilage with the bones, the vomer and perpendicular plate of the ethmoid. This bending would easily result in a dislocation, which, as it takes place slowly, is more or less masked by processes of repair. In this way spurs and ridges of mixed cartilage and bone appear on the convex surface of the bending septum, while the upper edge of the vomer sometimes appears as a rounded spur in the concave side. A second result which might be expected is found towards the center of the cartilaginous plate, in front of the bony septum. This plate being held firm by the maxillary spine below and by the nasal bones above, but comparatively movable in front, is often bent on a perpendicular axis, at about right angles to the dislocation behind. This may vary from a slight bowing of the cartilage to a sharp bend at an acute angle, coming just opposite the nasal process of the superior maxilla at the introitus of the nasal cavity, where it most easily obstructs breathing. In many cases of extensive deviation these three processes, bowing of the septum as a whole, dislocation of the cartilage and vomer, and a purely cartilaginous bend from the nasal spine of the maxilla, at right angles to the other, may be easily traced. The external nose, that is the nasal bones, or cartilaginous bridge or both, may take part in the asymmetry.

During the past three months I have in the hospital operated upon 12 cases, of which I show 5 this evening. Deviations vary so much that widely different methods must be adopted for different cases. In these cases the type of deviation was that already mentioned, a septum more or less bent as a whole, with a sharp angle which could be demonstrated as due to a dislocation of the cartilage from the vomer, and more or less perpendicular bend of the cartilage above and anterior to the maxillary spine. In these operations I have used some of the principles or instruments of Asch, Roe, Watson and Gleason. Where there is a perpendicular cartilaginous angle on the obstructed side a piece of cartilage is removed from the whole length of the angle, care being taken not to injure the mucous membrane of the concave side. This is easily done by a steel cylinder, sharpened at one end, an instrument introduced by Dr. Mixter for removing a core of tissue for pathological examination. A saw is then introduced along the floor of the obstructed cavity, and the cartilage separated from the vomer and maxillary spine, by cutting obliquely upwards through the septum. The free lower edge of the cartilage can then be forced over the free upper edge of the vomer into the concavity of the opposite side, where it overlaps and maintains itself in position. This overlapping is due partly to the oblique incision, and partly to the fact that a bowing septum will of course have redundant tissue when it is straightened. It is well to curette away the mucous membrane from the line along which the lower end of the cartilage is to rest. If the septal bones are markedly deviated from the median line, they are then fractured and set as near the median line as possible. A hollow tube is put into the previously obstructed cavity for support, and retained for a few days to a few weeks. There is often at first considerable over-correction, which disappears in a few weeks. A good final position of the septum can be encouraged by leaving out or putting in tubes of the proper size and shape during the first two or three weeks. A tube is easily removed daily, washed and re-inserted.

In regard to an anesthetic, if the operation can be done by cutting cartilage only, it is often easy to do it with cocaine, but if any bone is involved, ether is advisable.

F. C., schoolboy, age eleven. Respiration on the left side much obstructed by deviation of the septum with a spur at the vomer-cartilage synchondrosis, and a perpendicular cartilaginous spur at nasal process.

Operation with ether Dec. 17. Both spurs removed, cartilage separated from vomer, and incision brought forward anterior to nasal spine. Cartilage pushed over into concavity in right side; holds itself in good position. Hollow rubber splint.

Dec. 17. Over-correction. Smaller splint. Dec. 24. Slight over-correction, splint left out. Dec. 26. Small tube into left cavity. Jan. 13. Splint omitted. Jan. 30. Septum practically straight.

V. M., clerk. Age twenty-five. Nearly complete occlusion on right side of nose. Bend of septum along the vomer-cartilage synchondrosis. Anteriorly a bowing of cartilage without any sharp angle, nearly obstructing respiration behind the ala. Concavity in left side, with rounded top of vomer showing as a ridge.

Jan. 8. Operation with ether. Mucous membrane over upper part of vomer in left side curetted. An oblique cut with a saw from the right into the left cavity, separating cartilage from vomer and maxillary spine. Cartilage pushed easily into left side, good position. Jan. 19. Slight over-correction, splint omitted. Feb. 11. Septum nearly straight, slight over-correction.

J. B., mill operator, age twenty-three. Deflective of external nose, nasal bones and cartilage, to left. Septum much deviated into right cavity along lower edge of cartilage.

Jan. 30. Operation with ether. Both nasal bones separated by a saw from nasal processes of superior maxilla, and fractured. Placed in median line. Cartilage separated from vomer, and forced into left cavity. Vomer fractured and placed in median line. Long splint put in. Considerable over-correction. Feb. 4. Over-corrected. Splint removed. Feb. 11. Over-correction less marked.

M. R., cigar maker, age twenty. Patient complains of difficulty in breathing through right side of nose. Deviation of septum due principally to dislocation of septum from vomer; very slight bending of vomer, or of ethmoid or of cartilage anteriorly.

Feb. 9. Operation with cocaine. Mucous membrane curetted from upper part of vomer, incision along synchondrosis, cartilage pushed into other side, where it remains firm, forming a slight over-correction.

Feb. 16. Hollow splint removed. Slight over-correction.

F. C., clerk, age fifteen. Has always breathed through mouth. For three years the right side of nose has been nearly entirely occluded. External nose; nasal bones straight, cartilaginous bridge mark-

edly deviated to the left. An extensive deviation with sharp angle along the whole cartilage-vomer synchondrosis, also a sharp cartilaginous perpendicular bend occluding the introitus on the right. Deep concavity in the left side. A large mass of adenoid vegetations in the naso-pharynx.

Feb. 13. Operation with ether. Removal of sharp angle, reduction of dislocation and fracture of bony septum as already described. Also removal of adenoid vegetations.

Feb. 23. Tube replaced by pin inserted through the septum from the left side.

Feb. 25. Slight over-correction of septum, splints omitted. External nose deviation of cartilaginous bridge reduced one-half.

## USE OF THE SPHYGMOMANOMETER.

BY H. F. VICKERY, M.D., BOSTON.

On my last service I had every patient who came into my care measured with the sphygmomanometer upon entrance as a matter of routine. I have not the patients to show, but would like to speak briefly about things that interested me in that experience. There were 267 patients in whom the resistance of the radial artery was measured with the Riva-Rocci machine. Some patients were not measured because they were delirious or for other reasons.

I think the measuring of the pulse-tension a useful addition to the modes of studying medical cases, and I was impressed with the discovery of high tension by the machine in cases in which I had not suspected it. I was glad to see that Dr. Oliver of London and others in this country have made similar observations. Dr. Oliver says when the radial artery is of normal size one can tell the tension pretty reliably, but if the artery is not more than one half its normal caliber very good clinicians will fail to appreciate a tension of 160 or 200 mm. of mercury, whereas the average tension of a healthy man might be put at 140 and of women and children less.

In regard to diagnosis, first, it was present in all the cases of nephritis, I think without exception. It is said not to be present in a purely parenchymatous nephritis, but I do not think I had such a case. Some of the cases of nephritis were complicated with heart lesions, but that did not prevent the tension being high, and in fact, as we shall see in a moment, heart lesions are quite consistent with high tension apart from any nephritis. As improvement occurred in some of the nephritic cases the tension lowered.

I might mention incidentally as confirming the value of the manometer in diagnosis in nephritis that I have under observation two adolescents with constant albuminuria, one lasting some years, with absolutely no casts whatever, and they have a low tension, whereas a man of about forty who came to me lately with beginning interstitial had a tension of 210.

In aneurism Dr. Norris of Philadelphia and others have compared the two radial arteries. My house officer, Dr. Fitch, tried this and found in two or three cases a dissimilarity in the measurement, 110 compared with 132 in one patient, 112 compared with 123 in another. In a third case of aneurism there was no difference in the two arteries.

It is said that in hemiplegia there is also a disparity in the two sides. I had one hemiplegia case, but failed to measure the pulse except on one side. That was thought to be a thrombosis and the tension was low, 140, whereas if there is cerebral compression as in case of active hemorrhage that might be cut down on, the tension is high. We had an intracranial tumor with choked disc and severe headache in which the tension was only 130.

We were on the watch for typhoid perforation, but did not have any. The cardiac cases were astonishing to me. All sorts of cardiac lesions in different individuals are capable of presenting a high tension, persons with aortic regurgitation perhaps less often than the others; but mitral regurgitation, mitral stenosis, double mitral disease, aortic and mitral disease combined, and myocardial degeneration may all exhibit high tension. It seemed as though the majority of those with very high tension were not those with good compensation, but with ruptured compensation. For instance, a man who died in the hospital on the twenty-first day after entrance, sixty-eight years old, had arteriosclerosis, myocarditis and a tension of 198. A malignant endocarditis with trouble in both aortic and mitral valves died on the nineteenth day in the hospital, with a tension of 155. That was a very acute case, probably due to gonorrhea.

Cases with anarsaca and hydrothorax and irregular and intermittent heart with mitral disease had tensions of 215 and 232 and of pure myocarditis up to 235.

Now whether we can get any useful deductions as to treatment from these astonishing conditions in the systemic arteries in ruptured compensation remains to be seen. It would seem as if we see here the explanation of the clinical experience that digitalis often will not work in such cases until you have given a purge, preferably a mercurial, and unloaded the capillaries so the left heart when it is encouraged to work harder does not as you might say press against a stone wall. In one case with high tension we substituted nitroglycerine for digitalis, but the tension did not lower with that. Finally we resorted to purging and digitalis and the tension came down somewhat and the man improved. A similar experience has been reported at the Johns Hopkins Hospital.

Only one other point about the tension with regard to detecting a perforation in typhoid very early. It has been said that the highest typhoid tension is somewhere about 140 and usually much below that. I had a woman with typhoid on the fifth day, without any casts in her urine, with a tension of 152. Another woman on the ninth day, who probably had chronic interstitial nephritis, had a tension of 162. One man had a tension of 162 and another in the third week 165;

so that it would seem that if you are going to be guided by the sphygmomanometer with regard to advising a laparotomy for perforation you must keep track of the individual patient from the beginning of treatment.

Dr. R. C. Cabot: I think as Dr. Vickery does, that we have not proved in any way yet that this instrument is of use in giving us any therapeutic indications. I think we now know that *if* our fingers are of any use to tell us about pulse tension this instrument is of more use. If it was ever of any use to put the fingers on the pulse to find out the tension we have now a much better way of doing the same thing. Another use of the instrument is brought out by the third case of aneurism to which Dr. Vickery referred; comparing digitally both pulses I was convinced that the tension in one was twice as high as in the other. The blood pressure measure showed they were the same. The reason I think was that given by Dr. Vickery, namely, that on one side the artery was so much smaller than on the other. In a small artery I think most of us would be deceived again and again as regards tension when contrasting it with that in a larger artery. If it is of use to know tension this instrument is of value. What I doubt is whether it is of use to know tension, except possibly in kidney disease.

In regard to the cardiac cases which Dr. Vickery has reported I think what was recorded was the blood pressure during the strongest of the varying heart beats. If any wave comes through the cuff to the wrist we say the artery is not obliterated. The strength of different waves in mitral disease is very different, and when we say the blood pressure is 150 what we mean I suppose is that the strongest blood wave in a group occurring within a few seconds brings the blood pressure up to 150. The other waves may be so weak that the average tension is very low and yet our measurements recording only the crest of the highest waves will give a pressure which is very astonishing and quite misleading in view of the manifest phenomena of poor compensation.

## TWO CASES OF CRURAL MONOPLEGIA OF TRAUMATIC ORIGIN.

BY J. J. PUTNAM, M.D., BOSTON.

The first patient was an athletic young man, an accomplished boxer, who, about one month ago, received a number of blows about his head during a sparring-match. He does not think there was any particular blow which caused the mischief which resulted, but he was struck a number of times and became very much exhausted from the contest, the more so that he was out of condition. He finally went to his corner in a sort of collapse, and became nearly if not quite unconscious. His friends then took him to the relief station and the next day brought him to this hospital, where he came under the care of Drs. Warren and Greenough. When he appeared at the hospital he did not remember much of anything that occurred the previous evening, but as soon as he improved he recalled some things which he had forgotten which would indicate that the unconsciousness was not so deep as it had appeared. When he came to the hospital his left foot was entirely limp at the ankle, and could not be extended although he could flex it somewhat. Besides that there seemed to be practically nothing the matter except that he was very nervous. It was found that his knee-jerk was exaggerated on the right side, and he had at least a suspicion of an ankle-clonus and also a Babinski reflex which, however, was not obtained every time. Sensibility was not materially affected. He was feeling very uncomfortable about his head and very nervous. After he had been in the hospital some days a plaster was put on to keep the foot in a proper position and he went out. He does not know just how soon his foot began to improve, but certainly within forty-eight hours. About a week later he came to the out-patient department, and then the motions of the foot were almost perfectly good.

The question arises as to whether he had a lesion in the head and what the lesion was. It seemed hardly possible that he could have had a hemorrhage into the substance of the brain or involving the cortex to any great degree without more symptoms, and at the same time the diagnosis of purely hysterical trouble appeared hardly justifiable. He now tells us that he has discovered another symptom, namely, that he bumps into people on the right side, and on examination of his field of vision we find that he has hemianopsia, although not so complete but that he can see vaguely in the right half of the field, especially of the right eye, and that, I think, makes it clear that these symptoms were, so to speak, genuine, and that he did have an affection of the head which resulted from the accident. Then the question arises whether such lesions are not a good deal more common than we suppose, and whether they are as limited as the limited extent of the paralysis would indicate. The lesion or lesions must I believe have gone back as far as the occipital lobe and as far forward as the neighborhood of the Rolandic fissure, and in fact there are perhaps multiple capillary hemorrhages present. He is now practically well except for his hemianopsia, and inasmuch as he sees, although not very distinctly, in the right half of his field, it is to be hoped that the trouble will disappear.

His native tongue is German, and he says he spoke English fluently before the accident but that since then he has not been able to speak so well.

The second patient is a law student who last October was coaching a foot-ball team of young men and was tackling with a number at once when he received a blow on his head from somebody's knee. He came to the ground at the moment and felt his leg limp, but only for a brief time, so that he got up and went on with the game. Two weeks later he was playing basket-ball and was again struck on the head and again felt the leg limp and tingling. After that he received in wrestling and on other occasions blows about the head, and on several such occasions this tingling and weakness came in the leg. In November, after being fatigued through one of these contests, he felt of a sudden his leg getting rigid and a sensation passing up the leg to the arm and the face. He was able to ask his friends to do certain things for him, but at the end of about two minutes he lost consciousness and was unconscious twenty minutes. The same thing happened again about seven weeks ago. Now he has a nearly complete foot similar to that which the last patient had when he first came to the hospital. There is no other sign of cerebral injury, but the paralysis is becoming rather more intense and perhaps more extensive. The knee-jerk is exaggerated and there is a distinct ankle-clonus.

## PERINEAL PROSTATECTOMY.

BY F. B. HARRINGTON, M.D., BOSTON.

I SHOW a case of perineal prostatectomy done six weeks ago. It is a conservative prostatectomy in which the ejaculatory ducts have been saved. You will see a small curved scar in the perineum. Two weeks after operation the perineal tube was taken out of the bladder and he then could pass his urine voluntarily and has ever since. He has still a little leakage by the perineum and about an ounce of residual urine. The urine is in good condition. He had a good deal of cystitis when he came in and had spent all his money and time in trying to get relief. He is now a happy man.

Young of Baltimore described this operation in June and his paper is published in the *Journal of the American Medical Association* in October. It is one of the clearest and best descriptions of an operation I ever saw. It does not mean an operation which is to do away with the Bottini. I think the youngest man here can remember when physicians and surgeons practiced and taught that a hernia which was well held by a truss and which gave no trouble should be let alone and operation only done when a truss could not be worn. Now if a patient is in good health we recommend operation as a rule even if the hernia gives little or no trouble. I have always believed that if we ever got a good operation for the prostate we should recommend an operation as soon as a man came to catheter life, not waiting until they came with diseased kidneys and bladders. Such an operation I believe this of Young to be.

Young had operated in June on fifteen men. He said he believed in every one the sexual power had been retained. He was quite certain there had been no injury to the vas or to the seminal vesicles and he does this in this way: An inverted V is made in the perineum down to the urethra having separated it so that the rectum drops away from the prostate; this is done very easily and you have a clear space to operate in. Through the membranous urethra this tractor is put into the bladder and opened. It takes hold on both the lateral lobes and you have a powerful instrument with which you can drag down the prostate getting it well into the perineum. Having brought the prostate into view you make incisions on either side of the urethra. You are guided by this retractor. You make a direct incision along the side of the urethra for a considerable distance down, perhaps one-fourth to one-half inch. You dissect with a blunt dissector the prostate on either side away from the sheath. After you get down towards the bladder you put your finger in. You feel the wings of the instrument. You can very easily go in and shell out the prostate without injuring the urethra which I cannot do by the Alexander operation. You also do not injure the ejaculatory ducts. Dr. Young has rightly designated it conservative prostatectomy. I believe it has a great future.

## FINNEY'S OPERATION FOR PYLORIC STENOSIS: SUDDEN DEATH IN STATUS LYMPHATICUS.

BY JAMES G. MUMFORD, M.D., BOSTON.

I PROPOSE to report two cases.

The first case is one of Finney's operation for pyloric stenosis and I am reporting it because I find that it is the first one to have been done in this hospital.

CASE I. The patient was a woman of forty-six, who had suffered all her life from "indigestion." Ten weeks ago she began to have pain about an hour after taking food; the pain was relieved by vomiting. In the course of a few weeks nausea and vomiting increased until at the end of a month she is stated to have vomited all food taken. The pain was in the epigastrium.

She was nourished by enemeta for a time and finally was sent into my wards by her physician, Dr. Winslow, for operation. I found her extremely emaciated and with the symptoms as described. The abdomen was boat shaped, the walls flexed. There was slight gastric dilatation but the gastrectasis was less than one might have expected. The stomach capacity was about fifty-six ounces, and the greater curvature descended only to the umbilicus. There was no ptosis. Free HCl was present, but no lactic acid.

As in so many of these cases, cancer of the pylorus was strongly suspected though no tumor or induration could be determined.

On Jan. 1, I cut down upon the stomach and found it corresponding in size to what we had made out previously. There were adhesions between the stomach, transverse colon and duodenum; the duodenum especially was adherent to the stomach, causing a sharp kink at the pylorus which was thickened by the scar of what was probably an old ulcer. The finger and thumb could not meet through the contracted opening.

Finney's operation of gastroduodenostomy through the pylorus was done. I think it unnecessary to describe this method of operating, as it has been familiar to all readers of medical journals. Suffice it to say that a very free opening was made between the stomach and duodenum, an opening through which one could easily pass three fingers.

The woman recovered promptly; there was little vomiting. On the second day she was taking liquid nourishment and on the seventh day she was eating hearty house diet. She has gained fifteen pounds since the operation and is now perfectly well, reporting that never in her life before has she known what it was to be so free from indigestion. She promised to report here to-night, but I regret to say she has not come in to show herself.

CASE II. This case has two points of interest connected with it. The patient was a young man of twenty-one, with a tumor of the lower jaw which had existed two years. A few days ago I cut down upon it and excised it with about five inches of the jaw, including the symphysis. A few glands in the anterior cervical triangle were removed. The tumor proved to be a round cell sarcoma.

The first point of interest in the case is, that as a preliminary to the operation, I cut down upon and controlled the common carotid on the right side by the use of this little control clamp, devised by Dr. Crile of Cleveland. As you see it is a device resembling a small clothes pin. While putting it on I explained its uses to the students present and warned them that it must be applied with care so as not to

bruise the intima of the vessel and so run the risk of thrombosis and embolism.

The use of the clamp gave me an almost bloodless field to work in, very satisfactory in operations on the face. I have made a practice for two or three years of controling the carotid in these operations and have never met with an accident. The operation in this case was brought to a successful termination and the patient left the table in good condition, with a pulse of 90.

About half an hour afterwards he suddenly died, and naturally my first thought was that he had died of embolism.

Dr. Oscar Richardson made the autopsy and will give you a statement in a few minutes. He found a persistent enlarged thymus gland, characteristic of the status lymphaticus, and with your permission I will read the following paragraph on this subject, written by Dr. Osler:

"What has directed the attention of writers more particularly to this condition is the frequency with which it has been found in cases of unexpected death from very trifling and inadequate causes. A good deal of attention was directed to the subject by the death of the son of Professor Langerhans, of Berlin, immediately after the preventive inoculation with the antitoxin of diphtheria. In another child death occurred under similar circumstances. The condition has also been met with in a number of cases of sudden death under anesthetics, and I know of one instance during anesthesia for adenoid growths. The whole question is one which deserves the most careful study. The anatomical features appear fairly well defined. The clinical features are by no means so clear, nor is it at all certain in what way sudden death is caused in these cases. The students of the question have, however, in the past few years brought forward evidence enough to show that the subjects of this lymphatic constitution have a diminished vital resistance, and are especially prone to fatal collapse under ordinarily very inadequate exciting causes."

Dr. Oscar Richardson: This case which Dr. Mumford reports belongs to a large group of cases which have been recorded from time to time by many different observers. They have all been associated with sudden death without apparent sufficient cause and with certain definite anatomical conditions at autopsy. These conditions are a more or less hypertrophied thymus gland associated with more or less hyperplasia of the lymphatic glands and hypoplasia of the aorta. The hypertrophy of the thymus is the most constant factor in these cases. The condition is known as status lymphaticus or constitutio lymphatica.

On examination of Dr. Mumford's case the body was found to be that of a young man of twenty years of age, fairly well developed and nourished and presenting an operation wound in the region of the right side of the face and neck through which a portion of the jaw had been removed. On section, no evidence of thrombosis was found; the brain was not remarkable and the thoracic and abdominal viscera showed nothing worthy of note, except for the presence of hemorrhagic edema of the lungs, a persistent hypertrophied thymus, a very small aorta and hyperplastic mesenteric and cervical lymphatic glands. These anatomical conditions clearly classify the case as one of constitutio lymphatica.

Various theories have been propounded as to how death is brought about in these cases of constitutio lymphatica but they are generally inadequate. The supposition, however, in regard to certain cases which occur among young children, that death is due to pressure on the trachea and nerves seems reasonable. Some experimental work has been done in regard to the poisonous nature of extracts of the thymus but without solving the question. In a recent paper Blumer calls attention to an hypothesis that the condition known as status lymphaticus is probably associated with, if not due to, a condition of intermittent lymphotoxemia. It is interesting to note in the report of a case of dyspnea in an eight weeks old child, quoted by Blake in the Annals of Surgery, that an operation was performed in which the cervical portion of the thymus was removed and the lower half pulled up and anchored high with stitches. The dyspnea ceased and the child made an uneventful recovery.

## ACTION OF RESORCIN.[1]

BY F. C. CLARK, M.D., PROVIDENCE, R. I.

In all the literature thus far published, relative to resorcin, there has been nothing said in regard to its action whether as an internal or an external remedy. Unless an attempt is made in this direction there can be no headway secured in the employment of any new remedy, and medicine will sink into mere empiricism.

I propose to make a few remarks which I hope may be of some service in this connection. Although my experience has been small compared to that of many other physicians, in the use of this remedy, I trust that my efforts may not be for that reason less respected.

It is as an external remedy I shall speak of resorcin, and of its use in eczema. From this I shall deduce a few conclusions which will lead, I trust, to the further investigations of others in wider fields.

Although the number of remedies for eczema rubrum is legion, there has yet been found no specific on which to depend for any absolute cure. However, there are certain remedies upon which we can rely to ameliorate if not shorten the disease, by allaying certain disagreeable features as they occur. In resorcin, I think, may be found a valuable remedy. But whether it cuts the disease short is a matter of opinion.

In the inflammatory stage of eczema accompanied by intolerable itching, burning or smarting, or all three, resorcin is, perhaps, almost infallible. Its action here is anodyne. It almost

[1] So named by Hlasiwetz and Barth (1862), its discoverers, who first obtained it from certain resins. For best accounts of this drug see Squibbs' Ephemeris in course (1888, fol.).

immediately after application relieves either of these three conditions, and the patient is made at once comfortable. It is surprising what benefit may be derived from a comparatively small amount of the drug. Its superiority to diachylon ointment (ung. diachyli) and the various other preparations is most marked. Hence its chief action is to reduce inflammation and soothe irritation. This result has followed so many times in my hands, that I cannot think it is entirely accidental or coincidental.

Thus noting its action, we come to its application. For this purpose two methods may be employed, — in solution or as an ointment. For the first dissolve 20 gr. of resorcin in an ounce of water, thus making a 4% solution. A stronger solution may be employed if found necessary; but this strength has answered thus far in my hands very well.

The application may be made on strips of linen, or lint cut to the desired size saturated with the solution and then laid over the inflamed surface. The slightest covering over this should be laid, just to keep the application in place. A gauze bandage may be sparingly applied when possible, as over a limb or around the neck or body, etc. It is unnecessary, perhaps, to say, that strict cleanliness should be observed in every application. The solution may be used indefinitely; that is until the disease is under control, or harm follows.

I prefer, however, except in some cases, the use of a resorcin ointment. To every ounce of zinc ointment (ung. zinci oxidi benzoati) 20 gr. of resorcin are added. Instead of the zinc ointment cold cream may be used (ung. aquæ rosæ). Sometimes from 5 to 10 gr. of salicylic acid may be added to the resorcin ointment. A good prescription is this:

℞. Resorcin ʒij
Oxidi salicylici gr. x
Unguenti Zinci oxidi benzoati ad ʒij

Apply every night or oftener as the condition requires. In preparing this prescription the resorcin and salicylic acid should be dissolved in alcohol to assure perfect union, then the zinc ointment is warmed over a slow fire and the alcoholic solution of the two added, or, if powdered, rubbed together and sifted in; the whole cooled slowly and stirred until sufficiently cold. By this method a more fluid and intimate mixture may be obtained.

The salicylic acid acts, probably, as a mild antiseptic. Cold cream and resorcin answer very well together; but I think greater healing properties may be ascribed to the zinc ointment in combination with the above remedy. Olive oil is also a good menstruum; so is linseed oil or lard, especially when large surfaces are to be treated, having here the advantage of cheapness.

Constitutional treatment, however, is not to be neglected in case it should be required; for resorcin is not a specific. Whether it only possesses palliative powers or is also remedial, in the sense of cutting short the disease, I am unable to say. At least the patient is rendered more comfortable during the inflammatory and irritable stages of the eczema. It is a good remedy, but must not be overrated, which has been the fate of many new remedies when based on empiricism or enterprising advertisements.

The stains on linen and clothing produced by resorcin can be removed with strong soap-suds. Smarting may be remedied by cold cream or vaseline, should it occur.

From the above remarks the following conclusions may, I think, not unreasonably be drawn; that these and similar preparations of resorcin may be employed in the treatment of all inflammatory surfaces, such as erysipelas, erythema, herpes zoster, etc. Of course, the proportions of resorcin and salicylic acid must be varied to suit the case. Even in small quantities salicylic acid is liable to irritate delicate skins. The smarting, however, is usually but slight and of short duration.

## Medical Progress.

### REPORT ON DERMATOLOGY.

BY JOHN T. BOWEN, M.D., BOSTON.

#### PROTOZOA IN A CASE OF ALEPPO BOIL.[1]

A case of Aleppo boil in a female child of nine, born in Armenia, that presented itself at the Massachusetts General Hospital in July, 1903, afforded Dr. Wright the opportunity for an investigation, the results of which are most important as regards the pathology of this disease. The lesion, which occurred in the skin of the left cheek near the mouth, was excised and from it smear preparations were made and stained in various ways. In these preparations peculiar bodies were seen. They were best demonstrated in preparations fixed in pure methyl alcohol, and afterwards stained with Romanowsky staining fluid for blood films. They were generally round, sharply defined, and exhibited an unstained, or white, central portion, while a large part of their peripheral portions was stained blue. In each of these bodies a larger and a smaller lilac-colored mass could be shown. These bodies were present in very large numbers in the smears, often occurring in aggregations associated with a large nucleus. Microscopic examinations of sections of the material which had been fixed in Zenker's fluid showed a very extensive infiltration of the corium with cells, a type of plasma cells, various kinds of lymphoid cells, and large cells with large nuclei and a considerable amount of cytoplasm in which there were many micro-organisms. Wright regards them as proliferated endothelial cells. The micro-organisms are almost exclusively in these cells, many containing twenty or more. On account of the constant morphology and structure of these bodies, their great numbers, their position in cells, and the different staining of their parts, the belief that they are micro-

[1] By J. H. Wright, M.D. Jour. Med. Research, Nov., 1903. Jour. Cut. Dis., Jan., 1904.

organisms and are the cause of the lesion is justified, and it is evident that they must belong among the protozoa. The writer is, however, unable to give a definite opinion as to their position in classification. He proposes the generic and specific names Heleosoma tropicum.

No pathogenic effect was noted from the inoculation of a rabbit with a part of the material subcutaneously.

Aleppo boil, as is well known, is endemic only in tropical and sub-tropical countries, where in certain localities a large portion of all the inhabitants are affected. It has generally been believed to be of an infectious nature, and capable of transmission from one person to another by inoculation; and there is evidence that it may be carried by mosquitoes and other insects. Many have tried to find the infectious agent, but with no very positive results. Cunningham, in 1885, described a large number of peculiar bodies in a specimen that had been put in alcohol immediately after its removal from Delhi. The writer considers that these bodies were not proved to be of a parasitic nature, although it seems probable that he did see the large cells described above among the various bodies that he regards as parasites.

Riehl, in 1886, described, as the result of his examination of a case, many large epithelioid cells among the infiltrating cells of the lesion which contained in their cytoplasm many bodies which he regarded as micrococci with capsules, frequently more than twenty in a cell. Wright states that in thicker sections the protozoic micro-organisms give to the large cells in which they are contained the appearance of basic staining granules about the size of pus-cocci, each surrounded by a clear space. He does not doubt that the appearances described by Riehl as micrococci with capsules and contained within the cells, represented the protozoa as they appeared under these conditions.

### ARSENICAL DERMATOSES.[2]

Rille doubts the well accepted view that herpes zoster may follow arsenical treatment, and also, with more ground, the view that arsenic may give rise to alopecia areata. With regard to the keratoses which follow the use of arsenic, he has never seen them occur in cases of cutaneous affections such as lichen planus, even where large doses of the drug were administered. On the contrary, he cites the case of a young girl who was affected with a general pruritus and lympho-sarcoma. After treatment with Asiatic pills, an intense keratosis of the hands appeared. Having failed to observe this keratosis in cutaneous patients who were affected with psoriasis and lichen planus and treated by arsenic, he is convinced that it is very rare in subjects affected with cutaneous disease, while it is more common in those treated for other affections. It would appear that the writer's experience must have, by simple chance, differed from that of most dermatologists, as the association of zoster and keratosis of the palms of the hands with ingestion of arsenic for cutaneous, as well as for other diseases, must be regarded as an absolutely settled point.

[2] Wien. klin. Woch., 1902. Rille.

### DESQUAMATION OF THE HANDS IN PATCHES, OCCURRING IN SUMMER.[3]

This paper, which is from the Dermatological Clinic of Bordeaux, deals with two forms of estival desquamation of the hands which recur each year.

The first, and more common form, is seen exclusively in warm weather, from June to September. A great many people, of all ages and both sexes, are affected, and the course is the same in all. It has no connection with an habitual hyperidrosis. The lesions are situated on the palms of the hands, and on the palmar aspect of the fingers, seldom on the lateral surfaces, and never on the dorsal surfaces. They appear as small white spots of a rounded form, from the size of a pin's head to that of a large pea. These spots are formed by a layer of exfoliated epidermis of great thinness. They are never associated with any exudation. Beneath the scales the epidermis is slightly redder than normally and absolutely dry. The course of these lesions is very short, lasting scarcely twenty-four to forty-eight hours. They recur, however, as rapidly as they disappear, and the people affected are not free from them during the whole period of summer. They disappear with the first frost, and are never accompanied by any painful symptoms. Of these cases a large number were observed, one of which, that of a student of medicine, is described in detail.

The second form is much less common than the preceding, and the writer has been able to collect but three cases. The lesions are much more extensive, deeper, and more lasting than those just described. Manual labor does not seem to be a factor in their causation. This form also appears only in the warm season, but when once affected, the patient is invariably visited each year. Here, too, the palms of the hands and the palmar aspects of the fingers are the parts affected. The hands are dry, without hyperidrosis. These scaling patches vary in size from a bean to that of a franc piece. They keep on enlarging for two or three weeks, when the epidermis breaks and exfoliates. There is never any redness, infiltration, or induration of the skin, nor are there any subjective sensations except, perhaps, a slight burning. The evolution of a single lesion varies from twenty days to a month. Frequently new lesions appear immediately over the old ones.

In discussing these cases, the writer speaks of the analogy that they bear to dysidrosis, especially to the slight form of this disease which is common in hot weather as small vesicles on the sides of the fingers, which are followed by appearances not unlike those here described; but in these cases there is no preceding vesicle.

The most effective treatment that was tried

[3] Annal de Derm. et de Syph. April, 1903. A. Sarayon.

seemed to be wrapping the hands in compresses wet with a one per cent watery solution of resorcin, and covering with wax paper. If this application is continued through the night, desquamation is furthered and the keratinization is modified.

GRANULOSIS RUBRA NASI (JADASSOHN).[4]

This peculiar disease was first described by Jadassohn in 1901. It is characterized by a local erythematous area on the tip of the nose, covered with small macules and papules, with an oily seborrhea, and also a hyperidrosis of the hands.

Macleod's case concerned a delicate boy of six, who had always been nervous, but free from any especial disease. The lesion on the nose began at the age of six months, when his mother noticed that the nose was always red and covered with perspiration, and also that his hands were moist. The trouble was said to be more pronounced in summer than in winter.

When seen there was a hyperemic patch extending from the tip of the nose up to the bridge, and spreading laterally as far as the middle of the alæ. The patch was symmetrical, not definitely bounded, and covered with punctate beads of perspiration. The most prominent feature of the patch was the presence of a large number of small discrete macules and papules, brownish red in color, varying in size from a pin's point to a pin's head. There was hardly any infiltration, but the papules gave it a granular feeling, which had suggested the name granulosis. There was some passive congestion of the hands, which were moist from hyperidrosis.

Histologically all that was seen was a slight parakeratosis around the sweat pores, but the piece excised was of limited size. Other observers have found the chief pathological changes in the corium, with a dilatation of the blood capillaries and a perivascular infiltration of leucocytes, connective tissue cells, mast cells, and plasma cells. The lumen of the sweat coils was widened and contained a granular débris, while the walls of the coils were thickened. There was little change in the sweat ducts. Jadassohn thought from the histology that it was a chronic inflammation originating in the vessels around the sweat coils. Harrmann was unable to find these changes around the sweat apparatus. Macleod considers that the two cases of Pringle's, which were described as hydrocystoma in 1894, were examples of this affection.

The treatment that was adopted in this case consisted of various pastes containing salicylic acid, and general hygiene. No distinct improvement could be detected at the end of two months. Macleod believes that this is a distinct affection, which is peculiar to young subjects, disappears spontaneously when adult life is reached, begins early in life and affects weakly children who are apt to have a weak circulation and hyperidrosis of the hands and feet. The course of the disease is very chronic, and it is very rebellious to treatment. Macleod thinks that it is probably a simple inflammatory disturbance, secondary to hyperidrosis, and associated with local vasomotor derangement. He considers that it has a close analogy to prickly heat.

[4] J. M. Macleod. British Journal of Derm., June, 1903.

TREATMENT OF LEPROSY.[5]

Brault treated in the hospital at Mustapha thirteen lepers from January, 1902, to October, 1903. Most of the cases represented mixed forms. In one case, it was almost entirely of the tubercular form, and in another entirely of the anesthetic, or nerve, type. On account of this large number of cases, to which were added several others seen outside the hospital, a good opportunity was afforded to try different methods of treatment. Anti-diphtheritic serum was tried in two cases. They received in all six injections, one every second day. An intense fever was excited, and the method had to be abandoned, without any appreciable improvement in their condition.

Chaulmoogra oil, given internally or by injections, is a method of which the advantages did not seem to compensate for its drawbacks. A short time before a patient had died of Bright's disease, who had taken very large doses of this drug, up to 250 drops a day. The author also speaks of a patient in whom the remedy had been used as high as 300 drops a day, who also presented signs of nephritis.

Unna's treatment was tried in the case of a patient who had got to the last stages of the disease and was already cachectic, and who had large ulcerations over the thighs. In this case the ulcerations were healed under icthyol internally and external applications of the same drug; but the author calls attention to the fact that hygienic measures which were employed at the same time probably had much influence. Later, however, the patient began to lose ground, in spite of a continuance of the treatment. Several cases were treated by injections of calomel and of biniodide, with amelioration in almost all cases. Injections of sublimate proved rather unsatisfactory. On the whole, the writer considers that treatment by mercury is better borne than most of the other general methods. One advantage of this method, he thinks, is its moral effect, in that the patients do not suspect from it the nature of their trouble and are spared extreme mental depression. Various topical applications were tried, such as collodion, with the addition of the biniodide or sublimate, upon tubercles and non-ulcerated lesions, but with only meagre success; and airol and icthyol proved of distinct value.

In conclusion, the writer considers it indicated above all to ameliorate the life of the lepers by a thorough use of all the measures that are afforded by hygiene. With regard to therapeutics, properly speaking, the writer is rather more reserved because there is so often spontaneous improvement in this disease and because of the danger of injuring the patient by powerful drugs.

[5] Annale de Derm. et Syph., Nov., 1903.

# Reports of Societies.

## NEW YORK NEUROLOGICAL SOCIETY.

Stated meeting, Feb. 2, 1904.

Dr. Joseph Fraenkel, President *pro tem.*, in the chair.

### A CASE OF HUNTINGTON'S CHOREA (DEGENERATIVE CHOREA) WITH LIMITATION OF THE MOVEMENTS OF THE FACE AND EXTREMITIES OF THE LEFT SIDE.

Presented by Dr. J. Ramsay Hunt: The patient was an Hungarian, thirty-three years old, the youngest of seven children. He had been a resident of the United States for six years. No history of choreiform movements in his antecedents could be elicited. From the patient's sister it was learned that he was extremely dull, even as a child, and lacked interest in his studies. For the past three years he had twitching movements of the left upper extremity, confined chiefly to the fingers and wrist of the left hand. Similar muscle-twitching was also present in the left lower extremity, consisting of slight flexion movements in the ankles and toes. Occasionally, the left quadriceps extensor contracted, elevating the patella.

The face was the seat of irregular grimaces and twitchings, and the latter were also present in the tongue, interfering at times with speech. These movements were at no time violent, and seemed to be increased by voluntary movements of the parts. The left upper extremity was complained of by the patient as feeling cold and heavy, and interfering with finer movements of the hand, such as eating.

Mentally, the patient was dull. He was cranky and irritable at times, careless in his dress, and was unable to obtain any employment. At times, he had mild acute mental symptoms and apparent hallucinations. He had complained of frontal headaches at intervals since the onset of the trouble. Otherwise, the examination proved negative. Muscular power was unimpaired; there was no ataxia; no sensory disturbances. The pupils and all reflexes were normal. He had never had a convulsion.

Dr. Hunt said that the character of the twitchings, although slight and limited to the left side, resembled those observed in Huntington's chorea. The constancy of the symptoms, the pronounced and progressive character of the mental changes even in the absence of heredity pointed very strongly to a degenerative form of chorea. An initial psychosis with secondary motor manifestations would deserve consideration in the differential diagnosis.

### A CASE OF MULTIPLE CEREBELLAR TUMORS.

Specimen shown by Dr. B. Sachs: The patient was a boy, seventeen years old, a native of Russia, who was admitted to Mount Sinai Hospital on Nov. 8, 1903. He complained of vague symptoms, and was discharged after a few weeks with the diagnosis of neurasthenia.

He was re-admitted to the hospital on Dec. 19, and stated that for eight weeks previous to Nov. 8 he had suffered a great deal from occipital headache, daily vomiting, difficulty in speech and unsteady gait, associated with dizziness.

When Dr. Sachs first saw the patient, on Dec. 28, he found, in addition to the subjective symptoms above mentioned a very distinct scanning speech similar to that of multiple sclerosis. There were marked ataxic movements of the left upper extremity, a distinct titubating walk, and double optic neuritis. A second examination on Jan. 3, 1904, showed an increase in the ataxic tremor of the left upper extremity, which was also somewhat weaker than the right. The knee-jerks were present, but not exaggerated. There was slight ataxia of the left lower extremity; a marked plantar reflex; no Babinski. The scrotal reflex on the left side was increased; also the abdominal reflex on that side. There was no difference in the facial innervation, but some weakness of the left external rectus. On Jan. 8, Dr. Gruening reported that the optic neuritis was progressing, and that there were hemorrhages in the fundi. Hearing was normal.

On Jan. 15 the patient's skull was trephined for the purpose of relieving pressure and preventing the development of total blindness. The patient died from shock a few hours after the operation.

### CEREBRO-SPINAL LUES (SYRINGOMYELIA SYMPTOM COMPLEX).

Presented by Dr. Isador Abrahamson: The patient was a male; thirty-five years old; single; a peddler, and a native of Roumania. When he was eleven years old, after a fright, he became blind in the right eye and the vision of the left eye became impaired. Some improvement in sight occurred within two months.

When he was sixteen years old he contracted a chancre, with the usual secondary symptoms. He was treated for this disease for one year with both external and internal remedies. He was moderately addicted to the use of alcoholic stimulants, and smoked excessively.

This case, which was reported in detail by Dr. Abrahamson, was probably one of cerebro-spinal lues, presenting the syringomyelic symptom complex, or else it was a case of syringomyelia, plus lues, or possibly of luetic origin. Such cases, the speaker thought, were rather uncommon, and were naturally of considerable clinical importance.

Dr. Sachs, in discussing this case, said he had seen some cases which, while luetic, presented the clinical aspect of syringomyelia. He regarded these cases as examples of cerebrospinal lues, not luetic syringomyelia.

### FLACCID LUETIC HEMIPLEGIA WITH ATROPHIES.

Presented by Dr. Abrahamson: The patient was a male; twenty-six years old; married; a Russian peddler. He was an excessive smoker and used alcoholic stimulants in moderation. He had lues four years ago. Ten years ago he had an attack of parasitic alopecia, and six years ago he sustained a severe fall. This resulted in a Colles' fracture and he was said to have been unconscious for a long time.

About two months ago he was obliged to remain in bed for three weeks on account of stiffness of the neck, violent neuralgic occipital pains, and headaches, chiefly nocturnal. During the third week of this illness he began to suffer severe right-sided headaches, with vertigo.

Three weeks ago, while in a café, he felt dizzy and staggered as though drunk. He fell to the floor and found that the right side of his body was numb and paralyzed. Speech was also lost. This condition lasted about five minutes, when he apparently again felt normal. A short time afterwards he had a second attack lasting five or six minutes, and in the course of two hours he had four additional similar attacks. From the sixth attack, however, he failed to recover; speech was lost for four days and the paralysis still persisted.

At the present time there was paralysis of the lower two thirds of the right face and of the right upper and lower extremities. There was dropped wrist and

foot of the right side, flaccidity of the right hand and forearm; also the leg and foot. Decided wasting in right posterior forearm musculature; also, but to a lesser degree, in the right leg. The electrical reactions in the posterior forearm were much diminished; myotatic irritability diminished; sensibility intact; heart normal.

Dr. Abrahamson said that in view of the electrical changes, the marked wasting, flaccidity and altered myotatic irritability, all occurring within three weeks after the onset of the attack, he felt justified in calling the case a flaccid hemiplegia with atrophy.

### JACKSONIAN EPILEPSY OF LUETIC ORIGIN; IMPROVEMENT UNDER ANTI-LUETIC TREATMENT.

Presented by Dr. Abrahamson: The patient was a male; thirty-nine years old; a shoemaker by occupation and a native of Hungary. He was married and the father of eight children, of whom six were living. His first wife had three miscarriages occurring about the third or fourth month. The patient had typhoid fever in childhood. He was a heavy smoker and a moderate drinker. He positively denied venereal infection.

His present illness dated back to Dec. 15, 1903, when he began to suffer from frequent attacks which were ushered in with a feeling of numbness in the right hand, followed by a drawing in of the thumb, flexion of the fingers and semi-pronation of the hand. The numb sensation spread to the shoulder, then down to the hip and feet. He complained of weakness of the leg and had to sit down to keep from falling. Speech was also temporarily lost. Each of these attacks, which sometimes occurred at hourly intervals, lasted about fifteen minutes, and were followed by some weakness of the right side and slight dizziness. He also complained of left-sided headaches and slight nausea and epigastric distress at the end of the attack. There was also rolling of the eyes during the attack, and rolling of the tongue upon attempting to speak. No frothing; no biting of the tongue; no diplopia. Micturition and defecation were not affected. There was no loss of consciousness.

An examination showed that the right pupil was larger than the left. The pupillary reactions and ocular movements were normal. There was weakness of the entire right half of the body, including the lower two thirds of the face. There was some exaggeration of the deep reflexes on the right side. The special senses were normal. The eyes showed a beginning papillitis.

The patient was put upon inunctions of mercury and large doses of potassium iodide. At first, the weakness on the right side increased, and a right hemianesthesia of somewhat irregular distribution developed. Subsequently, he improved rapidly, and at the present time he had entirely lost his attacks, the right-sided weakness was much less, and only scattered areas of diminished sensibility were present over the right side.

### ARTERIO-SCLEROSIS OF SPINAL CORD, WITH HEMORRHAGE.

By Drs. Joseph Collins and Edwin G. Zabriskie: M. H., a fireman, with no particular antecedents, noticed toward the end of 1902 fatigue on exertion, jerking sensations, occasional sharp pains in lower extremities, and a sensation of heaviness, accompanied by difficulty in holding his urine. These symptoms steadily progressed, until he awoke one morning and found himself unable to stand or walk. There was also incontinence of the bowels and bladder.

On examination, it was found that he was unable to flex his thighs slowly, and there was slight atrophy of the left anterior and inner thigh muscles. The reflexes were absent; Babinski's phenomenon present. Power in the upper extremities was fair, but he was easily fatigued. There was slight quantitative diminution of sensation in both lower extremities, and a zone of hyperesthesia as wide as the hand above the trochanters. There was slow speech and mental reflex. Also a moderate degree of general arterio-sclerosis. Death supervened gradually of cardiac weakness.

*Autopsy.* — Macroscopically, there was arterio-fibrosis everywhere, only slightly marked in the brain and bulb, but very marked throughout the cord. The vessels were distended with blood, and there was some extravasation into the perivascular spaces. The changes consisted in thickening of the media and propria, with loss of muscular tissue. A hemorrhage was found in the ninth dorsal segment of the cord, involving the right posterior and left anterior horns. There was sclerosis of the glia around the margin of the cord and in the lateral pyramidal tracts. Secondary degenerations were found in marginal portions of the right column of Goll, Gowers and the direct cerebellar tracts on both sides above the lesion, and the crossed pyramidal tracts, and columns of Turk below the lesion. There was no definite degeneration of Schultze's tract or the other descending tracts of the posterior columns, excepting in the lower lumbar region, where a small area in the triangle of Gombault and Phillippe was apparent.

Dr. Zabriskie said it was interesting, in view of the difference of opinion as to the origin of the fibres in the descending tracts of the posterior columns, to note that in this case, although the right posterior horn was almost completely destroyed, the comma tract and areas of Flechsig and Phillippe-Gombault were not involved; this would seem to point to the exogenous origin of these fibres.

(*To be continued.*)

## Recent Literature.

*International Clinic.* A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, Neurology, Pediatrics, Obstetrics, etc. By leading members of the Medical Profession throughout the World. Edited by A. O. J. Kelly, A.M., M.D., Philadelphia, with the collaboration of twelve other physicians. Vols. III and IV. Thirteenth series. Philadelphia: J. B. Lippincott Company. 1904.

Volume III of the now well known International Clinics contains lectures on the gall bladder and gall ducts, on the treatment of certain common and important diseases, various discussions on topics in general medicine, and several surgical papers of importance.

Among other lectures on a great variety of subjects, the fourth volume contains a discussion of the present state of our knowledge of immunity by Dr. Joseph McFarland.

These clinics are always readable and valuable inasmuch as they are distinctly expressions of personal opinion on topics in which the authors are particularly versed. The form of publication remains unchanged.

THE BOSTON

# Medical and Surgical Journal.

THURSDAY, MAY 5, 1904.

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## USE OF PUBLIC INSTITUTIONS FOR CLINICAL INSTRUCTION.

It has been interesting to observe, during the past few years, the gradual disappearance of prejudice against hospitals. Not many years ago, a hospital for general disease, not to mention those concerned with the treatment of the insane, was regarded as a place to be avoided rather than one to be sought by the critically ill. A gradual and natural change of attitude has come about, so that at the present time general hospitals, at least, are overcrowded with applications for admission, and the feeling against them, although at times met, is far less in evidence than it was ten years ago. For somewhat obvious reasons the prejudice against hospitals for the insane still exists, but here, too, it is evident that this feeling is gradually giving place to a more rational attitude. A natural tendency of this disappearance of prejudice has been the somewhat phenomenal expansion of hospital facilities, the foundation of new hospitals, both municipal and suburban, and the general use of such hospitals for the purposes of medical investigation and teaching.

Another curious prejudice, which likewise in great measure is passing, is the feeling that the medical student is in some way a dangerous and unprincipled person. The origin and persistence of this idea is no doubt based upon certain fancied or real attributes of the student of medicine, which the difficulties of acquiring necessary knowledge in years gone by forced upon him, a state of things happily at an end. In the second place the inexperience of the student, and his supposed active participation in the treatment of patients in hospitals, has led to a somewhat natural feeling of distrust on the part of the laity. All this also apparently is at an end for reasons which are too obvious for us to enter into here. The public is gradually, though with some difficulty, being educated to the feeling that the presence of the medical student, and the general medical interest which his presence implies, is a benefit rather than a detriment. In general, it may be safely said that the more examination and the more attention given to a given case the more adequate and satisfactory will its treatment be. This is clearly brought about by the presence of students in the wards of hospitals and institutions.

It should therefore be the aim of all public and semi-public institutions, which have to do with the care of the sick, to encourage the visits of medical students, under proper direction, for the purpose of observation and study of the patients there treated. We have long been impressed with the fact that, although our large municipal hospitals, here and elsewhere, are adequately used for purposes of medical instruction to the unquestioned benefit of the institutions as well as to the students, many other institutions affording excellent opportunities for the study of special cases are wholly neglected. This, we take it, does not arise from a lack of interest on the part of those controlling the institutions, but rather from the lack of initiative on the part of medical schools whose students might profit by the instruction which such institutions may afford. This opinion is reinforced by the fact that, in a recent conversation with one of the trustees of the Massachusetts Hospital for Epileptics, he said that the board of trustees and the management in general would be entirely willing to open the doors of the hospital for purposes of medical instruction to selected groups of students. In a recent report also of the Massachusetts School for Feeble Minded, the superintendent, Dr. Walter E. Fernald, makes the following statement:

> One of the functions of a school of this sort is to provide clinical instruction for medical and other students. Graduating classes of medical students from Tufts College Medical School, the Boston University Medical School, and usually from the Harvard University Medical School, visit the school once or more each year, and are each given a clinic, where they are shown groups of cases illustrating the various types of mental defect. Hundreds of physicians now in practice in this and other states have thus been familiarized with this important form of mental disease. Classes from

Wellesley College, Harvard University and the State Normal schools also visit the school, to observe matters of psychological or pedagogical interest. Many teachers and superintendents of schools visit and observe the school classes.

That such a liberal attitude should be of great and distinct advantage to classes of students, and indirectly to the institution, is sufficiently self-evident. These two instances may serve as examples of the feeling which we are sure is widespread among men at the head of various institutions. Unquestionably the student derives a lasting impression from the observation of large groups of cases of similar character which he could hardly attain by the sporadic appearance of such cases at other less special hospitals. It is, therefore, to be regretted that more effort is not made on the part of authorities of medical schools to institute regular instruction at public institutions in the neighborhood of medical centers.

Information of great value to the student could be had in this way in tuberculosis, various forms of mental enfeeblement, epilepsy and its associated conditions, as well as in the great group of the insanities. It is furthermore not to be doubted that if interest were once excited in developing and using such institutions more systematically for medical instruction, opportunities now not thought of would rapidly develop. That sustained objection to the visits of medical students to institutions of this character should longer be made is not to be considered in spite of the fact that we may well expect occasional sporadic objections on the part of persons not thoroughly informed, or influenced by ulterior motives. The education of the public in such matters must be a gradual process, but the time should now be near at hand when it will be clearly recognized by any one of intelligence, who seriously considers the matter, that the greatest possible usefulness of institutions for the sick will be subserved by the publicity given them through visits of outsiders, and especially of those who have a distinct medical interest.

## MEDICAL EDUCATION IN AMERICA FROM A BRITISH STANDPOINT.

It may be remembered that Mr. A. Mosely, being impressed with the capacity of American engineers in South Africa, in 1902 organized a commission to visit the United States for the purpose of finding, if possible, an answer to the question, "How is it that the United States can afford to pay half a dollar in wages where we pay a shilling and yet compete with us in the markets of the world?" In a general way the answer seemed to depend upon the condition of education, using the term in its widest sense. Among other matters to which the commission gave its attention, was the question of medical education, which was under the charge of Dr. J. Rose Bradford of University College, London, and Dr. W. H. Gaskell of Cambridge.

A recent number of the *British Medical Journal* discusses some of the conclusions reached by the investigation of these men and published in full recently in a volume by Mr. Mosely. Dr. Gaskell comments on the uncertainty at present existing in this country regarding the best methods of instruction, and has found it, therefore, more or less difficult to get a definite idea of immediate tendencies. Many of his comments, however, are significant and of much interest to us as expressing the generous but critical attitude of a foreign observer. He finds, for example, that the tendency, which has become established in the universities of the middle west, not to confine physiology and human anatomy to the medical course one of the most hopeful signs for progress in biology. The separation which he deplores has, perhaps, been carried to its extremest limit in the large eastern universities, and we are inclined to think his implied criticism is an eminently just one, and one to which those concerned with the regulation of the curriculum should give renewed attention. Furthermore, he finds that the term physiology is quite differently understood here and in England. In America there are usually three distinct laboratories which concern themselves respectively with histology, including often embryology, physiological chemistry and physiology proper, whereas in England these subjects are usually included under the general head of physiology.

Dr. Gaskell was impressed with the conscientiousness of the teaching in American universities, with the earnestness of the students, as brought about particularly by the so-called concentration system, and also by the great strain thrown upon the teachers by this method. He says on the subject: "To my mind two of the most striking points about the laboratory instruction of all kinds in the States is the energy and activity displayed by the teachers, their earnest endeavor to do their utmost without sparing themselves, and the determination of the students to be taught."

The laboratories in general he found well equipped, and where modern research had in a measure outgrown the facilities originally provided, he notes the erection of new and adequate buildings, speaking particularly of Harvard and the University of Pennsylvania. In consequence of his very careful observations, Dr. Gaskell is led to make the following suggestions, among others, particularly with reference to medical education in his own country: Separate laboratories with separate staffs of teachers should be provided for anatomy, histology, physiology, physiological chemistry, experimental psychology, and perhaps neurology, the extreme concentration method is not recommended; it is preferable to extend a subject, such, for example, as physiology in the broad sense, over two years; histology should be connected with embryology and put into the department of anatomy, but the laboratories of histology and physiological chemistry should be under the control of the professor of physiology, the head of each department being an assistant professor; it is not proven that didactic lectures are in large measure a mistake and that recitations should largely take their place; a system of seminars is to be encouraged; a six or seven years' conjoint course for the academic and medical degree should be encouraged, and preliminary medical subjects should be included among the subjects for the degrees of arts or science.

Prof. Rose Bradford reports on medicine and surgery, after visiting a number of our medical institutions and also several in Canada. The excellence of clinical laboratories connected with hospitals, the utilization of out-patient departments for purposes of teaching, and the general tendency to make the subject taught as objective as possible by means of drawings, lantern slides, etc., all impressed themselves upon his attention. The recitation system also he regards as a method which has a very distinct educational value. His conclusions are systematically given in his own words as follows:

(1) That the enthusiasm of the teachers and of the students was one of the most striking features of his visit.

(2) All the leading universities had exceedingly fine, and in some cases magnificent, laboratories, and the equipment was of a high order of excellence.

(3) In the teaching of the non-clinical subjects the laboratory and practical side was especially developed.

(4) Systematic instruction by lectures seemed not to be in general favour.

(5) Even in the final subjects (medicine, surgery, etc.) the teaching was extraordinarily systematized; but, speaking generally, the students did not have the clinical facilities they obtain in this country (England).

(6) The scientific investigation of disease in clinical laboratories had reached a very high order of development.

(7) The teachers in this country, in such subjects as pathology, might well consider whether some of the methods in vogue, such as the early study of bacteriology and the custom of giving the class unknown organisms and sections to identify, and the careful record of the students' work, are not features thoroughly deserving of imitation.

Evidently the investigation of our methods, which we have very briefly alluded to above, was undertaken in no carping spirit, and so far as we may judge from the report at hand the impression was that the American system, though possibly still in an experimental stage, may offer suggestions of distinct value to the older schools in England. However this may be, we are more and more impressed with the great desirability of a free interchange of ideas on educational matters. It is difficult for us to conceive in this country of a method of education which shall approach in general character that given in the universities of Germany, but we can easily foresee the time in the two great English speaking countries when the best elements of the educational system of each shall be incorporated in the other. Certainly, that system must finally prevail which will at the same time provide the student with the greatest store of useful knowledge and, far more important than this, with the training which will make it possible for him to acquire knowledge independently. In the attempt to teach many the individual must not be forgotten. Certain elements in our developing system of medical education seem destined to bring this to pass in the greatest possible degree.

## REPORT OF THE BOSTON INSANE HOSPITAL.

The report of the Boston Insane Hospital for the year ending Jan. 31, 1904, is a brief document, which nevertheless contains certain statements and suggestions of wide interest. Among the suggestions to which we would call attention is the establishment of a colony for certain of the insane of Boston near the city. It is remarked that all the state institutions, excepting Worcester and Medfield, now have colonies, and that were one established for Boston, it would permit a juster classification, and also would be distinctly profitable to the city through the estab-

lishment of a farm capable of supporting both the hospital in the city and the colony. The colony system for the insane, for the feeble minded, and for the epileptic, as well as for any other class of dependents in the community, has always seemed to us a rational means of meeting the problem. Any method by means of which such charges of the state or city may be made in a measure self supporting is certainly to be regarded as a distinctly progressive step.

The report further notes the fact that the trustees of the Boston Insane Hospital will no longer have charge of the non-insane dependents in the Hospital for Epileptics, in the State Hospital for Dipsomaniacs, and in the School for Feeble Minded, who will hereafter be cared for by the Board of Pauper Institutions' trustees. Dr. Edward B. Lane, superintendent of the institution, notes the fact that the past year has been the most active in the history of the hospital, the daily average population being upwards of 550 persons. The per capita cost for the year was $4.68, slightly more than that of the previous year. This institution, like others, suffered on account of the excessive price of coal, which curtailed the expenditure of money for other needed purposes. In general, the year appears to have been a satisfactory one, and with the completion of new buildings, which have been delayed in construction, the institution will no doubt enter upon another year of even greater usefulness.

We observe that during the year Dr. P. C. Knapp resigned from the position of chairman of the Board of Trustees, after a year's service in that capacity. We note also the resignation of Dr. John J. Thomas as pathologist of the consulting staff, and that no successor has as yet been appointed. It is to be hoped that the trustees of the institution may fully realize the importance of pathological study at an institution of this character, and that the work inaugurated by Dr. Thomas may not be long interrupted.

## MEDICAL NOTES.

An Influx of Daughters. — All the alumni of the Harvard Medical School who announce the birth of children in the last quarterly of the Association seem to have been blessed with daughters.

National Academy of Sciences. — At a recent meeting of the National Academy of Sciences, among others, the following men were elected to membership: Prof. Paul Ehrlich of Frankfurt and Prof. William T. Councilman of Boston.

Bequest to Tulane Medical College. — The Louisiana State Supreme Court, meeting at New Orleans, has rendered a decision giving the bulk of the estate of the late A. C. Hutchinson, amounting to approximately one million dollars, to the Tulane Medical College.

New York State Cancer Laboratory. — It will be remembered that the announcement was made some weeks ago that the New York legislature had refused to make the annual appropriation of $15,000 for the support of this laboratory. It is now announced that there has been a change of heart, and that the chief opponent of the item has withdrawn his objection, so that the usual amount will be appropriated for the purposes of the laboratory.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, May 4, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 56, scarlatina 13, typhoid fever 11, measles 190, smallpox 0.

Antivivisection Bill Defeated. — The Committee of the Massachusetts legislature, before which the recent bill for the regulation and control of vivisection was held, has given leave to the petitioners to withdraw. This or a similar bill has had the same fate for several preceding years, and should serve as a further protest against the interference of possibly well meaning but misinformed persons.

Possible Abolition of Department of Statistics.— The Boston Board of Aldermen voted, at their meeting on May 2, to abolish the Department of Statistics The matter still requires action on the part of the Common Council, and will then go to the mayor. The discussion at the meeting of the aldermen showed that their action was the result of the most contemptible sort of petty personal politics, and it hardly seems possible that the other branches of the city government can concur in supporting such a policy.

A Memorial to Dr. John Homans. — Friends and associates of the late Dr. John Homans are desirous that some permanent and useful memorial shall be established in grateful recognition of his earnest, fruitful, and long-continued devotion to the cause of surgery.

It is their aim to raise a fund to be placed in charge of the Corporation of Harvard College, the income to be used to promote the acquirement of knowledge in the science and art of surgery in accordance with the recommendation of the Faculty of the Medical Department of the University.

It is hoped that as much as $50,000 may be contributed for the purpose of establishing a John Homans Professorship in the Harvard Medical School, and it is confidently believed that those who remember Dr. Homans' own loyalty and generosity will be glad to contribute towards the raising of this fund. Subscriptions may be sent to Charles C. Jackson, 15 Congress St., Boston.

NEW YORK.

Cottage Colony for Juvenile Asylum. — Seventeen buildings are now in course of erection in the hill country of the Hudson, near Dobbs Ferry, for a cottage colony to accommodate the New York Juvenile Asylum, which for many years has occupied a single large building at Fort Washington, on the Kingsbridge Road, New York City. This institution cares for a large number of the destitute, deserted and delinquent children of the city, and it is believed that the change to the new quarters will result in the physical, mental and moral improvement of the children. During the fifty-two years of its existence it has maintained and educated more than 38,000 children, and in the last annual report of the asylum the directors say: "The ancestry of the congregate school is not to its credit; advanced opinion is unfavorable to dull, forbidding and convent-like walls. Aside from the unedifying environment, the old system is incapable of reproducing the atmosphere of even an average home. It cannot give an adequate amount of individual attention; character development is necessarily neglected, and classification of children under it is a figment of the imagination. Classification is decidedly one of the desiderata of such an institution, and this is possible only where there are many groups, affording opportunity to take into consideration not only character, but stature and educational advancement." The plot of ground purchased at Dobbs Ferry consists of 277 acres, and the new home of the asylum, which will cost the city about $3,000,000, promises to be one of the model institutions of the world. When it is complete there will be about eighty separate and distinct buildings, including, in addition to the living cottages, a chapel, library, infirmary, schools, gymnasiums, workshops and administration buildings. In separate departments the children will be taught printing, shoemaking, tailoring, carpentry, plumbing and other trades, and the farm on which they will work will be a real farm. To meet the requirements of play there will be athletic fields, ample playgrounds and a campus where the boys will be drilled in military tactics. The cottage homes will eventually number about sixty, forty for the boys and twenty for the girls. Not more than twenty boys, nor more than fifteen girls will be allowed under one roof. Each cottage is to be a completed home, having even its own dining room, and each will be in charge of a "guardian" or "house parent" who will exercise as far as possible the functions of a real parent. All this is certainly very different from the manner of caring for the "charity child" in the past, either in this country or in England, and the results ought to be very gratifying.

## Miscellany.

### SYLLABUS OF SILLIMAN LECTURES AT YALE UNIVERSITY FOR 1904.

The lectures this year were given by Prof. Charles S. Sherrington, M.D., LL.D., F.R.S., of the University of Liverpool, on the subject,

INTEGRATIVE ACTION BY THE NERVOUS SYSTEM,

beginning April 22 and ending May 4.

Lecture I.

Physiological study of the integration of the animal body by the nervous system. Integration of a simple organism by the primitive nerve-net. The reflex unit: receptor, conductor, effector. Intercalation of the synapse into the conductor. The synaptic nervous system set over the nerve-net. Visceral and vascular innervation. Minute and precise use of time achieved by the nervous system: demand for this unequal in different parts of the organism: the synaptic system supplies it best.

Lecture II.

The synaptic system supplies isolated correlation between distant parts. Subdivision of effector organs and segmentation (metamerism). The segmental concept of the nervous system. The segments of a high type of vertebrate as judged by receptor and effector segmental fields. The nervous system of the segment. The integration of the segment as evidenced by nervous reactions. More minute and precise use of space given by isolated correlation: yet the nervous system remains a continuum.

Lecture III.

More varied use of space given by the synaptic system than by the nerve-net. With complexity of the organism increase in number and species

of receptors means correlation to a greater variety of changes in a greater number of environmental points. Reflex arcs and the principle of the common path. Successive use, not simultaneous use of common paths permitted. The proprio-ceptive field. Its quota of receptors. Characters of its reflexes — maintained, secondary. Nervous background and transient reactions. Spinal inhibition of knee-jerk. The common path acts as a whole. Conflicting arcs. Central inhibition and peripheral inhibition compared.

### Lecture IV.

Common paths in relation to private paths. Centrality of the nervous system. The extero-ceptive division of the surface field and its richness in receptors. Category or extero-ceptors. Skin pain: evidence of specific sense apparatus initiating it: characters of the reactions: nociceptive arcs, facile, protective. Nociceptive reactions prepotent in competition for common paths. Weak and strong reflexes. Reactions to which strong affective tone is adjunct are prepotent: such reactions usually consummatory. Physiological incongruity of nerve trunks; yet yield homogeneous results, because common paths inter-related.

### Lecture V.

Seeming inequality of reflex facility of motor mechanisms in one and the same segment. The extensor stroke. Positive stereotropism. Reflex progression of the limb. Apesthesia. Progression under decerebrate rigidity. Transient and maintained reactions. Forms of reflex contractions: brief, rhythmic, cataleptoid, maintained. Features of conduction referable to gray matter: delay, irreciprocity, summation. Conditions determining prepotency over the common path — quality of receptor, intensity of stimulus, duration of reaction. Central fatigue.

### Lecture VI.

The "scratch" reflex: reaction compared with the cardiac; refractory period; intensity; variation of form, two types of movement; the path of the arcs; proprio-spinal aboral tracts; the reflex plurisegmental and its arcs disynaptic with an internuncial path; fatigue and its place of incidence; attempt to obtain central fatigue; mutual reinforcement of allied arcs; the whole common path reacts as a unity; competition of conflicting arcs for the common path; two forms of central inhibition; after effects of inhibition. The common path a passive instrument in the hands of the various arcs. Distinct receptors and conjoined receptors; conflicting and allied arcs. Some psychical aspects of central interference.

### Lecture VII.

Spinal shock. Shivering. Meaning of spinal reflexes. Pseudo-affective reflex, and its spinal path. The relation of visceral reactions to the coarser emotions.

### Lecture VIII.

Nervous integration of the segmental series. Refinements of the receptors in the leading segments. Restriction of distribution a factor toward integration. Distance receptors: their frequency of use; they drive the total animal; they initiate and guide precurrent reactions as contrasted with consummatory; germ of conation attaching to them; derive affective tint from consummatory reactions to which they lead if associative memory attach. The brain developed over the arcs of the distance receptors, *i. e.*, the ganglion of the distance receptors. Relation between locomotion and receptive range. The "head" as physiologically conceived. The head and trunk and internuncial paths. Severity of spinal shock proportionate to the so-called height of the animal's neural development.

### Lecture IX.

Physiological method and the functions of the cerebrum. The "excitable" cortex in dog, monkey and anthropoid ape. Topography of places yielding reactions: strength of stimulus; epileptiform effects, primary and secondary movements: reinforcements, *e. g.*, perineum and trunk, neck and ocular deviation. Narcosis depth. Reciprocal innervation experiments. Silence of the post-central gyrus. Evidence of pyramidal tract. Character of the tract in anthropoids. Contrast in structure between precentral and postcentral cortex — cells, fibres. Degeneration consecutive to amputation, amyotrophy, and tabes dorsalis. Recovery of function after cortical ablation of limited extent. Hierarchy of centers.

### Lecture X.

Confluence of neural paths taken as token of psychical synthesis: tendency to accept also the converse. Convergence of retinal paths toward same region of cortex interpreted as indicating that synthesis of twin retinal impressions to a single sensation is effected by confluence to a single unitary neural mechanism. Binocular flicker. The rotating binocular lantern. Symmetrical flicker; asymmetrical flicker. Some uniocular and binocular comparisons. Binocular fusion in this case a time-combination, not a spatial combination. Cortical localization and composition of a sense-perception. Examination of anthropoid brain for a speech center. Conclusion.

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## ADVICE FROM A LAYMAN TO MEDICAL UNDERGRADUATES.

In a recent address made by Maj. H. L. Higginson to the undergraduates of the Harvard Medical School his concluding remarks were as follows:

The world seeks your help in questions of hygiene, and of water supply, drainage and ventilation, because you of necessity study these questions.

See what happens. When our city needed a comprehensive system of water supply, it turned to a great physician who had organized and administered admirably our Massachusetts Board of Health. He has played the principal part in the wonderful Metropolitan system of water-works, as well as the Metropolitan systems of drainage and parks.

New York City searched for a competent man to unite and organize the Lenox, the Astor and the Tilden libraries, and chose Dr. John Billings, a well-known United States Army surgeon.

President McKinley selected an army surgeon who had gone into the fighting line to put Santiago into order after the siege of that city. This doctor (and general) justified the choice so well that he was given charge of all Cuba until it was ready to try self-government. We can safely trust in his good results in the Philippines.

Surely, gentlemen, you get your share of the work and of the honor of the times; and you have deserved it.

Do you believe that my words of advice to my young friends spring from convictions about your profession? A boundless field of knowledge, old and new; great power over mankind through your practice, your sympathy, your devotion; true happiness in seeing intimately the noble, loving side of life; a constant temptation to do good by a word of advice and a smile; the frequent chance to minister to a sore spirit or a weak resolution by firm cheerfulness and hope, — all these are yours, if you will.

But let me insist that you are to expect nothing except from yourselves. The world lies open before you, and invites you to its innermost nooks. Nobody penetrates so far into human life as the physician, if he will; and nobody stays there so surely as he, if he deserves his position. The world gives its rewards for deserts; and if by chance it throws a man a plum, he can only be grateful for the chance shot. See clearly what you wish; and if you fail, do not deceive yourselves about the fault. It rests on your own shoulders.

Banish all thoughts of yourselves, rely on your own powers, and think only of your subject; for your profession is in the making and needs every atom of your wits. Single-hearted, single-minded, devoted to your patient, you will surely win success.

Am I expecting too much of you? You are young gentlemen, carefully nurtured in your homes, and now enjoying the full education and training of a great medical school, conducted by able practitioners and teachers. You are citizens of our great republic, and know your duties. What is more likely to draw forth your best qualities and bring them to their fruition than the expectation of yourselves and of your fellowmen that you will accomplish high and noble results?

## NOMENCLATURE FOR PULMONARY TUBERCULOSIS.

A committee on nomenclature, consisting of Drs. Bowditch, Stubbert, Baldwin, Knight and Quimby, appointed by the American Climatological Association, suggests the following classification for cases of pulmonary tuberculosis:

*Incipient.* — Slight physical and subjective signs, with history indicative of pulmonary tuberculosis. Sputa, if present, without bacilli. *First Stage.* — Definite physical signs of localized infiltration; total involvement less than half a lobe, whether at one or more points; cough and expectoration with bacilli; constitutional symptoms slight. (In disseminated cases expectoration and bacilli may be absent with constitutional symptoms more severe.) *Second Stage.* — Infiltration of single or multiple areas approaching or equal in amount to one lobe; or smaller area in stage of softening; cough and expectoration with bacilli; constitutional symptoms, severe. *Third Stage.* — Infiltration in excess of one lobe, or if less in stage of well developed excavation; more severe constitutional symptoms.

The committee also suggests, as a classification of results of treatment in pulmonary tuberculosis, the following:

*Progressive.* — All essential symptoms and signs continue unabated. *Quiescent.* — Constitutional symptoms slight or entirely absent; physical signs improved or unchanged; cough and expectoration with bacilli still present. *Arrested.* — Absence of all constitutional symptoms; expectoration and bacilli still present; physical signs may or may not persist; foregoing to have existed for at least three months. *Apparently Cured.* — All constitutional symptoms and expectoration with bacilli absent for a period of three months. *Cured.* — All constitutional symptoms and expectoration with bacilli absent for a period of two years under ordinary conditions of life.

## Correspondence.

### JOHN WESLEY'S LIFE-LONG CAPACITY FOR WORK.

Boston, April 26, 1904.

*Mr. Editor:* The following account of the life and work of John Welsey from Sir Leslie Stephen's "History of English Thought in the Eighteenth Century" is of interest as showing the possibilities of physical and intellectual accomplishment in a lifetime.

"As a mere record of the quantity of work that can be got out of a single human being, endowed with untiring energy, and absolutely devoid of at least the lower forms of selfish indulgence, the account of his labor is encouraging to the strong and calculated to throw the weak into despair.

"For more than fifty years Wesley was the autocratic chief of his society, and not content with administration from a distance, personally inspected, at frequent intervals, every part of the machinery which he had organized. He travelled on his ceaseless round of duty some 4,500 miles annually; he preached two or more sermons a day; and it is calculated that in fifty-two years he travelled 225,000 miles, and preached over 40,000 sermons. The sermons were occasionally delivered to audiences of 20,000 persons, and at the age of eighty-six (1789) he records an address delivered to a congregation of 25,000. Though he doubts whether all could hear, the feat, considered as a mere exhibition of physical energy, is something stupendous. He rose every morning at four, allowing himself only six hours of sleep, though we are told that he possessed the faculty, common to nearly all great workers, of falling asleep at a moment's notice. He often rode seventy miles a day, and generally read as he rode, avoiding stumbling, as he tells us, by riding with a slack rein.

"On his eighty-fifth birthday he ascribes his health to his constant exercise and change of air, to his powers of sleeping, to early rising, and regular preaching during sixty years, at five A.M., and to his having had little pain, sorrow, or anxious care during his life."

Very truly yours,

Wm. Pearce Coues, M.D.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, APRIL 23, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Erysipelas. | Cerebro-spinal meningitis. |
| New York . . | 3,908,644 | 1,831 | 534 | 24.00 | 23.90 | 2.89 | .44 | 3.00 |
| Chicago . . . | 2,021,086 | 643 | 136 | 20.21 | 21.92 | 1.24 | .15 | — |
| Philadelphia | 1,407,968 | 595 | 151 | 27.40 | 16.13 | 1.85 | .17 | — |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 225 | 52 | 28.00 | 11.89 | 1.33 | — | — |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 124 | — | 28.22 | 18.54 | 1.61 | .80 | — |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 72 | 20 | 26.33 | 13.86 | 4.16 | — | — |
| Boston . . . | 617,950 | 233 | 71 | 18.89 | 19.74 | 2.57 | .43 | .86 |
| Worcester . . | 136,925 | 40 | 10 | 7.50 | 20.00 | — | — | — |
| Fall River . . | 119,349 | 36 | 14 | 25.00 | 19.34 | — | — | — |
| Lowell . . . | 104,402 | 28 | 11 | 14.28 | 18.85 | 3.57 | — | 3.57 |
| Cambridge . | 100,998 | 27 | 6 | 25.92 | 18.51 | 3.70 | — | — |
| Lynn . . . . | 73,875 | 23 | 6 | 13.04 | — | — | — | — |
| Lawrence . . | 72,348 | 15 | 2 | 52.23 | 6.67 | 6.67 | — | — |
| Springfield . | 72,020 | 16 | 2 | 25.00 | — | — | — | — |
| Somerville . | 70,413 | 26 | 5 | 34.65 | 15.40 | — | — | 7.70 |
| New Bedford | 68,863 | 34 | 9 | 23.53 | 11.76 | — | — | — |
| Holyoke . . . | 50,538 | 19 | 3 | 21.05 | 10.52 | — | — | — |
| Brockton . . | 46,601 | 13 | 6 | 15.40 | — | — | — | 15.40 |
| Newton . . . | 39,310 | 9 | 1 | 22.22 | — | — | — | — |
| Haverhill . . | 39,061 | 8 | — | 25.00 | 37.50 | — | — | — |
| Malden . . . | 37,205 | 8 | 1 | 12.50 | 25.00 | — | — | — |
| Salem . . . | 37,188 | 7 | 3 | — | — | — | — | — |
| Chelsea . . . | 36,499 | 16 | 2 | 6.25 | 25.00 | — | — | — |
| Fitchburg . . | 36,335 | 18 | 5 | 11.11 | 33.33 | — | — | — |
| Taunton . . . | 34,577 | 11 | 0 | 9.09 | 9.09 | — | — | — |
| Everett . . . | 30,209 | 7 | 2 | 42.90 | — | 14.30 | — | — |
| North Adams | 29,201 | 9 | 3 | 18.18 | 18.18 | 9.09 | — | — |
| Quincy . . . | 26,798 | 9 | 3 | 9.09 | 27.27 | — | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 5 | — | — | 20.00 | — | — | — |
| Brookline . . | 23,576 | 4 | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | 9 | 1 | 11.11 | 11.11 | — | — | — |
| Medford . . | 21,956 | 4 | 1 | 50.00 | 25.00 | — | — | — |
| Chicopee . . | 21,692 | 7 | 1 | 42.90 | — | — | — | — |
| Northampton | 20,314 | — | — | — | — | — | — | — |
| Beverly . . . | 15,807 | 2 | — | 50.00 | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 5 | 0 | 20.00 | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | 2 | 1 | — | 50.00 | — | — | — |
| Hyde Park . | 14,500 | 5 | 2 | 20.00 | 60.00 | — | — | — |
| Newburyport | 14,478 | 3 | 1 | 66.67 | — | — | 33.33 | — |
| Woburn . . . | 14,315 | 8 | 3 | 12.50 | 25.00 | — | 12.50 | — |
| Melrose . . . | 13,819 | 8 | 2 | — | 37.50 | — | — | — |
| Westfield . . | 13,809 | 3 | 1 | — | 33.33 | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 7 | 1 | 28.60 | — | — | — | — |
| Revere . . . | 13,609 | 4 | 1 | 25.00 | 50.00 | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 4 | 3 | 25.00 | 25.00 | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 7 | 1 | 14.30 | 14.30 | — | — | — |
| Weymouth . | 11,350 | 7 | 1 | 42.90 | 28.60 | — | — | 14.30 |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 4,196; under five years of age, 1,081; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,005; acute lung diseases 858, consumption 515, scarlet fever 49, whooping cough 10, cerebrospinal meningitis 63, smallpox 10, erysipelas 15, puerperal fever 22, measles 51, typhoid fever 43, diarrheal diseases 127, diphtheria and croup 91, influenza 11.

From whooping-cough, New York 5, Baltimore 3, Springfield 1, Fitchburg 1. From smallpox, Philadelphia 9, Pittsburg 1. From cerebrospinal meningitis, New York 55, Boston 2, Lowell 1, Somerville 2, Brockton 2, Weymouth 1. From erysipelas, New York 8, Chicago, Philadelphia, Pittsburg, Boston, Chicopee, Newburyport and Woburn, 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending April 9, the death-rate was 18.4. Deaths reported 5,379; acute diseases of the respiratory organs (London) 167, whooping cough 223, diphtheria 57, measles 183, smallpox 9, scarlet fever 35.

The death-rate ranged from 7.0 in Walthamston to 29.3 in Norwich, London 18.6, West Ham 16.5, Brighton 18.2, Southampton 13.4, Plymouth 19.7, Bristol 19.1, Birmingham 24.8, Leicester 13.7, Nottingham 17.8, Liverpool 19.2, Bolton 21.4, Manchester 21.5, Salford 20.7, Bradford 19.4, Leeds 22.8, Hull 16.6, Cardiff 13.3, Rhondda 18.3, Wigan 15.8, Merthyr Tydfil 17.9, Rochdale 19.5.

## METEOROLOGICAL RECORD.

For the week ending April 23, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. . 17 | 30.19 | 38 | 49 | 28 | 51 | 46 | 48 | W | S | 14 | 4 | C. | C. | 0 |
| M . 18 | 30.00 | 46 | 56 | 35 | 63 | 63 | 63 | S W | S | 14 | 9 | C. | C. | 0 |
| T. . 19 | 29.76 | 44 | 60 | 28 | 54 | 96 | 75 | W | W | 6 | 14 | C. | R. | T. |
| W . 20 | 29.69 | 32 | 38 | 26 | 89 | 95 | 92 | W | N W | 17 | 9 | F. | N. | .44 |
| T. . 21 | 30.09 | 41 | 53 | 34 | 54 | 44 | 49 | N W | N W | 15 | 17 | C. | C. | T. |
| F. . 22 | 30.46 | 43 | 50 | 36 | 63 | 40 | 52 | N W | S | 8 | 8 | C. | C. | 0 |
| S. . 23 | 30.44 | 46 | 56 | 37 | 33 | 44 | 38 | W | S | 5 | 20 | C. | C. | 0 |
| Mean | 30.09 | | 52 | 32 | | | 60 | | | | | | | .44 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. Mean for week.

## RECENT DEATHS.

EDWARD REED WHEELER, M.D., M.M.S.S., of Spencer, died in Winthrop, April 30, 1904.

MILLER COX, M.D., of New York, died on April 24 from pneumonia. He received the degree of B.A. from Union College, Schenectady, and was graduated from the College of Physicians and Surgeons, New York, in 1871. For twenty years he had been a medical inspector in the health department.

## SOCIETY NOTICES.

NEW HAMPSHIRE MEDICAL SOCIETY.— The 113th anniversary meeting of the New Hampshire Medical Society will be held at Concord, N. H., Thursday and Friday, May 19 and 20.

G. P. CONOR, M.D., Secretary.

AMERICAN MEDICAL EDITORS' ASSOCIATION.— The annual meeting of the American Medical Editors' Association will be held on June 6 at 2 P.M., Dennis Hotel, Atlantic City, N. J.

AMERICAN PROCTOLOGIC SOCIETY.— The sixth annual meeting will be held at Seaside House, Atlantic City, N. J., June 8 and 9, 1904. The first session will begin at 10 A.M., June 8. The profession is cordially invited to attend all meetings.

A. B. COOKE, M.D., Secretary.

STATE BOARD OF MEDICAL EXAMINERS OF NEW JERSEY.— The examinations of the State Board of Medical Examiners of New Jersey will be held at Trenton, N. J., June 21 and 22. Application for the regular blanks should be made before June 11.

E. L. B. GODFREY, M.D., Secretary.

Camden, N. J.

NEW ENGLAND HOSPITAL MEDICAL SOCIETY.— A regular meeting of the Society will be held at Hotel Nottingham, Boston, Mass., on Thursday, May 19, 1904, at 7.30 P.M. The meeting will be in charge of the Section on Orthopedic Surgery, Dr. Kelly Sabine, Chairman. Paper I, "Congenital Hip," by Dr. J. D. K. Sabine; II, "A Case of Dupuytren's Contraction Cured without Incision by Brisement Forcé and Absorbents," by Dr. Emma B. Culbertson; III, "Report of a Case," Dr. Clara J. Alexander.

MARION NUTE, Secretary *pro tem.*

32 Mill St., Dorchester.

## BOOKS AND PAMPHLETS RECEIVED.

Department of the Interior. Bureau of Government Laboratories. Biological Laboratory. Report on Some Pulmonary Lesions Produced by the Bacillus of Hemorrhagic Septicæmia of Carabaos. By Paul G. Woolley, M. D. Manila, 1904.

Department of the Interior. Bureau of Government Laboratories. I. New or Noteworthy Philippine Plants. II. The American Element in the Philippine Flora. By Elmer D. Merrill. Manila, 1904.

A Text-Book of Physiology. By Isaac Ott, A.M., M.D. Illustrated. Philadelphia: F. A. Davis Co., 1904.

# Original Articles.

## THE HYSTERO-NEUROSES AND THEIR RELATION TO THE PHYSICAL EXAMINATION OF ALL WOMEN PATIENTS.*

BY DANIEL H. CRAIG, M.D., BOSTON, MASS.,

*Surgeon to Out-Patients, Free Hospital for Women; instructor in Clinical Gynecology, Tufts College Medical School; instructor Boston Polyclinic, etc., etc.*

The relationship between the hystero-neuroses and the physical examination of all women patients may not at once be clear, but I feel sure that you will be convinced that such a relationship does in reality exist. Physical examination occupies the same position relative to the hystero-neuroses that judge and jury occupy to the accused, or suspected, criminal. It is through their good offices that he must be acquitted or sentenced, and I feel certain that errors of judgment would be scarcely less frequent under the deplorable reign of lynch law than they are in cases of the hystero-neuroses when not tried and proved by physical examination. The ideas which I wish to express, although in this instance confined to the hystero-neuroses, apply with equal force to every form of reflex symptom, and I have chosen the hystero-neuroses only because I naturally know more of the evil effects accruing from the overestimation and underestimation of their importance than I do of any other.

First let us understand just what is meant by the hystero-neuroses. Engelmann [1] defines them as, "Those phenomena which simulate a morbid condition in an organ which is in an anatomically healthy state, and which are due, not to structural changes in the organ in which they appear, but to morbid or physiological changes in the uterus or ovaries." To uterus and ovaries I would like to add kidneys, although of course such an addition would necessitate a designation of broader scope than hystero-neuroses; but in women the urinary organs are so anatomically distinct from those of the male that they come logically within the most strictly limited province of the gynecologist.

The hystero-neuroses have been comprehended from time immemorial both by the medical profession and the laity, especially the neuroses incident to pregnancy; but in recent times they have been more commonly realized to be either understood or misunderstood by the profession ever since Emmet so forcibly called attention to them in 1867 and the succeeding years in connection with his operation for trachelorrhaphy. That they have been grossly misinterpreted is easily demonstrable. Examples are constantly appearing both at my office and at my outpatient clinic at the Free Hospital for Women; but as these latter are charity patients who have not, perhaps, as a whole, been able to command the services of the highest type of medical adviser, I have undertaken to see how frequently the hystero-neuroses have been misinterpreted amongst private, well-to-do patients. To this end I examined my current volume of case records with this investigation in view. I confined the examination to the current volume that I might not be open to the criticism of antedating, in the least, present progressive methods of research. The cases recorded are 194. Of these I find that the hystero-neuroses had been undeniably and unmistakably misinterpreted in 26 cases, or nearly 14%. This percentage is quite high enough to justify such a study, but when to this is added the fact that a certain number of these 194 cases had not consulted a general clinician, perhaps for years, that the cases were frankly gynecological from the outset, that their first resort was to me, and that of the above 26 cases in which errors had been made practically all had consulted *several* physicians, it is easily seen that the actual percentage is considerably higher; unfortunately, my records do not show exactly how much higher, as it is at all times difficult to obtain such facts, except from naturally loquacious patients, without arousing suspicions, often very unjust, of their own physician's thoroughness.

The hystero-neuroses have been quite abundantly exploited by our most able gynecologists, and it is not my intention to ply you with a repetition of these facts and I do not feel that there are any new ones to add. In fact, I think possibly they have already been overstated, and I am certain that a careful following of the methods which I adopted three years ago will considerably lessen the number of cases in which the diagnosis of an hystero-neurosis will be made. They have been woefully overestimated by some enthusiasts and equally erroneously understated by others.

This subject seems a fitting one for this occasion in that it has been very wisely said that the neuroses constitute the link which binds the specialist to general medicine. Virchow said, many years ago, that no man can be a thorough specialist who is not a good physician, and this grows more manifestly the fact each year as more elaborate and perfect means of investigation demonstrate the complex interdependence of the various bodily structures, for the human body is a mechanism possessed of marvelous powers of autonomous compensation whereby the function of any overworked or diseased organ is taken up either by other organs or by sound portions of the partially diseased organ. It is a thorough comprehension of these compensatory processes which distinguishes the wise physician from his less discriminating confrere.

The more thorough the physical examination of all women patients the less opportunity there will be for over- or underestimating the hystero-neuroses. Probably those gynecologists who in the eighth and ninth decades of the century but just ended were urging the importance of the hystero-neuroses little thought that need would ever arise for cautioning the profession against

*Read, by invitation, before the Massachusetts Medical Society, Middlesex (East) District, March 16, 1904.

[1] System of Gynecology, Mann, p. 151 et seq.

the exaggeration of these conditions. But I am so impressed with this necessity that I have formulated the rule for my students, "*Never accept any symptom as an hystero-neurosis until every other possible cause has been rationally ruled out.*" I might stop right here for such causes cannot be rationally ruled out except after painstaking physical examination.

Why is the thorough physical examination of patients, not only women but men as well, so neglected? Some will give one answer, some others, but there should be no laudable reply. In the minds of the laity it is not the greater diagnostic or therapeutic acumen that distinguishes the specialist, but the greater thoroughness of his methods of investigation. It is usually for diagnosis rather than treatment, except in the case of major surgery, that the patient seeks, or is sent to, the specialist. And just here permit me to say that I am by no means attempting to contrast the specialist with the general clinician, because to do so would as often be disastrous to the one as to the other. As compared with the really industrious, studious, general clinician every specialist is a man of small attainments, and his sole right to existence lies in his possession of knowledge which the circumstances of a busy and varied practice make it well-nigh impossible for his confrére to obtain. My personal experience leads me to believe that the gynecologist errs through overestimation of the hystero-neuroses nearly as often as the general clinician does through underestimation. However, that this overestimation is not characteristic of all gynecologists is readily demonstrable from the writing of a few, as, for instance, Ford[2] who, incited by this overenthusiasm, goes so far as to deny all reflex action to lacerations of the cervix uteri. A more temperate statement is nearer the truth, and the truth, the whole truth, and nothing but the truth is what science demands.

The gynecologist, like every other specialist, unless he carefully guards against it, is all too prone to come, in time, to consider the female pelvis or, of course, the respective organs over which the other specialists preside, as the abiding place of all the evils to which female flesh is heir. I know no remedy which will so speedily dispel this fantasy as the routine, thorough, physical examination of all women patients.

But to return to the reasons for the neglect of physical examination. The incompetent neglects physical examination because he fears, first, that he will know no more at the end than at the beginning, and, second, that the patient may attribute his long search for causes to a limited diagnostic knowledge. To such I say: Begin such routine examination at once in all patients, and this practice alone will inevitably make competent diagnosticians of them in a few weeks or months. It will be found a veritable postgraduate course. The busy man will reply that it consumes too much time. This is not true. The patient has a right to demand so much of the physician's time as is essential to diagnosis. At my out-patient clinic it is the rule to treat, in from two and one-half to three hours, from 20 to 36, or even more, patients, of whom from 3 to 7 are new ones, with the aid of one assistant. In each new patient the full physical examination obtains, and I am sure the time consumed is not excessive. Another says patients object to the exposure. Not if they are made to understand the all-importance of learning accurately every available fact in their case. The man who is content to prescribe for his patient after merely listening to the patient's recital of her symptoms is not in the true sense a member of the fraternity devoted to medical *science*. His methods are strictly empirical. But he, in thus following the example of the charlatan, handicaps his professional brethren, for patients come to assume that a doctor must be able by merely looking at their faces and listening to their voices to make the most difficult diagnoses. Believe me, for I speak from experience, nothing so much pleases a patient, after it is all over, as a comprehensive examination.

Nor am I pleading that a pelvic examination of every woman be made. No, indeed. I have said, Accept no symptom as an hystero-neurosis until every other cause has been rationally excluded. And what does this preclude? First, it precludes the necessity of doing what my experience leads me to believe a majority of the general clinicians avoid. That is, a thorough study of etiology, pathogenesis and pathology. It is my belief that most busy physicians on meeting a puzzling case turn to their libraries and open the appropriate book to the desired subject. They then turn the leaves hastily until they reach the symptomatology, diagnosis, prognosis and treatment. These they read with deep interest, but how will a doctor permanently cure without removing the cause, and how, except by fortunate accident and with the aid of long-suffering nature, will he remove a cause without a thorough knowledge of it? In short, the laudable tendency of modern medicine to eradicate causes renders it incumbent upon the physician to read the very portions of his literature which the above example slighted. A thorough knowledge of etiology and pathogenesis becomes the keynote of success. If then a thorough search might be invariably made for extrapelvic causes of symptoms which might or might not be hystero-neuroses, all necessity for intrapelvic examination may often be proved wanting, and in doubtful cases, especially in single women, the therapeutic test may often seem justifiable before proceeding to pelvic exploration.

If, however, there is any form of neurosis in which great allowance is due the errors of estimation it is the hystero-neurosis, because there exists good and sufficient reason wherefore the general clinician is less proficient in gynecological diagnosis, at least in its refinements, than is the case concerning other organs. This arises from the difficulty naturally encountered in

[2] W. E. Ford, Trans. Am. Gyn. Soc., Vol. xx, 1895.

supplying large numbers of demonstrating cases to the student during his preliminary studies, and also from the fact that in practice a pelvic examination is to be avoided whenever not positively indicated, and particularly in the young unmarried. But it is just here that the knowledge of the hystero-neuroses comes in play. A thorough comprehension of this subject and a realization that pelvic lesions may cause distant neuroses with pelvic symptoms so slight as to have been overlooked by the patient will, after a thorough examination of the seat of the reflex symptoms without any discovery of a cause, lead to such a pelvic examination with the happiest results.

It seems almost unnecessary to even name one of the many instances in which the hystero-neuroses have been made a diagnostic scapegoat. You have each and every one seen such. I refer to symptoms anywhere from head to foot which, with or without a semblance of reason, have been attributed to the menopause. So firmly have women become impressed by these gross exaggerations that many a perfectly healthy woman looks forward for years with apprehension to the dreaded ' change of life" only to learn by experience what doctors should long ago have learned by observation, that a woman with healthy pelvic organs has nothing to fear from the menopause. When hystero-neuroses or local pelvic symptoms arise at the inception of the menopause they are as much an indication for investigation and treatment as they are at any period of a woman's existence. And if this rule might be invariably followed, just try to realize the cases of cervical carcinoma which would be recognized in the early stages when radical operation has most to offer.

Thus far I have spoken only of the advantage to the patient in the thorough investigation of the causes of disease but the patient is by no means the only gainer. Insufficient physical examination very frequently leads to a three-fold error: first, an incorrect, or at least inexact, diagnosis; second, an incorrect therapy; and third, an erroneous prognosis; and the patient, and her friends, will readily forgive, if they ever suspect, the first two, but will inevitably discover and possibly grudgingly forgive but never forget the third. The prognosis is the one element in every case which the layman can judge critically and justly if very often harshly. Therefore, if the penalty for an error must be paid it often falls to the lot of the patient to pay the first installment but the doctor usually pays in the end and frequently the lion's share.

One last, by no means negligible, advantage to be gained by the comprehensive physical examination of all patients is the discovery that the patient may be suffering from two or more distinct pathogenies in no way related to each other directly nor reflexly except in so far as both disturb general metabolism. This constitutes the class of cases in which the general clinician, the family physician, and the specialist reach their highest degree of efficiency through intelligent co-operation, each coincidently attending to those factors within his legitimate scope.

Permit me to outline what, in the foregoing, I have meant by a thorough physical examination. Three years ago I adopted the rule to which I have since strictly adhered, that every new patient be examined as to the condition of all viscera, those of special sense alone excepted, these being considered beyond the limits of the average gynecologist. The first step is a routine anamnesis. And when I say routine I do not allude to the filling in of spaces left in a printed form. Nothing could be worse. A short experience with such history blanks is all that is necessary to convince anyone that no one blank will accurately adjust itself to all cases any more than will one prescription. This recording of histories is too frequently neglected by general clinicians. It often serves as the opening wedge to discover facts which would otherwise remain hidden either through the patient's underestimation of their importance or her idea that they can have no connection with symptoms in remote organs and hence their concealment through false modesty. It is always possible, by beginning at the beginning and inquiring in the most commonplace way as to the age at which menstruation began, to get a full menstrual and pelvic history without in the least offending the delicacy of the most scrupulous.

The history completed, the patient's heart and lungs are examined by auscultation and percussion. Realizing the intimate relationship existent between respiratory and intrapelvic lesions, catarrhal conditions of the upper air passages should be looked for. The abdomen next receives attention, the liver and spleen being percussed out and palpated if possible. Robson's and Boas's points are palpated for evidences of gallstones. The kidneys are next investigated as to palpability, mobility or enlargement and the course of the ureters followed down to the pelvic brim. The position and size of the stomach, colon and small intestine are next determined by auscultatory percussion, and the colon and iliac regions are palpated for evidences of appendicitis, ovarian tenderness or colonic fecal impaction. The hypogastrium is palpated for uterine or bladder enlargement or tenderness. The history will always determine the regions which must have careful examinations and those in which we merely wish to be assured that all is really normal. And no man of discernment requires to follow this routine long to learn how inadequate to complete and accurate diagnosis the patient's statement of symptoms is.

The abdominal viscera well understood the pelvis is investigated. This with the general clinician will not, of course, follow in every case as it does with the gynecologist, but should follow, in all except the young unmarried, in all cases in which symptoms exist which are known to result from hystero-neuroses, even occasionally, when every known extrapelvic cause has been exhausted without satisfaction.

With the supersensitive patient nothing so

greatly facilitates the pelvic explorations as nitrous oxide. It is easily given at the office and produces a transient but quite sufficient relaxation with no disagreeable after effects beyond a possible momentary dizziness.

The thighs and legs, containing no important viscera, are examined only when the seat of special symptoms.

The following are a few cases selected as types either of belittling or exaggeration, or both in the same case, of the hystero-neuroses taken from the twenty-six cases above mentioned.

CASE I. Mrs. H. F. M., age thirty, married seven years, never pregnant, housewife. Family and past histories entirely irrelevant. First catamenia at twelve, always regular and painless, of five to seven days' duration and requiring from five to seven napkins. Last catamenia one week ago exactly on time. Present illness: Two years ago, while travelling in Mexico contracted dysentery (?) and was ill several weeks. Extreme rectal tenesmus resulting in frequent, prolonged and violent straining. During this straining on one or two occasions felt as though something gave way in the pelvis. Never wholly recovered from this attack and has been constantly under medical attendance ever since. Has been under the care of three general clinicians and one who, while stopping at the same summer hotel, proclaimed himself a specialist in gastro-intestinal diseases. Since the abatement of the dysentery (?) she has had a great variety of gastro-intestinal symptoms but no marked diarrhea; on the contrary she has been generally inclined to constipation. No one of the four doctors had ever even suggested to Mrs. M. that she loosen her clothing for examination. There were absolutely no pelvic symptoms, not even a noticeable leucorrhea.

The physical examination showed a catarrhal nasopharyngitis for which she was advised to consult a competent specialist with the offer of assistance in selecting one if necessary. The heart and lungs were entirely normal. Examination of the abdominal viscera revealed nothing abnormal beyond the fact of a moderate distention of the intestine with gas. Both kidneys were easily palpable but not pathologic. The abdominal examination failing completely to show adequate cause for the gastro-intestinal symptoms and realizing the effects that the violent straining of two years before might have had on the pelvic organs a pelvic examination was made and a readily replaceable, considerably enlarged uterus was found retroverted to the third degree. Both tubes and ovaries normal. The uterus was replaced with immediate relief of all gastro-intestinal symptoms, and as no form of packing nor support was well tolerated, Alexander's operation was done two months later. At the present time, ten and one-half months after the operation, this patient remains entirely well and is again travelling abroad.

In this case I am certain that had any one of my four predecessors made a thorough physical examination he would at once have been impressed with the disparity between the symptoms and the absolute normality of the stomach as to position, size and tenderness. This case clearly indicates a lack of appreciation of the hystero-neuroses and by way of contrast permit me to cite one in which they were as grossly overestimated.

CASE II. Miss E. T., age forty-three, single, no occupation. Family history excellent, also past history. Had never had any acute serious illness. Had vulvo-vaginitis as a child but recovered promptly and completely but as a result had ever since been warned by her mother to expect all sorts of pelvic troubles. First catamenia at fourteen, always regular and never painful after the first year. Duration four to six days using two napkins a day. Last catamenia four months ago and had been gradually growing less. One year ago, after a comparatively mild attack of la grippe, became weak and anemic and began to have considerable leucorrhea which has persisted up to the present. During all this year catamenia gradually growing less, and six months ago began having backache, usually in lumbar region. For past two months has had pains, at times quite severe, in the epigastric region and extreme fatigue amounting almost to inability of locomotion. Four months ago consulted her physician who heard her recital of symptoms, and without further examination prescribed for supposed reflex neurosis arising from the supposed effects of the menopause and assured her that there was not the least occasion for alarm. As this treatment, however, yielded no results he advised her to consult me with the idea of having a curetting done.

Physical examination showed heart, lungs and abdomen absolutely normal beyond a questionable hepatic enlargement. Examination of the pelvis showed the leucorrhea to be thin and milky and coming almost, if not quite, entirely from the vaginal walls. The uterus was small suggesting the beginning of postclimacteric atrophy, was freely movable and no pelvic abnormality could be detected. The spine was slightly rigid, a little tender in the lumbar region, and the patella reflex was abolished. Delay was advised and a note sent to her doctor and the woman taken to a prominent neurologist who confirmed the diagnosis of tabes dorsalis.

The subsequent history of this patient is unknown to me, but it is evident that the menopause occurred, as it should have done in a normal pelvis, absolutely without symptoms and that the leucorrhea was the direct result not of a local lesion but of general debility and anemia. The fact of greatest interest in this case, however, is that special knowledge was not in the least demanded to exclude the pelvic origin of the symptoms, and there is not a doubt that the physician from whom she came was entirely competent to make the correct diagnosis as well as any specialist, had he followed the rule of investigating the causes of symptoms.

I wish to cite just one further case in which the question of the hystero-neuroses was by no means as simple, for it is quite possible to find many cases in which certain extra-pelvic symptoms are of undoubted reflex origin while coexistent symptoms have definite local pathologic basis.

CASE III. Mrs. N. M. T., age thirty-five, married four years, never pregnant; father and mother living and well. Past history good. Present illness began four years ago. Has had more or less leucorrhea all her life. First catamenia when eighteen, and was then operated upon for imperforate hymen. Irregular from the first. Never knows when to expect flow. Last menstruation two weeks ago. Always painful. Moderate pain in left iliac and sacral regions all the time, but decidedly aggravated at the menstrual epoch. Dura-

tion of flow from four to eight days, requiring four or five napkins a day. No clots and no odor.

Two years ago began having what her physician termed "nervous indigestion." A few months later began suffering severely, at times, with a pain of variable character but always located exactly at the vertex. Often felt as though head was opening and shutting and she feared impending insanity. One year ago resorted, on her own responsibility, to a well-known specialist in gastro-intestinal diseases. Was told after a thorough examination of her abdomen, and nothing more, that she had a gastro-ptosis and entero-ptosis. Gastric lavage was advised and practiced with marked relief of the gastro-intestinal symptoms, but the headache, leucorrhea, sacral and left iliac pain, which she was assured were the result of debility owing to malassimilation, remained uninfluenced. Not feeling satisfied herself that these were entirely nutritional symptoms she, once more on her own authority, sought a gynecologist. After taking her history he assured her that all her troubles were probably reflexes from the pelvis and proceeded to a pelvic examination and made no further investigation. Under his treatment she made some pelvic and head improvement, but the gastro-intestinal symptoms recurred. It was at this point, that through the advice of her neighbor, she came to my office.

The result of the physical examination was as follows: Heart and lungs normal. Abdominal examination shows a normal or but very slightly enlarged stomach considerably ptosed while the transverse colon was considerably below the umbilicus and was V-shaped and much dilated with considerable fecal impaction at the sigmoid flexure. The pelvic examination showed a large uterus with a very short portio vaginalis which is moderately antereflexed. Left ovary the size of a pullet's egg, prolapsed and firmly adherent. A peculiar band, resembling the cicatrix of a vaginal laceration, in the upper left portion of the vagina. On operation, six weeks later, the left ovary, completely degenerated, was removed and the omentum was found rolled up, and thus much shortened, and adherent directly across the pelvis so that the traction thus caused was producing the gastro- and coloptosis mechanically. Before her discharge from the hospital the stomach and colon were very nearly in their normal position, and when last heard from, a year and a half after the operation, she was well and attending to her household duties.

This case has been cited because it is one in which a particularly good history was obtainable. She was a self-reliant, assertive woman who stated facts clearly and without questionings, and above all because it demonstrates the shortcomings of the family physician in failing to make any physical examination at all, and each of the specialists, in confining his examination to those organs within the limits of his own particular specialty.

Illustrative cases might be cited in great abundance, but I think the above are quite sufficient as exemplifying my meaning.

## TUBERCULAR MENINGITIS IN ADULTS.*

BY HENRY JACKSON, M.D., BOSTON,
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Various diseases of the brain and the meninges are among the most serious diseases with which we have to deal, serious because of the importance of the vital organs attacked, and in many instances presenting indefinite symptoms that make the diagnosis difficult. There are a few symptoms that offer us great assistance in arriving at the diagnosis of some intracranial disease, and it is the experience of most clinicians that the physician must be satisfied if he is able to make a diagnosis as to the organic processes present, even though he cannot accurately define the exact pathological condition which has caused the organic process believed to exist in the individual case.

Trauma, syphilitic disease, cerebro-spinal meningitis, meningitis secondary to various pathological processes, as the diplococcus of pneumonia, and septic organisms and tubercular meningitis — all give rise to intracranial diseases that have many points of resemblance in their symptomatology though their etiology is so different. Add to these diseases the effect of mechanical processes which cause symptoms suggestive of meningitis, and we find ourselves brought face to face with a most difficult problem in the differential diagnosis of a supposed case of meningeal disease. Examples of mechanical processes which simulate intracranial disease are found in edema, due to chronic alcohol, the so-called "wet brain" of the drunkard, and internal hydrocephalus, dependent upon closure of the canal between the third and fourth ventricles by the organic remnants of a previous meningitis that has run its course. The enumeration of these various diseases does not represent a theoretical consideration of any and all processes that may give rise to symptoms suggestive of meningitis, but is a review of conditions that in some cases must be considered *seriatim*, while in all cases many of the conditions must be eliminated to enable us to arrive at a fairly probable diagnosis.

In meningitis we have many symptoms common in several diseases, as fever, headache, general malaise, and often leucocytosis. We find fever in cases of simple trauma, often of a high grade, and on the other hand, the temperature may be quite low in tubercular meningitis, and other forms of meningitis of an inflammatory origin.

Headache is usually present, but often it is not severe, and in many cases the sensorium is so dulled that at all events there is no expression of pain in the head though it may be present.

Leucocytosis is a symptom of importance, chiefly because we must not place too much reliance upon it in making our diagnosis. We often find a leucocytosis of moderate degree in trauma or cerebral hemorrhage, and it may be absent in local suppurative processes. In acute cerebro-spinal meningitis a high white count is the rule, a symptom that usually is of importance in the differential diagnosis of tubercular meningitis, but I have seen a high white count in tubercular meningitis, and thereby been led to make an incorrect diagnosis. It seems probable that the white count in meningitis is independent of

* Read at the meeting of the Boston Society for Medical Improvement, January, 1904.

acute inflammatory processes, as leucocytosis may be found in cerebral hemorrhage as we find fever without the demonstration of any acute septic process.

The most important evidence to be drawn from the presence of leucocytosis in a doubtful case is that thereby we may with much assurance eliminate typhoid fever, a disease that must be considered in most cases. My personal experience is that I have never seen leucocytosis in a case of uncomplicated typhoid fever. I am aware that such cases have been observed, though very rarely.

Delirium, fever, stupor, or maniacal symptoms may be present in meningitis in common with other diseases, hence arises the difficulty of diagnosis in doubtful cases. As meningitis may be due to so many causes, it is fair to assume that we must always be on our guard to eliminate this serious disease in cases where such a diagnosis is possible.

We have two classes of symptoms directly dependent upon the organic changes in the brain or meninges on which to base our diagnosis, namely, disturbance of the pulse rate and paralyses of various muscles, especially of the eye and face. In the pulse we have a sign of the greatest possible value which may not be disregarded if present. In the early stages of meningitis, or in cases with moderate effusion within the head, we find a slow pulse as the result of irritation of the vagus, while in the later stages we have an exceedingly rapid pulse from paralysis of the same nerve.

Looking at this matter from a practical standpoint, a slow pulse, or a relatively slow pulse, in a very sick person should always arouse the suspicion that there is some factor which is causing an abnormal reduction in the rate of the pulse. The pulse of typhoid fever is slow in comparison with other diseases that have a similarly high fever, but this rule does not apply in cases of fever in which the individuals are so sick as to suggest the probability, or even the possibility, of meningitis. I have seen in consultation three cases, all with a slow pulse, yet evidently very sick; the slow pulse was in each case a source of relief to the attendant physician, whereas to my mind the slow pulse was one of the chief causes for alarm. Two of the cases were tubercular meningitis, and one evidently cerebral, though the diagnosis was obscure. All died within a few days of the time that I first saw them, and in all an exceedingly rapid pulse preceded death. If the pulse be not only slow but irregular, or intermittent, it furnishes still greater cause for alarm.

On the other hand, a pulse of normal rate, or one with a rapidity such as might be expected from the general condition of the patient, is a strong presumptive proof that the case is not cerebral in origin. Therefore, taking these two factors into consideration, it may be stated with much confidence that in the pulse we have a strong bit of evidence for or against the existence of meningitis in an individual case.

The existence of paralysis of one or more muscles of the eyes, or of one of the muscles of the face, is of the greatest value. The paralysis may be so slight that doubt arises whether the slight deviation may not be natural to the individual. As a rule one or more muscles are affected; rarely is the lesion sufficiently great to produce absolute paralysis of any of the larger muscles of the extremities. Especial attention should be paid to the existence of paralysis, as it is a sign easily overlooked when the patient is very sick. Twice I have seen cases in which a facial paralysis was not recognized, as in the ordinary motions of the face it was not recognizable, though pressure on the point of exit of the supra-orbital nerve made it apparent.

It is not rare in hospital practice to meet with cases of tubercular meningitis in adults, and, as in my experience these cases are essentially different from the disease as seen in children, it seems worth while to review the recent cases in the Boston City Hospital with the addition of one seen in private consultation.

I have notes of eighteen cases collected in the last few years at the City Hospital. Seven cases were between eighteen and twenty-five years, eight between twenty-five and thirty, and three between forty and fifty years of age. In hospital practice the previous history of a patient is apt to be rather unreliable, though perhaps not more so than the history of our private patients, especially when we consider the accurate data usually gathered by our house officers. In one case no history was obtainable; in three cases there was a history of a subacute disease two years before coming to the hospital which certainly suggests the possibility of a preceding subacute tubercular process, namely, in one case pleurisy, in one case a slight cough which lasted a long time and kept the patient in bed, and in the third case some disease that kept the patient in bed several weeks, though he recovered subsequently.

Fourteen of the hospital cases gave no history of a disease preceding their present attack on entering the hospital. The case seen in private practice had not been sick for over seventeen years, during which time his wife could give us accurate information. Therefore, it is evident that in making the diagnosis of tubercular meningitis the lack of the evidence of a pre-existent tubercular trouble is no strong argument against the probability that the individual has tubercular meningitis.

The history, however, does not agree with the post-mortem examination, as in only two cases did the pathologist fail to find the evidence of an old healed tubercular process. On the other hand, no one of the cases showed extensive tubercular disease susceptible of diagnosis by our recognized methods of clinical examination.

Therefore, as in the case of the history of their preceding illnesses, the general examination failed to suggest a probable tubercular trouble, except possibly in two instances: one patient was admitted for acute pleurisy of the usual type, and

did not develop cerebral symptoms until four weeks after entrance to the hospital; the other had a chronic tubercular hip joint disease, which had existed since childhood and was said to have resulted from an early infantile paralysis. This latter case might probably have been diagnosed as tubercular, though it was not.

The period of sickness before entrance to the hospital was varied, but, as a rule, much shorter than the incubation period as seen in children. One case was admitted as a sunstroke case, with the history of an acute attack of unconsciousness. One case had complained of sore throat for two days; one had been sick for two weeks; three for a week; seven for ten days; in one no history. In fifteen cases, therefore, the disease was abrupt in its onset, or preceded by symptoms of short duration. One patient had been sick with vomiting and diarrhea for four weeks; this attack had followed, and was supposed to be due to, the eating of uncooked ham. In three cases only was there a history of symptoms extending over a period of several weeks, and in these three cases there was a general, acute, miliary tuberculosis in addition to the tubercular meningitis. The prodromal symptoms in all were indefinite, symptoms suggestive of many acute febrile diseases, rather than pointing towards a definite cerebral trouble. Four only of the cases laid especial stress on headache and vomiting, though headache was present to a certain extent in other cases. Three were delirious, and in one the mental symptoms were so marked that some form of insanity was considered possible. In the other cases the symptoms were described as weakness, malaise, fever and cough, or stomach trouble, as in two instances.

A good idea is obtained of the general impression that the cases made when first seen by the fact that in most of the cases the blood was examined by the Widal test. The course of the disease as it progressed in the hospital was that of some cerebral trouble. One third of the cases presented the type described as typhoidal delirium; two thirds presented varying grades of stupor and delirium. A small number were noisy and delirious. Headache was often complained of when the question was raised, but in only one case was severe headache an important and prominent symptom, that is to say, the disease in adults is not usually marked by the same headache, photophobia, cerebral cries, and extreme restlessness that make up the picture of the disease as usually seen in children.

In two cases there were convulsions. So far, then, we may say that the cases present nothing in their previous history suggestive of tubercular trouble, nothing in the history of the prodromal period that may establish the proof of a cerebral disease, whereas the course of the disease itself offers pretty strong proof that we have to deal with some acute cerebral trouble.

Taking up the physical signs, in all the cases but one, the pulse was slow in the first part of the acute stage. The pulse rate was usually from 60 to 70, until the last few days of the disease, and occasionally the pulse was as low as 50. In the last two or three days of life the pulse rate was 130 to 150, even rising in a few cases to 180, the average 140. Comparing the slow pulse rate just given with the picture of the general condition described, as stupor, delirium or noisy maniacal conditions, and the marked discrepancy between the pulse and the general condition, offers us practically proof that the pulse rate is dependent upon cerebral trouble. The temperature was unimportant, rarely over 102.5°, usually from 100 to 101°, and in one case normal or under after the second day.

The white count in nine cases showed on the average a much smaller number than in acute cerebro-spinal meningitis. In one case 23,000, in another 17,400 white cells were counted, in the other cases the count was at or below 12,000.

| | | | |
|---|---|---|---|
| (1) | 12,500 | (6) | 12,000 |
| (2) | 17,400 | | 7,200 |
| (3) | 10,000 | (7) | 7,500 |
| (4) | 12,000 | (8) | 6,500 |
| | 10,000 | (9) | 9,400 |
| (5) | 12,800 | | |
| | 23,200 | | |

The small leucocytosis favors the diagnosis of tubercular meningitis as against acute cerebro-spinal meningitis.

Lumbar puncture was done in eight cases; in all the fluid spurted out showing that it was under pressure; in each case the fluid showed no growth, except in two cases the albus as a contamination from the skin; the fluid was almost clear, with a few flocculi. In one case the bacilli of tuberculosis were found on microscopic examination.

The lumbar puncture in these cases is, therefore, very different in its results from acute cerebro-spinal meningitis. In the latter we find pus or semi-purulent contents, and organisms are easily obtained by culture. Examination of the fundus oculi gave little information; in only one case was neuritis found. Retinal tubercles are certainly rarely found. In four cases the fundus is distinctly described as normal.

*Paralysis.* — In three cases no paralyses were noted, but these cases were very sick and death ensued shortly after entrance to the hospital in two. In one case extensive and marked paralyses were present, namely, a dilatation of the left pupil, and a complete left hemiplegia, face, arm and leg.

In two cases there was very slight facial paralysis in addition to strabismus.

In twelve cases paralysis was found limited to one or more of the muscles of the eye. We may then say that the rule is to find paralysis limited to the eye muscles. In this regard there is no difference from cerebro-spinal meningitis, but the paralysis found in syphilis, cerebral edema and trauma is usually more extensive.

Other signs of cerebral trouble were found, but less frequent and less marked than in cerebro-spinal meningitis, namely, retraction of the head, Kernig's phenomenon, and opisthotonos, the last mentioned sign being found only once.

After the onset of acute symptoms three died in less than two weeks, and several died in less than one week, two cases lived for three weeks.

*Autopsies.* — The post-mortem findings corresponded very accurately with the clinical examination as to the lungs, in no case was there found a lesion that was sufficiently marked to give rise to signs during life.

In sixteen of the eighteen cases small areas of chronic tuberculosis were found; small areas in the lungs in nine cases; caseous bronchial lymph glands in seven cases; chronic tuberculous hip in one case.

Acute miliary tuberculosis was found in the lungs in seven cases, and general acute miliary tuberculosis in five cases.

The cord was involved in a large number of the cases, as well as the meninges of the brain, namely, in eight cases. It seems to me that the involvement of the cord is not usually considered as so common. The meninges of the brain were involved alone in ten cases.

In the case with left hemiplegia there was marked flattening of the convolutions, the result of increase of the subdural fluid.

I give the history of two cases.

CASE I. Woman, twenty-one years of age. Previous history, always well. Present illness: For one week a cold with a little cough; for three days had been weak and sick. She entered the hospital on Aug. 25.

Physical examination on entrance as follows: Sordes, typhoidal appearance; pupils not abnormal; lungs not abnormal. Aug. 27, head retracted, tache cérébrale. Aug. 29, less stupor, convergent strabismus of right eye. Aug. 31, fundus normal, W. N. B., probably tubercular meningitis. Sept. 1, ptosis of left eyelid. Sept. 7, gradual failure and death.

Pulse slow to Sept. 1, later rapid. Temperature 101–102°.

*Autopsy.* — Area size of an almond of caseous tuberculosis at one apex. Tubercular cerebro-spinal meningitis.

CASE II. Man, forty-two years of age. For seventeen years he had had no serious illness. He went to Europe in the spring, as he was not very well. Arrived at home June 10; June 17 felt poorly; tongue coated, no fever, pulse not quick. For ten days he was cared for by his wife. Suddenly, on June 27, delirium came on, and a nurse was called. For next five days pulse 60–70, low, irregular fever, delirium. During the night of July 1 and 2 he became much worse, respiration was stertorous; at that time pulse 80. He waved the right hand constantly, and could wave the left a little; moderate Kernig; no knee-jerk; pupils both rather large.

Paralysis left side of face, left arm and left leg. Heart negative; lungs negative; Widal negative. In a few days the pulse became very rapid and death.

*Autopsy.* — Tuberculous meningitis, with exudate the most prominent feature, most marked at the base; marked flattening of convolutions from increase of subdural fluid. Spinal cord negative; thoracic organs not abnormal, except a few miliary tubercles at one lobe. Lymph nodes, mesenteric, bronchial, aortic and cervical showed no evidence of tuberculosis.

This case I report in detail as careful search was made for evidence of a chronic tubercular process, which might be the starting point of the acute tuberculosis. No such lesion was found.

## CLAUDIUS' IODIZED CATGUT.

BY HORACE BINNEY, M.D., BOSTON.

THE sterilization of catgut sutures and ligatures by immersion in an aqueous solution of iodine was first brought before the public by Claudius of Copenhagen in the "Deutsche Zeitschrift fur Chirurgie" for 1902.[1] A second article by him appeared in the same publication, in the following year.[2] In this country, attention was first called to this new method of sterilization by Dr. Nicholas Senn.[3] The most recent discussion of the subject is an article by Martina of Gratz.[4]

The improvement during the past few years in the preparation of sterile catgut has shown itself in the comparative rarity, at the present time, of abscess following aseptic operations. The number of surgeons must, however, be small whose experience does not include cases of abscess where the catgut used seems alone to blame. It is also a well-known fact that cultures taken from many of the commercial preparations of catgut sutures have not infrequently shown the material to be infected.

An example of such bacteriological tests is the work of Dr. Jouett, for Dr. Hildreth of Cambridge, Mass., done during the past year. A résumé of his experiments with catgut, prepared by a number of different firms, is, through the courtesy of Dr. Hildreth, here given:

| | |
|---|---|
| Number of specimens examined . . . . . | 18 |
| Positive growth obtained in . . . . . | 9 |
| In infected specimens growth appeared in . | 24–48 hrs. |
| Number of cases in which a coccus was found | 6 |
| Number in which a bacillus was found . . . | 3 |

The precise character of the organisms was not investigated and the question as to their pathogenicity is unsettled.

Another example of less significance than the above is an investigation by the writer of a small amount of catgut on which suspicion fell. Out of ten samples of chromicized gut, positive growths was obtained in three cases, appearing in from two to seven days. The bacteria found were cultivated on the ordinary liquid and solid media and in one case showed characteristics of the *Bacillus mesentericus vulgatus;* in a second, those of the Hay bacillus. In the third case a spore-bearing bacillus was found which was not identified. The first two are known to be non-pathogenic spore-bearers, and among the most resistant to sterilization of all bacteria. That the third (unidentified) was non-pathogenic was inferred from its failure to grow on blood serum.

What conclusion may be drawn from these experiments? Of course, the question of technique and possible contamination of the catgut and cultures during the course of tests at once arises. But, allowing that such accidents did occur, it is unlikely that in experiments carefully conducted the percentage of positive growth would be as high as 50% in the one case and 30% in the other. Moreover, the variety of the organisms found argues against contamination, during

[1] Vol. lxiv, p. 489.
[2] Vol. lxix, p. 462.
[3] Journal of the American Medical Assn., xl, p. 817, 1903.
[4] Deut. Zeit. f. Chir., lxx, p. 141, 1903.

the test, in all cases. We may, therefore, conclude that certain commercial preparations of catgut are not invariably sterile and are, therefore, a source of danger in operations. While the non-pathogenic character of the organisms in three of the above cases suggests an absence of danger to the patient, we cannot accept this, for the presence of such bacteria in a wound undoubtedly favors the growth of any other bacteria which are present in, or accidentally enter into, the tissues during operation.

The above experiments emphasize the need of a method of preparing absolutely sterile catgut — one that can be always trusted.

In general, it may be said that the simpler the method of preparation of sterile catgut, the better the results, because the risk of accidents is less and, needless to say, the cheaper the product. The efforts of most manufacturers to supply an absolutely sterile article have elaborated rather than simplified the methods of preparation.

One of the newer methods for sterilization is the cumol method.[5] In this the gut, arranged in a convenient form, is put through a process of drying, is treated with cumol and again dried at high temperatures, the whole process requiring more or less constant attention for at least five hours. Gut prepared in this way has been shown to be absolutely sterile, but the method, besides being complicated, is expensive, the apparatus costing at least $40.00. The other methods in common use are less expensive, but it is a well known fact that they are more or less complicated; hence the need of a simpler method. This need seems to have been largely filled by Claudius' iodized catgut.

A synopsis of the method is as follows: Raw catgut wound on glass spools is placed directly into the following solution: Iodine, 1 part; potassium, 1 part; water, 100 parts.[6] The bottle is labeled and dated. Claudius states that after eight days the gut is ready for use and may be kept in the same solution and bottle. Through the action of the iodine solution the gut becomes deep black in color, completely sterile, antiseptic, pliable, and easy to tie. Immediately before using, Claudius recommends rinsing the gut in a 3% aqueous solution of carbolic acid or in any sterile fluid, to remove the surplus of iodine solution. The antiseptic action of the latter solution is demonstrated by Claudius by numerous tests in which he found that staphylococci were killed after three minutes' exposure to the solution, anthrax spores after twenty hours. Careful experiments with gut which had soaked for eight days in the solution showed it to be invariably sterile.

Dr. Senn[7] has used catgut prepared by this method with results so far entirely satisfactory, but I have not learned of his yet having published a detailed report of his personal experience with it.

[5] Miller: "The Sterilization of Catgut." Johns Hopkins Medical Bulletin, September 1900, p. 225.

[6] KI is dissolved in a small amount of water, to which the pulverized iodine is added then diluted with water to the above strength.

[7] Journal American Medical Association. (*Loc. cit.*)

The writer, desiring to test sterilization by iodine of a raw commercial gut, which is extensively used by eastern surgeons, made the following experiment. Raw gut was cut into pieces about six inches in length, soaked in the iodine solution for one week and then placed in bouillon tubes. In eleven cases the gut was soaked in two changes of sterile salt solution twenty-four hours each, to remove the iodine. In three cases this was omitted. In every case there was no growth of bacteria at the end of ten days. Control cultures to determine the presence of bacteria or spores in the raw gut were not found practicable because of the difficulty of completely removing the antiseptic agent used to kill surface bacteria, without recontamination. In the attempts made a trace of the antiseptic was invariably carried in the gut when planted in the culture medium, sufficient to inhibit all growth.

In order to determine the penetrating power of the iodine and thus prove that bacteria or spores in the substance of the gut, as well as on the surface, were destroyed, the following method was employed. Raw gut was macerated thoroughly in water, placed in bouillon cultures of the *Bacillus mesentericus vulgatus* for ten days and, at intervals of three or four days, was thoroughly triturated with a glass rod. The gut, impregnated with bacteria and spores, was then transferred to the iodine solution and soaked for one week. It was then removed and soaked in sterile water for two or three days, to remove the iodine, after which it was planted in bouillon. At the end of sixteen days, in every case there was no growth, proving the effective sterilization of the gut by the iodine solution.

In a similar way Martina tested gut which had been soaked in bouillon cultures of anthrax bacilli. The gut was dried, placed in the solution of iodine and potassium iodide for varying lengths of time, and washed and transferred to culture media; specimens exposed to the I. K. I. solution for forty minutes or longer gave negative results in agar, gelatine and bouillon. He further demonstrated the antiseptic property of iodized gut by placing pieces which had been drawn repeatedly through the unsterilized hands in various culture media. In no case did any growth of bacteria appear. The same test with cumol and sublimate-alcohol catgut gave positive results. He also placed pieces of the iodized gut in culture media in which various kinds of bacteria were then planted. The presence of the iodine in every case inhibited the growth of bacteria for a considerable distance around the gut, showing that the iodine was to a certain extent diffused into the surrounding medium.

Owing to the volatile nature of the iodine, the solution tends to become weaker the longer it is kept. Martina used solutions which were three weeks or more old. He states that the probable limit at which the solution can be safely used is three months. The writer in most of the cases referred to above used solutions from two to four weeks old. It is probable that if the solu-

tion is kept in a tightly corked bottle, and does not become transparent, it may be safely used until the end of four months.

*Durability.* — From experiments with rabbits and a few clinical tests it was found that the iodized gut corresponded closely with plain catgut in the time required for absorption. Claudius found it was absorbed more slowly than carbol-alcohol catgut when used as a skin suture, requiring twelve to sixteen days. Martina made extensive experiments with rabbits and found the gut entirely free from iodine, much swollen and quite fragile after ten days. He concluded that in cases where a great strain was to be put upon the sutures, the iodized gut was not applicable, since its strength after eight days was not sufficient. In hernia operations he does not advocate its use for the suture of the fascia. Other surgeons, whom Claudius quotes, have had no unfavorable results from its use in similar cases. Martina is also opposed to its use in suture of tendons. In such tissues, of slow healing properties, any rapidly absorbable suture would naturally be unsafe, if the parts were under any especial tension. The cases in which the iodized gut prepared by the writer was employed are but nine in number, in eight of which the catgut was used on the fascia in closing the laparotomy wound, and in every case, the wound healed in a satisfactory manner. No tests were made as to the absorbability of catgut sterilized by iodine after being previously chromicized, nor has it been used clinically. From a few experiments it appears, however, that this method of sterilizing chromicized catgut is an effective one.

*Antiseptic Action in the Tissues.* — Martina showed experimentally that the antiseptic property of the gut lasts about forty-eight hours, and it is probable that this holds true for sutures placed in human tissues. Thus, any bacteria which might adhere to the sutures during handling, and become introduced into the tissues, must be destroyed by the action of the iodine. This is, doubtless, the strongest reason for the good results obtained from the use of iodized catgut.

The absorption of iodine from the suture naturally suggests the possibility of toxic effect. The quantity of iodine absorbed from the sutures, even in a case where a large number of ties are used, such as a dissection of the breast and axilla, has never been found large enough to cause any poisoning. Its only action appears to be local as shown by slight reddening of the skin, which according to Martina lasts for four days, when the gut is used as a skin suture.

*Strength.* — Claudius found that iodized gut after soaking for one week in the solution was stronger than ordinary catgut prepared by other methods, and that the strength was retained until the end of six months. Gut which had been soaked longer became brittle and therefore unsafe. He also considered the strength of the gut to be increased by washing in a three per cent carbolic solution immediately before use. With this observation, Martina does not agree, nor do the writer's experiments bear it out. Martina prefers an iodine solution of one half the usual strength to the carbolic solution, for the purpose of rinsing the gut. The writer found that gut kept in watery solutions was inferior in strength to gut which had been transferred to an alcoholic solution previous to use. The question of preserving the catgut in an alcoholic solution naturally arose, and various antiseptic substances dissolved in alcohol were tried. Corrosive alcohol was found satisfactory as far as preservation of the strength was concerned, but iodine is rapidly absorbed from the gut by this solution, and it therefore becomes a plain catgut, and antiseptic action in the tissues is lost. An alcoholic solution of biniodide of mercury was tried and found to be highly satisfactory, since there is but little tendency for the iodine to be absorbed out of the catgut. The best results were obtained by rinsing the catgut (after its soaking for one week in the iodine solution) in 95% alcohol, to remove the superfluous water, then placing the gut in a solution of biniodide of mercury, one part; 95% alcohol, one thousand parts; glycerine, twenty parts. Gut preserved in this solution retains the iodine well, and is stronger than that preserved in watery solutions. The fluid, being antiseptic, permits any catgut not used during the operation to be returned to the bottle without resterilization. This, of course, applies only to clean operations. Any handling of suture material with dirty hands or gloves would, of course, endanger the sterility of the gut. Gut soiled in this way may, however, be safely used after resterilizing in the iodine solution.

The longer the gut has been kept in the solution of mercuric biniodide the stronger it appears to become, and for this reason the gut which has been but recently sterilized may be found of insufficient strength. If, however, the spools are allowed to stand in the air before using, for fifteen minutes or more, the gut becomes very strong and of a convenient consistency for tying. It was found advisable in every case to remove the suture material from the solution at the beginning of the operation. It was then unwound from the spools and cut into convenient lengths, laid on the instrument table and covered by a sterile towel. The above procedure gave most satisfactory results.

The preserving solution of biniodide of mercury is stable and has no unfavorable action on the catgut, which may therefore be used safely after keeping for a long time. In several cases gut which had stood for two months was used and found thoroughly satisfactory. It can probably be safely used after a much longer period.

*Clinical Results.* — The detailed reports of a large number of cases in which iodized catgut has been used by foreign surgeons with the best results may be found in the articles above referred to. A single instance of its successful use, mentioned in the second article by Claudius, was in the practice of Dr. Schon, who used the

iodized catgut in seventeen dissections of the breast and axilla with a perfect healing in every case. This operation is, as he states, probably the best test of catgut, owing to the large number of ligatures employed, and the comparatively poor circulation in the tissues about many of the ties.

The catgut prepared by the writer was employed in the following cases, which were operated upon at the Baptist Hospital, Brookline, by Dr. Hugh Cabot. Catgut of size No. 1 was used throughout: Interval appendix, 3 cases; interval appendix with myomectomy, 1 case; amputation of the breast for sarcoma, 1 case; gastro-enterostomy, 1 case; ovarian cyst, 1 case; varicose veins of leg, 1 case; cholecystectomy, 1 case. These cases were operated upon during the last eight months, and in every one the healing of the wound was satisfactory. Up to the present time the result, so far as suture material is concerned, is perfect.

*Cost.* — Finally, a word is to be said as to the cost of this method of sterilization. All of the ingredients of the solutions are inexpensive, and the solutions can be safely prepared by any apothecary, or, if necessary, by the surgeon himself. The exact cost has not been figured nor the relative cost compared with other preparations, but it is certainly very much less. The fact that gut which is not used during operation may be returned to the stock bottle is alone a source of considerable economy.

### CONCLUSIONS.

Catgut prepared by Claudius' method is superior to other catgut in that: (1) It is invariably sterile. (2) It is readily absorbed in the tissues. (3) The ease and simplicity of its preparation enables the surgeon to prepare his own sutures with a minimum of trouble. (4) It is comparatively cheap.

## CONCERNING THE DANGER OF INFECTION TO THE ATTENDANTS OF TUBERCULAR PATIENTS.

BY LOUIS FAUGERES BISHOP, A.M., M.D., NEW YORK,

*Physician to Lincoln Hospital, New York (including the Phyllis Pavilion for Consumptives).*

There is one point that I would like to take up, and that is the danger of contagion of pulmonary tuberculosis.

It is not very long ago since pulmonary tuberculosis was not considered an infectious disease; in fact, it was not thought that one person could get it from another. The opinion was held that it arose from within the body, and that if people suffered it was a matter of fate. The cause of it was not understood. This belief persisted for a good many thousands of years and the general opinion was that consumption was not an infectious disease.

We do not know the cause of scarlet fever or measles as well as we know that of tuberculosis, and yet there never was a time when it was doubted that scarlet fever and measles were contagious, the reason being that there was the evidence that when people came into contact with these diseases they contracted them. It has, however, been observed all these years that people lived in the house with consumptives and were intimately associated with them and yet did not uniformly get the disease, hence the belief arose that it not was a communicable disease.

When consumption was found to be a germ disease like typhoid fever and others we jumped to the conclusion that it was of necessity contagious. This is, however, not strictly true. If any of us have charge of a case of measles and we have not previously had the disease, we are liable to get it, but we can take care of many cases of consumption and be exposed to infection and yet not get it. With measles we would not escape once in a thousand times; that is, everyone is liable to measles unless he has had it and is protected against the disease, while with tuberculosis it is not necessary to have it and we are not uniformly liable to get it. This is founded upon the fact that no one enjoys immunity against the poison of measles, whereas most people enjoy an immunity which protects them in the case of slight infection with tuberculosis; that is, most people are in the same position toward tuberculosis as if it were a disease that protected against itself and they had had an attack. All of us in the city take in the germs of tuberculosis every little while. If the dust that flies about the streets on a windy day be analyzed the germs of tuberculosis will be found; indeed, there will be fewer tubercle bacilli found in the tubercular ward of a hospital than in the air of a dusty street, because in the tubercular wards there are no carpets or dust to carry the germs, while in a crowded street all conditions are favorable. So, even though we all of us at some time inhale the germs of tuberculosis we do not get tuberculosis because we enjoy a natural immunity against it. The tubercle bacilli can be introduced into the human body but there will, ordinarily, be no ill effect. There is one exception, and that is in the case of a very severe infection if the person is inoculated with the germs of tuberculosis repeatedly and the natural immunity temporarily broken down, but even then if the individual is not susceptible he will throw it off.

The germs of consumption are so widely distributed that a large number of people once in a while are so badly infected that the disease takes a start. They are sick for a little while but the condition is not recognized and the lesions heal and they get well. The only way we know that this happens is because the lungs of those dying of other diseases are examined and those who make a great many post-mortem examinations find that a large number of persons have at some time or other had a slight degree of pulmonary tuberculosis and have recovered without ever knowing that they had it.

I scarcely consider it fair, therefore, that tuberculosis should be put in the same category with

other contagious diseases, because it is only contagious in the sense that it may be transmitted from one to another, but is not contagious in the sense that the average person is liable to catch it. It is only contagious to those who are susceptible to it. This is a very important point, because in it lies the principle of the only treatment known for tuberculosis, and that is to restore to the individual the natural immunity which he enjoyed before he became infected and this is best accomplished by measures directed to the system in general.

There is no specific remedy for tuberculosis, and I am not sure that there ever will be, but some day it is possible that we may learn some better way of restoring this individual immunity. It has been found by experience that if a person not too far advanced in tuberculosis can be put in the open air and kept there day and night in any climate, that this treatment with proper feeding has a strong tendency to restore the natural immunity, and the result is that the lesion heals in most people who are infected slightly and in some who are quite severely infected. The whole thing comes down to a matter of susceptibility; if we are susceptible to tuberculosis we can hardly escape, while if we are not susceptible we can scarcely get it if we try.

As far as danger in taking care of tuberculous patients is concerned, this is practically nil. I think that if anyone working among tuberculous patients who uses ordinary care gets the disease he would have acquired it under other conditions.

## Clinical Department.

### LOCAL CONDITIONS IN THE RESPIRATORY TRACT MODIFIED BY GENERAL FUNCTIONAL OR ORGANIC DISEASE.

BY FRANCIS P. EMERSON, M.D., BOSTON.

Local measures have been carried so far and have accomplished so much for the relief and cure of chronic catarrhal conditions of the respiratory tract that one does not need to urge their importance nor to reaffirm belief in such rational methods. It is not to detract from these brilliant results that I try to emphasize some general principles that seem in danger of being overlooked. We have all reached the point where it is admitted that no examination of the respiratory organs is complete that does not include the air tract as a whole, but does this mean the search for mechanical obstructions or the sequelæ of acute inflammatory processes only? Drainage can be established and obstructive lesions overcome to the temporary gratification of our patient, but is there not a local function to be preserved and also a relationship between it and general functional and organic disease? The term "specialist" can only be used relatively, because the result of minute investigation of any organ in its physiological and pathological aspect is to lead us to the broader consideration of the modifying influence upon it, of habits, environment, climate, seasons, occupation, heredity, age, etc., as well as its relation to other organs. This would seem to be a self-evident truth did not the question come up for discussion at a recent meeting of a national laryngological society as to whether the rhinologist was ever justified in prescribing even a laxative without the consent of the general practitioner. Every man who operates in the nose often must have noted the difference in reaction between the patient who leads an active out-of-door life and the one of sedentary habits. In the same way the man or woman with chronic constipation, indigestion, rheumatism, or gout will show an individual reaction that is not represented by the amount of trauma or the virulence of an infective organism. Normal excrementitious products may be retained within the body so that there results an incomplete chemical metabolism, or we may have an acid intoxication or the formation of leucomaines. The retention of such by-products may cause a chronic pharyngitis, an enlarged inferior turbinate or be one of the causes of a general arterio-sclerosis indicated locally by prominent tortuous vessels at the base of the tongue. Alcohol and chronic secretory disturbances of the stomach may for a long time produce local throat trouble, preceding marked symptoms in other organs.

"Taking cold" may result from reduced immunity due to over function of the larynx or from excessive heat or debauch so that pathogenic organisms of the throat become active, as well as from the lighting up of a subacute rhinitis from the chilling of the surface of the body. The prephthisical anemia of the larynx is an early local manifestation of a general trouble which all recognize.

A violent epistaxis may be the only symptom of a serious organic kidney or cardiac disease. Instances might be multiplied, but the object of this paper is not to exhaustively point out all the local conditions that simply indicate a general disorder or are associated with it, but to emphasize the importance of studying the patient as a whole so that when the local condition has been remedied general medicinal measures may be carried out in conjunction with the family physician to prevent a recurrence. Even chronic follicular pharyngitis is probably the sequel of changes resulting from hypertrophic disease in childhood and associated with the so-called lymphatic tendency. The chronic form we often hear spoken of by the older practitioners as throats of debility. Here the general lymphatic tendency needs to be studied on broad lines as well as local measures instituted.

Case I. Miss M. S., single, school teacher, age twenty-five. Referred to me in 1901 for hay fever. Nervous temperament. Was anemic two years. Digestion good. No especial sickness but is always nervously exhausted, especially at the end of her school year. Nose always troubled her but two years ago had sore throat and has been worse since. Hay fever comes on in June and lasts until September then skips one month and returns to last all winter. A large horizontal

ridge was removed from the left naris and the naso-pharynx treated. Freedom from hay fever one year when she returned as bad as before. Adrenalin was prescribed and a specimen of urine requested which on two analyses gave specific gravity 1008. Quantity 2 qts. Urea 1%. Albumen and sugar absent. Her symptoms immediately subsided under adrenalin and she was referred back to her physician with the analyses and suggestions as to her general condition. Whether she remains well or not, the importance of a stable nervous system from a good physique is conceded as probably one of the factors in the triad which go to make up the symptom-complex which we call hay fever.

Case II. Mr. A., school teacher, American, forty-seven years, 150 lbs.

*Family History.* — Father died seventy, grippe. Mother died eighty, always well. Two brothers and one sister. One brother and sister have rheumatism.

*Past History.* — Patient had inflammation of the bladder six years ago of three weeks' duration. Grip ten years ago. Indigestion or so-called bilious attacks frequently. As a boy had sick headaches. Left wrist has pained him since fall of 1903. Throat sore and pharynx red, horizontal ridge through left inferior meatus. Septum to left and at upper third is in contact with the middle turbinate. Naso-pharyngitis and laryngitis. Larynx malformed from early struma. Uvula large and glistening. Croupy cough and embarrassed breathing as through a sieve. Tongue heavily coated and bowels inactive. Much prostration. He remained under my care through the winter, and, after the acute symptoms subsided, attended to his usual duties but having constant subacute exacerbations until summer when he went as usual to the seashore working about his summer place but failing to be benefited as usual. As the season was very wet I suggested that he go back into the mountains which he did but returned in the fall in poor condition. The ridge in the left nose had been removed but no attempt was made to set up his septum owing to his bad general condition. His bowels had been regulated and beside the local measures he had been given tonics with poor results. At this time examination of the urine gave specifiic gravity 1024, strongly acid. He was given lithia grs. v T. I. D., advised to box twice weekly with sufficient clothing to make him perspire followed by a cool sponge bath, sleep in a cool room and take a cold bath daily. The diet was regulated, the ingestion of water increased and the temperature of the house lowered to 64°–68°.

Nov. 28. — Urine 2 qts., specific gravity 1017. Urea 1.13%. No albumen, although he still has his deviated septum he is doing his work easier than usual and has been free from any but a slight cold for the last three severe winter months and keeps improving. It is still necessary to use an alkaline nasal wash twice daily and probably will be until the nasal condition is corrected, but his improved general condition has modified the activity of the local process and makes it easier to control.

Since writing the above his left middle turbinate commenced to show myxomatous tissue along its anterior border, and later a fully developed polypus necessitated its removal. This was apparently an ethmoiditis from grippe.

Case III. Mr. L. S., referred by Dr. —— in November, 1903; merchant, American, fifty-four years, weight 185. Smoked excessively since eighteen years of age until one year ago. Throat trouble fifteen years. Uses no stimulants. No catarrh. Is large meat eater three times daily and drinks three glasses water per meal. Never sick except typhoid fever at fifteen years. Throat begins to trouble him in the fall and lasts through the winter. Painful and accompanied by a hacking cough.

*Family History.* — Father died seventy-three, chronic rheumatism. Mother died sixty-one, apoplexy. One brother well. Three sisters well.

*Examination.* — Chronic pharyngitis. Large amount lymphoid tissue at the base of his tongue and prominent blood-vessels. Upper naso-pharynx negative.

*Urine.* — Specific gravity 1024. No albumen. Urea 1.77%. Uric acid marked.

Beside local treatment the nitrogenous food was restricted and he was given Carlsbad Sprudel, one teaspoonful in a glass of water on rising, with an occasional dose of calomel and citrate of lithia grs. v T. I. D. He continued to improve steadily and at the end of two weeks volunteered the information that he was getting over the feeling of exhaustion at night that had troubled him so that he felt like lying down as soon as he returned from business and that his throat was entirely free from pain. Here the pharyngitis seemed to be worse in the fall from the diminished action of the skin and the increase of nitrogenous food.

Case IV. Mr. K., referred to me in 1899 by Dr. ——; Irish American, merchant, forty years. Has smoked 3 to 5 cigars daily. No stimulants.

*Past History.* — Tonsilitis, quinsy. Bronchitis frequently. Grippe, pneumonia, typhoid at twelve years. Bowels inactive.

*Family History.* — Father died sixty, stoppage of bowels. Mother died sixty-four, grippe and meningitis. Three brothers well. One sister well.

*Examination.* — Right naris. A horizontal ridge running well back on to the vomer. Right middle turbinate shows dried secretion on its anterior border and is close to the septum. Right sphenoid carious. Ridge was removed and local treatment instituted for several weeks. The following winter he had some bronchitis and went south. 1901 and 1902 his history was one of continued bronchitis and naso-pharyngitis until April, 1903, when after a change of flannels he took cold and examination showed so much puffiness over the left arytenoid with a general dark red appearance of the whole mucous membrane that I sent him home and saw him again in the evening when the edema had extended to the other side, and during the night the larynx was scarified twice to relieve his respiration. He recovered very slowly and on coming to the office a careful examination showed the nose and upper pharynx not inflamed, but as the sphenoid was bare the anterior wall was broken down to relieve the dropping posteriorly. A previous examination of the urine had given a specific gravity of 1031. Quantity, one and a half pints. A few crystals uric acid. No albumen. His physician had been aware of his condition but as the patient was a man with large business interests he could not be prevailed upon to follow directions for physical exercise until his last attack which so frightened him that he commenced systematic horseback riding, cool bathing, long walks, etc. General medication was directed toward his concentrated urine with noticeable effect upon his larynx which improved at once in becoming less sensitive to changes of temperature and more free from unpleasant sensations which had annoyed him since his acute attack. The throat here strongly suggested an incompetent kidney.

Case V. Mr. K., referred by Dr. —— in April, 1901; American, teacher, forty-six years. Has always had a persistent cough following every cold.

*Examination.* — Slight cartilaginous ridge well for-

ward in both nares. Naso-pharyngitis. Tonsils enlarged. Adenoid tissue at the vault and in Rosenmuller's fossæ. Lymphoid tissue extends laterally from base of tongue up to epiglottis and is continuous with that at base of tonsils. Glandular tissue at base of tongue very prominent which accounts for his long continued coughs. Chronic indigestion. The enlarged glands at the base of the tongue were cauterized and the lymphatic tissue in the vault and fossæ removed as well as that lower down about the epiglottis. He continued in good condition until February, 1903, when he reappeared with a painful pharynx, without any naso-pharyngitis above. He was referred back to his family physician with suggestions in regard to his digestion. A test meal showed chronic secretory trouble which was corrected with benefit to his throat.

The above five cases show that judicious local treatment was necessary to their restoration, yet they also illustrate the point that one must have a broad outlook as these conditions represent no one disorder but chronic functional or organic disturbances of metabolism which aggravate and tend to recurrent exacerbations of the local disease.

## GERMAN MEASLES.

BY F. H. MONTGOMERY, M.D., DANVILLE, KENTUCKY.

The Clinical Department of The Journal of April 14 contains an article entitled "Concerning German Measles" by Dr. Chas. W. Townsend, which I have read with much interest and which induces me to submit to you the following clinical experiences:

Case I. A young lady, sixteen years of age, developed a rash the thirtieth day of January. There were no prodromes, a rise of less than one degree of temperature, only slight malaise and some enlargement and tenderness of the posterior-cervical glands. The eruption lasted two days. On Feb. 13 I was again called to see her when she gave a history of having felt badly for three or four days with marked catarrhal symptoms and considerable cough. Temperature 101. She had a typical eruption of rubeola over face, chest and back. This persisted four or five days and disappeared leaving her in good condition. She had no sore throat in either attack.

Case II. A child two years of age. After three or four days of catarrhal symptoms this child, on Jan. 23, developed an attack of broncho-pneumonia of the congestive type and had several convulsions. Both lungs became filled with liquid rales, the patient became somewhat cyanosed and fell into a condition of semi-coma. Temperature at this time was 105½ (taken in the groin). He rallied from this condition and during the following night broke out with a typical rash of rubeola. This patient was seriously ill for three weeks, the pneumonia producing grave anxiety for a fortnight after the disappearance of the rash. On March 6, after having been out of bed for some ten days, he developed a rash with more of the characteristics of scarlatina than that of the former attack. He had no prodromes, his temperature did not reach 100 F., he had no sore throat and the rash disappeared in less than two days. The post-cervical glands were enlarged and tender.

Cases III, IV and V. All were members of the same family. I attended them during well marked, uncomplicated attacks of rubeola from Jan. 23 to Feb. 3. On March 21 one of them developed a rash similar to that described above, having had no prodromes, and was followed in a few days by its development in the other two. The source of infection in these cases was undoubtedly case No. II, as they were next-door neighbors and playmates.

Case VI. A girl of about twelve years of age on Feb. 12 developed a rash, having had no prodromes. Temperature 99½, post-cervical glands enlarged and tender. No catarrhal symptoms. On Feb. 27, after the usual prodromes, this patient developed a well marked attack of rubeola. An interesting point in this case is that I attended her during a well marked attack of scarlatina in the spring of 1898, when the symptoms were all so characteristic and the source of infection so well known that there was no chance for error.

Cases VII and VIII. Two children of the same family, cousins of case VI and exposed to her on Feb. 12 and 13. On Feb. 24 one of these, without prodromes, developed a rash attended by slight temperature and enlargement of the post-cervical glands. On Feb. 28 the other child developed a similar condition, and a few days later their mother (who had had rubeola) went through the same character of sickness. This family moved to a neighboring state, but just prior to their removal these children were exposed to case IX during his attack of rubeola, and I have recently learned that they both developed this disease in about ten days after exposure.

Case IX. Cousin to VII and VIII and visiting in the same family. Was exposed to VII and VIII and to their mother during their attacks of illness. On March 16, without prodromes, developed a rash accompanied by slight temperature and enlargement and tenderness of the post-cervical glands. He had absolutely no sore throat. On March 6 played with a child who had the cough and catarrhal prodromes of rubeola, and on the twenty-third was thoroughly broken out with the typical rash of this disease.

During the period covered by these cases there was no scarlatina reported to the authorities of this town, and I could hear of none, but there was an epidemic of rubeola and I am confident of Rotheln.

The following points in this series of cases are interesting:

(1) The occurrence of two attacks of eruptive disease in each of these nine cases within the duration of a few weeks.

(2) The fact that one of these attacks could be absolutely diagnosed as rubeola.

(3) The fact that the other attack did not have the initial chill or vomiting of scarlatina, did not have any sore throat, and did not desquamate, and the period of incubation where it could be determined was too long for scarlatina — being from twelve to twenty days.

(4) That case VI had previously had an attack of scarlatina contracted from a known source and followed by marked desquamation.

In conclusion I would say that I attended during this period a number of other cases of typical rubeola and also a number of cases of this very mild eruptive disease as they were both epidemic in this community, but report only those cases that had an attack of each.

# Medical Progress.

## THE PROGRESS OF SURGERY.

BY HERBERT L. BURRELL, M.D., AND HAYWARD W. CUSHING, M.D.

### A METHOD OF ANESTHESIA DURING OPERATION ON THE FACE.

L. Ombredanne [1] recommends the following method, the advantages of which are that the inconvenience to the operator of the usual apparatus and the danger of wound infection from the same are avoided. The apparatus consists of a can-like receptacle, containing a sponge fitted with a movable perforated cover and a tubelike "nose," to which is fitted a flexible rubber tube, which connects the apparatus with a metal tube, which perforates a piece of soft rubber which is placed between the patient's teeth and lips. When used, the sponge in the "can" is saturated with ether, the patient's nostrils "tamponned," the soft rubber mouthpiece placed in the proper position in the patient's mouth and the ether vapor is inhaled. By lifting the lid of the "can," the desirable portion of air can be mingled with the ether inhaled by the patient. The method is another modification of the practice of inhaling ether without an apparatus which, more or less, covers the face and is held in position by the hand of an anesthetizer. This particular device would not seem to have all the advantages of the method described in a recent report of the Boston City Hospital.[2]

### IGNITION OF ETHER VAPOR IN PRESENCE OF A CLOSED ELECTRIC LIGHT.

D. Murray makes a short but interesting report of a case where an explosion occurred under the condition above stated. The etherizer was testing the corneal reflex. The patient was lying prone and the head was turned around so as to bring it directly under an electric lamp. At this instant the ether vapor ignited and the patient was slightly burned. The lamp is described as a "closed" light.[3]

In this connection the cause of a recently noted gasolene explosion is of interest. The patient was cleansing an article of clothing with gasolene in a wash basin on a cold day. Another person touched the victim of the explosion with her hand. The contact produced an electric spark and an explosion of the gasolene vapor followed, resulting in severe burns and a fire in the house. Although no similar accident with ether is on record as far as we remember, still the above incident suggests it as a possibility.

### PROGNOSIS IN FRACTURES OF BASE OF THE SKULL.

Graf [4] has compiled and studied the records of the König clinic at the Charite Hospital in Berlin from 1896 to 1902. He has arranged statistically, and according to their relative frequency of recurrence, the different clinical results of cases of fracture of the base of the skull (not only the immediate but also the final condition of the patients).

He collected 90 cases (77 men, 13 women). The most frequent cause of the injury was a fall from a greater or less height (63 cases). The immediate mortality was 21 deaths in 24 hours. On second to third day, 4; 6 on sixth to eighteenth day, 3 of meningitis. The most frequent symptom of the fracture was hemorrhage from the nose, ear and mouth. One ear, 64 times, both ears, 13. Nose and mouth, 39 times. Escape of cerebro-spinal fluid from one ear, only six times. From the nose once. Subconjunctival hemorrhage, 25 times. Postorbital, twice. Of paralysis of cranial nerves, the facial was most frequently noted, 24 cases. This was generally due to hemorrhagic pressure which recurred after absorption of the clot. There was loss of consciousness in 74 cases. In 28 this was of short duration. In 40 cases from several to twenty-four hours; of these latter 21 ended fatally. The pulse was slow and strong in 16. Aphasia in 3. Convulsions in 3.

In 48 patients in whom the after history was learned, the most frequent condition was headache (34). This followed in 8 cases a blow on the head. In 16 patients this was constant and incapacitated the individual for hard work. Twenty-seven complained of vertigo, which was caused in 10 patients by backward motions of the head. Ear noises occurred 16 times. Weakness of memory, 17. Diminished intelligence in 11. Dementia in 2. Abnormal irritability, 15 times. The hearing power was found to be normal in 12 out of 39 patients tested. Four had middle ear catarrh and 20 impaired hearing, due to interference of the sound conducting apparatus. Short clinical histories of the special cases are appended.

### TUMORS OF THE RETROCAROTID GLAND.

P. Reclus and M. Chevassu [5] have recently made a contribution to the literature of this subject. The etiology of these tumors is not understood, but they occur in early life; in the few cases reported the affection having been seen between the seventh and thirty-third year. They seem to be made up in most cases, as in that described by the authors, of blood vessels and numerous cells of undetermined origin, the whole enclosed in a capsule. Of slow growth, the patient becomes aware of the existence of the tumor by chance, or after it has gained sufficient size to cause some discomfort; slight pain in its neighborhood in some cases, first calling attention to it. With the head slightly extended, the outline of the tumor may be readily recognized and at the same time it may be seen to pulsate; these pulsations being synchronous with the radial pulse. The tumor occupies the carotid region, embracing the division of the common carotid and the bifurcation of its two initial branches. Its size is said to vary between that of a pigeon's and hen's egg; it is generally soft and elastic, quite mobile transversely, but slightly so vertically and

[1] Gaz. des hôpitaux, 1903, no. 109.
[2] Thirteenth series, 1902, p. 118.
[3] New York and Philadelphia Med. Journ., June 27, 1903.
[4] Deutsche Zeitschr. f. Chir. Bd., lxviii, p. 464.
[5] Revue de Chirurgie, September, 1903.

it may be made to disappear under pressure; though upon withdrawal of pressure it regains its former size within two or three successive pulsations. Auscultation over the tumor may reveal a systolic murmur. The pulsation seen is the most striking symptom, this being synchronous with the radial pulse, non-expansile and disappearing upon compression of the common carotid. The authors state that a positive diagnosis of tumor of the retrocarotid gland may be made in the presence of a single, soft, pulsating, non-expansile tumor of slow development in the carotid region at the level and above the thyroid cartilage. Treatment is surgical, consisting in extirpation of the tumor.

### ESOPHAGEAL DIVERTICULA.

In a comprehensive article, G. Riebold [6] states that traction diverticula are very frequent in adults (3.5 % of all autopsies on adults and none in children under fifteen years). Their location is usually the anterior or lateral (more often the right than the left) wall at the level of the trachea; in four cases they were seated 5 to 6 cm. (2½ inches) higher, in one case 10 cm. (5 inches) lower, and in another the posterior wall was involved. In the majority of cases only one is found, but at one autopsy there were as many as nine. They all stand in intimate relation with indurated chalicotic or anthracotic lymph-nodes. The form most frequently encountered is that of a funnel 3 to 6 mm. ($\frac{1}{10}$ to $\frac{1}{5}$ inches) deep, but a large number of variations may be described. The shape of the opening is not constant and the longest diameter is usually directed obliquely upward. All the layers of the esophagus may participate, but usually the mucous membrane is defective. The clinical importance of these diverticula lies in the possibility of perforation and infection of the surrounding tissues. The stagnating food may set up an inflammation and progressive ulceration, or else the gland will suppurate and discharge into the esophagus. The result is an enlargement of the original diverticulum, or a purulent mediastinitis or perforation of the pus into the trachea, bronchi, lung, pleura, pericardium, or vessels. Carcinoma or tuberculosis are very apt to develop upon the scar tissue of an old diverticulum. The diagnosis during life has never been made. The fact that a glandular inflammation is apt to spread toward the esophagus and draw out its walls is best explained by an obstruction of lymph-channels which permits a retrograde transport of germs. Similar diverticula of the trachea and bronchi have also been described, but here the cartilaginous rings offer a much greater resistance than the soft walls of the esophagus. In the second group, the diverticula by traction and pressure, part of the wall of a traction diverticulum is bulged out, or else the entire pouch has yielded and it would be hard to distinguish it from a pressure diverticulum, were it not for the remains of glands and chronic inflammation in the neighborhood, and perhaps the deposit of coal in the walls. This group is rare, and position and etiology are the same as in the preceding group. Lastly, the pure pressure diverticula claim attention, especially since their causation has been a mooted point. It is probable that the pressure of a morsel passing down the esophagus or forced expiratory acts bulge out a posterior pharyngeal wall weakened congenitally or by trauma. The muscle fibers of the inferior constrictor will yield so that a hernia of the mucous membrane can readily take place. After the bag has attained a certain size, the pressure of the contained food will enlarge it more and more. The diagnosis is fairly certain and treatment is also satisfactory; formerly one fourth of the cases died of starvation or aspiration pneumonia, with pulmonary gangrene, but now a large number are amenable to operation, Lower down in the esophagus, especially on its anterior and lateral wall, above physiological stenoses, similar pathological lesions are sometimes seen, and it is likely that here, also, a congenital weakness is at fault.

[6] Virchow's Archiv., vol. 173, no. 3.

### DERMOID CYSTS AND TERATOMAS OF THE ANTERIOR MEDIASTINUM.

Dangschat, [7] an assistant in Garre's clinic in Konigsberg, gives practically all the information obtainable on this subject up to date. He reports two cases operated on in the Konigsberg clinic and has collected from the literature forty-four similar cases. Only two of these are from American journals, one reported in 1879, and three others are mentioned from English sources.

Various theories have been advanced to account for the origin of these tumors. The theory of origin by direct embryonic inclusion, by development from the thyroid or thymus or from the gill-slits, Dangschat rejects. The symptoms generally appear at about the time of puberty. The growth usually continues for several years and is much slower than that of sarcoma and carcinoma. Difficulty in breathing is the most important symptom of these dermoids, and with it there is often considerable pain. In a considerable proportion of cases there was cough and expectoration and in a few cases spitting of blood. As the growth increases in size, the prominence of the chest wall is noticeable. Earlier in the disease the picture may resemble that of tuberculosis of the lungs, but at a later stage the diagnosis would lie between pleurisy with effusion, aneurism, echinococcus and actinomycosis. The finding of hairs in the sputum furnishes positive diagnostic proof. In many other cases puncture with an aspirating needle would clear up the diagnosis.

When the history leads to a probable diagnosis of dermoid cyst, operation should be undertaken. Aneurismal bruit and symptoms of inflammation in actinomycosis would probably leave little doubt as to the differential diagnosis from these conditions. The prognosis is absolutely unfavorable unless a timely diagnosis is made and suitable operation undertaken. The operation in most cases necessitates resection of several

[7] Beitrage zur klin. Chirurgie, 1903, xxxviii, p. 692.

ribs, or of the sternum, and evacuation of the cyst and suture of the remaining cyst wall into the opening. The cavity then is scraped with a curette, or treated with caustic, and left to close by granulation. In three of the cases out of forty-four, death followed the operation, in one case from hemorrhage, in the second from infection, and in the third from an unknown cause. The remaining patients were either cured or improved. In several of the cases reported, cavities of very large size resulted from the operation. These can hardly be expected to close without further treatment. He suggests that in such cases these cavities may be obliterated sometimes, either partially or entirely, by turning in large skin flaps from the surrounding parts after the wound was well covered by healthy granulations, or, failing in this, the Thiersch method of skin grafting might be employed.

### SPEAR WOUND OF THE HEART.

A most interesting example of this condition is described by T. McArdle [8] where a barbed spear was embedded in the chest, passing through the wall of the left ventricle, but without entering the cardiac cavity, and the patient made a good recovery after operation. The patient was a Soudanese and the spear entered near the lower angle of the left scapula, passed through the chest and projected at a point midway between the left nipple and the midsternal line, about one inch above the nipple. Operation was done. A part of the sixth rib was resected and the spear was found to have penetrated the margin of the left ventricle. This fleshy fragment was divided, the spear withdrawn and the external wound sutured. Restoration of pulse and respiration followed and the man made an interrupted recovery. Interesting points are the slight general influence produced by operative interference with the cardiac muscle, the profound disturbance caused by the change in cardiac position, as shown by the apparent fatal syncope which followed traction on the spear while it was still fixed in the wall of the heart and the peculiar modification of the cardiac sounds produced by the presence of a foreign body in the cardiac wall.

### RESUSCITATION BY MASSAGE OF HEART AN HOUR AFTER DEATH.

Dr. Paul Sick [9] reports that a lad of fifteen was being operated on Dec. 13, 1902, at the Kiel clinic, on account of tuberculous peritonitis, when heart action and respiration ceased. Artificial respiration and König-Maas massage of the heart restored the respiration for a single minute or two, but it then subsided again and after thirty minutes the youth was still cyanosed, pulseless, no respiration, the entire body growing colder and colder. The heart was then exposed by a Rotter incision and, forty-five minutes after the first signs of disturbance, massage was applied directly to the heart, supplemented by warm compresses. After fifteen minutes the heart gave signs of life and in fifteen more minutes was beating regularly. Respiration was resumed, the pupils contracted to normal, the color returned and the pulse became good, although rather frequent. The pericardium was then sutured and the thorax flap replaced and sutured over the tampon. Two hours later the youth had regained consciousness and complained of thirst and dyspnea; respiration 60, pulse 144. Under camphor and saline infusion the condition remained about the same for twenty-four hours. The speech was indistinct, hurried but intelligible. Then symptoms of collapse were observed, the dyspnea increased and death ensued after three hours of coma. Signs of slight fibrinous pericarditis were found at the autopsy and of old pleuritis, fresh recent tumefaction of spleen and liver, with tuberculosis of peritoneum and mesentery in an advanced stage. Sick remarks that the resuscitation might have been permanent in a subject less severely undermined. The action of the chloroform on the heart had evidently been magnified by the shock and the altered conditions in the circulation entailed by the laparotomy and evacuation of the ascites.

*(To be continued.)*

[8] Journ. R. A. M. C., vol. i, no. 2.
[9] Centralblatt f. Chirurgie, no. 36, Sept. 5, 1903, p. 981.

## Reports of Societies.

### NEW YORK NEUROLOGICAL SOCIETY.

Stated meeting, Feb. 2, 1904.

Dr. Joseph Fraenkel, President *pro tem.*, in the chair.

(Concluded from No. 18, page 488.)

### REPORT OF TWO CASES OF TUMOR OF THE PONTO-MEDULLO-CEREBELLAR SPACE (ACOUSTIC NEUROMA) WITH OPERATION.

By Drs. J. Fraenkel and J. Ramsay Hunt.

Case I. Reported by Dr. Fraenkel; operation by Dr. Charles A. Elsberg: The patient was a man, forty-eight years old, a theatrical manager, who entered the Montefiore Home on July 1, 1903. One brother was an imbecile; otherwise his family history was negative. His previous personal history was also without bearing on the present condition. He denied excesses and venereal infection.

About five years ago the patient first noticed that his hearing on the right side was impaired, so that he had to use his left ear when at the telephone. A year later his gait became staggering and uncertain, and he could not co-ordinate his lower extremities at all times. The right lower extremity was the first to be affected. The patient did not notice that he swayed to one side more than the other. Three years ago his gait frequently was like that of a drunken man, and two years ago a transient diplopia was noticed. About the same time the lower extremities became marked spastic, his sight became impaired, his speech became stammering, and he noticed that he was tremulous when writing or performing any other intentional function with the upper extremities. During the last year, occasional insufficiency of the sphincters was noticed and he was unable to walk without assistance. At no time was there any pain, paresthesia or girdle sensation.

An objective examination showed static and locomotor ataxia. Romberg's symptom was present. The patient falls and inclines to the left side. There is slight mental hebetude and occasional emotional explosiveness. There was motor weakness of all four extremities, particularly on the left side; a tactiform unsteadiness of both upper extremities, particularly of the right; loss of position sense in right-sided upper extremity; exaggeration of reflexes, particularly on the left side; Babinsky present on both sides, more marked on the left; marked nystagmus; scanning speech; considerable choked disk, with retinal hemorrhages; deafness of the left ear.

Six weeks before the operation, a paralysis of all branches of the seventh nerve set in, with marked changes of the electrical reactions.

The operation for the removal of the tumor was performed by Dr. Elsberg. The patient unfortunately died from what appeared to be an acute uremia thirty-six hours after the preparatory operation.

Dr. Charles A. Elsberg, who did the operation in this case, said that the opening in the skull was made in a rather unusual situation. In most of the operations for a tumor in the posterior fossa, the cerebellum was exposed by the so-called occipital craniotomy, in which the opening was made in the occipital bone somewhere between the median line and the posterior margin of the mastoid, and below the level of the lateral sinus. For tumors situated in front of the cerebellum, as was the tumor in this case, and for tumors in the anterior and lateral parts of the cerebellum there were several objections to this method of exposure:

(1) It was not the shortest route from the surface of the skull.

(2) The manipulations in the removal of the tumor must be done by the sense of touch alone.

(3) Even with the most gentle manipulations the cerebellum was apt to be contused and its tissues lacerated.

(4) In the digital examination of the anterior parts of the cerebellum from the under surface of the organ, the finger must come in frequent contact with the medulla and perhaps the pons, and the great danger from even slight injury to these structures was well known.

Dr. Elsberg said he investigated this subject for the purpose of finding, if possible, a method by which the disadvantages above mentioned would be avoided.

Actual measurements on a number of skulls showed that the shortest distance from the surface of the skull to the anterior edge of the lateral lobe of the cerebellum on the same side was measured on a line which ran along the posterior surface of the petrous portion of the temporal bone, and reached the surface of the mastoid 1 to 2 cm. behind the external auditory meatus. The distance from the outer surface of the occipital bone, below the level of the lateral sinus, to the anterior edge of the cerebellum, diminished steadily as the measurements were made more and more distant from the median line. These facts showed that the shortest route to the ponto-medullary space on the same side would be through an opening made in the mastoid process.

If, in the cadaver, an opening was made in the mastoid region and the dura incised, the lateral edge of the lateral lobe of the cerebellum fell away from the posterior surface of the petrous portion of the temporal bone, so that fully one half of that part of the bone could be seen. With only very slight retraction, the lateral lobe could be drawn sufficiently towards the median line so that the auditory and facial nerves could be plainly seen in their course from the ponto-medullary cerebellar space to the internal auditory meatus, and even the ninth, tenth and eleventh cranial nerves could be seen in part of their course in the posterior fossa. The auditory nerve could be cut close to its origin with a fine scissors without touching the pons or medulla. Dr. Elsberg said he had performed the operation on the dead body a number of times and was convinced of its feasibility. In the living body, where the cerebellum was filled with blood, the same conditions would be found, although to a somewhat lesser degree. This had been demonstrated by Krause, of Berlin, in a somewhat similar operation devised by him in a case in which he cut the auditory nerve in the posterior fossa for the relief of a persistent tinnitus aurium.

As was well known, considerable of the lateral parts of the cerebellum could be cut away without causing a permanent disturbance in the functions of this part of the brain. Therefore, this was the part of the cerebellum that could be handled with the greatest safety, and at the same time, could be most easily retracted. From these facts it followed that the approach to the anterior edge of the cerebellum along its outer edge was not only the easiest, but also the route by which the organ was least apt to be injured during the manipulations.

An examination into the anatomical relations of the parts in the posterior fossa would soon make it clear that when the ponto-medullary cerebellar space was approached from the mastoid region along the outer edge of the lateral lobe of the cerebellum, neither finger nor instrument need come in intimate contact with the pons or medulla until the space itself had been reached. It was probable that the correct way to remove tumors from this region was to expose the structures on the central side of the tumor, if possible, and first divide these, and then to work outwards all of the time, away from the pons and medulla. Hence, with this lateral method, the danger of wounding these important structures was reduced to a minimum.

Dr. Elsberg thought it was advisable, in almost all of these cases, to operate in two stages. On Jan. 21, 1904, under chloroform anesthesia, the bone was exposed by a flap of the soft parts, including the periosteum over the mastoid and outer parts of the occipital regions. An opening was then made with the cranial drill, chisel and rongeur, measuring 5 by 8 cm., and extending from above the superior curved line of the occipital bone to within 1½ cm. of the margin of the foramen magnum, and from within 1 cm. of the external auditory meatus to 3 cm. from the median line. In the upper part of the wound the occipital lobe, covered by its dura, was visible, and in the lower part, the right lobe of the cerebellum, covered by its dura. The greater part of the lateral sinus of the right side was thus exposed. The wound was then closed, the flap being sutured back into place, and a voluminous dry dressing was applied.

The patient was considerably shocked at the end of the operation, but he reacted well to stimulation. His condition remained fairly good until the second day, when his kidneys ceased to act and he passed into a uremic condition and died in forty-eight hours.

The skin-flap was turned back about two hours after death and the dura incised. With the head turned to the side, the tumor could be plainly seen at a depth of from 3 to 4 cm. and when the finger was introduced it was found that the tumor could be peeled out with the greatest ease. It seemed probable that had the patient survived the first operation, the removal of the tumor could have been accomplished at

the second operation in a short time and with very little difficulty.

After the patient's death it was learned that he had had an attack of acute nephritis, with general edema, some years before, and although the urine had been carefully examined prior to the operation and had showed no evidence of renal disease, it was just to suppose that long-standing kidney trouble was the probable cause of the acute suppression of urine after the operation.

Case II. Reported by Dr. Hunt; operation by Dr. George Woolsey: This patient was a Jewish peddler, forty-two years old. Six years ago he began to suffer from an annoying tinnitus in the left ear, followed by some impairment of hearing. During the past four years he had had occasional occipital headaches, with vertigo. These symptoms gradually increased in severity and were accompanied by cloudiness of vision. For the past six months there has been an unsteadiness of gait.

When he first came under Dr. Hunt's observation, the watch tick was not perceptible with the left ear, and the tuning fork was very faint to aerial and bone conduction on that side. There was paresis of the left seventh nerve, more apparent in its upper branch, with slight quantitative electrical changes. There was paresthesia in the sensory distribution of the left fifth nerve, with objective sensory disturbances. The pupils were unequal, the left being wider than the right. Reactions were present. There was amblyopia and choked discs, and a slow nystagmus in extreme positions. There was hemiasynergia and hemiataxia of the left side. In falling, the patient favored the left, and progression was decidedly to that side. The nuclear reflexes were active, the knee-jerks exaggerated, the left more so than the right. There was no ankle-clonus. The skin reflexes were present; no Babinsky.

The diagnosis of a neurofibroma of the left acoustic nerve was made, and operation was advised. From the known pathological character and relation of the surrounding structures of this variety of tumor in general, it was possible not only to localize the growth, but to state in general terms its situation in the ponto-cerebellar space outside of the brain substance, its possible size and consistency, and its enucleability. Its attachments to the surrounding structures consist only of the leptomeninges, blood vessels and adhesions, and when these are divided it would be possible to lift the growth out of its socket in the brain with ease.

With these data at his disposal, Dr. Woolsey decided on entering the occipital bone on its postero-inferior surface, to the left of the median line and below the lateral sinus. The index finger was inserted through the trephine opening and beneath the left cerebellar hemisphere, coming in contact immediately with the nodular surface of the growth, which was broken up by gentle manipulation and removed in fragments.

There was a tendency for the cerebellar hemisphere to rise into the trephine opening, and this, with the digital manipulation, caused some laceration of its substance, with oozing.

Following the removal of the growth, the respirations of the patient became irregular and shallow, with occasional alarmingly long intervals. The pulse was rapid. The operation, which was done under ether, had required nearly two hours. At 5 P.M., three hours after the operation, the patient's temperature was 102; pulse, 112; respirations, 26. The breathing had improved in character, and the patient seemed to be reacting. Slight clonic twitchings of the left side of the face were noticeable. Death occurred at 1 A.M., apparently of respiratory and cardiac failure, just twelve hours after the completion of the operation.

Permission was obtained to remove the brain only. The outer surface of the dura was dotted here and there with little tufts and excrescences, which proved to be attached to the brain cortex, and when torn away, they left minute depressions, with a punched-out border. Examination of the base showed that the tumor had been almost completely removed, only two small fragments remaining, together with a small blood-clot, scarcely larger than the little finger-nail. The inferior surface of the cerebellum was lacerated, but there was no external evidence of injury to the pons and medulla. The general ventricular cavity of the brain was dilated, showing that there had been a not inconsiderable internal hydrocephalus. Upon splitting the worm of the cerebellum, Dr. Hunt said he was surprised to find a firm, rounded projection from the left side of the floor of the fourth ventricle, corresponding to the site of the tumor. Microscopic sections through the brain proved this to be an extensive edema and hemorrhagic infiltration of the left peduncle of the pons, evidently arising from the region of the lacerated cerebellum, and gradually encroaching on the vital centers of the medulla. This internal pons hemorrhage was probably the immediate cause of death.

Dr. George Woolsey said he was much interested in the class of tumors described in the cases reported by Drs. Fraenkel and Hunt, for they were so definitely localizable and could be so readily enucleated that they were very suitable for surgical treatment if they could be successfully exposed. He believed that this could be done. In the case he had operated on several months ago, which was referred to him at Bellevue Hospital by Dr. Hunt, he knew of no previous experience to serve as a guide in the operation. The tumor was approached from behind and the side by removing a large area of bone, comprising all that part of the occipital bone below the superior curved line and to the left of the median line. The opening left only a narrow bridge of bone between it and the foramen magnum and extended forward into the mastoid until the bone became very thick.

Passing the finger beneath the cerebellum, the tumor was felt and removed piecemeal. This necessitated introducing the finger a number of times, and there was some laceration of the lateral lobe of the cerebellum which did not seem of any moment. The tumor was larger than he expected to find it. In another case he would try to pass a forceps along the finger, seize the tumor, enucleate it with the finger and remove it entire.

The plan of operating in two stages, recommended by Horsley and employed by Dr. Elsberg, he thought was most excellent where the exposure was prolonged and much blood was lost. He thought Dr. Elsberg's method of approach had much to commend it, although it was not so much nearer the site of the tumor than the opening he had made as might be inferred. It had the objection that the bone was very thick, so that too much time and perhaps blood was lost in getting through it. In operations on brain tumors it was important not to take too much time in the exposure alone. This objection was obviated by operating in two stages. Dr. Woolsey said the entire operation in his case took no longer, if as long, as the exposure in Dr. Elsberg's case.

After the operation, his patient seemed in good condition and appeared to suffer but little from shock, but symptoms of the latter appeared several hours later, and he failed to rally. On the whole, in another similar

case, he would be inclined to operate in two stages and by the lateral approach suggested by Dr. Elsberg.

Dr. George E. Brewer said that he had been interested in the subject of cerebral tumors for many years. He had twice explored the posterior fossa, in the first instance finding a subcortical cerebellar growth of tuberculous origin, which was successfully removed, the patient making an excellent operative recovery. He died some months later, however, from general tuberculosis.

In the second case the patient succumbed after an extensive bone removal, undertaken simply to relieve pressure. A number of anatomical investigations carried on in the dissecting room of the College of Physicians and Surgeons led the speaker to advocate the plan of opening the skull by removing, practically, all of the bone below the superior curved line to within half an inch of the foramen magnum below, and from the median line to a point half an inch behind the mastoid. By opening the dura, the finger could be easily passed behind the lateral lobe and reach the situation of these tumors at a depth of less than an inch and one half from the surface of the wound. Of course, adequate exposure to remove such a growth would necessitate the destruction of a portion of the lateral lobe; this, however, could be done without serious trouble to the patient, as had been demonstrated in his first case.

It was Dr. Brewer's opinion that speed of operation was perhaps the most important factor necessary to success, as these patients almost invariably died if the operation was at all protracted. He was in favor of doing the operation, when practicable, in two stages. The first operation should consist of the removal of the bone only, which to a certain extent relieved the pressure, and at a subsequent period the dura should be incised and the tumor removed. He thought the primary operation should be done in from twenty to thirty minutes.

Dr. Hunt, in closing, referred to a previous communication, published in conjunction with Dr. Fraenkel, in which five cases of tumor of the ponto-cerebellar space were recorded. In that paper, especial stress was laid on the certainty of localization and the enucleability of this group of tumors, and their surgical importance.

In both of the cases under discussion, in which operation was attempted, the diagnosis of an acoustic neuroma was made, and the operative procedure was modified to meet the known anatomical peculiarities of this type of tumor. In Case I the patient succumbed thirty-six hours after performing the first stage of the operation, apparently from shock, although a renal complication could not be excluded. In Case II death was due to laceration of the cerebellum, with resulting effusion of blood into the tissues of the medulla and pons. Both of the operations were prolonged and tedious, and considerable trauma was inflicted in removing the thick occipital bone, and enlarging the trephine opening. It seemed of paramount importance, in exposing tumors in this locality, that the operation be done expeditiously and with great gentleness, as any concussion must be especially effective in this region. The division of the operative procedure into two stages was also to be recommended.

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The Zoological Society of Philadelphia, according to the *Medical News*, is to make experiments looking toward the prevention of tuberculosis in animals, this disease being one of the most frequent causes of death. An unused house in the garden is to be converted into a hospital where all new specimens will be received and examined.

## BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

MEETING JANUARY, 1904, DR. W. T. COUNCILMAN IN THE CHAIR.

Dr. Henry Jackson read a paper on

TUBERCULAR MENINGITIS IN ADULTS.[1]

Dr. W. N. Bullard said that he desired to express his full agreement with the writer in regard to the symptoms in the tubercular meningitis of adults. Up to the time of the appearance of the ocular or facial palsies the condition suggests that found in an advanced stage of typhoid fever, but without the special signs of typhoid (rose spots, etc.). Where the paralyses exist it is evident that the affection is of intracranial origin, but even at this stage it is distinguished from the other intracranial affections by its lack of destinctive symptoms. Contrary to what might be expected the deep reflexes are normal. It is not by any means an uncommon affection and in any case of obscure acute or subacute intracranial disease the possibility of its existence should be considered.

Dr. P. C. Knapp had also found that the clinical picture of tubercular meningitis in the adult differed from that usually seen in childhood. There was another form of tubercular meningitis often observed in the adult, which must be so regarded pathologically, although clinically it was quite distinct. In many cases of so-called solitary tubercle of the brain in the neighborhood of the meninges there is often a patch of chronic tubercular meningitis, with perhaps a few miliary tubercles scattered about in the meninges in the vicinity. In such cases the symptoms are those of a cerebral tumor rather than of meningitis.

Dr. E. E. Jack desired to say a word from the standpoint of the eye. He had examined quite a number of cases of tubercular meningitis, but had never found tubercles in the choroid. He had, however, seen them in general miliary tuberculosis and it is his impression that they are almost limited to that disease.

Dr. J. L. Morse: While the type of tubercular meningitis in infancy and childhood, as a rule, corresponds to the picture drawn by Dr. Jackson and by most textbooks, it is not very uncommon, especially in infants, to have the disease resemble the adult type as described by Dr. Jackson. I can remember distinctly a number of cases in infants, proved either by autopsy or by lumbar puncture, in which there were not only no marked nervous symptoms, but in which there was no bulging of the fontanelle, no Kernig's sign and no exaggeration of the reflexes. Dr. Jackson spoke of the aid given by lumbar puncture in the differential diagnosis between tubercular and cerebro-spinal meningitis. I cannot agree entirely with his statements. While, of course, in a general way, the fluid from tubercular meningitis is only slightly turbid, it may be decidedly purulent, and while in cerebro-spinal meningitis the fluid is usually decidedly turbid or purulent, it may, especially in long cases, be almost clear. Tubercle bacilli are, of course, rarely found in the fluid of tubercular meningitis, but absence of bacteria does not, however, by any means, rule out cerebro-spinal meningitis, for while the meningococcus is usually present early in the disease it is usually absent later. Dr. Jackson did not speak of the characteristics of the cells in cerebro-spinal fluid in the two diseases. To my mind, the sort of cell is of great importance in diagnosis, as the amount of mononuclear cells predominate greatly in tubercular meningitis, while polynuclear cells predominate in cerebro-spinal meningitis.

[1] See Journal, p. 501.

## Recent Literature.

*Students-Aid to the Muscular Attachments. Graphic Scheme.* Part I. The Upper Extremity. By Erbett E. McLellon.

This chart is designed to show graphically the origin and insertion of muscles of the upper extremities of the body. To accomplish this end a diagram of the skeleton is reproduced with the various muscles represented diagrammatically, simply as lines. The chart itself is liberally supplied with explanatory text, and in addition there is a considerable amount of information on general anatomical points. The front of the body is represented on one side of the chart and the back on the other. Anything which helps to fix muscular attachments is certainly of value, and this should accomplish, in a measure this result.

*Elements of Surgical Diagnosis.* By A. Pearce Gould, M.S. (Lond.), F.R.C.S. (Eng.), Surgeon to the Middlesex Hospital, Member of the Council of the Royal College of Surgeons of England and of the Examining Board for England, Member of the Senate of the University of London. Third edition. Revised and enlarged. Chicago: W. T. Keener & Co. 1903.

We welcome an old friend in this little red-covered book on the elements of surgical diagnosis. We have long wondered why Mr. Gould did not bring the book out again with the additions of modern surgery. This he has done and in a very satisfactory manner. We are very sure that it is a book which will serve a most useful purpose and will be greatly valued by students, physicians and surgeons.

*Hypnotism: Its History, Practice and Theory.* By J. Milne Bramwell, M.C., C.M. London: Grant Richards. 1903.

Dr. Bramwell has produced a practical book on the theory and practice of hypnotism. He calls attention to the fact that, although many books on the subject have been published in foreign languages, few have as yet appeared in English. He therefore discusses the topic from a general point of view as well as from the standpoint of wide personal experience extending over twelve years. The general aim has been to draw attention particularly to those points which may be of practical value to those desiring to practice hypnotism as a means of treatment. Theories are discussed, but not at great length, and the pitfalls of hypnotic practice are dwelt upon in considerable detail. The value of the book lies largely in its appeal to personal experience. Many cases are reported of the most varied affections with the outcome of suggestive treatment. The discussion is judicial and the book is certainly worthy of warm recommendation to physicians in general, as well as to those concerned particularly in the use of hypnotism as a therapeutic aid. The book is admirably printed and attractively bound. It contains no illustrations. An excellent systematic bibliography is appended which should prove of value to students of the general subject.

*The Blues (splanchnic neurasthenia); Causes and Cure.* By Albert Abrams, A.M., M.D. 12mo. pp. 240. With 27 illustrations. E. B. Treat & Co.: New York. 1904.

The writer calls attention to a special form of neurasthenia, characterized by paroxysms of depression, popularly called the "blues," which he terms splanchnic neurasthenia. This he believes to be due to a congestion of the intra-abdominal veins, and the chief abdominal symptoms are abdominal sensitiveness, tenderness and enlargement of the liver and intestinal flatulence. This form of neurasthenia can be cured by relieving this congestion by various physical methods, such as abdominal massage, exercises to strengthen the abdominal muscles, respiratory exercises, electricity (especially the sinusoidal current) to the abdomen, abdominal supporters and cold douches to the abdomen. The author's theories are interesting and they may prove of some assistance in the treatment of certain cases of neurasthenia.

*Scheme for the Differential Testing of Nerves and Muscles for use in Diagnosis.* By J. Montgomery Mosher, A.M., M.D. 8vo. pp. 58. With two cuts, five charts and six plates. Brandon Printing Company: Albany. 1903.

This little volume gives the essential rules for testing the electrical reactions of nerves and muscles, a specimen chart for electro-diagnosis, and a description in the text of the anatomical position of the various motor points of the nerves and muscles, with a series of new plates of the motor points drawn from original investigations. These plates are superior to those in ordinary use, being larger and clearer and more helpful to the student by the use of color, the motor points of the muscles supplied by a given nerve being of the same color as the motor point of the nerve. The volume will be useful to all who use electricity for diagnosis.

*The Practical Medicine Series of Year Books.* Vol. III, which is one of a series of twelve, issued once a month. Gustavus P. Head, M.D., Editor. 12mo. pp. 322. Casey A. Wood, M.D., The Eye; Albert H. Andrews, M.D., The Ear; T. Melville Hardis, A.M., M.D., The Nose and Throat. Chicago: The Year Book Publishers. 1903.

The selections from current literature in this little volume are well chosen and instructive. They are evidently intended for the use of the general practitioner who does work in these specialties and has not time to follow the literature of the subjects through the thousands of pages which appear in the ophthalmic and aural journals yearly. The printing and paper are good and the volume of handy size.

THE BOSTON

# Medical and Surgical Journal.

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## THE MINIMUM PROTEID REQUIREMENT OF THE HEALTHY MAN.

Among the many interesting papers presented at the April meeting at Washington of the National Academy of Sciences none attracted greater attention than the "preliminary report" by Professor Chittenden of Yale on the results of his investigation into the minimum proteid requirement of the healthy man. This investigation has been going on for the past six months in the laboratory of the Sheffield Scientific School, the experiments being made upon twenty-seven men of whom six were professors and instructors in Yale University, thirteen were soldiers detailed, as volunteers for the service, from the United States Hospital Corps, and eight were Yale students selected on account of their proficiency in athletic exercises. The object of the research was to determine whether the commonly accepted dietary standards represent the actual needs of the human organism or merely indicate what men are in the habit of eating.

Prof. Carl von Voit of Munich, whose studies have usually been regarded as furnishing trustworthy information on this point, placed the proteid requirement of the average human being at 118 gm. daily, corresponding to the excretion in the form of urea of 16 gm. of nitrogen, but of late years evidence has accumulated that certain individuals and even certain races of men could lead healthy and active lives with a daily consumption of proteid food far less than that indicated in Voit's standard tables.

Thus Kumagawa[1] has shown that Japanese dietaries containing relatively small amounts of proteids suffice to maintain the health and strength of that oriental race, and Sivén[2] has demonstrated the possibility in his own case of living for several weeks with a daily average nitrogen excretion of only 4.52 gm.

Under these circumstances Professor Chittenden's attention was naturally attracted by the claim made by Mr. Horace Fletcher[3] that great economy of food can be effected by careful attention to mastication and insalivation, and when, through Mr. Fletcher's appeal to the Secretary of War, the soldiers were detailed for the purpose, the investigation began in earnest, the expenses being borne by certain research endowments aided by a liberal contribution from Mr. Fletcher himself. No publication of results has as yet been made by Professor Chittenden, and we must therefore limit ourselves to a statement of the main facts as reported to the National Academy.

In brief it may be said that an amount of proteid food from one third to one half of that required by the Voit standard has been found amply sufficient to provide for the support of the body even in the case of those who indulged in athletic exercises. In fact, the testimony of the athletes themselves with regard to the feeling of vigor which they experience, their capacity for work and the absence of muscular soreness after violent athletic contests is one of the most convincing arguments in favor of a reduction of proteids in the diet. Professor Chittenden's personal experience is also extremely interesting, for his own proteid metabolism was for six months measured by the daily excretion through the kidneys of 5.82 gm. of nitrogen. During this time he enjoyed excellent health and performed an unusual amount of intellectual work. In reply to a question on the subject he stated to the Academy that nothing would induce him to return to his former dietary habits.

The important points in this investigation are the large number of persons concerned, the care with which the research has been conducted in its minutest details, and the length of time over which it has extended. The amount of work involved in the daily analysis of the excreta of twenty-seven persons for six months is not easily appreciated except by those who have undertaken similar investigations. Other observers have shown the possibility of reducing proteid metabolism to a fraction of its customary amount,

[1] Virchow's Archiv., cxvi, pp. 370 – 431.

[2] Skandinavisches Archiv. fur Physiologie, xi, p. 308.

[3] The A B–Z of Nutrition. New York: Frederick A. Stokes Co. 1903. The New Glutton or Epicure. New York: Frederick A. Stokes Co. 1903.

but it has remained for Professor Chittenden to demonstrate that such a reduction, maintained for six months, is consistent with the preservation of a high degree of health and vigor. It is to be observed that these results have been reached without the employment of any special methods of eating. Thus, while Mr. Fletcher's main contention as to the possibility of effecting a great economy in nutrition is amply confirmed, the investigation is not conclusive as to the importance of thorough mastication and insalivation. Mr. Fletcher has, however, shown in the volumes above referred to that many persons have found that attention to these processes has been of great assistance in the improvement of their nutrition.

The immediate lesson to be drawn from Professor Chittenden's work seems to be that the optimum of proteid metabolism probably lies nearer to the minimum than to the maximum of nitrogen equilibrium and that the feeling of gastric distention, which is apt to be accepted as a sign that the appetite is appeased, is, perhaps, not a wholly trustworthy indication of the satisfaction of the body's need of nutriment.

## LEPROSY IN MASSACHUSETTS.

The occurrence of leprosy in any New England state is so rare as to attract public attention whenever a case is reported. During the past month, a Portuguese, a native of the Cape Verde Islands, living at Harwich, Mass., was found to be suffering with leprosy. According to the reports of the public press the people of this town appear to have been greatly alarmed at the discovery of a leper among them, and yet, if the experience of the past hundred years or more with reference to the existence of leprosy in this country may be taken as worth anything, the actual danger to a community from the existence of a case of leprosy is not so great as that which may at any time be due to the existence of a case of tuberculosis, or of typhoid fever. The spread of these diseases from the sick to the well through neglect of proper precautions has been a matter of common occurrence. But, notwithstanding the arrival of very many lepers in the United States during the years before the enforcement of acts restricting immigration, there is scarcely any record of its spread to other persons, and instances of its occurrence among the descendants of such lepers in this country are also quite as rare. Why then so much apprehension about a disease of such rare occurrence, and of actually less danger to the community than other diseases of every-day prevalence? Much is undoubtedly due to the great importance attached to the disease in the accounts given in the Mosaic books of the Old Testament. The identity of that disease with the leprosy of to-day does not appear to be a settled question.

Of the half-dozen or more cases, which have been reported in Massachusetts in the past twenty years, none have given rise to any spread of the disease. These few cases have, with one exception, been foreign born, and were natives of countries where leprosy is more or less prevalent. The exceptional case was that of a native of Massachusetts who contracted the disease after a residence of many years in the Hawaiian Islands, and after intimate association with the natives. He returned to his home in 1882, and died there in March, 1883.

In this country the states where the greatest numbers exist are California and Minnesota, but in these states the disease is limited, in the first instance to the Chinese and in the other to the Norwegian immigrants, and has in no instance attacked other people. Many cases have also occurred in Louisiana. In the little settlement at Tracadie, New Brunswick, where it has existed for a century, the disease has not spread to other towns.

The experience of Minnesota in regard to this disease, is instructive, as it covers a period of about fifty years, since immigrants from Norway began making that state their home. In Norway, as in many other countries, the disease is decreasing. An enumeration made about forty years ago showed 2,800 lepers in that country, but at present there are but little more than 1,000.

The number reported in Minnesota in the past twenty years or more has been 112. "In that state all lepers are registered and kept under observation, and all suspected cases are carefully examined. No further isolation than the use of their own beds and utensils is required, and this their own good sense, and that of their relatives, as a rule secures. Of the twenty-one lepers now known to be living in Minnesota, all are Scandinavians, and in none is the disease known to have been caused by exposure to infection in this country, but in nearly every one there is a history of exposure in Norway or Sweden." (15th Report of State Board of Health of Minnesota. Appendix 18.)

In 1888 Dr. G. A. Hansen of Norway, the discoverer of the *Bacillus lepræ* came to this country to study the disease among these immigrants

and their descendants, and gives the following interesting results of his observations: "Of about 160 lepers who have immigrated to Wisconsin, Iowa and Minnesota, thirteen are alive, whom I have seen myself, and perhaps three or four more. All the others are dead. Of all the descendants of lepers (and that includes the great-grandchildren of some of them), not a single one has become leprous. This is, in short, the result of my observation."

In consequence of the difference of opinion which prevails as to the methods by which leprosy is spread, there are also differences of opinion as to the best methods of prevention. The English Leprosy Commission considered compulsory isolation as unnecessary, while the Berlin Conference were of a contrary opinion. Notwithstanding the fact that compulsory isolation has not been practiced in Norway, the disease has by intelligent management diminished very much in that country. Hansen believed that its spread could be checked by scrupulous cleanliness, on the part of the patient. Since the number of lepers existing in any one state is comparatively small, the plan of providing a hospital or asylum by the General Government, in which such unfortunate persons may be placed, affords a practicable solution of the problem. This plan was advocated by Dr. J. C. White in an able paper in the *American Journal of Medical Sciences* (October, 1882). He stated that: "such measures should be undertaken by the national government, and should be made applicable to all parts of the country alike."

## THE PATENT MEDICINE CURSE.

Under the foregoing title, Mr. Edward Bok has performed a useful service, by publishing, in the *Ladies' Home Journal*, a portion of the report of the Massachusetts State Board of Health upon the percentage of alcohol in patent medicines, together with some very timely and useful advice to the public upon the insidious and harmful character of many of these preparations. It is a very encouraging sign that several public journals of high standing have, within a comparatively recent period, taken a bold stand against the mercenary overtures of the patent medicine trust, and have in some instances excluded advertisements of such concoctions altogether from their columns.

Among the worst offenders in this direction are the so-called religious weekly papers. After publishing a list containing many of the tonics, bitters and other alcoholic remedies so frequently advertised in the columns of these journals, Mr. Bok goes on to say: "A pretty consistent picture do the two portions of the average religious paper present — advocating with one hand alcoholic prohibition, or temperance, and receiving, with the other hand, money for advertising — and thereby recommending to their readers — preparations filled ten times over with more alcohol than the beer which fills them with so much horror in the editorial columns! There are no papers published that are so flagrantly guilty of admitting to their columns the advertisements, not only of alcohol-filled medicines, but preparations and cure-alls of the most flagrantly obscene nature, as the so-called religious papers of this country."

Unfortunately, the original sources of much of the reliable information on this subject, the analyses of expert chemists, scattered through the pages of several reports of the State Board of Health in different years, do not reach the general public. The editions are limited by statute, and hence cannot accomplish the results that are secured by publication with judicious comments in the columns of a public journal having a very wide circulation.

Public interest in this question is shown by the fact that bills were introduced in the legislatures of three different states during the past winter, providing that the ingredients of proprietary medicines "shall be stated on packages or other receptacles thereof prepared for sale." (House Document 939, Mass. Legislature, 1904.) Further than this, a reputable drug journal[1] has, in its March and April issues, published editorials decidedly in favor of such legislation. The following extract from the March number of this paper strikes at the root of the evil:

> The fact that no such bill has ever passed and become a law in any state speaks badly for the intelligence or else the morality of the average legislator. From the standpoint of public policy nothing can be urged against a measure of this kind, while a multitude of sound reasons can be given why such a law should exist in every state. That a measure which asks for justice to the purchaser, health to the community, enlightenment to ignorance and an end to base fraud and robbery, should annually knock at the doors of legislative halls for admission, always to meet with denial, would seem to indicate that "something is rotten in Denmark." That the day is coming when a law of this kind must pass, seems certain to those who believe in the inherent righteousness of things, and the constant trend of society toward higher ethical

[1] The Druggist's Circular, March and April, 1904.

planes. The conviction has been growing for years that in many of the proprietary medicines in which so many people indulge, resides the first insidious introduction to alcohol and narcotics that later develops into soul-destroying habits.

Nearly a half century ago, the genial poet-physician said: "I firmly believe that if the whole materia medica, as now used, could be sunk to the bottom of the sea, it would be all the better for mankind and all the worse for the fishes." To this sweeping statement, however, Dr. Holmes made certain exceptions, and we half suspect from a later passage in the same address that he had in mind the great army of patent medicines which even then were legion.

"Somebody buys all the quack medicines that build palaces for the mushroom, say rather toadstool, millionaires. Who is it? These people have a constituency of millions. The popular belief is all but universal that sick persons should feed on noxious substances." Later on he aims the following Horatian shaft at the same industry:

> Hardest of all when art has done her best,
> To feed the cuckoo brooding in her nest,
> The shrewd adventurer, fresh from parts unknown,
> Kills off the patients Science thought her own;
> Towns from a nostrum vendor get their name,
> Fences and walls the cure-all drug proclaim.
> Plasters and pads the willing world beguile,
> Fair Lydia greets us with astringent smile.
> Munchausen's fellow-countryman unlocks
> His new Pandora's globule-holding box,
> And as King George inquired with puzzled grin,
> "How — how the devil got the apple in?"
> So we ask how, — with wonder opening eyes, —
> Such pigmy pills can hold such giant lies!

The fictitious value which can be created by means of liberal advertising is fully illustrated in the case of patent and proprietary medicines. Upon this point the *Druggist's Circular* says: "Aside from these positive dangers lies the fact that many of these preparations are pure and simple frauds upon the community. Their intrinsic worth is trifling compared with what is charged for them,[2] and where they benefit once, they injure a dozen times. Their dupes, while running after imaginary health, are sinking themselves deeper into the toils of chronic and sometimes of acute disease."

[2] An illustration of this fact is shown in the case of a certain proprietary medicine recently brought out in a western city, in which the only ingredients are water and sulphur, the sulphur being so combined as to produce its most destructive agents, sulphurous and sulphuric acids ruinous to the teeth of those who swallow the compound. This article, which sells for one dollar per pint bottle, can be made for two cents a gallon.

When the community at large are informed that hair dyes marked "harmless" owe their activity to one of the most insidious of all poisons, sugar of lead, face bleaches also marked "harmless" are composed of the most violent poisons; asthma and catarrh cures contain considerable quantities of cocaine; "spring medicines" owe their action, not to inert sarsaparilla, but to an agent which cannot be taken by the quart with impunity, and many temperance tonics are popular only because of the alcohol they contain, and this information is conveyed by an honest label affixed to each package, the health of the community will be improved in no small degree.

Even the life insurance companies have taken up the subject, and applicants for insurance in some companies are now asked, "What patent medicines or cures have you taken in the past five years?" One writer says, "A man who will swallow a patent medicine for his blood will swallow a yellow journal editorial for his mental ballast, and he who will bolt department-store pills for his liver is not a fit subject for life insurance."

## MEDICAL NOTES.

Appointment of Dr. Charles R. Bardeen. — It is announced that Dr. Charles R. Bardeen, at present associate professor of anatomy in the Johns Hopkins Medical School, is to take the chair of anatomy at the University of Wisconsin.

State Requirements for Medical Practice. — The Illinois State Board of Health has done a service in gathering together in brief the requirements for medical practice in the various states of the Union. The aim of the compiler has been to give the essential facts to physicians who are desirous of ascertaining how they can qualify in particular states. No attempt has been made to enter into further detail regarding laws, regulations, fees for examination, time and place of examination, etc. The pamphlet, which is printed by the American Medical Association Press, should certainly prove of much practical value.

Sanitary Conditions in the Philippines. — According to the monthly report of the Board of Health of the Philippine Islands and the City of Manila for December, 1903, evidence of continued improvement in sanitary matters is apparent. During the month in question two new free dispensaries were opened, with the hope

that they might become more popular than they have hitherto been with that class of the population for whom they are especially designed. Hitherto they have been regarded with considerable distrust.

A course of instruction for provincial health officers was also put into operation in Manila during the month. The course extends over a period of four weeks, is wholly practical, and is designed to give general instruction in sanitary work as needed by the various provincial boards of health. The course will be continued until all presidents of provincial boards of health have had an opportunity of taking it. Plague and malaria are reported to be under control, and smallpox plays a very small part in the mortality.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, May 4, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 44, scarlatina 18, typhoid fever 19, measles 179, smallpox 0.

Department of Statistics. — The Boston Common Council has refused to concur with the recent action of the Board of Aldermen in voting to abolish the Boston department of statistics.

A Leper in Harwich, Mass. — A case of leprosy in a Portuguese has been discovered in Harwich, Mass. He is at present living alone in an isolated situation and is prevented by the authorities from leaving the premises. His food is supplied by the town.

American Social Science Association. — This Association holds its annual meeting in Boston, May 11, 12, 13 and 14. Dr. S. H. Durgin is chairman and Dr. H. W. Hill, secretary of the Department of Health which meets Friday, May 13, in Huntington Hall of the Institute of Technology.

Alcohol as a Stimulant. — Further interesting information regarding the action of alcohol as a stimulant was afforded by the so-called Marathon race recently held in Boston. The race involves a run of twenty-five miles. One of the contestants, a youth of eighteen, began to take raw brandy near the beginning of the race. He had four or more drinks in all, although he had never taken liquor before. The result was a condition of extreme exhaustion at the end of the race, with poor pulse, low temperature and mental dulness. It was the opinion of the physicians in attendance that alcohol taken as a stimulant in such tests of strength and endurance acts rather as a poison than as a stimulant.

A Dinner to Dr. C. S. Sherrington. — Dr. C. S. Sherrington, who has this year delivered the Silliman lectures at Yale University, was tendered a dinner by Prof. R. H. Chittenden, at which a company of twenty men from various cities, particularly known for their work in physiology and allied sciences, were present. Among the non-medical guests was Mr. Horace Fletcher whose work on nutrition has of late excited wide attention.

Boston Mortality Statistics. — The number of deaths reported to the Board of Health for the week ending May 7 was 239, as against 210 the corresponding week last year, showing an increase of 29 deaths, and making the death rate for the week 20.66. The number of cases and deaths from infectious diseases included diphtheria, 52 cases and 3 deaths; typhoid fever, 17 cases, 1 death; measles, 192 cases, 3 deaths; tuberculosis, 44 cases, 31 deaths. The deaths from pneumonia were 32.

NEW YORK.

Celebration of One Hundred and Fiftieth Anniversary of King's College. — In the latter part of October next Columbia is to have a four days' celebration of the one hundred and fiftieth anniversary of the foundation of King's College, by which name the institution was known up to the time of the Revolution.

Resignations. — On May 4, Dr. William T. Bull formally severed his connection with the Medical Department of Columbia University, and as a token of their regard the classes of 1904 and 1905 presented to him a silver loving cup, appropriately inscribed. Dr. Robert W. Taylor, Clinical Professor of Genito-Urinary Diseases, has now tendered his resignation.

Fordham Hospital. — Plans for the new buildings of the Fordham Hospital, in the Borough of the Bronx, to be erected by the city, have just been filed at the Building Department. The proposed structures include the main hospital building, 305 by 43 feet and five stories in height, a four-story power house, which will also contain a laundry and quarters for employees, a two-story brick stable and dead-house, and a five-story, nurses' home. The estimated cost is $560,315, of which $339,000 is for the hospital proper.

Prevalence of Cerebro-Spinal Meningitis. — During the past month there has been a very serious increase in the prevalence of cerebro-spinal meningitis. In the week ending April 9, 24 deaths were reported from it; in the week ending April 16, 26 deaths; in the week ending April 23, 55 deaths; and in the week ending April 30, 70 deaths. The disease is represented as of a malignant type, a large proportion of the cases terminating fatally in a very brief time. This appears to be especially the case in a certain section of Harlem, in the neighborhood of 106th Street and Madison Avenue, where nine children have died within ten days, and where a feeling akin to panic prevails among the people. No such severe visitation of cerebro-spinal fever, it is stated at the Health Department, has occurred in New York within thirty years.

Investigation of Oysters. — To determine whether the oysters which supply the New York market are exposed to contamination a series of investigations was sometime ago undertaken by Dr. Walter Bensel, assistant sanitary superintendent of the health department. They were very carefully made and extended along the shores of Long Island, on the west side of Staten Island, along the New Jersey coast, and up the Sound as far as New Haven. The conclusions reached by Dr. Bensel are, briefly, as follows: (1) That the beds from which oysters are taken for consumption in the city often lie in grossly polluted waters; (2) That the process of "freshening," "fattening," or "drinking," often performed as it is in small streams badly contaminated with sewage, is a most dangerous practice and should be discontinued.

Increase of Tuition Fee at Columbia. — As a result of the recent increase of the tuition fee from $200 to $250 a year, ninety-eight of the students at the school have decided not to return next season, but to go to other institutions. When the announcement of this increase was made a few weeks ago the students held a meeting of protest, the result of which was that a petition was sent to each member of the board of trustees, urging that it was a manifest injustice that those who had entered with the understanding that the fee was to be $200 a year should be subjected to the increase. At their meeting of May 2 the trustees decided not to make any concession, and at the next meeting of the students, on May 5, ninety-eight of them announced their intention to pursue their medical studies elsewhere.

Continuance of High Death-Rate. — The unusually high death-rate continues, and during the past month it even advanced one point. The Health Department reports show that during April the mortality in the city represented an annual death-rate of 24.82, as against 23.80 in March and 18.98 in April, 1903. The corrected death-rate for the month, excluding non-residents and infants under one week old, was 23.76. The maximum mortality of the year was reached during the week ending April 9, when the death-rate ran up to 25.76. In the correspondi g week of last year it was more than 6½ points lower, 19.05. Among the diseases which showed an augmented fatality were the following: The weekly average of deaths from diphtheria and croup increased from 40.8 in March to 60.25 in April; of deaths from scarlet fever, from 26.2 to 29; from measles, from 29 to 41.5; from bronchо-pneumonia, from 114 to 132.25; from pulmonary tuberculosis, from 195.6 to 202.75; from Bright's disease and nephritis, from 130.6 to 135½; from organic heart diseases, from 106.4 to 114; from diarrheal diseases, from 41.6 to 49.25; and from diarrheals under two years of age, from 32.4 to 36. Among the few diseases showing a decline in mortality were the following: The weekly average of deaths from pneumonia decreased from 296 in March to 244.75 in April; of deaths from influenza, from 28.2 to 22; from typhoid fever, from 9.4 to 6.25; and from cancer, from 51 to 48¼. No death from smallpox was reported; the last fatal case of that disease occurring in the week ending March 19.

## Obituary.

### RESOLUTIONS ON THE DEATH OF DR. CHARLOTTE BLAKE BROWN.

It is with deep regret that we learn of the death of Dr. Charlotte Blake Brown of San Francisco, at the early age of fifty-six years.

Her pioneer work on the Pacific slope and her warm interest in all medical women won the esteem and admiration of a wide circle of friends.

*It is therefore resolved,* That the New England Hospital Medical Society deplores the loss of her great services to her sex and to the profession.

*Resolved,* That a copy of this expression of appreciation be published in the Boston Medical and Surgical Journal and also be sent to her family.

Emma L. Call, M.D.,
Mary F. Hobart, M.D.,
Emma B. Culbertson, M.D.,
*Committee.*

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, APRIL 30, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Erysipelas. | Measles. |
|---|---|---|---|---|---|---|---|---|
| New York . . | 3,908,644 | — | — | — | — | — | — | — |
| Chicago . . . | 2,021,086 | — | — | — | — | — | — | — |
| Philadelphia | 1,407,968 | 591 | 148 | 28.76 | 16.75 | 1.52 | .15 | .30 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 202 | 54 | 27.22 | 16.33 | .98 | .49 | — |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 157 | — | 24.20 | 15.28 | 2.55 | — | 1.27 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 72 | 20 | 22.22 | 11.11 | 1.39 | 1.39 | 1.39 |
| Boston . . . | 617,950 | 255 | 80 | 22.35 | 15.28 | 1.96 | 1.57 | 1.57 |
| Worcester . . | 136,925 | 27 | 10 | 22.18 | 18.50 | 3.70 | — | — |
| Fall River . . | 119,349 | 37 | 18 | 21.60 | 16.20 | — | — | — |
| Lowell . . . | 104,402 | 31 | 12 | 16.10 | 32.26 | — | — | — |
| Cambridge . | 100,998 | 24 | 5 | 20.83 | 8.33 | — | — | — |
| Lynn . . . . | 73,875 | 32 | 3 | 12.50 | — | — | — | — |
| Lawrence . . | 72,348 | — | — | — | — | — | — | — |
| Springfield . | 72,020 | 19 | 5 | 26.31 | 10.52 | — | — | — |
| Somerville . | 70,413 | — | — | — | — | — | — | — |
| New Bedford | 68,863 | 17 | 4 | 5.88 | 11.76 | — | — | — |
| Holyoke . . . | 50,538 | 21 | 6 | 9.52 | 19.05 | — | — | — |
| Brockton . . | 46,601 | 14 | 3 | 14.28 | — | — | — | — |
| Newton . . . | 39,310 | 7 | 2 | — | 42.90 | — | — | — |
| Haverhill . . | 39,061 | 10 | 5 | 10.00 | 30.00 | — | — | — |
| Malden . . . | 37,205 | 9 | 2 | 33.33 | 11.11 | — | — | 11.11 |
| Salem . . . . | 37,188 | 8 | 2 | — | — | — | — | — |
| Chelsea . . . | 36,499 | 16 | 3 | 6.25 | 18.75 | — | — | — |
| Fitchburg . . | 36,335 | 17 | 3 | 11.76 | 17.64 | — | — | — |
| Taunton . . . | 34,577 | 17 | 5 | 17.64 | 17.64 | — | 5.88 | — |
| Everett . . . | 30,209 | 9 | 2 | 11.11 | — | — | — | — |
| North Adams | 29,201 | 8 | 3 | — | 37.50 | — | — | — |
| Quincy . . . | 26,798 | 8 | 1 | 12.50 | 25.00 | — | — | — |
| Gloucester . | 26,131 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 6 | — | — | 16.67 | — | — | — |
| Brookline . . | 23,576 | 0 | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | 11 | 2 | 18.18 | 27.27 | 9.09 | — | — |
| Medford . . | 21,956 | 6 | — | — | 16.67 | — | — | — |
| Chicopee . . | 21,692 | 4 | 1 | 50.00 | — | — | — | 25.00 |
| Northampton | 20,314 | 7 | 3 | 42.90 | — | — | — | 28.60 |
| Beverly . . . | 15,807 | 3 | — | 33.33 | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 5 | 1 | — | 20.00 | — | — | — |
| Adams . . . | 14,745 | 3 | 0 | — | — | — | — | — |
| Attleboro . . | 14,561 | 2 | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 2 | — | — | — | — | — | — |
| Newburyport | 14,478 | 4 | 1 | — | 25.00 | — | — | — |
| Woburn . . . | 14,315 | 6 | — | 16.67 | — | — | — | — |
| Melrose . . . | 13,819 | 2 | — | — | 50.00 | — | — | — |
| Westfield . . | 13,809 | 6 | 1 | 16.67 | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 2 | 1 | — | — | — | — | — |
| Revere . . . | 13,609 | 2 | — | — | — | — | — | — |
| Framingham | 12,974 | 8 | 2 | 12.50 | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 1 | — | — | — | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 2 | 1 | 50.00 | — | — | — | — |
| Weymouth . | 11,350 | 4 | 1 | — | — | — | — | — |
| Plymouth . . | 11,189 | — | — | — | — | — | — | — |

Deaths reported, 1,694; under five years of age, 414; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 398; acute lung diseases 264, consumption 201, scarlet fever 17, whooping cough 6, cerebrospinal meningitis 3, smallpox 8, erysipelas 8, puerperal fever 4, measles 13, typhoid fever 61, diarrheal diseases 49, diphtheria and croup 23, influenza 5.

From whooping-cough, Baltimore 1, Pittsburg, 2, Springfield 2, Fitchburg 1. From smallpox, Philadelphia 8. From cerebrospinal meningitis, Philadelphia, Worcester and Chelsea 1 each. From erysipelas, Philadelphia, Baltimore, Providence and Taunton 1 each, Boston 4. From typhoid fever, Philadelphia 45, Baltimore 3, Pittsburg 7, Providence 1, Boston 3, Fall River 1, Brockton 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending April 16, the death-rate was 17.6. Deaths reported 5,142; acute diseases of the respiratory organs (London) 156, whooping cough 216, diphtheria 41, measles 191, smallpox 6, scarlet fever 21.

The death-rate ranged from 8.2 in Reading to 25.2 in Halifax London 16.7, West Ham 14.6, Brighton 21.9, Southampton 9.7, Plymouth 18.8, Bristol 16.1, Birmingham 22.1, Leicester 17.7, Nottingham 19.7, Liverpool 20.0, Bolton 13.1, Manchester 21.5, Salford 21.4, Bradford 21.9, Leeds 19.6, Hull 17.7, Cardiff 18.3, Rhondda 18.8, Wigan 23.2, Merthyr Tydfil 18.6, Walthamston 10.3, Norwich 23.9

## METEOROLOGICAL RECORD.

For the week ending April 30, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. Daily mean. | Thermometer. Daily mean. | Thermometer. Maximum. | Thermometer. Minimum. | Relative humidity. 8.00 A.M. | Relative humidity. 8.00 P.M. | Relative humidity. Daily mean. | Direction of wind. 8.00 A.M. | Direction of wind. 8.00 P.M. | Velocity of wind. 8.00 A.M. | Velocity of wind. 8.00 P.M. | We'th'r * 8.00 A.M. | We'th'r * 8.00 P.M. | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. . 24 | 30.18 | 50 | 63 | 37 | 58 | 60 | 59 | S W | S | 6 | 16 | C. | F. | 0 |
| M . 25 | 29.73 | 57 | 68 | 46 | 81 | 54 | 66 | S W | W | 12 | 7 | O. | C. | .05 |
| T. . 26 | 29.92 | 50 | 54 | 45 | 81 | 24 | 78 | N | S E | 10 | 8 | O. | O. | 0 |
| W . 27 | 30.17 | 42 | 45 | 40 | 85 | 100 | 92 | N E | N E | 15 | 27 | R. | R. | 1.15 |
| T. . 28 | 30.06 | 41 | 47 | 40 | 100 | 100 | 100 | N E | E | 20 | 14 | R. | O. | 2.97 |
| F. . 29 | 29.80 | 48 | 52 | 45 | 100 | 100 | 100 | N | N E | 9 | 6 | R. | R. | 1.09 |
| S. . 30 | 29.70 | 58 | 70 | 47 | 97 | 78 | 86 | W | W | 8 | 5 | R. | C. | .18 |
| ☞ | 29.94 | | 57 | 43 | | | 83 | | | | | | | 5.44 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## RECENT DEATHS.

EDWARD LIVINGSTON TRUDEAU, Jr., M.D., of New York, son of Dr. E. L. Trudeau of Saranac Lake, N. Y., died from pneumonia, after a brief illness, on May 4. He was thirty-one years of age, and was born at Saranac Lake. He was graduated from Yale in 1896, and from the medical department of Columbia University in 1900. Later, he spent two years as an interne at the Presbyterian Hospital, New York, and in the autumn of 1903 commenced private practice. In December last he was married to Miss Hazel Martyn of Chicago.

AUGUST F. W. REIMAR, M.D., of College Point, Borough of Queens, New York City, died suddenly on April 29, from cardiac disease. He was a native of Germany, and sixty-six years of age. He was graduated from Augusta University, Goettingen, in 1860, and came to the United States in 1864.

## SOCIETY NOTICES.

AMERICAN GYNECOLOGICAL SOCIETY.— The twenty-ninth annual meeting will take place in Boston, May 24, 25 and 26, 1904. The sessions will be held in the Boston Medical Library, No. 8, The Fenway. The profession is cordially invited to attend.

J. RIDDLE GOFFE, M.D., Secretary.

AMERICAN UROLOGICAL ASSOCIATION.— The annual meeting of the American Urological Association will be held at Atlantic City, June 8 and 9, 1904.

FERD. C. VALENTINE, M.D., Secretary.

THE AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION.— This Association will hold its sixtieth annual meeting at the Planters' Hotel, St. Louis, May 30, 31, June 1, 2, 3, 1904.

C. B. BURR, M.D., Secretary.

AMERICAN LARYNGOLOGICAL ASSOCIATION.— The twenty-sixth annual meeting of the American Laryngological Association will take place at Atlantic City, N. J., June 2, 3 and 4, 1904. The sessions will be held at the Hotel Chelsea.

JAMES E. NEWCOMB, M.D., Secretary.

## BOOKS AND PAMPHLETS RECEIVED.

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, Neurology, Pediatrics, Obstetrics, Gynecology, Orthopedics, Pathology, Dermatology, Ophthalmology, Otology, Rhinology, Laryngology, Hygiene, and Other Topics of Interest to Students and Practitioners. By leading members of the Medical Profession throughout the World. Edited by A. O. J. Kelley, A.M., M.D. Vol. I. Fourteenth Series, 1904. Philadelphia: J. B. Lippincott Co. 1904.

Seventh Annual Report of the Trustees of the Boston Insane Hospital. For the year ending January 31, 1904.

Exposé de M. de Piza, Délégué du Brésil, sur la Fièvre Jaune. Paris, 1904.

The Practical Medicine Series of Year Books. Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Issued Monthly. Under the General Editorial Charge of Gustavus P. Head, M.D. Vol. IV. March, 1904. Chicago: The Year Book Publishers.

# Original Articles.

## ENTEROSTOMY IN PERITONITIS.

BY ROBERT B. GREENOUGH, M.D., BOSTON,

*Surgeon to Out-Patients, Massachusetts General Hospital; Assistant in Surgery, Harvard Medical School.*

The value of direct drainage of the intestine by enterostomy, in cases of acute intestinal obstruction, is so well recognized as to need no further argument in its support.. It is almost universally employed in the graver cases of mechanical obstruction or ' ileus," and the technique and indications for the operation have been thoroughly established. (Kocher,[10] Treves.[28])

The value of enterostomy in that form of intestinal obstruction which occurs in diffuse peritonitis, the so-called " dynamic obstruction " or " paralytic ileus" has not been so fully recognized. A number of writers have called attention to the advantages of the operation in this condition, but the varying technique of the application of the fistula, and the different arguments advanced in its support, appear to justify a brief review of the subject and the report of a series of forty-one cases of diffuse peritonitis from the Massachusetts General Hospital in which the operation has been done. The writer would here express his thanks to the surgeons of the hospital for the permission to report their cases.

In 1891, Mr. F. T. Paul[23] of Liverpool described a glass tube which he used in the operation of inguinal colostomy, and in 1892 he published a further communication in which he reported the use of this tube in cases of acute mechanical obstruction and peritonitis and in resection of the colon. The device was accepted in England and is in use in that country at the present time. In 1895, a similar device was described by Dr. S. J. Mixter[20] of Boston and its value in the paralytic obstruction of acute general peritonitis reported. The Mixter tube and the Paul tube are to all intents and purposes the same, and although the priority of description belongs undoubtedly to Mr. Paul, to Dr. Mixter belongs the credit of its successful application in the treatment of paralytic obstruction and its introduction in this community, where it is commonly known as the Mixter tube.

In 1893, Henrotin[9] observed the beneficial effect of a spontaneous fecal fistula in a case of diffuse peritonitis and applied the principle successfully in a later operation for the same condition. Hadra[7] in 1894, Mixter[20] in 1895, Porter[25] in 1897, Pond[24] in 1898 and van Arsdale[29] in 1899 bore witness to the efficacy of the operation in paralytic obstruction and reported cases. During this time puncture or aspiration of the distended bowel at operation with immediate closure of the wound was extensively employed in cases of diffuse peritonitis. McCosh,[18] however, observed that the relief to distention obtained by this maneuvre was confined to a distance within twelve inches of the puncture, and in general the temporary and incomplete relief obtained by this method, and the inability to apply the procedure in the after treatment of the case, have led to its rejection in favor of the more lasting effects of enterostomy. In 1897 McCosh[18] advised the injection of magnesium sulphate solution directly into the small intestine at the time of operation, and reported a number of successful cases. This procedure again approaches that of enterostomy and has obtained a number of adherents. It is directed against the symptom of paralysis of peristalsis and has been combined with multiple puncture of the bowel and closure of the wounds. Its advantages and disadvantages will be discussed in connection with the causes of distention.

Lennander[14] in his valuable article on peritonitis published in 1901 discusses the value of puncture of the intestine and enterostomy and decides strongly in favor of the latter in the graver cases of diffuse infection. He opens the cecum in preference to the ileum, on account of the danger of irritation and digestion of the wound and the development of an artificial anus. The cecum is attached to the parietal peritoneum and a catheter is introduced and held in place by a purse-string suture. He considers the operation indicated when distention is present or when its advent is to be feared from the extent of the peritoneal infection. When enterostomy is not performed at the primary operation Lennander advises the fixation of the cecum in the wound for secondary enterostomy if occasion should arise.

At the German Surgical Congress in 1902, Heidenhain[8] presented an elaborate paper on enterostomy in peritonitis and reported several cases. He considers that the obstruction in peritonitis is chiefly due to paralysis of peristalsis, but that this paralysis is to a great extent local in character and confined to one or more adjacent coils of bowel. The cause of the paralysis he attributes chiefly to infiltration of the bowel wall and to toxemia, although he admits the significance of adhesions and mechanical obstruction. For these reasons Heidenhain performs enterostomy of the ileum above the affected portion of the bowel and does not advise the operation when there is a diffuse infection of the peritoneal cavity. At the same meeting Doyen[3] of Paris presented a communication upon enterostomy of the jejunum in peritonitis, an operation against which a number of arguments can be advanced, based chiefly upon the need of an immediate secondary operation for closure of the fistula in order to prevent digestion of the wound and death from starvation.

In 1903, papers by Finney and Pancoast,[5] Follis,[6] Lund[15] and Escher[4] appeared on the subject of enterostomy in peritonitis and other conditions, and a number of methods of operation were described. Finney and Escher attached the opening in the bowel to the parietal peritoneum by suture and protected the abdominal cavity with gauze, while Follis placed gauze between the bowel and the parietal peritoneum and sutured through the gauze. Follis

made use of the operation chiefly for mechanical obstruction and opened the ileum. Finney also opened the ileum for the relief of distention either of mechanical or paralytic origin and for the introduction of nourishment. Escher advises enterostomy especially in typhoid perforation, in order to save the time required to close the perforation and to ensure drainage of the intestine. Lund [15] considers especially cases of distention due to mechanical obstruction rather than paralysis, and occurring in local rather than diffuse infections of the peritoneum. He advises secondary enterostomy of the ileum as the operation to be preferred. For this purpose the ileum is sutured to the parietal peritoneum and a catheter introduced for drainage. The fistula is then to be closed by excision and suture at a later operation. He reports in detail five cases of enterostomy of which four recovered, and refers briefly to five other unsuccessful cases which are not reported.

Statistics of results in diffuse peritonitis which are based upon selected cases can be of little value. So many factors enter into the question of the ultimate result of the disease that it is impossible to find two cases exactly alike. The duration of the disease and, what is of far more importance, the extent of diffusion which has occurred during that time, the source of the infection and its virulence, the presence or absence of gross or readily diffusible irritants accompanying the infection, the resistance of the patient and the previous condition of the peritoneum, all play an important part in the patient's chances of recovery. The operation itself, the duration of anesthesia, the extent of manipulation and exposure of the abdominal contents and the efficiency and rapidity of the surgeon are of great significance. Finally, the conduct of the after-treatment of the case, the judicious use of lavage of the stomach and bowel, the administration of fluids, of stimulants and of nourishment, the employment of subcutaneous and intravenous infusion, and the care of the abdominal wounds and drainage wicks or tubes, — all are important elements in the results of treatment of this grave disease.

The classifications of the different forms of peritonitis are often inadequate in clinical application. The three forms of diffuse peritonitis described by Mikulicz [12]; diffuse septic, gangreno-purulent and fibrino-purulent peritonitis, can in many cases be differentiated with certainty only at the autopsy table. For clinical purposes the main fact is the determination of whether the peritonitis is a local process or whether it is diffuse and spreading. The appearance of the exudate and of the peritoneum, the extent and rapidity of diffusion and the constitutional reaction of the patient then determine the gravity of the condition. In this connection the correct interpretation of the appearances of the peritoneum of the general cavity in the presence of a local process is of great importance. In certain cases of local peritonitis of a virulent type a degree of inflammatory reaction occurs in the general peritoneal cavity which is due more to chemical and toxic causes than to actual bacterial infection. This condition produces a moderate injection of the peritoneum and a serous exudate containing leucocytes. It has been called "peritonism" by many writers (Burkhardt,[2] Weber [30]) and it subsides promptly on evacuation of the local abscess without requiring irrigation or drainage for its relief. While undoubtedly predisposing to a more severe form of actual peritonitis on the introduction of bacteria, peritonism itself is of minor significance and should be distinguished from actual peritonitis. Without the proof of cultures or cover-glass examination therefore, the lesser degrees of peritoneal inflammation cannot always be accepted as demanding more than local treatment.

The actual causes of death in diffuse peritonitis are variable. Patients may die in the first twenty-four hours after operation from the severity of the disease and the added shock of operation. A certain number of cases will die within forty-eight hours from the commencement of the disease itself with septic intoxication (the peritoneal sepsis of Mikulicz), whether operation is done or not. Other cases succumb from the second to the fifth day of the disease with "peritoneal facies," vomiting, paralysis of the bowel, distention, low temperature and thready pulse, a train of symptoms largely due to the suspension of peristalsis and in part remediable by enterostomy.

A certain number of cases survive this stage of the disease only to die of sepsis or exhaustion from the extent of the local suppurative process in the peritoneal cavity, after the diffuse peritonitis has subsided and peristalsis has been again established. Among this number are the cases of subdiaphragmatic and pelvic abscess, which occur after purulent peritonitis.

Finally, cases may die of intercurrent diseases or later complications in convalescence. Pneumonia, uremia, pylephlebitis and thrombosis, liver abscess and the various forms of post-operative intestinal obstruction due to adhesions, each cause a certain number of deaths after diffuse peritonitis.

The tympanites of peritonitis has been attributed to a number of different causes and a brief review of the subject is necessary in the consideration of the value of enterostomy. An increase in the amount of gas in the intestine in peritonitis may be due to increased production, diminished out-flow or diminished absorption. Diminished out-flow is chiefly due to mechanical obstruction of the lumen of the gut, or to diminished or suspended peristalsis.

A sudden and severe irritation or stimulation of the sensory nerves of the abdominal area is capable of causing a reflex inhibition of peristal-is. This occurs in cases of biliary and renal colic (Nothnagel [21]) and is probably the main cause of the suspension of peristalsis which occurs so frequently after laparotomy. This inhibition paralysis is undoubtedly a conserva-

tive effort on the part of Nature. It is certain that active peristalsis greatly favors the rapidity of diffusion of an infecting agent in the peritoneal cavity (Meisel [19]), and absence of peristalsis would tend to limit diffusion and confine the process to a local infection. This theory has its clinical application in the non-operative treatment of appendicitis during the intermediate stages, which has been advocated by Ochsner.

Another form of paralysis of peristalsis has been thought to be due to septic absorption. The toxins of a virulent infection, either within the bowel or in the peritoneal cavity, may act locally upon the nerve endings and muscle fibers of the intestinal wall or through the central nervous system. The tympanites of typhoid fever is advanced by Nothnagel [21] as a type of toxic paralysis of peristalsis.

Paralysis of the muscular action of the intestine has also been attributed to the local effect of infiltration of the intestinal wall by inflammatory products. (Hedenhain, [8] Nothnagel. [21]) Marked examples of this condition are seen occasionally after strangulated hernia and in the intestine forming the wall of an appendix abscess. It has been thought to occur also in diffuse peritonitis, but its importance is probably far greater in inflammatory conditions of a local nature.

Pure mechanical obstruction of the bowel is found to be present in a certain number of cases of diffuse peritonitis. This is especially the case when the peritonitis results from mechanical obstruction or when a local inflammatory process antedates by some time the onset of the diffuse infection. Compression of the bowel by inflammatory exudate may occur as in a pelvic abscess of large extent. Obstruction by bands and adhesions from a previous peritonitis are occasionally reported. The loss of peristalsis by the adhesion of large areas of bowel to the abdominal wound may offer impediment to peristalsis, and twists and kinks of the coil of bowel immediately above the adhesion may close the lumen of the bowel and cause obstruction. Obstruction of the bowel by gauze wicks which have been introduced for drainage is also to be borne in mind as one of the possible causes of mechanical obstruction. The symptoms of intestinal obstruction due to mechanical causes, however, develop as a rule only after the lapse of a period of time sufficient for the formation of firm adhesions. Distention due to obstruction of this nature appears during the convalescence from operation in diffuse peritonitis, or in cases in which a local inflammatory process has existed for some time prior to the appearance of the symptoms of diffuse infection. Much has been written upon the subject of intestinal obstruction of this nature and its relief by operation. An increase of peristaltic activity can often be demonstrated in these cases by visible waves of contraction in the distended bowel, accompanied by colicky pain of an intermittent character. This condition is very different from the absence of peristalsis in the distention of peritonitis. The records of the Massachusetts General Hospital from 1900 to 1904 show 17 cases of acute intestinal obstruction after inflammatory conditions of the peritoneum, which came to operation. Seven cases of more chronic obstruction were also found attributable to this cause. The shortest period of time which elapsed in any case between the first symptoms of peritonitis and the operation for obstruction was six days. This was a case of local appendix abscess of two days' duration which was operated upon by Dr. Codman. Four days later symptoms of mechanical obstruction demanded interference, and a coil of ileum was found twisted upon itself and adherent to the appendix wound. The adhesions were freed, a Mixter tube was tied into the distended coil of ileum and the patient recovered. A secondary operation for closure of the fistula was necessary and the patient is now well. Six cases showed obstruction between seven and fourteen days after the first symptom of peritonitis and 11 cases only after the lapse of a period of time greater than one month. The cause of the mechanical obstruction in these cases was as follows: Volvulus occurred twice, twists and kinks four times and bands and adhesions in 11 cases. In two cases only was the obstruction the result of a diffuse peritonitis, whereas in 16 cases it followed a local inflammatory process in the peritoneal cavity. Of the 24 cases of diffuse peritonitis which are reported in detail at the conclusion of this paper and in which enterostomy was done as a primary operation, distention was present at the time of operation in 16 cases. Of these 16 cases, in 9 adhesions were found in some portion of the peritoneal cavity, in 3 cases the record is not specific on this point and in 6 cases no adhesions whatever were discovered. In only two cases of the entire 24 was actual mechanical obstruction present; this was due in one case to cancer of the colon and in the other to an abscess in the pelvis. The duration of the diffuse peritonitis in these cases averaged 2.4 days from onset to operation. It is apparent, then, that obstruction due to purely mechanical causes occurs chiefly after the lapse of a considerable time from the beginning of the peritonitis and that it is favored more by a local than by a diffuse form of infection. Visible peristalsis and colicky pain are not infrequently observed in the early stages of mechanical obstruction and serve to distinguish from the paralysis of peristalsis which accompanies diffuse peritonitis.

An important cause of paralysis of peristalsis and probably in the later stages of peritonitis and of intestinal obstruction, the most important one, is distention of the bowel by the accumulation of gases within its lumen. The growth of the bacteria which normally inhabit the intestinal canal results in the production of gases of different varieties as by-products in the decomposition of the intestinal contents. (Kukula.[13]) When the out-flow of these gases is prevented, distention of the bowel ensues, the stagnant intestinal contents undergo more rapid decomposition, and

the gases, ptomaines and bacterial toxins which accumulate affect the integrity and function of the bowel wall. Up to a certain point distention of the intestine may occur without permanent effect; beyond this point, however, the thinning of the intestinal wall and interference with its blood supply and nervous mechanism produce a condition of paralysis of the muscular coats of the intestine. Recovery from this condition is of necessity slow and may not occur at all. Examples of paralysis from over-dilatation are familiar in the stretched cervix or sphincter ani or the over-distended bladder. In over-distention of the intestine we thus have the familiar conception of the vicious circle in another form; more gas, more distention, more paralysis, more decomposition, more gas, etc. It is this aspect of distention against which enterostomy offers most satisfactory relief. Paralysis of the intestinal muscle, however, is not the only danger of obstruction to the onflow of the intestinal contents. Ptomaines and bacterial toxins are produced in the process of decomposition, and their absorption is followed by grave systemic disturbance. The absorption of these products is probably delayed by the disturbance of circulation in the distended bowel, but that it does occur is proved by the constitutional toxemia of strangulated hernia, and by the experiments upon animals which have been reported. (Kukula,[13] Borszczky.[1]) The thinning of the intestinal wall which results from the accumulation of gases is accompanied by a change in its physical characteristics of such a nature as to allow the ready passage of bacteria from the lumen of the bowel into the blood vessels and even through the wall into the peritoneal cavity. (Borszczky and Generisch.[1]) The significance of this phenomenon in the increase in virulence of a case of peritonitis, and even in the production of a fatal septicemia, is readily appreciated.

Although in theory the different causes of intestinal paralysis and obstruction can be differentiated and discussed, in actual occurrence they merge one into another to such an extent that they can be separated with difficulty or not at all. Schlange[26] distinguishes two main classes of intestinal obstruction, mechanical and "dynamic." Mechanical obstruction is associated especially with local and chronic forms of peritonitis and dynamic or "paralytic ileus" with acute diffuse forms of the disease. However true this distinction may be in the early stages of both conditions, it is a well recognized fact that the distinction fails as the disease progresses to its fatal termination. In pure mechanical obstruction due to a constricting band the over dilatation and toxic paralysis produced by decomposition of the intestinal contents may prevent recovery after removal of the constricting band by operation, or the symptoms of diffuse peritonitis may supervene and mask the original symptoms of intestinal obstruction. In diffuse peritonitis the process may be even more complicated. The inhibition of peristalsis from the irritation of the primary infection merges into the paralysis of toxemia as rapid absorption from the peritoneal cavity takes place. To this is further added the paralysis from over dilatation as gases collect from the fermenting contents of the intestine. The extent to which actual mechanical causes enter into the production of the dynamic obstruction of peritonitis has been much discussed. Körte[12] considers that infiltration of the bowel wall plays an important part in paralytic obstruction, and Kocher[10] believes that slight mechanical causes, such as light adhesions, circulatory changes and the handling of the intestine at operation, are important factors. In all probability many causes enter into the production of the condition, but it must be admitted that to a paretic intestine a mechanical obstacle of almost trivial nature may be insurmountable. The main feature of the distinction, however, hangs upon the presence or absence of peristalsis. When peristalsis is present, as shown by visible contractions and spasmodic pain, mechanical causes are especially to be considered. When pain is continuous and no evidence of peristalsis is to be obtained the graver condition is to be feared and relief must be prompt or not at all.

The more remote effects of accumulation of gas in the intestine are next to be considered. The distended coils of bowel demand more room for their accommodation, which can be obtained only by elevation of the abdominal wall and of the diaphragm. Embarrassment of respiration and even of the action of the heart are not uncommonly observed as a result of this encroachment upon the cavity of the thorax. Another result of paralysis of peristalsis is the increased opportunity for the formation of adhesions between the coils, with the subsequent danger of mechanical obstruction. At the time of operation distended coils may so obstruct the view or the manipulations of the surgeon as to endanger life by prolonging or rendering inadequate the measures for the relief of the disease. Finally, the normal elimination of fecal material and gases by rectum is prevented by suspension of peristalsis, and the normal absorption of fluids and of nourishment by the stomach is interfered with by the vomiting which accompanies obstruction of the intestine.

Against the dangers of suspension of peristalsis in peritonitis there remains to be contrasted only its possible conservative effect in limiting diffusion of the process throughout the general peritoneal cavity. That inhibition of peristalsis is in fact a conservative phenomenon is hardly open to doubt. The occasional success of the opium treatment in cases of diffuse peritonitis before the days of operation attests the correctness of this view, and the Ochsner[22] treatment of appendicitis is based upon this theory. It is not the purpose of this paper to discuss the Ochsner treatment, and it has not been given sufficient trial at the Massachusetts General Hospital to admit of a report upon its value. In fact, so radical a departure from existing tenets of surgical faith requires time for its acceptance. The

dangers of delay in cases which ultimately demand operation and the possibility of error in diagnosis have worked against its general adoption. Cases of peritonitis which are beginning to spread from a local point of origin, such as the appendix, and in which the general cavity presents the condition spoken of above as peritonism rather than peritonitis, can probably be aided toward local limitation by the Ochsner method. Cases, however, in which the greater portion of the peritoneal cavity is already infected, and especially those cases in which a constant source of infection, such as a perforated gastric ulcer or a ruptured appendix abscess, is continually supplying further contaminating material in large amount, the value of the conservative inhibition of peristalsis disappears in the dangers by which it is accompanied,— the dangers of distention, paralysis, toxemia, septicemia and of mechanical hindrance to respiration and circulation.

The advantages of enterostomy in peritonitis are in the main the avoidance of the dangers of distention, by the removal of the decomposing contents of the intestine. The muscular wall of the bowel is enabled to regain its tone and to resume its suspended function. The absorption of ptomaines and bacterial toxins from the intestinal mucosa and their poisonous effects upon the patient are diminished. The escape of bacteria from the intestinal canal into the peritoneal cavity and into the circulation is diminished if not prevented. Pressure upon the diaphragm is relieved and the attendant disturbance to respiration and circulation. In addition to these direct results of enterostomy, however, the surgeon obtains a direct control over the intestine which may be employed to great advantage. Lavage of the bowel through the enterostomy wound promotes the discharge of intestinal contents from far beyond the immediate vicinity of the fistula. A most important aspect of the enterostomy opening is that emphasized by Finney in the statement that it should be regarded "more as a mouth than as an anus." Stimulation, fluids and nourishment may be introduced directly into the portion of the bowel where they are most rapidly absorbed, and where they cannot be immediately rejected by vomiting or by an involuntary dejection. By this means the function of the kidneys may be sustained and the constitutional reaction against the disease supported.

A further advantage of enterostomy which has been noted by many writers is the possibility of the direct introduction of cathartics into the intestine. When a fistula is made, however, lavage of the bowel will be found to supplant the cathartic treatment of peritonitis after operation to a great extent. The reflex inhibition of peristalsis above described and the tendency to paralysis of peristalsis from distention explain the inefficacy of cathartics introduced directly into the bowel at the time of operation in the graver forms of peritonitis. When peristalsis is capable of being excited by magnesium sulphate, its introduction at the time of operation, in the manner advocated by McCosh,[18] produces satisfactory results. When paralysis is present, however, and peristalsis cannot be excited by the irritation of the cathartic, its introduction can have only a toxic effect upon the patient and increase the intestinal irritation and decomposition. During the first twenty-four hours after operation lavage of the bowel is to be preferred. After that time, if spontaneous action does not occur, the use of cathartics introduced through the fistula is generally followed by prompt results.

The disadvantages of an enterostomy are next to be considered and their importance weighed. A fecal fistula is an unnatural condition, extremely revolting to the patient and his attendants and acompanied by dangers of its own. To make a wound in the intestine and insert a Mixter tube prolongs the operation for a few moments, at least, and where every moment under the anesthetic is of importance even this should not be done without its benefit to the patient being well established. After the operation the presence of the enterostomy opening makes the dressings more complicated, and when the fistula is established by the removal of the tube, more frequent and more offensive. The danger of contamination of the peritoneal cavity from the enterostomy wound, before adhesions are established is not to be considered when the Mixter tube is used. After its removal, however, so ling of the wound and continued suppuration must be guarded against by frequent dressings and scrupulous cleanliness. The danger of persistance of the fistula depends largely upon the situation and method of its formation. An opening in the jejunum will rarely close spontaneously on account of the irritating character of the intestinal secretions. Openings in the ileum are less significant in this respect and in the cecum least of all. The nature of the opening in the bowel, whether it is transverse or longitudinal to the long axis, whether it comprises a large or a small portion of the circumference of the intestine, and whether it is above or below the parietal peritoneum, — all are factors which exert an influence upon spontaneous closure. In general it may be said that an opening in the cecum, made by an incision in the long axis of the bowel not more than one-half inch long, and prevented from elevation above the line of the parietal peritoneum, will almost always close spontaneously. In other cases the persistence of the fistula will demand its closure by operative measures, a serious drawback to the value of enterostomy. Finally, it may be urged that the presence of a fecal fistula increases the adhesions which remain after the peritonitis and predisposes to hernia and to intestinal obstruction. The dangers and disadvantages of enterostomy are thus of sufficient weight to demand consideration before the operation is adopted. It is obvious also that enterostomy can exert little effect upon certain of the causes of death from peritonitis. The cases which die in the first twenty-four hours after operation,

whether from the shock of operation or from the septic intoxication of the disease, can be expected to obtain little benefit from enterostomy except that their last hours may be made more comfortable and their distressing vomiting relieved. The cases which survive the operation and recover from the general infection of the peritoneal cavity, only to die of local sepsis and exhaustion or by one of the intercurrent complications, cannot be saved by enterostomy, however much they may have been benefited by the operation in the early stages of their disease. The intermediate cases, however, which ordinarily die from two to five days after operation, with distention, vomiting, low temperature and thready pulse, are the cases which obtain the most marked benefit from enterostomy. In these cases drainage of the bowel reduces the toxemia and relieves the distention, allowing the paralyzed muscles of the intestinal wall to regain their tone and peristalsis to be again established. In such cases the more remote dangers and disadvantages of a fecal fistula are not to be compared with the immediate and positive advantages to be obtained. It is to be regretted that the cases of this nature cannot be selected at the operation, but except within broad limits this does not appear to be possible at the present time. These considerations would appear to justify the performance of enterostomy as a secondary operation. A review of the statistics of secondary operations, however, makes obvious the fact that they have been performed as a rule too late to be of benefit. Diffuse peritonitis is a disease which is measured in hours rather than in days, and delay in waiting for the failure of enemata and cathartics to establish an indication for interference is fatal for the success of the enterostomy when it is performed. Cases of mechanical obstruction due to adhesions which develop in the course of the convalescence from peritonitis demand interference only when the indications are well established, and in these cases, as advised by Lund, a secondary enterostomy is indicated, especially when the cause of the mechanical obstruction cannot be removed by an open operation. The portion of the bowel immediately above the obstruction is the situation to be chosen for opening under these conditions, and secondary closure of the fistula will then be necessary as a rule. In cases of diffuse peritonitis, however, which involve the greater portion of the peritoneal cavity, and especially where paralytic distention is present and no mechanical cause for the obstruction is found, a primary enterostomy is indicated, and for this purpose the cecum is to be preferred. Under these circumstances the mortality of cases of peritonitis treated by enterostomy will still be high, but a certain number of cases will be saved which would otherwise go on to a fatal termination.

The technique of enterostomy is extremely simple. The Mixter tube is a bent glass tube of about ½ inch diameter, provided with a flange and collar about ¼ inch apart at the lower end. (Fig. 1.) A purse-string stitch is introduced in the intestine and in its center a linear incision ½ inch in length is made parallel with the long axis

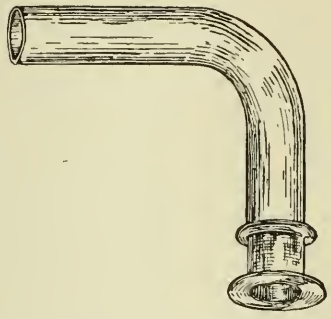


Fig. 1. Mixter tube for enterostomy of cecum. Actual size, about ½ inch in diameter.

of the bowel. In the large intestine the incision should be in the center of one of the longitudinal bands. The flanged end of the tube is inserted into the bowel and the purse-string stitch is tied under the collar, thus preventing leakage and securing the tube from slipping in or out. The end of the purse-string stitch is then carried through the parietal peritoneum just below the margin of the abdominal wound and the opening in the bowel is thus secured below the level of the abdominal wall. (Fig. 2.) The wound is now

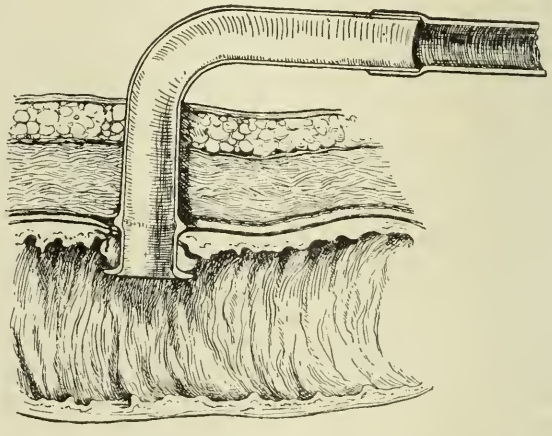


Fig. 2. Diagram of Mixter tube in situ, showing purse-string suture and fixation to parietal peritoneum below abdominal wall. Drawings by Miss Florence Byrnes.

dressed in the customary manner and a rubber tube attached to the outer end of the glass tube and conducted through the dressings to a receptacle beside the bed. The chief advantage of the Mixter tube over other methods of enterostomy is the fact that immediate opening of the bowel is obtained without the risk of contamination of the general peritoneal cavity before the necessary time has elapsed for the formation of protective adhesions. The flange and collar also prevent the tube from slipping too far in or too far out of the bowel, an accident which is not infrequent when a rubber tube or catheter is used. Another advantage of hardly less importance is the fact that the fistula remaining

after a Mixter tube enterostomy is below the parietal peritoneum and closes spontaneously in many cases. Tubes of varying weight and size are provided to suit the size of the intestine which is to be opened, and a lighter tube than the one described is advisable for introduction in the small intestine. The purse-string stitch cuts out as a rule from the fourth to the seventh day and the tube comes away. After this has occurred the fistula must be treated by frequent irrigation and its closure promoted by drawing together the edges of the wound. Secondary suture of the fistula in the wound is frequently successful, and if the indications for immediate closure are sufficient, anastomosis or resection may be done. Resection was not necessary in any of the cases here reported. The selection of the cecum rather than the ileum or jejunum for enterostomy has been widely discussed. The jejunum appears to be ill adapted to the purpose for a number of reasons, owing to the facts that the jejunal secretions are extremely irritating to the wound, that the drainage is too high to be effective, that death from inanition threatens unless nutrition is artificially maintained, and that immediate closure of the fistula by operation is attended by a high mo tality. Between the ileum and the cecum no such potent reasons enter into the decision and it is more a matter of the indications of the special case. In cases of diffuse peritonitis, where mechanical causes for obstruct'on are not found, as a rule the cecum is to be preferred. Paralytic distention affects the large more readily than the small intestine because of its thinner wall. The fistula in the cecum drains the ileum to a certain extent, whereas drainage of the ileum does not affect the cecum. The fistula in the cecum is less irritating, does not affect nutrition and generally closes spontaneously without operative interference. Its lateral situation also makes later mechanical obstruction from adhesions less probable than when the ileum is attached to the abdominal wall.

Forty-one cases of diffuse peritonitis were treated by enterostomy in addition to other operative measures, at the Massachusetts General Hospital between January, 1900, and March, 1904. In 24 cases enterostomy was done at the first operation and of this number 5 cases recovered, 21%. In 17 cases it was done as a secondary operation, generally when the patient was moribund, and only one case recovered. The technique of operation emp'oyed for the diffuse peritonitis is detailed in the abstract of cases, but it may be said that multiple incision, irrigation with salt solution and drainage were employed in the majority of cases. No case that was not actually moribund was refused the possible benefit of operation.

Of the 24 cases of diffuse peritonitis in which primary enterostomy was done, 17 were due to appendicitis and one each to the following causes: cancer of colon with perforation, pancreatitis, perforation of gastric ulcer, stab wound of intestine, cholecystitis, typhoid perforation and post-operative peritonitis. Of the 17 cases of secondary enterostomy 10 were due to appendicitis and one each to the following causes: cancer of colon with perforation, rupture of intestine, pyo-salpinx, perforation of gastric ulcer, perforation of duodenal ulcer, stab wound of intestine and post-operative peritonitis.

Of the 24 cases of primary enterostomy, 19 died. Eleven of this number, 58%, died within twenty-four hours, 2 in the second day, 2 in the third day, and 4 after more than four days had elapsed, on the fifth, sixth, twelfth and thirteenth days. The actual cause of death in the last four cases was determined at autopsy in three instances. One case was due to pancreatitis and diabetes with no further evidence of peritonitis, one to acute fibrinous peritonitis without free pus but with a gangrenous local abscess in the pelvis, and another to a local peritoneal abscess without general infection or distention. In the fourth case no autopsy was obtainable,but death occurred on the thirteenth day after operation and was apparently due to a local abscess in the pelvis. The symptoms of diffuse peritonitis had subsided and peristalsis was well established. In each of these four cases benefit was obtained from the enterostomy, although a fatal result of the disease was not prevented. Of the 19 cases which died 4 only are left as having died on the second, third and fourth day after operation, or 21%. Of the 16 cases of secondary enterostomy which died, one died within twenty-four hours of the first operation, 8 on the second, third and fourth days, 50%, and 7 after the fourth day. In this connection the statistics recently collected by Dr. W. C. Quinby of Boston are of interest. Of 81 cases of undoubted diffuse peritonitis after appendicitis at the Massachusetts General Hospital, 57 cases died, 70%. Of this number, the deaths on the first day after operation were 29%, on the second, third and fourth days after operation, 31%, and after four days, 40%. These figures emphasize two facts in connection with primary enterostomy. The operation has been done only in the graver cases of peritonitis, as shown by the number of cases which died within twenty-four hours, 58% against the 29% of all cases collected by Dr. Quinby. The number of cases dying on the third, second, and fourth days is also reduced by enterostomy from 50 and 31% to 21%. It is to be noted therefore that in spite of the fact that enterostomy has been done as a primary operation only in the graver cases of peritonitis, the mortality of the second, third and fourth days has been notably diminished. Under these circumstances the operation must be accorded a place as a measure of value in cases of grave diffuse peritonitis.

Five cases recovered after primary enterostomy. In four of these cases the peritonitis was due to appendicitis. The process in each case was diffuse throughout the abdominal cavity so far as could be ascertained by multiple incisions, and cultures showed the colon bacillus in three cases and streptococci in the fourth. The fifth case was due to perforation of a gastric ulcer which

had occurred about six and one-half hours previously, and a diffuse peritonitis, with turbid serum and fibrin, was found over all the accessible portions of the abdominal cavity. In this case cultures were negative with regard to the presence of bacteria. No anerobic cultures were made, however, and proof of the presence of bacteria by cover-glass examination of the fluid was not attempted. In all five cases the severity and extent of the infection of the peritoneal cavity were such as to lead the surgeon operating to the belief that the usual operative measures would not be sufficient to ward off a fatal termination. That five such cases recovered would alone appear to justify the operation. In four of these cases the cecum was opened. One closed spontaneously on the eighth day, one on the seventeenth day and one after six weeks. One case was closed by a purse-string suture on the fifth day and never leaked. In the fifth case the ileum was opened and the fistula discharged slightly for ten weeks before closing spontaneously. In the one case of secondary enterostomy which recovered, the fistula was successfully closed on the fourteenth day by a purse-string stitch.

To sum up the points covered in this paper it may be said:

(1) The obstruction of the intestine in diffuse peritonitis is the result of a combination of causes.

(2) The most important cause is suspension or paralysis of peristalsis.

(3) Paralysis of peristalsis is due to inhibition, to toxic paralysis and to the paralysis of distention.

(4) Mechanical causes such as infiltration of the bowel wall and light adhesions in certain cases contribute to this paralysis.

(5) Pure mechanical obstruction due to adhesions is the result of chronic or local peritonitis of at least some days' duration.

(6) Enterostomy is indicated in addition to other operative measures in the graver forms of diffuse peritonitis.

(7) Its greatest advantage is the drainage of the gases and decomposing contents of the bowel and the relief of paralysis of peristalsis.

(8) By enterostomy the surgeon obtains direct control over the intestine for lavage and for the introduction of stimulants, nourishment, fluids and cathartics.

(9) For the relief of paralysis of peristalsis primary enterostomy is to be preferred to the secondary operation.

(10) Enterostomy is best performed by the use of the Mixter tube.

(11) The cecum is the most satisfactory part of the bowel for a primary enterostomy, and the jejunum is to be avoided.

(12) Spontaneous closure of the fistula may be expected when the cecum is opened, if the opening is kept below the level of the parietal peritoneum.

(13) By the systematic use of enterostomy in the graver forms of d ffuse peritonitis the number of patients dying on the second, third and fourth days after operation is reduced.

(14) The symptoms of visible peristalsis and spasmodic pain in intestinal obstruction indicate a mechanical cause for the obstruction.

(15) The persistence of these symptoms, unrelieved by enemata and cathartics, is an indication for operation.

(16) Under these circumstances the cause of the obstruction should be removed if possible by operation.

(17) In advanced cases of obstruction of this form enterostomy of the coil of intestine nearest above the obstruction should be done.

## ABSTRACT OF CASES.

### PRIMARY ENTEROSTOMY.

1. Dr. C. A. Porter, 1902; age forty-five, pancreatitis, diabetes, peritonitis, seven days' duration, pulse 110, respiration 30, temperature 100.6, whites 34,000, tympanites; 2 incisions, irrigation, Mixter tube in descending colon, drainage, purulent bloody exudate in pelvis and between coils; culture streptococcus and bacillus mucos. caps. Died in five days. Autopsy, no general peritonitis, adhesions, abscess in pelvis, pneumonia, chronic pancreatitis.

2. Dr. C. A. Porter, 1901; age twenty-three, appendicitis, peritonitis, four days' duration (?), pulse 100, respiration 34, temperature 100.4, whites 16,000, tympanites; 2 incisions, irrigation, Mixter tube in cecum, appendectomy, drainage, sero-pus in right and left flanks and pelvis and between coils; streptococci. Recovery; no fecal discharge after tube removed on eighth day.

3. Dr. C. A. Porter, 1901, age twenty-six, appendicitis, peritonitis, four days' duration, pulse 150, respiration 30, temperature 104, no tympanites; 2 incisions, irrigation, appendectomy, Mixter tube in cecum, drainage, thick pus in flanks and pelvis and between coils; colon bacillus; magnesium sulphate given through fistula. Died twelve hours. No autopsy.

4. Dr. E. A. Codman, 1902; age ten, appendicitis peritonitis, two days' duration, pulse 140, respiration 24, temperature 101.6, whites 19,000, tympanites; 2 incisions, irrigation, appendectomy, catheter tied in cecum, drainage; foul pus right flank, purulent fluid left side, pelvis and between coils. Lavage and catharsis by fistula. Died in ten hours. No autopsy. The catheter was introduced in the cecum in this case by Kaders method for gastrostomy.

5. Dr. C. A. Porter, 1902; age twenty-two, stab wound of colon, five days' duration, pulse 100, respiration 25, temperature 101, whites 15,000, tympanites; one incision, irrigation, Mixter tube in descending colon, drainage; turbid fluid in left flank and pelvis, no culture. Lavage and nourishment by fistula. Died six days later. Autopsy, fibrinous peritonitis, no free pus, abscess in pelvis.

6. Dr. E. A. Codman; 1901, age five, appendicitis, peritonitis, four days' duration, pulse 180, respiration (?), temperature 107, tympanites; one incision, irrigation, two Mixter tubes in ileum at and above ileocecal valve, drainage; pus throughout, no culture. Died in two hours. No autopsy.

7. Dr. E. A. Codman, 1901; age fifty-three, cholecystitis; peritonitis, two days' duration, pulse 138, respiration 26, temperature 104, whites 21,000, tympanites; one incision, irrigation, Mixter tube in cecum, drainage, pus throughout; colon bacillus; lavage of bowel and cathartics introduced by fistula. Died in twelve hours. No autopsy.

8. Dr. E. A. Codman, 1901; age thirty-seven, appendicitis peritonitis, four days' duration, pulse 104,

respiration 30, temperature 103, whites 4,800, tympanites; 2 incisions, irrigation, 2 Mixter tubes, in ileum and in cecum, drainage; pus throughout; colon bacillus; salt solution and cathartics by fistula. Died in forty-eight hours. No autopsy.

9. Dr. S. J. Mixter; 1902, age nineteen, appendicitis, peritonitis, duration (?), pulse 100, respiration 20, temperature 98.6, whites 15,000, no tympanites; one incision, irrigation, appendectomy, tube in cecum, drainage; pus in right and left flank, pelvis and between coils; colon bacillus; salt solution and cathartics by fistula. Recovery; fistula closed on fifth day by purse-string, no leakage.

10. Dr. R. B. Greenough, 1902; age twenty-three, appendicitis, peritonitis, one day's duration, pulse 100, respiration 35, temperature 103, whites 11,000, tympanites; 2 incisions, irrigation, Mixter tube in cecum, drainage; cloudy serum throughout; colon bacillus; lavage, and catharsis by fistula. Recovery; attacks of hypogastric distention in convalescence relieved by lavage of colon by fistula, fistula closed spontaneously in six weeks.

11. Dr. R. B. Greenough, 1902; age six, appendicitis, peritonitis, two days' duration, pulse 150, respiration 50, temperature 103.8, whites 10,600, tympanites; 2 incisions, irrigation, appendectomy, Mixter tube in cecum, drainage; pus throughout; colon bacilli. Died in twelve hours. No autopsy.

12. Dr. R. B. Greenough, 1902; age twenty-one, perforation of gastric ulcer, peritonitis, six and a half hours' duration, pulse 100, respiration 30, temperature 101, whites 21,000, tympanites; 3 incisions, ulcer closed by suture, posterior gastro-enterostomy by McGraw ligature, irrigation, Mixter tube in cecum, drainage; turbid serum throughout; culture negative; fistula used for drainage and catharsis, no distention after lavage on second day, fistula closed spontaneously on seventeenth day. Recovery.

13. Dr. G. W. W. Brewster, 1900; age forty-seven, appendicitis, peritonitis, four days' duration, pulse 140, temperature 101, no white count, tympanites; one incision, no irrigation, Mixter tube in ileum, drainage; pus throughout; culture mixed growth, cocci and bacilli. Died in three hours. No autopsy.

14. Dr. Farrar Cobb, 1902; age sixty-three, perforation above cancer of colon, peritonitis, three hours' duration, pulse 110, respiration 32, temperature 100, whites 9,000, tympanites; one incision, irrigation, Mixter tube in perforation of colon, drainage, fluid feces throughout peritoneal cavity. Died in ten hours. Autopsy, general fibrino-purulent peritonitis and cancer.

15. Dr. J. C. Warren, 1903; age forty-two, appendicitis, peritonitis, two days' duration, pulse 120, respiration 30, temperature 102, whites 25,000, tympanites; one incision, irrigation, Mixter tube in cecum, appendectomy, drainage; pus throughout; no cultures; fistula used for drainage, lavage and catharsis, no further distention. Died in twelve days. Autopsy, large local abscess in central portion of peritoneal cavity.

16. Dr. R. B. Greenough, 1903; age twenty-seven, appendicitis, peritonitis, six and a half hours' duration, pulse 95, respiration 20, temperature 99.3, no white count, no tympanites; 2 incisions, irrigation, appendectomy, drainage, Mixter tube in ileum, turbid serum in right and left flank, pelvis and between coils; culture colon bacillus. Recovery. Much discharge from fistula, lavage of bowel, no distention, fistula closed spontaneously in ten weeks.

17. Dr. J. G. Mumford, 1903; age fifty-nine, appendicitis, peritonitis, thirty-six hours' duration, pulse 136, respiration 45, temperature 103, whites 21,000, tympanites; one incision, irrigation, Mixter tube in cecum, drainage; pus throughout; colon bacillus. Died in eight hours. No autopsy.

18. Dr. G. W. W. Brewster, 1903; age sixty-four, diffuse peritonitis after operation for resection of colon for cancer with lateral McGraw anastomosis, duration forty-eight hours, pulse 120, respiration 24, temperature 101, no white count, tympanites; operation for peritonitis by 2 incisions, irrigation, 2 Mixter tubes in ileum and in cecum, drainage; pus throughout; no cultures. Died in ten hours. Autopsy showed diffuse purulent peritonitis due to leakage from end of bowel closed by purse-string.

19. Dr. F. B. Harrington, 1903; age forty-three, appendicitis, peritonitis, four days' duration, pulse 120, respiration 34, temperature 100, whites 10,000, tympanites; 2 incisions, irrigation, appendectomy, Mixter tube in cecum, drainage; pus throughout; no culture; fistula used for lavage, drainage and stimulation by hot salt solution every two hours; no vomiting, delirium and sepsis. Died two and one-half days. No autopsy.

20. Dr. J. G. Mumford, 1904; age thirty-three, typhoid fever perforation and peritonitis, twenty-four hours' duration, pulse 120, respiration 28, temperature 105, white count 4,300, tympanites (?); one incision; treated dry, Mixter tube in perforation in jejunum, drainage, cloudy fluid with flakes of fibrin throughout; no culture. Died in six hours. No autopsy.

21. Dr. J. G. Mumford, 1904; age fifty-five, appendicitis, peritonitis, four days' duration, pulse 120, respiration 28, temperature 104.4, whites 11,000, tympanites; median incision, treated dry, Mixter tube in cecum, appendectomy, drainage, pus throughout; no culture. Died in ten hours. No autopsy.

22. Dr. F. G. Balch, 1904; age sixty-seven, appendicitis, peritonitis, five days' duration, pulse 120, respiration 30, temperature 101.8, whites 19,000, tympanites; one incision, irrigation, Mixter tube in ileum, appendectomy, drainage, foul pus throughout; no culture; fistula used for drainage, lavage, stimulation and catharsis. Died in thirty-six hours. No autopsy.

23. Dr. R. B. Greenough, 1904; age twenty-one, appendicitis, peritonitis, seven hours' duration (appendicitis, five days' duration), pulse 140, respiration 24, temperature 101, whites 9,000, no tympanites; 5 incisions, irrigation, appendectomy, Mixter tube in cecum, drainage, thin pus throughout; colon bacillus and bacillus mucosus capsulatus. Patient survived the symptoms of diffuse peritonitis but died on thirteenth day from pelvic abscess. No autopsy.

24. Dr. D. F. Jones, 1904; age thirty-four, appendicitis, peritonitis; operation for local abscess four days after first symptoms, five days later diffuse peritonitis and second operation, pulse 124, respiration 30, temperature 99.8, whites 62,000, tympanites; one incision, irrigation, Mixter tube in ileum, drainage, pus throughout, no culture, fistula used for drainage, and for introduction of nourishment and cathartics. Died in forty-eight hours. No autopsy.

SECONDARY ENTEROSTOMY.

25. Dr. C. L. Scudder, 1901; age forty, pyo-salpingitis, diffuse peritonitis, two days' duration, pulse 120, respiration 32, temperature 100.8, whites 26,000, tympanites; one incision, irrigation, salpingectomy, drainage, pus throughout; no growth on culture, bacteria by cover glass; twenty-four hours later Mixter tube in ileum for distention, cathartics introduced by fistula, drainage. Died in thirty hours. No autopsy.

26. Dr. C. A. Porter, 1901; age fourteen, appendicitis, peritonitis, twenty-four hours' duration, pulse 124, respiration 36, temperature 100.8, whites 17,000, tympanites (?); 3 incisions, irrigation, drainage; pus

throughout; forty-eight hours later Mixter tube in colon, drainage. Died in twelve hours. Autopsy, acute general fibrino-purulent peritonitis.

27. Dr. F. G. Balch, 1901; age twenty-one, perforated duodenal ulcer, twenty-four hours' duration, pulse 120, respiration 30, temperature 102.4, whites 24,000, no tympanites; 2 incisions, irrigation, drainage, appendix removed, thin pus throughout; culture showed diplococci, varied bacteria by cover-glass; twenty hours later Mixter tube in ileum on right for distention, used for stimulation and drainage. Died in twelve hours. Autopsy, general purulent peritonitis, from perforated duodenal ulcer.

28. Dr. F. G. Balch, 1901; age twenty-four, appendicitis, peritonitis, two days' duration, pulse 112, respiration 21, temperature 103, whites 15,000, tympanites (?); one incision, dry sponging, drained, pus in right flank, turbid serum in left flank, pelvis and between coils; culture of serum, colon bacillus; forty-eight hours later Mixter tube in ileum on right for distention and vomiting. Died in six hours. No autopsy.

29. Dr. C. A. Porter, 1902; age forty-four, appendicitis, peritonitis, two and a half days' duration, pulse 120, respiration 30, temperature 102, whites 23,000, no tympanites; 2 incisions, irrigation, appendectomy, drainage; pus throughout; culture colon bacillus; forty-eight hours later Mixter tube in cecum. Died in ten hours. No autopsy.

30. Drs. F. Cobb and C. A. Porter, 1902; age fifty-two, peritonitis after ileo-colostomy, three days' duration, pulse 130, respiration 30, temperature 101.6, whites 14,200, tympanites; one incision, drainage; no irrigation, pus in right flank and between coils; no culture; seventy-two hours later Mixter tube in ileum, drainage. Died in twenty hours. Autopsy, general purulent peritonitis.

31. Dr. S. J. Mixter, 1901; age 17, appendicitis, peritonitis, duration four days, pulse 90, respiration 24, temperature 102.6, whites 24,600, slight tympanites; one incision, irrigation, drainage; pus throughout; colon bacillus and streptococcus; four days later Mixter tube in cecum for distention, used for drainage and catharsis. Died twelve hours later. No autopsy.

32. Dr. W. A. Brooks, Jr., 1901; age nineteen, appendicitis, peritonitis, three days' duration, pulse 112, respiration 34, temperature 101.4, whites 14,800, slight tympanites; 2 incisions, irrigation and drainage, pus throughout; no culture; twelve hours later Mixter tube in "bowel," drainage and catharsis. Died in ten hours. No autopsy.

33. Dr. E. A. Codman, 1901; age nineteen, appendicitis, peritonitis, two days' duration, pulse 120, respiration 20, temperature 100.2, whites 13,400, no tympanites; one incision, dry sponging, no irrigation, drainage; turbid serum throughout; colon bacilli; five days later Mixter tube in presenting coil. Died in four hours. No autopsy.

34. Dr. E. A. Codman, 1901; age thirty, appendicitis, peritonitis, two days' duration, pulse 88, respiration 24, temperature 99, whites 28,700, slight tympanites, one incision, appendectomy, irrigation, drainage, fluid throughout; no growth of bacteria by culture, no cover glass examination; four days later Mixter tube in presenting coil of bowel for distention, with relief, opening closed on fourteenth day by purse-string without leakage. Recovery. Ten months later intestinal obstruction by adhesions, operation and recovery.

35. Dr. R. B. Greenough, 1901; age forty-eight, perforation gastric ulcer, peritonitis, twelve hours' duration, pulse 96, respiration 28, temperature 97, whites 12,000, slight tympanites; one incision, perforation closed, irrigation, drainage, milky contents of stomach throughout; no culture; forty-eight hours later Mixter tube in cecum for distention. Died in three hours. No autopsy.

36. Drs. M. H. Richardson and J. G. Mumford, 1900; age twenty-three, traumatic rupture of liver and intestine, two days' duration, pulse 104, respiration 24, temperature 100, no blood count, slight tympanites; one incision, resection of part of liver, suture of intestine, irrigation, puncture of bowel and injection of magnesium sulphate, drainage, blood throughout peritoneal cavity; no cultures; forty-eight hours later Mixter tube in ileum for distention, fistula used for drainage and cathartics. Died in forty-eight hours more. No autopsy.

37. Dr. Farrar Cobb, 1900; age twenty-eight, stab wound of intestine and peritonitis, twenty-four hours' duration, pulse 140, respiration 31, temperature 104, no white count; one incision, closure of intestinal wound, irrigation, drainage, pus and feces throughout cavity; five days later Mixter tube in presenting coil for distention. Died in twenty-four hours. No autopsy.

38. Dr. Farrar Cobb, 1901; age eight, appendicitis, peritonitis, two days' duration, pulse 145, respiration 50, temperature 103, whites 32,000, no tympanites; one incision, appendectomy, irrigation, drainage; pus throughout; no growth on culture; twenty-four hours later Mixter tube in sigmoid for distention, fistula used for drainage, lavage and for introduction of nourishment and cathartics, distention relieved. Died six days later with flat abdomen, pelvic abscess and opening in bladder. No autopsy.

39. Dr. Farrar Cobb, 1902; age twenty-four, appendicitis, peritonitis, two days' duration, pulse 104, respiration 34, temperature 103.4, no white count, tympanites; 2 incisions, appendectomy, irrigation, drainage; cloudy fluid containing colon bacilli by cover glass and culture throughout cavity; forty-eight hours later Mixter tube in presenting coil for distention. Died in two hours. No autopsy.

40. Dr. C. L. Scudder, 1901; age fifty-six, peritonitis from perforation above cancer of colon, six days' duration, pulse 128, respiration 28, temperature 100.8, tympanites, no blood count; 2 incisions, irrigation, suture of colon for later enterostomy, drainage; pus throughout; colon bacillus; colon opened by incision on third day, no improvement. Died two days later. Autopsy, general fibrino-purulent peritonitis.

41. Dr. M. H. Richardson, 1904; age six, appendicitis, peritonitis, three days' duration, pulse 150, respiration 60, temperature 102, whites 40,000, no tympanites; one incision, irrigation, drainage; pus throughout; no cultures; three days later, ileum opened in wound for distention with immediate relief. Fistula used for drainage, but nourishment introduced was not retained; another fistula high in jejunum developed spontaneously on fifth day (?), digestion of wound occurred and patient died on ninth day of starvation and sepsis. Distention recurred just before death. No autopsy.

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## A COMPARATIVE STUDY OF THE DEATH RATES FOR THE STATE OF MASSACHUSETTS FOR THE YEARS 1850, 1875 AND 1900.

BY WILLIAM F. WHITNEY, M.D., BOSTON.

As is well known, the annual death rate is calculated from two factors, the number of persons alive at the middle of the year and the total deaths occurring during the entire year, and is expressed in terms of so many of the latter to one thousand of the former. The population is only obtainable when a census is taken, which, for Massachusetts, is once in five years. On the other hand, the deaths can be had each year from the Registration Report of Vital Statistics of the State; but from the variation due to epidemics or other causes, the results based on the returns of a single year may be misleading. This can be obviated by taking the average for five years, and the rates which are given below have been figured on that basis, with the census year as the central point of a quinquennial group.

The recently published report for 1902 enables the estimate to be made for 1900 for comparison with the preceding decennia, which are available already.

First of all let us consider the general death rate for each of the ten years from 1850 to 1900, which for one thousand persons living at all ages is as follows:[1]

| Year. | Rate. | Year. | Rate. | Year. | Rate. |
|---|---|---|---|---|---|
| 1850 — | 16.69 | | | 1880 — | 19.27 |
| 1860 — | 18.73 | 1875 — | 20.01 | 1890 — | 19.77 |
| 1870 — | 19.45 | | | 1900 — | 17.20 |

In looking at these it is evident that the highest lies midway, while the extremes differ but little from each other. These three are the ones then that should be carefully studied; but their single figure, while it is suggestive, does not tell the whole story by any means, and it will be only after an analysis of their component parts that we can hope to learn it.

To begin with, the rates for the sexes should be found separately, and they are as follows:

Males (All Ages).

| Year. | Rate. | Year. | Rate. | Year. | Rate. |
|---|---|---|---|---|---|
| 1850 — | 18.60 | 1875 — | 20.61 | 1900 — | 18.06 |

Females (All Ages).

| | | | | | |
|---|---|---|---|---|---|
| 1850 — | 16.50 | 1875 — | 19.30 | 1900 — | 16.42 |

[1] In order that the reader may have a general idea of the size and increase of the population in this community, it may be briefly stated that in 1850 the population was 994,514, and the deaths 16,606, while in 1900 it was 2,805,346 and 48,278, respectively.

If the sexes alone are compared, it will be seen that the rate for females is always lower than that for the males; but in 1875 they were the nearest together. If now each sex is looked at for the fifty years, both will be found to have a lower rate at the end of the century than in 1850, although when the aggregate was taken, as is seen above, the reverse appeared to be true. The explanation is that the proportion of women was greater then than now, and their lower rate made itself felt.

The next step should be to take into account age as well as sex, and for preliminary consideration life may be divided into two periods. The one comprising all ages up to thirty, the other, all over it. These are the figures:

Males.

| | Year. | Rate. | Year. | Rate. | Year. | Rate. |
|---|---|---|---|---|---|---|
| Under 30, | 1850 — | 15.85 | 1875 — | 20.19 | 1900 — | 14.86 |
| Over 30, | 1850 — | 17.90 | 1875 — | 21.57 | 1900 — | 22.15 |

Females.

| | Year. | Rate. | Year. | Rate. | Year. | Rate. |
|---|---|---|---|---|---|---|
| Under 30, | 1850 — | 15.67 | 1875 — | 18.08 | 1900 — | 12.45 |
| Over 30, | 1850 — | 17.99 | 1875 — | 21.07 | 1900 — | 21.47 |

Looking at the first half of life, there is a marked rise from 1850 to 1875, with a greater drop in 1900, and a resulting increased difference between the males and females, in favor of the latter.

Turning now to the period over thirty, the picture is not so pleasant to contemplate, for it shows a steady rise for both sexes from the beginning to the present time, with a little more increase for the females than the males. The only encouraging fact is that during the last twenty-five years it has been *apparently* less than before.

But still further subdivision is necessary, and each of the milestones must be examined to arrive at a true conclusion as to exactly where the gain or loss lies. These are given in the following tables:

Males.

| Age. | 1850. | 1875. | 1900. |
|---|---|---|---|
| 0 – 1 | 138.53 | 172.24 | 159.55 |
| 1 – 5 | 38.10 | 35.65 | 19.78 |
| 5 – 10 | 8.65 | 9.24 | 4.48 |
| 10 – 15 | 3.90 | 4.12 | 2.77 |
| 15 – 20 | 5.70 | 6.52 | 4.63 |
| 20 – 30 | 8.68 | 9.91 | 7.22 |
| 30 – 40 | 10.09 | 10.43 | 8.92 |
| 40 – 50 | 12.74 | 12.74 | 12.48 |
| 50 – 60 | 19.00 | 18.87 | 21.71 |
| 60 – 70 | 32.36 | 35.91 | 43.19 |
| 70 – 80 | 68.86 | 77.06 | 89.02 |
| 80 – 100 | 171.82 | 180.08 | 196.21 |

Females.

| Age. | 1850. | 1875. | 1900. |
|---|---|---|---|
| 0 – 1 | 133.91 | 165.19 | 146.84 |
| 1 – 5 | 35.20 | 32.82 | 18.31 |
| 5 – 10 | 7.97 | 9.64 | 4.29 |
| 10 – 15 | 4.52 | 4.95 | 2.77 |
| 15 – 20 | 8.00 | 7.87 | 4.37 |
| 20 – 30 | 11.53 | 10.55 | 6.39 |
| 30 – 40 | 12.50 | 10.96 | 8.12 |
| 40 – 50 | 11.97 | 11.50 | 10.94 |
| 50 – 60 | 16.06 | 18.03 | 19.00 |
| 60 – 70 | 28.54 | 31.99 | 36.33 |
| 70 – 80 | 61.94 | 65.84 | 78.82 |
| 80 – 100 | 159.40 | 165.29 | 180.54 |

In these, also, 1900 shows a marked decrease, for every period from one year to fifty for both sexes; but from that time till the end of life there is a distinct increase.

If 1850 and 1875 are taken alone into account, there is an increase at every period except from one to five years for both sexes, and from twenty to fifty for females. He would have been a wise man, however, who could have foretold at that time what that little rift in the cloud meant, and with the marked rise everywhere else, the outlook for the future must have seemed very gloomy.

But in spite of the splendid gain that has been made in 1900, there remains much to be done, and the very first line in each of the above tables arrests the attention at once. And the question immediately suggests itself, Why is it that with all the progress that has been made in the other periods of childhood and early life, the death rate for infants under a year is still greater than in 1850? Possibly it may be answered that, although the modification of milk has modified the terrible rate of 1875, it has not been able to equal wholly the maternal combination, which very likely was poured out more freely in 1850 than now, and this, with better air from less crowding, kept down the death rate. But that may not be all, and it is probable that other points of attack might be found if the story of the first year could be written for each month in the Registration Report, especially if it was still further combined with that for the seasons of the year. When it is recalled that the deaths under one year are about ten thousand annually, more than a fifth of the total of all ages, too much attention cannot be given to this period, for it is here, let us hope, that race preservation may neutralize the effects of "race suicide."[2]

But it is not from statistics alone that it can be accomplished; they may be able to show the point at which the greatest care should be exercised, but it depends upon the practitioner to develop and carry this out. If in some way this necessity can only be brought home to him, it must surely lead to redoubled exertions on his part, both for more careful diagnosis and treatment.

And all the more so when he appreciates that it is only in early life that we are encouraged to look for any substantial gain. For after fifty we find there has been a steady increase in the death rate for each decade of life since 1850, and it has been a little greater during the last twenty-five than the first. This again reverses the figures obtained when only the aggregate of all under and over thirty were taken. As to the two sexes, the actual amount is about the same, but as the females started lower, the proportion is a little greater for them.

In conclusion, what does a comprehensive view of the picture show of the expectancy of life then and now? The children that were born in 1850 stood a better chance of reaching the end of their first year, while from that time on the infectious diseases claimed many victims; but those who reached fifty could look forward more confidently to an old age.

In 1875 the new era of medicine had only just begun, and with the passing away of the quieter and simpler modes of living, with the crowding out of fresh air and sunshine, the natural checks upon infection were broken down, and the result was what would be expected. But, fortunately, to-day preventive medicine and hygiene have been able to minimize infection, and thus to more than offset the evil effects of our concentrated, high-pressure civilization up to fifty; after that period, however, modern science appears to be powerless against the diseases of old age, to which the survivors of this strenuous existence seem more readily to succumb.

[2] The following figures show the decrease in the birth-rate for 1,000 females between the ages of 15 and 50: 1850, 97.6; 1875, 91.5; 1900, 88.8.

## Clinical Department.

### BOSTON CITY HOSPITAL CLINICAL CLUB.

MARCH MEETING.

DR. G. G. SEARS in the chair. DR. L. R. G. CRANDON, secretary.

There were sixty-five members present, and cases and reports were presented as follows:

#### SEPTICEMIA FROM THE BACILLUS MUCOSUS CAPSULATUS.

BY ABNER POST, M.D., BOSTON.

THE patient, Charles Pothoff, a native of Holland, thirty-seven years old, and married, entered the hospital with a condition which it was supposed might be due an embolus of the femoral artery of the right thigh. For two weeks he had had pain all over his body, especially in the larger joints. Twenty-four hours before entrance, the pain seemed to localize about the right knee, but the patient's account of his symptoms was not very definite.

On entrance, the right leg was greatly swollen from Poupart's ligament to the toes. It was mottled with purpuric spots and the thigh measured five inches more in circumference than the left. Pulsation of the arteries of leg and thigh could not be made out.

Examination showed that there was little change in surface temperature. The foot was not cold, nor was there any interference with the circulation, as the color returned immediately when pressure was made on the nails. The inability to feel the pulsation was due to the great swelling.

It was not an ordinary cellulitis, though it might easily have been mistaken for one. There was no wound to serve as a point of infection. There was no fluctuation, nor especial tenderness. There was no distention that called for an incision. The blood count showed 24,500 whites. One thought of an infection of the gas-producing bacillus, but there was no subcutaneous crackling, and the general condition was entirely different. There was no restlessness nor delirium. The swelling decreased in a few days, and on February 6 it was noted that the right leg was much less swollen, but redness, with a well-defined border like that of erysipelas, extended for a few inches above Poupart's ligament. This subsided in a day or two.

On Feb. 7 there was pain and swelling in left leg, but to a much less degree than the previous swelling

in the right leg, and it subsided more rapidly. The white count on Feb. 13 was 12,000. Meanwhile, Feb. 17, a small incision was made in the right leg and a specimen taken, which showed the presence of the *Bacillus capsulatus mucosus*. The little cut healed by first intention. The patient was never very sick. He lost weight and strength, but not to a marked degree. Up to the time the patient left the hospital various areas continued to be swollen. These areas were fairly well defined. They appeared and disappeared irregularly; at one time there was a well-marked but not very acute lymphangitis of the right leg.

March 6, there was considerable swelling and tenderness of the dorsum of the left foot. A specimen of urine taken by catheter on March 17 showed absolutely nothing.

On the evening of entrance this man's temperature was 101, and pulse 110. Temperature reached 102 Feb. 8 and 9, and became normal on Feb. 25. His pulse was about 90 most of his stay, but fell to about 70 the day before his discharge.

This case in appearance and course was peculiar, and the bacteriological examination alone could solve the mystery. The recurrent swellings, evidently due to some constitutional condition, did not conform to any recognized form of disease. The case seems worthy of note, as it shows a condition hitherto undescribed — at least no case of general septicemia with such recurrent swelling due to the *Bacillus capsulatus mucosus* in the general circulation has found its way into medical literature.

The patient was discharged with normal pulse and temperature, but pale and weak, and with some swelling of the left foot. He promised to return if there were further symptoms. The bacteriological investigations were made by Dr. C. W. Duval, who submits the following bacteriological analysis:

### BACTERIOLOGICAL ANALYSIS.

Technique: Blood specimen aseptically obtained from subcutaneous tissue over tibia of involved leg. Incision made penetrating vascular layer of dermis, and approximately 3 cm. of blood and serum removed by sterile pipette and placed in bacillon suspension. From this suspension a series of six agar-gelatin plates were inoculated, and incubated at 37° C. for twenty-four hours. All plates showed numerous semi-transparent, soft, glistening, mucoid colonies, ranging from 1 to 2 mm. in size.

Some days later a second specimen was obtained from the involved limb, about the middle of the thigh. Whole anterior surface cleaned as for a surgical operation. The skin was scarified with a sharp sterile knife until bloody serum exuded. Ten to fifteen loops of this bloody serum was collected in sterile bacillon, and from the suspension agar-gelatin culture plates were seeded as before. After twenty-four hours in the incubator at 37° C., colonies identical in every way with those on the first series of plates appeared. No plate contained less than a dozen colonies. Both the first and second series of plates gave a pure culture.

Third specimen of blood obtained two weeks later. The median basilic vein of left arm was entered with a large hyperdermic syringe and 15 cm. of blood withdrawn. A series of 8 plates inoculated, using 1 to 2 cm. of the blood per plate. The plating was done immediately after blood was drawn from vein. Agar-gelatin tubes had been liquified and cooled to temperature of 41° C. Into each tube of the melted medium a given quantity of blood was introduced before the blood coagulated. The tubes were well shaken to equally distribute the injected blood, and poured into plates, using every precaution against contamination, both in the technique of drawing off the blood and in plating. The plates, after twenty-four hours in incubator, showed the same mucoid colony growth as described in the case of first and second plate specimens. Two plates of the series contained 50 to 100 superficial colonies. Colonies were sub-cultured from the plates of all three series, and the morphology and cultural characteristics observed to be that of *B. Mucosus capsulatus*.

*Morphology.* — Non-motile, short rods with rounded ends, many almost coccal in shape, varying from 1 to 2 microns in length, and from 0.5 to 1.0 microns in width, occur singly and in pairs. Do not take the Gram's stain. Mucilaginous capsules easily demonstrated by either the Welch or Hiss method, regardless of medium on which bacillus was grown.

*Cultural features.*—The bacillus grows readily on all the ordinary culture media, and always mucoid or sticky in character when on solid medium. On litmus milk, fermentation with acid production occurs, but never coagulation. Semi-solid medium (containing 1% dextrose) shows slight gas production in twenty-four hours. Mannite serum water shows acid production by pink change in medium, no coagulation. Dextrin serum water shows no change. Dextrose serum water gives acid production and coagulation of medium after forty-eight hours.

In stab cultures there is some tendency to nail-head appearing at exit of needle. This is not true in stab inoculation of a more soft medium, as, for example, semi-solid medium of Hiss.

*Conclusion.* — In all three platings of blood specimens from the case, a pure growth of a bacillus was obtained, corresponding in morphology and cultural features to that of *B. mucosus capsulatus*.

Bacteriological analysis of the urine gave negative results.

## AMPUTATION AT HIP JOINT.

BY W. P. BOLLES, M.D., BOSTON.

The patient is a girl eighteen or nineteen years old, who has had a tuberculous hip for eleven years. During the first two years she had a number of operations at the Children's Hospital, one of which was probably an excision. She has had numerous discharging sinuses ever since, seven in all. Several are open at the present time. She is small, immature looking, and has the ways and development of a child of twelve or thirteen years only. The heart, lungs and abdominal organs appear to be normal, but she is debilitated by the pain and suppuration from the right thigh.

The leg is four and a half inches shorter than its fellow, the foot markedly everted, the pelvis tilted. The thigh is striped with scars and sinuses, swollen, red, tender. It is useless for standing and walking, and amputation, which was advised several years ago, was at last accepted.

On Feb. 1 she was etherized and the limb removed at the hip by Dr. Bolles, Dr. Kelly assisting. Under ether. First, a femoral gland was removed and the femoral artery and vein tied, then an oblique incision was made, starting at the trochanter and running downward, forward, around the thigh, and up and forward to the starting point. The bone was then dissected out, from above downwards, and the soft tissues cut across. There was no head, but the end of the bone lay near the pelvis and was held to it by ligamentous tissues. Several extensive sinuses were cut out of the stump, leaving it quite irregular. Edges were then brought together and stitched, with two gauze drains.

She showed considerable shock after the operation, and received a "shock enema" besides intracellular salt solution of one and a half quarts. Recovered from shock and ether well by next day, but vomited for several days, and was fed by rectum. Recovery was uneventful. After this she was up in less than three weeks, and discharged in about four or five weeks on crutches, with the sinuses, where the gauze was, not quite healed. She had gained remarkably in physique and strength.

## GASTRIC ULCER.

BY E. M. BUCKINGHAM, M.D., BOSTON.

This case of gastric ulcer is shown because of the length of time that it has been possible to continue rectal feeding without injury. There can be no question as to diagnosis. The young woman was admitted to a Swedish hospital four years ago for gastric ulcer, accompanied by the vomiting of blood. Since discharge she has been well until recently, except for some headache, which, of course, may have been digestive. About a month before admission she began having pain, occurring after meals, beginning in the epigastrium and extending into the back. At the same time a cupful of blood was vomited, and smaller quantities have been vomited two or three times since. On admission there was rigidity on pressure over the epigastrium, together with tenderness.

Treatment has consisted in absolute rest in bed and feeding by rectal enemata. These consisted of one egg, eight ounces of peptonized milk and ten minims deodorized tincture of opium. They were repeated every six hours and there was one cleansing enema daily. After a few days the peptonized milk in each enema was reduced to six ounces because of intolerance. There has been no pain from the first, while rigidity and tenderness both disappeared after some fourteen days. Nothing has entered the patient's mouth for three weeks except small pieces of ice, and I want to call attention to her very good condition. There seems no reason why this treatment should not be continued a little longer if desirable.

## ANEURISM OF THE AORTIC ARCH.

BY CHARLES F. WITHINGTON, M.D., BOSTON.

The patient is a man of sixty-five years, whose arteries are older than the rest of his body. The right radial, for example, shows evidence of marked atheromatous change. As he is thin, the right brachial can be distinctly seen throughout a large part of its course; it is tortuous and rigid. The left radial pulse on the other hand is difficult to feel; further investigation fails to detect an ulnar pulse on this side, and the brachial can neither be seen nor felt.

An examination as to the cause of this obliteration of the circulation in the left arm is, so far as physical signs are concerned, unsatisfactory. The heart is slightly enlarged, both to right and left, and there is a systolic apical murmur. Percussion shows a slight increase of dulness upward and to the left, the center of this dull area being about the junction of the second left rib with the sternum. This suggests, of course, either a tumor of the mediastinum or an aneurism of the arch. There is, however, no murmur nor pulsation to be detected over it. Neither is there tracheal tug, paralysis of vocal cord, or inequality of pupils. The diagnosis of aneurism would, therefore, remain inconclusive but for the radiograph, which I now pass about, and which shows a circular shadow about one and one-half inches in diameter protruding to the left of the dark area, corresponding to the aorta, and corresponding to the dull percussion area. This makes it evident that the patient has a small circular aneurism near the junction of the transverse and descending portions of the aortic arch, which, doubtless, obstructs to some extent the origin of the left subclavian artery.

The patient has a greatly enlarged prostate, and passes no urine except by catheter. The question of how far a patient with aneurism may safely be subjected to surgical operation is answered in this case by one of my surgical colleagues whom I have consulted, and who thinks the obstruction can be remedied to a considerable extent, and safely, by operation with the electric knife.

## BULLET WOUNDS OF THE HEAD, CHEST AND ABDOMEN.

BY H. W. CUSHING, M.D., BOSTON.

On Jan. 30, 1904, a man aged fifty-three, the victim of these injuries, was shot with a "32" caliber revolver. He was taken to the Boston City Hospital Relief Station. Examination showed two circular wounds in the right parietal region, about one inch apart. The hair was singed about the lower one, marking it as the wound of entrance. The track of the ball was upward and backward. The skull was apparently uninjured.

There was also a circular wound in the front of the chest, three inches to right of the median line at level of the fourth rib, and a similar wound over the left costal arch one and one-half inches from the xyphoid cartilage.

The patient showed considerable shock. Pulse 110, fair quality. There was little external hemorrhage. The abdomen was not distended, but was generally tympanitic, the hepatic dulness being absent. The tympanitic resonance extended into the flanks. There was marked spasm of the abdominal muscles. No cough, hemoptysis, or hamatemesis was observed.

The patient was seen by Dr. F. S. Watson, who advised immediate operation. Under ether the abdomen was opened by a median incision extending from the ensiform cartilage downward about six inches. There was no noticeable escape of gas. Little blood and no evidence of extravasation of gastric or intestinal contents was seen. A small circular wound was found in the anterior wall of the stomach, from which a small amount of gastric contents escaped as the stomach was raised into the abdominal wound. The stomach was not collapsed. This wound was closed by two "purse-string" sutures. No other wound of the stomach was found, and examination of the transverse colon and small intestine was also negative.

No perforation of the posterior wall of the stomach was found. On the under surface of the liver, two inches from its anterior border, just to the right of the median line, a rent one inch long was found, from which there had been considerable hemorrhage. This was one-half inch deep. It was closed by a single silk suture which controlled the bleeding. The abdomen was washed out with sterile salt solution, and drained in either flank and through the median incision. Salt solution by intravenous infusion was also used early in the operation.

The wound in the chest was not found to penetrate the thorax, and healed without incident. The subsequent history of the case has been uneventful. Rectal feeding was used for the first day after operation, after which nutrition by oval feeding was gradually resumed. The drainage from the median wound was removed on the second day; that in the flanks, on the sixth after the operation.

(Transferred from Relief Station to main hospital, service of Dr. H. W. Cushing, on Feb. 18, 1904.)

On March 1 a bullet, located by radiograph and by manipulation, was removed from the left back. It was situated just under the superficial fascia over the tenth intercostal space and three inches to the left of the median line. It was well encapsulated. This bullet probably passed through the stomach to the point where it was found. No other bullet has been found by careful x-ray examination, and it is difficult to understand how the one which caused the thoracic wound could have reached the point where this one was found without more evidence of its course.

The patient has fully recovered from his injuries as far as is now known.

## NEPHROCAPSULECTOMY.

BY J. B. BLAKE, M.D., BOSTON.

J. D., thirty-three years old, teamster, was operated upon Sept. 15, 1902, for chronic nephritis, on the first surgical service, Boston City Hospital. He had previously been treated by Dr. Henry Jackson on the medical side of the hospital for two months; he improved for a while and then began to get worse; the prognosis seemed unfavorable. He came to the surgical side and was admitted early in September, 1902, and operated on by Drs. Munro and Blake. His condition at that time was as follows: Color, pale; thin; moderate edema of extremities; heart and lungs negative; urine, pale, 1013, acid, albumen ¼%; no bile or sugar.

Sediment: Numerous hyaline and fine granular casts, of small diameter, and with renal cells adherent. Considerable blood, free and on casts; a little fat on casts; numerous renal cells, with an occasional fatty cell.

He reported once or twice since the operation. He has felt well and done hard work since leaving the hospital, except for occasional vacations, which are sometimes simply alcoholic sprees. On one of these he noticed that his urine was becoming brownish and his feet were beginning to swell. He then stopped drinking, and these symptoms disappeared.

He has worked out of doors in the Adirondacks this winter. He is still drinking steadily, though not to great excess. He looks and feels well. His urine is pale, 1,012, acid, ⅛% albumen. Sediment contains a few hyaline and fine granular casts; a few large, round cells, an occasional epithelial cell.

The scars of the operation show as faint white lines. There is no tendency to hernia, no tenderness and no loss of sensation, motion, or strength in or about them.

The operation was a simultaneous double decapsulation, an operator and his assistant standing together on either side. Two layers of capsule were demonstrated, and both removed down to the pelvis of each kidney. The wounds were closed without drainage. A small bit was taken from each kidney for pathological examination. The report was "chronic glomerulo-nephritis, so-called parenchymatous" (Mallory).

The case may be regarded as greatly improved, though not cured.

## TREMOR OF RIGHT ARM. LOSS OF MUSCULAR SENSE AND ATAXIA.

BY P. C. KNAPP, M.D., BOSTON.

Case I. This child, eleven months old, was perfectly well until six weeks ago, when he had a moderately severe attack of measles, from which he recovered two weeks ago. Day before yesterday he woke with this tremor of the right arm, — a clonic, jerky tremor, affecting the flexors of the forearm, the hand and the fingers. The tremor persists during sleep. The arm is a little warmer than the other, and manipulation is apparently disagreeable, for he cries a little if it is handled much. He can move the arm fairly well, but he is more disposed to use the left hand to grasp objects, and an attempt to use the right arm exaggerates the tremor. Except for this tremor he appears perfectly well, and examination has shown no other abnormality. The tremor has diminished in the last twenty-four hours under salicylate of sodium. It does not seem probable that a post-infectious encephalitis could occur in so young a child without more serious cerebral and general symptoms. The local heat and tenderness suggest a local disturbance, but such a tremor from any local inflammation is certainly remarkable.

Case II. This patient is a widow, sixty-eight years of age, who was apparently well until about two weeks ago. Examination, however, shows an enlarged heart, albumen and casts in the urine and evident arteriosclerosis. Two weeks ago she had an attack in which she lost control of her limbs, and was unable to walk. This attack was attended with slight vertigo and paresthesia, but no loss of consciousness. After about an hour she gained control of her limbs. Since then she has had other attacks, and there has been a greater or less persistence of the symptoms between the attacks. The striking symptom at present is a very ataxic gait, and great uncertainty of station. She does not stagger like a drunken person or come down on her heels like a tabid person. In addition, there was yesterday great ataxia of the hands, which to-day is much better. Examination shows no involvement of the cranial nerves, no disturbances of tactile, painful, or thermic sensibility, or of the bony sensibility, a tolerably good sense of movement, but a very profound loss of the sense of position of the limbs. There is no paresis anywhere. The tendon reflexes are exaggerated, but not to an extreme degree, and the plantar reflexes are normal. Her condition varies from day to day, and to-night she shows much less ataxia of the arms and a better sense of the position of her limbs than she did yesterday. There has been, in all probability, some vascular disturbance, either thrombosis or hemorrhage, involving the tracts for the muscular sense, which Starr believes to lie in the lemniscus.

## CHOLECYSTECTOMY.

BY F. B. LUND, M.D., BOSTON.

A gall bladder was shown, recently removed at an operation, illustrating a type of cases in which cholecystectomy should be performed. The gall bladder contained a single large stone impacted in the beginning of the cystic duct. The walls of the gall bladder were much thickened, averaging nearly one fourth of an inch thick. The cavity of the gall bladder, when opened, had contained a small amount of pus and no bile. The pressure of the stone in the neck of the gall bladder had caused it to nearly ulcerate through. In case operation had been delayed, the stone would, in all probability have ulcerated into the peritoneal cavity within a short time. In case the gall bladder had not been removed, and the operator had contented himself with removing the stone, a sinus would have persisted for a very long period, and the chronically inflamed organ would probably have contracted adhesions which would have caused pain and would have necessitated a subsequent cholecystectomy. It is in this class of cases and in the gangrenous gall bladders that cholecystectomy is indi-

cated. Such a gall bladder as this, if left behind, can never resume its functions, owing to the great fibrous thickening of its walls, which prevents either expansion or contraction, so that the organ remains as a useless and even harmful appendage.

In this case, owing to the fact that the woman had had a febrile temperature for some time, and the liver was greatly enlarged, it was thought wiser to drain the ducts, so after an excision of the gall bladder, a tube was tied in the stump of the cystic duct. During the operation no bile flowed from the duct, owing to the fact that a long incision had been made and the liver had been drawn vertically upward with such force as to kink the ducts, so that no bile could come through.

After the patient was put to bed, there was a copious discharge of bile from the ducts. This bile contained a considerable amount of mucus, and had a more or less irritating effect on the abdominal wall. The amount and character of the discharge, it was thought, justified the procedure of draining the ducts in this case, rather than ligaturing the cystic duct after removal of the gall bladder.

The patient was a woman of fifty-three years of age, who had had her first attack of pain in the region of the gall bladder two weeks before the operation, and during these two weeks had suffered from continuous fever. For the year preceding this attack she had felt weak and ill. She had not been able to do any work. She had had no attacks of pain in the region of the gall bladder at any time until the attack in which I saw her.

The case is instructive, showing that disease of the gall bladder may exist for a very long time without signalizing itself by local pain, which pain may be, and apparently was in this case, a symptom of threatened perforation. These thickened gall bladders, with stones impacted in the cystic duct, are the very cases which not infrequently result in gangrene of the gall bladder, signalized by a sudden severe attack of pain and fever, with marked constitutional symptoms requiring immediate operation. In this case it is evident that perforation, due to local gangrene rather than to general gangrene of the entire gall bladder, would have resulted.

## LAMINECTOMY FOR FRACTURED SPINE.

BY F. B. LUND, M.D., BOSTON.

This case was shown by Dr. F. J. Cotton: The patient fell from a height Jan. 9, 1904, striking his back or seat, just how is not known. When he was brought to the hospital there was obvious injury of the dorso-lumbar region — a distinct knuckle with ecchymosis. There was complete paralysis of the quadriceps, tibialis anticus and extensors of the foot. The thigh flexors and calf muscles were also paralyzed, in part at least. There was no disturbance of the sphincters and no sensory disturbance. The knuckle was in the upper lumbar region.

Jan. 14, 1904, laminectomy was performed under ether by Dr. Lund. The usual incision showed a projection of loose arch and spinous process which proved to be the second lumbar. This was cut away with the Munro forceps, as was also the arch of the third. It was then evident that the cord had been pressed back, apparently by a crushing back of an intervertebral disc into the canal. The dura was opened; no damage to the cord found; the wound drained and closed.

There was no immediate improvement. The wound closed finally in one month, and about this time power began to return to the thigh flexors, calf muscles, and shortly to the anterior tibial. At the time the patient was shown there was action of practically all the muscles, still weak, with reflexes present and sensation unimpaired. The wound was solid. The patient is now walking and apparently entirely cured.

## ARREST OF DEVELOPMENT, PROBABLY RESULTING FROM CONGENITAL SYPHILIS.

BY R. C. LARRABEE, M.D., BOSTON.

A girl of twenty-one had been under observation in the out-patient department for eighteen months. The family history gave no evidence of syphilis. The patient is stated to have had measles when five years of age, and following this she had much trouble with the eyes until a year or so ago when she was treated by Dr. Bossidy for ulcers of the cornea. There has been obstruction of the left side of the nose for four years, with much discharge. There have recently been several severe nose bleeds from the same side. Further than this there have been no symptoms other than failure of development. She graduated from the grammer school at the age of sixteen and stood high in her class. She has always been able and bright mentally, and a favorite with her friends.

She looks about ten or twelve years old, is fifty-three inches high and weighs seventy-six pounds. The breasts have only within the past few months begun to develop and there is no axillary or pubic hair or other evidence of sexual development. There are several depressed scars on the forehead involving the bone, said to have resulted from wounds. The bridge of the nose is slightly depressed. There is a prominent scar on the soft palate. There are opacities of both corneæ. In the nose there is an ulcer of the septum and a dry catarrh. The radiograph shows that the epiphyses at the wrists are not yet united to the shafts of the radius and ulnar.

## MYXEDEMA.

BY R. C. LARRABEE, M.D., BOSTON.

A woman of thirty from the out-patient department, for seven years had had marked gastric symptoms — erudations of gas, heart-burn and distress after eating. Five years ago she had "nervous prostration," for which the ovaries were removed with the resulting cessation of the catemenia. For a year marked changes have been taking place in her appearance, so that her friends sometimes fail to recognize her. She has gained over thirty pounds and her complexion has become dark and yellowish. She is unusually susceptible to cold. There is some dyspnea on exertion. There has been marked mental depression and she has had slight hallucinations of hearing, especially at night, with sensations as if floating on the water or of suddenly becoming large.

She is a large woman with coarse features, the appearance strongly suggesting myxedema. There were at first marked reddened areas over the malars. The hair and skin were dry. She spoke slowly and without expression. The eyelids were thick and the conjunctivæ were slightly reddened. The lips and tongue were not involved. The supra-clavicular fossæ were full. The urine was negative. The temperature was normal.

Sixteen days ago she was ordered thyroid extract and a mixture containing bismuth, magnesia and soda. Since then there has been a noticeable change in the face. The red areas over the malars have disappeared. She speaks much more naturally. The gastric symptoms have wholly disappeared, as have also the nervous and mental manifestations and the susceptibility to cold. She has lost six and one-half pounds in a week. She says that she feels much better in every way.

# Medical Progress.

## THE PROGRESS OF SURGERY.

BY HERBERT L. BURRELL, M.D., AND HAYWARD W. CUSHING, M.D.

(Continued from No. 19, p. 513.)

### THE TREATMENT OF GANGRENOUS HERNIÆ BY ENTERECTOMY.

Mr. A. E. Barker has discussed the treatment of this serious lesion in a somewhat extensive article [10] in which the following points are of interest. He states that the question of what to do in a case of gangrenous hernia is one the seriousness of which is well known to all surgeons of experience, and the factors which make such a case grave are also now fairly well recognized. They have been worked out by the anatomist, the bacteriologist and the pathological chemist. A given case of gangrenous femoral hernia presents the following elements of danger: (1) The gut is destroyed by necrosis over a greater or less surface and therefore it cannot be returned into the abdomen; (2) the dead portion is septic in the highest degree; (3) the fluid of the sac, if there be any, is highly septic and may run back into the abdomen and infect it if the constriction has been divided before the sac has been well cleansed; and (4) the condition of things within the abdomen is also fraught with risk. Here the gut above the constriction is loaded with retained fecal matter, which is virulent in proportion to the time it has been pent up in a stagnant condition. The bowel is distended by this fluid, often to an enormous extent and it is paralyzed owing to causes unnecessary to trace for the present. But not only is it distended and paralyzed, but its structure is in many cases much altered. Its mucous membrane is inflamed, or even ulcerated from the point obstructed upwards, often for some feet. The submucosa and muscular coat are edematous and the serous covering is sodden and discolored from extravasation of blood; it may also be flecked with patches of lymph either on its free surface or in its subserous layers. In this condition it is now well known that the bowel, although its continuity is unbroken, can no longer offer much resistance to the passage through its walls of septic organisms, and sooner or later these transude and set up a septic peritonitis. This has been long known of the bowel caught in the sac. But it is now clear that the same infection will take place sooner or later within the abdomen from the unbroken bowel above the constriction if the evacuation of the retained fermenting feces be not provided for. Probably a certain amount of toxic exudation from the obstructed bowel is tolerated by the peritoneum as long as it is sound and is removed by its lymphatics, but the time comes when it is not removed and peritonitis is set up. But beside these dangers the patient has probably been exhausted by vomiting and inadequate feeding for days. The vomited matter has been foul and in many cases it has been inhaled in fluid or vapor form into the lungs with more or less damage to them. Moreover, the patient has been confined to the recumbent position and the bases of the lungs may have been imperfectly expanded, owing to the position and the painful condition in the abdomen and so have become edematous, rendering them particularly vulnerable to infection. Again, the toxins stored up in the bowel above the constriction are absorbed and exert a depressing effect upon the whole economy.

Now it is in these retained contents of the bowel above the constriction and in their local and general toxic effects that the main danger of strangulation with or without mortification lies. Their irritating properties have been known ever since the artificial anus has been made for their evacuation in gangrenous hernia. The rapid production of excoriation or even ulceration of the skin around such an opening bears witness to their acrid nature. Again, the facts so often noted in former times when herniæ were more frequently reduced by taxis alone than now point in the same direction. We have all seen many such cases attacked after reduction by severe diarrhea, with blood-stained stools and other evidence of acute enteritis, often terminating in death. The cause here has been explained to be the rapid rush of the pent-up toxic fluid into the empty and starved intestine below the constriction, setting up there an acute inflammation continuous with the inflamed and sodden tract above. Again, how often have we seen in the days of frequent taxis a patient die from peritonitis starting from the sodden but still unperforated loop returned into the abdomen, or from pneumonia combined with moderate enteritis or peritonitis. Now, if the gut is not viable, experience has shown that the immediate establishment of an intestinal fistula is much the safest procedure, as this permits the immediate escape of the retained toxic products from the proximal bowel. Occasions doubtless arise when an immediate anastomosis can be made, but under ordinary circumstances it is preferable to establish an artificial anus and allow all the contents of the bowel to be rapidly evacuated. Mr. Barker's experience in a fairly large number of cases has led him to the following conclusions: (1) The most imminent danger to the patient with a greatly damaged or actually gangrenous loop of intestine lies in the condition of the bowel for the three or four feet above the constriction. (2) In a case where the patient is in a reasonably good condition, the excision of the dangerous portion of paralyzed and sodden or ulcerated gut *en bloc*, together with all its virulent contents, is relatively the safest course. At one sweep the three or four feet of gut, with pints of toxic material, can be cleanly removed. The great point is to remove at once the contents as well as the diseased bowel and to make our suture junction in relatively sound and clean gut. The procedure Mr. Barker recommends to accomplish this is as follows: When the gangrenous or extensively damaged loop has been drawn well

[10] Lancet, June 6, 1903, p. 1576.

out of the abdominal cavity, as far as the points to be divided, the wound is packed with one end of a long roll of sterilized gauze, none of which can thereby be lost in the abdomen. The first point is to select the spot at which the distal and proximal ends of the damaged loop are to be divided, the first some two or three inches below the constriction and the other at any distance above it, up to six or seven feet, which may be considered to have reached sound bowel. Here the two portions are placed accurately side by side in their long axes and are clamped together firmly with one (first) pair of Doyen's forceps. Next the damaged loop is stretched to its full length, so that each half of the mesentery is evenly applied to the other half. The two halves of this structure are then firmly clamped together with a second Doyen's forceps, placed parallel to and about one inch from the bowel. Another Doyen's forceps is now made to close on the rest of the two leaves of the mesentery if it is too long to be included in one pair. The forceps can start from the point of the second pair, one blade being pushed through the two folds of the mesentery, and should close the latter up to the point at which the two limbs are held together in the first pair used to keep the two limbs of the gut together. This latter pair is now removed and is placed only on the distal portion at the same spot. Another is placed about half an inch more distally, and between the two, the gut, previously packed around with gauze, is divided. The whole of the bowel, still closed by forceps, is now cut away from the mesentery round to the point opposite the forceps on the distal limb. The piece of bowel thus freed at one end and in its whole length is left hanging out of the abdomen, over the edge of the table into a basin and then the forceps closing its end is removed, allowing the contents to escape into the basin and draining the bowel both outside and inside the abdomen. While the latter process is going on, the two halves of the mesentery are stitched together laterally by strong threads passed through them from side to side between the clamps and the cut edges, all being tied on one side and including about two thirds of an inch of mesentery in each ligature. This closes the hole in the mesentery and at the same time the vessels going to the edges cut away from the bowel. All this time the contents of the bowel are running off into the basin on the floor. The anastomosis now remains to be made. But before the junction is begun, the distended gut within the abdomen can be further unloaded by pressure on the abdominal walls and by drawing the coils, if necessary, through the fingers with a kind of "milking" action, until their contents flow off into the basin below.

The junction of the two ends is made as follows: The clamped distal portion and the unclamped proximal, now empty and more or less reduced in size, are laid side by side in such a position that while their attached mesenteric margins correspond at one point, the axes of the two portions cross one another obliquely. When now both are included in one pair of Doyen's forceps at the point at which their mesenteric borders cross, their free margins also correspond by the greater obliquity of the smaller bowel. In other words, when they come to be cut off flush with this forceps, more is cut away from the free margin of the smaller bowel than from the proximal tube which is divided a little obliquely. The two tubes thus held together side by side in one forceps are again clamped nearer the abdomen by another pair as close as possible to the first and then being carefully packed around with sterile gauze are cut with a knife or scissors flush with the distal edge of the first pair of forceps. The freed long coil of intestine and the stump of the distal end held in the forceps applied earlier in the operation now drop off and the gauze packing is changed. Then the forceps at the edges of the approximated tubes is removed, the second pair being left on with the cut edges previously clamped in the first, projecting about a third of an inch beyond it.

Now commencing at the mesenteric border, the adjacent edges of the two tubes are stitched together with a continuous suture, taking up all their coats until the free margins are reached. Here the corner is turned and the opposite edges are similarly stitched until the suture reaches the mesenteric margins again and can be tied with the tail thread at the starting point. Another forceps is then made to clamp both tubes three or four inches nearer the abdomen and the forceps holding them together for the first row of suturing is taken off. This enables the operator to place another line of continuous suture over the first and folding it in. This second row should, of course, take up only the serous, muscular and fascial layer under the latter, avoiding the mucosa. When this has been carried quite round the bowel and has been tied to the tail thread at the starting point on the mesentery, the anastomosis is complete and the forceps higher up is removed. The whole area of operation is now washed with sterile saline solution, especially the anastomosed portion of the gut. The latter is then replaced in good position in the abdomen and this is closed with sutures. Mr. Barker's record, since he began to employ this method of procedure in 1899, is seven enterectomies for gangrenous herniæ, of which five have recovered. The technique of the operation in the original is fully illustrated. This makes the description much more intelligible to the reader.

### RESECTION OF THE STOMACH.

J. Boeckel [11] in an article on the partial and complete removal of the stomach reports several interesting statistics regarding gasterectomy. He has compiled 46 cases, which show 28 recoveries and 18 deaths, a mortality of 39%. Nine died from collapse, 7 from peritonitis, 2 from a giving way of the points of suture.

In 21 cases of the recoveries the end result was known. Of these, 11 died from recurrence of the disease after periods varying from five months

[11] De l'ablation de l'estomac, Paris, G. Bailliere et Cie., 1903, p. 192.

to five years. Of the surviving patients, as the case of Weiss, two and one-half years and no carcinoma; Ricard, nearly three years; Rivera, 1 patient, four years; 1 patient almost four years, but with cancer; Brooks-Brigham, five years, now seventy-one years old; and Maydl, eleven years. Of 28 patients on whom the operation was performed, only 4 have lived longer than the fourth year afterwards.

S. P. Federow [12] explains the fact that the esophagus can be united to the duodenum after gastric ablation in the living subject when it cannot be done in the cadaver by supposing that the long-continued weight of the gastric tumor increases the mobility of both the above mentioned points, so that they can be approximated. He reports a case in which the section removed 1½ cm. of the esophagus and the pylorus, yet he was able to make the union by a double suture row. The patient died on the fifth day from gangrene, due to injuries to the blood supply of the esophagus.

### A SIMPLE METHOD OF PERFORMING INTESTINAL UNION.

Mr. Alexander MacLennan [13] presents a method of intestinal union by means of bone bobbin. For exact details of this method, the reader is referred to the author's original article. The union is accomplished by means of bone bobbins, the external surfaces of which are grooved, to permit the sinking in of a constricting ligature. The bobbin is inserted into the proximal end of the divided gut and is held in place by a ligature tied around outside and superimposed to the groove; over this ligature is placed a rubber ring. The proximal end of the intestine, so armed, is then inserted into the distal end so far that the distal portion covers the groove. It is then ligated into this groove over the proximal end in a manner similar to that in which the proximal end is fixed to the bobbin. This ligature must be tight. Union is completed by stitching the cut borders of the mesentery. Finally, all distal to the rubber ring comes away. It is claimed that the operation is an exceptionally easy one to perform and takes much less time to carry out than to describe. The bobbins are made of decalcified bone in a series of four sizes and are slightly conical. The length of each is slightly more than its diameter.

### INTESTINAL LOCALIZATION.

Dr. G. H. Monks [14] has studied on the cadaver the characteristics of the intestine at various distances from the duodenum and gives his results. He utilized for differentiation the root of the mesentery, which springs from the posterior wall of the abdomen along a straight line six inches in length, starting above on the left side of the spinal column where the duodenum ends and about on a level with the body of the second lumbar vertebra, continued obliquely downward and to the right, to end in a somewhat indefinite way at a point opposite the sacro-iliac synchondrosis. The circulation in this mesentery is one of the valuable points in the localization of the intestine. The arrangement of the main branches of the superior mesenteric artery is in primary and secondary loops; the former predominating and being more marked in the upper end and the circulation becoming more complicated as we descend. There seems to be no fixed rule as to the length of the intestine. Age and sex have little to do with it. Where the intestine is very long, he has sometimes found the mesentery of unusual length and the little straight vessels running from the mesenteric loops to the intestines much longer than the average. Where it is short he has also observed in a few cases that the mesentery and vasa recta were also short. The diameter of the gut is the greatest above and gradually diminishes in size as we go down the tube. In the lower third or so the size remains the same throughout. The thickness is greatest in the upper part on account of the large and numerous valvulæ conniventes and the greater development of the muscle layers. It gradually gets thinner until within two or three feet of the cecum, where it thickens again. This thickening is presumably due to an increase in the muscular elements. The upper part is normally bright pink or red, showing numerous vessels. As we go down the tube the color changes to a gray or pinkish or yellowish gray and the vascularity is less marked. The valvulæ conniventes diminish in number as we go down and about fourteen or fifteen feet from the end of the duodenum they seem to disappear and below this can seldom be seen or felt. The various parts of the intestine show foods in various stages of intestinal digestion. The consistency increases somewhat towards the lower end. It is hardly necessary to suggest that when one end of the loop, which is high up in the bowels, is gently pulled on and meets with resistance, the loop is probably close to the duodenum, and likewise when one low down in the bowel meets with resistance, the loop is probably a short distance from the ileocecal valve. The mesentery varies in thickness in the different parts. The thinnest part of the mesentery is that portion which is adjacent to the upper part of the intestine and it becomes thicker as we go down the tube, largely owing to the deposition of fat. Its translucency varies immensely. Tabs of fat near the mesenteric border of the intestine are another guide, increasing toward the lower region. The direction of the stretched mesentery may also be a guide. Knowing the direction of the line of resistance, we get an approximate idea as to the part of the mesenteric root which resists; we can generally tell whether it is to the left or right. The more it inclines to the left from below upward, the nearer is the loop to the duodenum and vice versa. These conclusions which he reaches are only approximate ones. He gives a fair average, showing that he was within three feet of the true localization in about 75% of his estimations and that the average was not out more than two feet.

*(To be continued.)*

[12] Russisch Arch. f. Chir., Bd. xix.
[13] Lancet, Oct. 24, 1903, p. 1156.
[14] Transactions American Surgical Association, 1903, vol. xxi, p. 405.

## Recent Literature.

*A Laboratory Guide in Urinalysis and Toxicology.* By R. A. Witthaus, A.M., M.D., of Cornell University. Fifth edition. New York: William Wood & Co. 1903.

A fifth edition of Dr. Witthaus' Laboratory Guide in Urinalysis and Toxicology has been published. It is arranged primarily for the use of students, and contains a large number of tests for the determination of the presence of abnormal constituents and the methods of estimating the presence of poisons and the reactions of the various metals. Blank pages are left throughout the book for annotations, and a brief discussion of chemical terms and methods is introduced for the benefit of the elementary student. The book is made of such a shape and size that it will easily fit into a pocket.

*The Medical Epitome Series. Physics and Organic Chemistry.* A Manual for Students and Practitioners. Organic and Physiologic Chemistry. A Manual for Students and Practitioners. By Alexius McGlannan, M.D., of Baltimore, Md. Series edited by V. C. Pedersen, A.M., M.D., of New York. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1903.

These two small books are of the type with which we have long been familiar. An attempt has been made to reduce to the very smallest possible space the science in the one case of physics and inorganic chemistry, and in the other of organic and physiologic chemistry. Facts are stated without wide discussion, and the volumes are intended particularly for the use of students. To this end questions are appended at the end of the various chapters which are designed to cover the preceding text. As brief books of reference such epitomes have value.

*Laboratory Manual of Physiological and Pathological Chemistry.* For Students in Medicine. By Dr. E. Salkowski, Professor in the University and Director of the Chemical Laboratory of the Pathological Institute, Berlin. Authorized translation from the second revised and enlarged German edition by W. R. Orndorff, A.B., Ph.D., of Cornell University. Illustrated. New York: John Wiley & Sons. London: Chapman & Hall. Limited. 1904.

This volume of 263 pages aims to place before the student a practical knowledge of physiological and pathological chemistry, being a translation into English from the second revised German edition. The text concerns itself with a succinct discussion of methods of examination of the various organs and secretions of the body, and should certainly serve its purpose of interesting a greater number in the increasingly important topics of which it treats. Dr. Salkowski's name and position insures the value of the text, and the translation has been well and carefully done by W. R. Orndorff, Ph.D., of Cornell.

*The Medical Epitome Series. Microscopy and Bacteriology.* By P. E. Archinard, A.M., M.D., Demonstrator of Microscopy and Bacteriology, Tulane University of Louisiana, Medical Department. Series edited by V. C. Pedersen, A.M., M.D. Philadelphia and New York: Lea Brothers & Co. 1903.

The author states in his preface that this book is an epitome of matter contained in standard textbooks, and that not only the student but the practitioner may also use such a volume to post himself on the main facts of bacteriology and microscopy. The title is rather misleading as the entire volume except a short chapter on the malarial parasite and ameba coli is devoted to bacteriology.

The microscope and its use are illustrated and described briefly, too briefly perhaps to be clear to medical students untrained in physics. The fundamental principles of bacteriology are discussed in fourteen pages which contain no reference to the recent work of Chester, Hill and others on the morphology of various bacteria. Methods for the preparation of culture media are given. The common methods of staining are well described and the illustrations give one a good idea of the apparatus used. Illustrated chapters on technique are followed by descriptions of pathogenic bacteria.

Brief methods for the examination of water, air and soil as practiced in Europe are given. The better methods devised and used by American bacteriologists are not given.

To each chapter is appended a list of questions which serve to emphasize the salient points of the subjects treated.

*Nervous and Mental Diseases.* By Archibald Church, M.D., and Frederick Peterson, M.D. 8vo. pp. 922. With 338 illustrations. Fourth Edition, thoroughly revised. Philadelphia: W. B. Saunders & Co. 1903.

The portion of this work devoted to nervous diseases has been revised and various additions have been made, without materially changing the character of the work. The chief feature of this new edition is the addition to the section on nervous diseases of an elaborate article by Dr. Adolf Meyer, a review of recent problems of psychiatry. This is an excellent critical digest, nearly forty pages in length, of the recent teachings of Kraepelin, Wernicke and Ziehen. Excellent as this digest is it is decidedly out of place in the present work, intercolated as it is between the very commonplace and decidedly antiquated chapters of the section on mental diseases, which ignore every feature of the modern doctrines contained in the digest. It is certainly a question whether this elaborate discussion of these modern doctrines, which are still awaiting acceptance, is not too abstruse for the average student or practitioner for whom this work is intended, but, setting this question aside, Dr. Meyer's chapter in its present surroundings is one of the most striking examples of putting new cloth into an old garment that we have met in a long time.

THE BOSTON

# Medical and Surgical Journal.

THURSDAY, MAY 19, 1904.

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## THE ABSENCE OF EOSINOPHILE CELLS IN PUS.

In a very interesting thesis published at Geneva in 1902, entitled, 'Du Cytodiagnostic des Pus Chirurgicaux," Tissot reports the results of the cytologic examination of 42 cases of septic suppuration and 37 instances of tuberculous suppuration. It will at once be remarked in reading these experiments that eosinophile cells were absent in every case with one exception, that of a suppurating periostitis, and even here their proportion was very small, being only 0.3%. Tissot is, consequently, in opposition to Williams,[1] who was able to find eosinophile cells in every sample of pus examined by him, but this is explained from the fact that he used pus from acne pustules.

It is quite true that besides the pus of gonorrhea, eosinophiles have been found in the sputum in nearly all vesicular or pustular cutaneous affections, particularly in Deering's disease and blisters. The vesicular and pustular cutaneous diseases may in themselves form the object of a very extensive special cytologic study, but up to date little has been done. But if one studies cases of suppuration in which eosinophiles are present, it will be remarked that the lesion is seated on surfaces covered by epithelium, such as the integuments, the urethral mucosa, or that of the bronchial tubes.

According to Ehrlich and Einhorn, eosinophiles are formed in the bone marrow, but this opinion has been contested by Muller, who points out that these cells are, both by their vital conditions and morphology, different from bone marrow cells. For Vogel the spleen is another organ for the formation of eosinophiles, but this theory has been contested by Deny. Stutz tried to demonstrate that their origin is the same as other white cells of the blood, and that they originated in the intestinal mucosa. Schulze believes that they form in the blood, but the fact that there exist local eosinophilias without any eosinophilia of the blood is not quite in accord with this theory.

Comparative studies, especially by Fink, Schmidt and Leyden, have demonstrated that no relationship exists between the quantity of eosinophiles in the blood and those in the sputum, for example. Mandybur even thought that these cells formed in the respiratory apparatus, perhaps on account of special changes arising in the red blood cells, while Hagar and Klein explain the presence of eosinophiles in pleural exudates by resorption of hemorrhagic exudates, and he also noted a concomitant eosinophilia of the blood.

Fuchs endeavored to show that the eosinophiles were derived from altered red blood cells, while for Marchalkoff they are the result of a metaphasia of non-granular lymphocytes. Biondi, Heidenheim, Bergonzini and Rosin have demonstrated that eosinophiles are present in microscopic sections of tissues in the stage of inflammation just preceding suppuration. Pappenheim thought that their origin might simply be from the connective tissue, and that a local eosinophilia is primary and not secondary to that of the blood, as is upheld by Ehrlich.

Tissot believes that the explanation of the complete absence of eosinophiles in the pus cases that he studied may be found in the theory emitted by Ehrlich, that the bacterial toxins act by positive chemotaxis on the neutrophile polynuclears, and on the contrary, by negative chemotaxis on the eosinophiles, since both are endowed with the property of diapedesis. Pappenheim believes he has found a proof in favor of this theory from the fact that eosinophiles are found in the liquid of blisters as long as the serum remains clear, but as soon as it becomes purulent and contains many neutrophile polynuclears, the eosinophiles disappear. This is quite contrary to the theory of Posner and Lewin who, like Muller, believe that eosinophiles are derived from neutrophile polynuclears.

As may be seen, the question of eosinophilia is far from being elucidated, both as to the origin and mode of formation of these cells, as well as their significance. We would simply point out

[1] Boston Medical and Surgical Journal, Sept. 19, 1901.

that in no instance were they found when the pus was derived from deep structures, and that their presence in products of suppuration coming from cutaneous or mucous surfaces would lead one to believe that they are derived, if not from the epithelial cells themselves, at least from the connective tissue cells directly underneath the epithelium.

It is also not impossible that eosinophiles may be present during the early stages of suppuration, but the frailness of these elements is such that they are the first to undergo a degenerative process leading to liquefaction of the eosinophile granulations and to the destruction of the cell body, after destruction of the nuclear chromatin has occurred.

## REPORT OF A CANCER RESEARCH FUND.

We are in receipt of the first number of the scientific report on the investigations of the cancer research fund under the direction of the Royal College of Physicians of London and the Royal College of Surgeons of England. The pamphlet concerns itself with the zoölogical distribution, the limitations in the transmissibility, and the comparative histological and cytological characters of malignant new growths.

In approaching the subject from this standpoint the attempt has been made to investigate cancer in accordance with the extent to which it pervades the animal kingdom, and the opinion is expressed that a solution of the problem in man, far from being the rational starting point, is really the logical destination toward which all research must converge. In following out this object the report offers an interesting discussion of the distribution of cancer among the various lower animals. As a part result of this necessarily somewhat imperfect series of observations it is concluded that clearly the conditions of human life have not called cancer into being, and the suspicion is even suggested that these conditions have not led to a greater incidence of the disease. It is maintained that the essential factors in the causation of the disease must be sought in the possibilities residing in the cells themselves rather than in the conditions of life under which malignant new growths are found. Such external agencies must at least be relegated to a secondary place in determining the existence of the disease. A review of the various facts, up to this time demonstrated regarding the transmission of cancer through transp'antation, points to similar conclusions, again carrying us away from the various external agencies which have at times been supposed to be productive of the affection. Finally a section, amply illustrated, follows on the comparative study of the cells of malignant new growths. This matter, however, demands further observation in other tumors than those studied before a definite generalization may be made.

It is noticeable, in looking over this first product of the researches of this committee, that no attention is paid to the parasitic origin of the disease. We suspect that this is but a forerunner of the attitude toward the problem which we may look for in the immediate future. With all the painstaking research which has within the last few years been expended upon the supposed parasite of cancer, it is safe to venture a probable prediction that, attractive as that theory seemed to be, it will not serve to explain the existence of the disease. The account before us reverts to a position which has been rather lost sight of in the eagerness to discover a specific cause.

## AMERICAN SOCIAL SCIENCE ASSOCIATION.

The tendency toward narrowness and overmuch specialization is met in a measure by such societies as the American Social Science Association which held its general meeting in Boston last week. The object of this association is to discuss matters of public concern in the field of social economy, finance, education, jurisprudence and medicine. The broad scope of its work evidently entitles the association to a prominent place, and the character of the papers read at this last meeting justifies its wide recognition as a channel of information from experts in various lines to the public at large. It is of particular interest to the medical profession from the fact that through its agency matters of conspicuous concern to the laity find expression. At this meeting, for example, an excellent presentation of the arguments in favor of animal experimentation was given by Dr. H. C. Ernst. It is evidently desirable that this subject should be discussed elsewhere than before legislative committees, and that those interested in the progress of science in its broadest aspects should have an opportunity of hearing a plain statement of the case from one authorized to speak upon it. Dr. W. T. Porter also read a paper on the "Use of Physical Measurements of Public School Children," a matter with which his name has long been identified, and which is of wide pedagogical as well as medical interest. The matter of tuberculosis was taken up by Dr. E.

O. Otis, president of the Boston Society for the Relief and Control of Tuberculosis. We have frequently commented on the fact that the hope of extermination of this disease lies in the far-reaching education of the public regarding its dangers and its methods of propagation. The campaign is already well started, but the matter can hardly be too widely advertised if interest in the extermination of the disease is to be maintanied. Water supplies a'so received their share of attention. In calling a tention to this meeting it is our purpose merely to lay stress upon the fact that, particularly in this day of extreme specialization, it is desirable that certain associations of men interested in widely diversified branches of human activity should hold meetings for the purpose of bringing out the interrelationships of their work. This end the American Social Science Association appears to accomplish.

## MEETING OF THE AMERICAN GYNECOLOGICAL SOCIETY.

The twenty-ninth annual meeting of the American Gynecological Society will be held in Boston Tuesday, Wednesday and Thursday of next week. The medical public at large is cordially invited to these meetings, an invitation which will no doubt be accepted by many whose interests lie outside of the general topics under discussion. There are few special fields in medicine which have so wide and practical a bearing upon the work of the more general practitioner, and the opportunity offered is an unusual one for men engaged in various departments of medicine in this vicinity to learn what has been accomplished by specialists during the last year. We have before commented on the increasing desirability of Boston as a place of meeting for national societies, particularly at this season of the year when it offers those out-door attractions to visitors which are rightly coming to be an essential part of these yearly gatherings. The meetings of the society, under the presidency of Dr. Edward Reynolds, will be held at the Medical Library.

## MEDICAL NOTES.

Death of Prof. E. J. Marey.— News has just been received by cable that Prof. E. J. Marey died on May 16. Physiology has thus lost one of its ablest exponents and a leader in the application of methods of physical research to the study of biological phenomena.

Mr Rockefeller's Gift to the Johns Hopkins Hospital. — In the final presentation of his gift of $500,000 to the Johns Hopkins Hospital Mr. Rockefeller added $1,600 which represented the interest on the gift from April 1, the day on which it had been announced, to the time of its final presentation.

Bequest for the Study of the History of Medicine. — It is announced that Herr Puschmann has bequeathed in his will 500,000 marks to the University of Leipzig for the purpose of furthering the study of the history of medicine. Herr Puschmann was formerly connected with the University as a teacher of this general subject.

Samuel Smiles, M.D. — Dr. Samuel Smiles died recently in his ninety-second year. He retired from the practice of medicine in 1837, and became the editor of a Leeds newspaper. He was the author of a life of George Stephenson and other biographies and books. His name, however, is associated with " Self Help " and the " Self Help " Series. " Self Help " was published in 1859.

Retirement of Dr. William T. Bull. — Dr. William T. Bull recently delivered his last lecture in the medical department of Columbia University as professor of surgery. At the conclusion of his lecture he made certain appropriate remarks, commenting on the excellence of medical students as a class and expressing his gratification that his successor was a graduate of the same school of medicine. When he had finished his remarks he was presented with a silver loving cup by the third and fourth year classes.

Smallpox in Chicago. — According to the *Bulletin* of the Chicago Health Department four cases of smallpox were sent to the isolation hospital during the week ending May 7. None of these had ever been vaccinated. Two were colored persons, one of whom came from Memphis, Tenn., a few days ago, and the other from Omaha, Neb., while in the eruptive stage of the disease. The other two contracted the disease from persons who in turn had contracted it from Ohnett, the " Dowicite," making twelve cases of smallpox known to have been caused by this anti-vaccinationist.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, May 18, 1904, there were reported to the Board of Health of Boston

the following cases of acute infectious diseases: Diphtheria 48, scarlatina 11, typhoid fever 11, measles 172, smallpox 0.

Appointment of Dr. Myles Standish. — Dr. Myles Standish has been appointed assistant professor of ophthalmology in Harvard University.

A Centenarian. — Mrs. Delight B. Upson has recently died in Burlington, Conn., at the reputed age of nearly one hundred and three years. She is said never to have called on the services of a physician until after her hundredth year, and so secluded was her manner of life that she saw a train of cars for the first time six years ago.

Tuberculosis Before the Monday Evening Club. — James Alexander Miller, M.D., who has charge of the Tuberculosis Clinic of Bellevue Hospital, New York City, spoke of the dispensary management of cases of tuberculosis, and Miss Lilian Brandt, statistician of the New York Committee on the Prevention of Tuberculosis, spoke of the social aspects of tuberculosis, before the Boston Monday Evening Club, May 16.

NEW YORK.

The Sanity of an Eddyite. — A woman Eddyite was recently taken to the psychopathic ward of Bellevue Hospital to be examined as to her sanity because, in carrying out her beliefs to the logical conclusions which other Christian Scientists balk at except in the single matter of disease, she refused to take food any longer. She is certainly to be admired for her consistency in this respect.

Change in Existing Labor Laws. — The Governor has signed an act passed by the legislature effecting an important amendment of the existing labor laws. It transfers from the factory Commissioner to the Commissioner of Labor jurisdiction over tenement-house factories. It provides that no license for such factories shall be issued while there exists in the tenement concerned any communicable disease or any violation of the local ordinances in regard to sanitary conditions. The commissioner may require the abatement of any nuisance, and if any filthy or unsanitary condition is habitually maintained, he is authorized to "cause to be affixed to the entrance door of such apartment a placard calling attention to such facts, and prohibiting the manufacture, alteration, repair, or finishing of said articles therein." The commissioner must inspect tenement-house factories at least twice a year, and local health authorities are required to co-operate with him.

Legal Value of a Boy and a Girl. — In New Jersey the legal value of a boy and a girl has been fixed at $6,000 and $3,000 respectively. On May 13, in the Circuit Court sitting at Newark, Judge Adams refused to alter a verdict for $6,000 returned by a jury in favor of Evan N. Eastwood, whose son lost his life in a railroad grade crossing accident at Clifton Avenue, Newark, Feb. 19, 1903, when a number of children on their way to school in a trolley car were killed. Judge Adams also reduced to $3,000 the verdict of $5,000 which had been awarded Henry Werpapp, whose daughter was killed in the same accident, basing his decision upon the hypothesis that the value of a girl's life from a wage-earning standpoint is about half that of a boy's.

Charitable Bequests. — By the will of the late Solomon Loeb, of the banking firm of Kuhn, Loeb & Company, more than $100,000 is left in charitable bequests. Among the institutions favored are the following: Mount Sinai Hospital, $10,000; Montefiore Home and Hospital for Chronic Invalids, $10,000; New York Sanitarium for Hebrew Children, $5,000; General Memorial Hospital, New York, $2,500; Jewish Hospital at Cincinnati, Ohio, $5,000; Jewish Hospital at Worms, Grand Duchy of Hesse, $5,000, to be known as the Leopold and Rosina Convalescent Fund; University of New York, $10,000 for the support of a chemical library, provided his son, Prof. Morris Loeb, shall be a professor of the university at the time of the death of the testator.

Dr. W. P. Spratling, Superintendent of Bellevue Hospital. — At a meeting of the board of trustees of Bellevue and Allied Hospitals held May 13, Dr. William P. Spratling was appointed Superintendent of Bellevue Hospital, in the place of Dr. William Mabon, who has resigned. For the past nine years Dr. Spratling has been superintendent of the Craig Colony for Epileptics, at Sonyea, N. Y., and it was his admirable work in the organization and administration of that institution which led to his selection on the part of Dr. Brannan, president of the Bellevue board. He is a native of Alabama and was graduated from the College of Physicians and Surgeons, Baltimore, in 1886. From 1891 to 1895 he practiced in New York City, and in the latter year took the civil service competitive examination for the superintendency of the Craig Colony, his name standing at the head of the list.

Improved Accommodations for House Officers at Bellevue. — It has been announced that in order to increase and improve the accommodations for the house staff of Bellevue Hospital, the top floor of the building in the hospital grounds, which was formerly occupied by the Bellevue Hospital Medical College, is being renovated and partitioned off into dormitories for the internes.

A Case of Smallpox. — Just as he was about to be transferred on April 25, from Bellevue Hospital to the Metropolitan Hospital on Blackwell's Island, it was discovered that a negro patient, twenty years old, was suffering from smallpox. The case had developed rapidly while he was in Bellevue, and the ward in which he had been treated was at once quarantined. The negro was admitted on April 22, and at that time smallpox was not suspected.

Carpentier Professorship of Pediatrics. — At a meeting of the board of trustees of Columbia University held May 2 it was announced that a gift of $60,000 had been received from Horace W. Carpentier, a graduate of the Academic Department in the year 1848, for the support of a chair in the Medical School, in memory of his brother, the late Dr. Reuben S. Carpentier. The trustees voted to apply the income of this fund to the chair of diseases of children, and in recognition of the gift they named the chair, which is now occupied by Dr. L. Emmett Holt, the Carpentier Professorship of Pediatrics.

"Crowner's Quest." — The antiquated "crowner's quest," it seems, is not yet to be banished from New York. The bill passed by the legislature abolishing the coroners is one of those in which, as involving the interests of the city, the mayor has the right to veto, and Mayor McClellan has seen fit to return the bill to Albany with his disapproval. Before doing so he gave a public hearing on the matter, and for more than four hours listened to arguments for and against the measure. Dr. H. R. Purdy, who has been one of the most active workers in behalf of the proposed change, has made the following comment on the present situation: "The friends of reform are not discouraged, for the mayor's veto means only temporary delay — not final defeat. The habitual inertia of our people — if the mayor properly represents them — toward the acceptance of new and improved methods has apparently not yet been overcome, but they will in time be made to see that the coroner system is not only useless, but is a malignant growth in the body politic, and that the only cure is in a radical operation."

## Obituaries.

### ROBERTS BARTHOLOW, M.D.

Roberts Bartholow, M.D., of Philadelphia died in that city May 10, at the age of seventy-three. He was graduated from the University of Maryland in its medical department in 1852, and later received the degree of LL.D. from St. Mary's College of the same state. After serving for eight years in the medical staff of the army he resigned in 1864, and accepted a professorship in the Medical College of Ohio, giving instruction in the theory and practice of medicine and becoming dean of the faculty. In 1879 he allied himself with the Jefferson Medical College of Philadelphia, and the remainder of his life was passed in that city. At the time of his death he was emeritus professor of materia medica, general therapeutics and hygiene at this institution.

His literary work was concerned largely with treatises on materia medica and therapeutics, and it was in this general branch of medicine that he attained his greatest reputation. He was a member of many learned societies, and although he no longer actively taught, he was at the time of his death engaged in professional work. In 1880 he delivered the Cartwright Lectures in New York on the subject of "Antagonism between Medicines and between Remedies and Diseases."

### SIR HENRY THOMPSON.

Sir Henry Thompson died in London, April 18, in his eighty-fourth year. His origin was somewhat obscure. He studied medicine in London and graduated from University College at the mature age of thirty-two years. He was early interested in genito-urinary diseases and especially in lithotrity, and studied under Civiale in Paris. In this department of surgery he was for many years in the front rank of his profession, and enjoyed a large income. He was always a bold operator, and his boldness was sometimes carried to undesirable extremes. As a general surgeon he was not highly regarded. He had a strong but not a generous nature. This was evidenced in his reception of Dr. Bigelow's operation of litholapaxy when presented by Bigelow at the International Medical Congress in London.

Sir Henry interested himself in a variety of subjects not germane to surgery, — in painting, in pictures and china, in gastronomy, in cremation, in praying for the sick, in astronomy. He wrote several books, one on food and some novels.

## Miscellany.

### UNDESIRABLE MARRIAGES.

In connection with the subject of undesirable marriages and how they may be prevented, the *Lancet* in a recent issue discusses the difficulty of passing a law which will control the marriage of imbeciles, habitual criminals and persons unfit to propagate their kind in general. The following suggestions are made, which seem to be both ingenious and practical:

We have somewhere seen the excellent suggestion that every girl, through her parents or natural guardians, should insist upon the acceptance of her intended husband by a responsible insurance company before consenting to marry him; and this is a requirement in support of which public opinion might without any great difficulty be enlisted. The benefits of insurance are now rendered available for persons and classes of very moderate means; and we doubt whether the attraction between the sexes, or rather between particular individuals, is in any large number of cases sufficiently overmastering to cause the complete neglect of prudential considerations if these were but rendered prominent as matters of education, and strengthened by the common consent and practice of those to whom they would chiefly apply. Medical practitioners might do much to promote a proper estimation of the facts among their patients. They would seldom be justified in interfering with unasked advice as to any particular alliance, but they should earn the gratitude of the public by keeping the facts of physiology and pathology in relation to marriage under the notice of the numerous parents who might be prevented by such knowledge from consigning their children to lives of misery.

### AUTOMOBILES AND MEDICINE.

The use and abuse of the bicycle from a hygienic point of view came in for much discussion at one time, and the turn of the automobile seems to have arrived. Its therapeutic and pathogenic powers were the subject of a thesis recently presented by Dr. Blanchet to the University of Lyons. The thesis was founded partly on personal experiences and partly on the opinions collected from a number of medical men whose patients included numerous automobilists. The author considers the matter chiefly from the point of view of the treatment of phthisis. He himself had influenza in April, 1898. Previously he had had good health, but the attack was followed by pleurisy with effusion. The latter disappeared with some rapidity, but a dry pleurisy continued for a long time. Eighteen months later he had symptoms of slight bronchitis, and tubercle bacilli were found in the sputa. He then began to lose flesh and appetite, and had slight fever; fifteen months later he had to give up work. Some six or seven months of rest and open air treatment restored his health sufficiently for him to recommence work, but he was still below his usual weight, and had little appetite. Upon resuming work he bought an open automobile, and went out twice a day, covering on each occasion 60 or 70 km. After a year of this experiment he recorded the results, which were that he had entirely got rid of his cough, entirely regained his appetite, and had increased 6 kilos in weight, in spite of being actively engaged in professional work all the time. His chest capacity had also increased between 500 and 900 ccm. Summing up his own experiences and those cited from a number of medical friends, the author concludes that automobile exercise will gradually abolish or greatly diminish the cough of tuberculous patients and of those suffering from chronic bronchitis, and at the same time produce healthy sleep and appetite. On the other hand, the exercise will increase pyrexia if the latter already exists, and may cause it in those who are excitable. In view of the long stay in the open air which automobile exercise implies and the increased atmospheric pressure entailed by the rapid motion, it is quite natural that benefit should be experienced in cases of early pulmonary tuberculosis. It is essential, however, that the body should be duly protected from cold. It is also most important to avoid dust, and for this reason unfrequented roads should be selected. There is still more reason to believe that the exercise will prove of value in all conditions which are accompanied or brought about by ineffective or slow tissue metabolism. Examples of distinct benefit in neurasthenia have come under our own notice and, on the other hand, we have had reason to conclude that a catarrhal condition of the upper air passages may be kept up indefinitely by motoring under ordinary conditions and on frequented roads. — *British Medical Journal.*

## Correspondence.

### LEPROSY IN MASSACHUSETTS.

Boston, May 13, 1904.

Mr. Editor: May I be permitted to offer some comments upon your interesting editorial on this subject in the Journal of May 12?

Leprosy is a contagious disease, as tuberculosis and syphilis are contagious. It is preeminently a bacillus disease, for this organism is found in nearly all the tissues and fluids of lepers far more universally and abundantly than are the bacilli in those of a tuberculous patient. The bacillus of syphilis has not yet been seen, as we do not yet know the proper reagents to make it visible. Not long ago the same was true of tuberculosis and leprosy. Undoubtedly the human tissues are less favorable to the fruitful reception of the infective germs of leprosy than they are to those of these other two affections, and no other animal receives them at all; but then we must not minimize the danger which does exist. Lack of knowledge of it has led to dire results, both in past centuries and recent years. The mistaken conclusions of Boeck and Danielsen and of the Virchow and English commissions had, without doubt, much to do with the revival of the disease in modern times.

It is often maintained that leprosy is not contagious, because one has known of a few cases in a community which have not given rise to other cases, so far as is known. Can we not say the same of innumerable cases of tuberculosis and syphilis we have known? It is the

positive not the negative evidence to which we must give heed, nor should we forget that the period of incubation of leprosy is uncertain and very prolonged, so that it is not easy to determine the possible results of the occurrence of any case of the disease in a community. Certain so-called sporadic cases of natives of the United States who have never been out of the country can only be explained by chance and unrecognized association with resident lepers. I have known several lepers to have remained long unsuspected in this vicinity, who may have communicated the disease in instances as yet undeveloped or undiscovered. But of well-known individual cases of contagion, there are examples more than enough: Father Damien, other clergymen, nuns, physicians, nurses and ward tenders connected with lazarettos. But the recent spread of the disease in countries previously unaffected bears wholesale evidence of its contagious character, as in British Guiana, Trinidad, New South Wales, certain Spanish and Russian maritime provinces, etc. The rapid increase of the disease in some of these instances, as earlier in Hawaii, shows that it must spread by infection from person to person. The results of isolation in its control is another illustration of its infective character. In 1870 the number of lepers in Norway was 2,607. In 1885 government passed restrictive laws and established lazarettos. In 1893 the number had been reduced to 800.

Differences in the customs of living account, no doubt, for the greater prevalence and more rapid spread of the disease in some countries; such change in habits may explain the dying-out of the disease among the Norwegian immigrants here in New Scandinavia. They no longer sleep in the same bed with lepers or wear the clothes of the deceased, as formerly at home.

We have believed until lately that cases of ulcerating tubercular leprosy were alone dangerous, and that infection took place by surface contact with such lesions. Now we know that the nasal secretions of *all* lepers, and from the earliest stages, contain the bacilli, to be disseminated by exhaling and sneezing. This is probably the most common channel of inception of the disease.

May I add that within my knowledge there have been several instances of the disease in Massachusetts among native Americans, that there have been more than "half a dozen" lepers in this state in the past twenty years, that there are at least two here at present, and that Dr. Smith, superintendent of the lazaretto at Tracadie, reported in 1894 that "he found leprosy cropping out in unexpected places, and that he fears for years to come that new cases will be met with, and that by only permanent detention and isolation can it be kept checked or stamped out."

The fear of leprosy, although unreasonable in degree with us at the present time, may be regarded as a holy horror, and it were better for mankind were it divided up and bestowed in impartial measure upon tuberculosis and syphilis as well.

I am still of the opinion, Mr. Editor, presented to the Congress of Physicians and Surgeons in 1894: "That graded hospitals should be established by the national government in insular localities, where possible, within which both suspected and confirmed cases should be isolated, and to which all access should be prevented excepting under proper restrictions."

Very truly yours,

James C. White, M.D.

## ANNUAL MEETINGS OF MASSACHUSETTS MEDICAL SOCIETY AND AMERICAN MEDICAL ASSOCIATION IN CONFLICT.

Fall River, Mass., May 12, 1904.

*Mr. Editor:* At a meeting of the Bristol South District Medical Society held this day it was unanimously voted: "That the councillors of the Bristol South District Medical Society be directed to endeavor urgently to secure a change in the time of meeting of the Massachusetts Medical Society so that it will not conflict with that of the American Medical Association."

Very truly yours,

A. J. Abbe, M.D.
*Secretary.*

## RECORD OF MORTALITY
For the Week ending Saturday, May 7, 1904.

| Cities. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Erysipelas. | Measles. |
| New York . . | 3,908,644 | 1,716 | 502 | 25.99 | 23.72 | 2.32 | .29 | 2.27 |
| Chicago . . . | 2,021,086 | 539 | 110 | 21.15 | 22.26 | 1.48 | — | — |
| Philadelphia | 1,407,968 | 572 | 119 | 30.62 | 17.80 | 1.55 | .35 | .52 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 207 | 54 | 27.53 | 18.36 | 1.93 | — | — |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 135 | — | 25.18 | 13.33 | .74 | — | 2.96 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 68 | 21 | 14.71 | 14.71 | 1.47 | — | — |
| Boston . . . | 617,950 | 239 | 66 | 20.07 | 16.72 | 1.25 | .42 | 1.25 |
| Worcester . . | 136,925 | 31 | 14 | 19.35 | 13.30 | — | .32 | .32 |
| Fall River . . | 119,349 | 43 | 15 | 20.92 | 16.27 | .23 | — | — |
| Lowell . . . | 104,402 | 35 | 11 | 14.28 | 17.14 | — | — | .28 |
| Cambridge . | 100,998 | 25 | 7 | 16.00 | 16.00 | — | 8.00 | — |
| Lynn . . . . | 73,875 | 15 | 1 | 13.33 | — | — | — | — |
| Lawrence . . | 72,348 | 25 | 7 | 28.00 | 12.00 | — | — | — |
| Springfield . | 72,020 | 19 | 3 | 15.79 | 5.26 | — | — | — |
| Somerville . | 70,413 | 28 | 8 | 17.85 | 7.14 | 7.14 | — | — |
| New Bedford | 68,863 | 22 | 5 | 13.63 | 4.54 | — | 4.54 | — |
| Holyoke . . . | 50,538 | 15 | 6 | 13.33 | 40.00 | — | — | — |
| Brockton . . | 46,601 | 14 | 5 | 21.42 | — | — | — | 14.28 |
| Newton . . . | 39,310 | 8 | 3 | — | 12.50 | — | — | — |
| Haverhill . . | 39,061 | 11 | 1 | 9.09 | 36.36 | — | — | — |
| Malden . . . | 37,205 | 11 | 3 | 18.18 | — | — | — | — |
| Salem . . . . | 37,188 | 16 | 5 | 6.25 | — | — | — | — |
| Chelsea . . . | 36,499 | 18 | 2 | 5.55 | 16.67 | — | — | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 14 | 5 | 14.28 | 28.56 | — | 7.14 | — |
| Everett . . . | 30,209 | 7 | 1 | 14.30 | — | — | — | — |
| North Adams | 29,201 | 10 | 4 | 20.00 | 10.00 | — | — | — |
| Quincy . . . | 26,798 | 5 | 3 | 20.00 | — | — | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 4 | — | — | — | — | — | — |
| Brookline . . | 23,576 | 5 | 2 | 20.00 | — | — | — | — |
| Pittsfield . . | 22,870 | 10 | — | 40.00 | — | — | — | — |
| Medford . . | 21,956 | 9 | 1 | — | 11.11 | — | — | — |
| Chicopee . . | 21,692 | 6 | 1 | — | 33.33 | — | — | — |
| Northampton | 20,314 | 5 | 1 | — | — | — | — | — |
| Beverly . . . | 15,807 | 5 | 1 | — | 20.00 | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 7 | 2 | 14.30 | — | — | — | — |
| Adams . . . | 14,745 | 3 | 1 | 16.67 | — | — | — | — |
| Attleboro . . | 14,561 | 2 | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 6 | 3 | 33.33 | — | — | — | — |
| Newburyport | 14,478 | 7 | 0 | — | 14.30 | — | — | — |
| Woburn . . . | 14,315 | 6 | — | 16.67 | — | — | — | — |
| Melrose . . . | 13,819 | 4 | 1 | 50.00 | — | — | — | — |
| Westfield . . | 13,809 | 3 | — | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 3 | 0 | 66.67 | — | — | — | — |
| Revere . . . | 13,609 | 4 | — | 50.00 | — | — | — | — |
| Framingham | 12,974 | 5 | — | 40.00 | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 10 | 7 | 20.00 | 40.00 | — | — | — |
| Southbridge . | 11,716 | 1 | 1 | 100.00 | — | — | — | — |
| Watertown . | 11,575 | 2 | 0 | 50.00 | — | — | — | — |
| Weymouth . | 11,350 | 2 | 2 | — | 50.00 | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,957; under five years of age, 1,004; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 968; acute lung diseases 795, consumption 491, scarlet fever 46, whooping cough 13, cerebrospinal meningitis 81, smallpox 5, erysipelas 13, puerperal fever 16, measles 53, typhoid fever 62, diarrheal diseases 110, diphtheria and croup 69, influenza 9.

From whooping-cough, New York 8, Philadelphia 1, Baltimore 1, Pittsburg, 2, Worcester 1. From smallpox, Philadelphia 5. From cerebrospinal meningitis, New York 77, Boston, Brockton, Adams and Gardner, 1 each. From erysipelas, New York 5, Philadelphia 2, Cambridge 2, and Boston, Worcester, New Bedford and Taunton 1 each. From typhoid fever, New York 8, Chicago 6, Philadelphia 38, Baltimore 1, Pittsburg 6, Boston 1, Lynn 2.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending September 23, the death-rate was 16.0. Deaths reported 4,697; acute diseases of the respiratory organs (London) 127, whooping cough 215, diphtheria 42, measles 199, smallpox 6, scarlet fever 34.

The death-rate ranged from 5.1 in Willasden to 25.6 in Warrington, London 16.0, West Ham 13.9, Brighton 16.5, Southampton 13.9, Plymouth 16.5, Bristol 15.2, Birmingham 22.4, Leicester 12.6, Nottingham 13.0, Liverpool 19.8, Bolton 13.1, Manchester 22.0, Salford 19.4, Bradford 16.3, Leeds 16.2, Hull 17.3, Cardiff 13.9, Rhondda 17.5, Wigan 17.4, Marthyr Tydfil 17.9, Reading 11.6, Halifax 15.5.

## METEOROLOGICAL RECORD.

For the week ending May 7, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S.. 1 | 29.98 | 50 | 56 | 44 | 76 | 73 | 74 | N E | S E | 8 | 9 | O. | C. | 0 |
| M. 2 | 30.30 | 51 | 57 | 45 | 65 | 57 | 61 | N | S E | 6 | 10 | C. | C. | 0 |
| T.. 3 | 30.36 | 54 | 65 | 43 | 40 | 61 | 50 | S W | S W | 6 | 12 | C. | C. | 0 |
| W. 4 | 30.25 | 64 | 80 | 49 | 48 | 54 | 51 | S W | S W | 7 | 12 | C. | C. | 0 |
| T.. 5 | 30.05 | 69 | 82 | 56 | 51 | 44 | 48 | W | W | 12 | 9 | C. | F. | 0 |
| F.. 6 | 30.24 | 56 | 63 | 50 | 40 | 41 | 40 | E | S | 14 | 11 | O. | C. | 0 |
| S.. 7 | 30.18 | 65 | 81 | 49 | 76 | 64 | 70 | S W | S W | 4 | 14 | C. | C. | 0 |
| ☞ | 30.19 | | 69 | 48 | | | 56 | | | | | | | 0 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace ☞of rainfall. Mean for week.

## SOCIETY NOTICES.

THE AMERICAN CONFEDERATION OF RECIPROCATING EXAMINING AND LICENSING MEDICAL BOARDS. — The third annual meeting of the American Confederation of Reciprocating Examining and Licensing Medical Boards will be held in the Great Northern Hotel, Chicago, Tuesday, May 24, 1904.

B. D. HARRISON, M.D., Secretary.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY. — The tenth annual meeting of the American Laryngological, Rhinological and Otological Society will be held at Chicago, Ill., May 30, 31, June 1, 1904, in the Auditorium Hotel. The profession is cordially invited to attend.

WENDELL C. PHILLIPS, M.D., Secretary.

SUFFOLK DISTRICT MEDICAL SOCIETY. — There will be a meeting of the Section for Obstetrics and Diseases of Women in Sprague Hall, Boston Medical Library Building, 8, The Fenway, Wednesday, May 25, at 8 P.M. Papers: Dr. Charles H. Harwood, "Some Injuries of Parturition, Their Cause and Treatment;" Dr. A. Palmer Dudley, "Dudley's Operation for Restoration of the Perineum."

W. H. GRANT, M.D., Secretary.
DANIEL H. CRAIG, M.D., Chairman.

## RECENT DEATHS.

BENJAMIN FRANCIS MOULTON, M.D., M.M.S.S., of Lawrence, died May 3, 1904, aged fifty-eight years.

BERNARD MACKAY, M.D., a wealthy retired New York physician, was run over and killed by a fire engine, near Madison Square, on May 12, the accident being due to Dr. Mackay's deafness, from which he had suffered for many years. He was seventy years of age and a son of Col. William Mackay of the British army. He was born and received his medical degree in England, and although he had been in the United States for over forty years, he always remained a British subject.

WILLIAM WATERWORTH, M.D., of Brooklyn, N. Y., died on May 11. He was born in Salem, Ohio, in 1851, and was graduated from Adelbert College and in 1878 from Bellevue Hospital Medical College, New York. He had practiced in Brooklyn for twenty-two years, and at the time of his death was attending surgeon to the Brooklyn Eye and Ear Hospital.

WILLIAM H. MCGEE, M.D., a prominent physician of Warren County, died at his home in Belvidere, N. J., on May 11, at the age of fifty-six years.

## BOOKS AND PAMPHLETS RECEIVED.

Exercise as a Mode of Treating Diseases of the Heart. By N. S. Davis, Jr., A.M., M.D. Reprint.

Korsakoff's Psychosis — Report of Cases. By Harry W. Miller. Reprint.

Atrophy of the Prostate. By Robert C. Bryan, M.D. Reprint. 1904.

La Rachitide e le Deformità da essa Prodotte. Dr. Paolo Mancini. Illustrated. Milano: Ulrico Hoepli. 1904.

Proceedings of the Eighteenth Annual Meeting of the Conference of State and Provincial Boards of Health of North America. Baltimore, October 23 and 24, 1903. Providence: Snow & Farnham.

Graves' Disease With and Without Exophthalmic Goitre. By William Hanna Thomson, M.D., LL.D. New York: William Wood & Co. 1904.

A Guide to the Clinical Examination of the Blood for Diagnostic Purposes. By Richard C. Cabot, M.D. Fifth revised edition. Illustrated. New York: William Wood & Co. 1904.

Manual of Materia Medica and Pharmacy. Specially designed for the Use of Practitioners and Medical, Pharmaceutical, Dental and Veterinary Students. By E. Stanton Muir, Ph.G., V.M.D. Third edition, revised and enlarged. Philadelphia: F. A. Davis Company. 1904.

Seventh Annual Report of the Loomis Sanatorium and Annex. (For the Treatment of Tuberculosis.) Oct. 31, 1903.

Scientific Reports of the Investigations of the Cancer Research Fund. Under the Direction of the Royal College of Physicians of London and the Royal College of Surgeons of England. No. 1. Illustrated. London: Taylor and Francis. 1904.

Case Teaching in Surgery. By Herbert L. Burrell, M.D., and John Bapst Blake, M.D. Philadelphia: P. Blakiston's Son & Co. 1904.

A Practical Treatise on Medical Diagnosis. For Students and Physicians. By John H. Musser, M.D. Fifth edition, revised and enlarged. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1904.

Elements of General Radio-Therapy for Practitioners. By Dr. Leopold Freund. Translated by G. H. Lancashire, M.D. Brux., M.R.C.S. Eng., L.R.C.P. Lond. Illustrated. New York: Rebman Company. 1904.

Mayor Harrison on the Department of Health. Chicago 1904. Reprint.

State Requirements (Summary) for Medical Practice. Compiled by the Illinois State Board of Health. 1904.

Materia Medica, Pharmacology and Therapeutics. Inorganic Substances. By Charles D. F. Phillips, M.D., LL.D. (Abdn. and Edin.), F.R.S. and F.R.C.S. (Edin.) Third edition. London, New York and Bombay: Longmans, Green & Co. 1904.

Jahresbericht über die Fortschritte in der Lehre von den Pathogenen Mikroorganismen umfassend Bacterien, Pilze und Protozoën Unter Mitwirkung von Fachgenossen bearbeitet und herausgegeben von Dr. med. P. von Baumgarten und Dr. med. F. Tangl. Achtzehnter Jahrgang 1902. Erste Abtheilung. Leipzig: Verlag von S. Hirzel. 1904.

Typical Tuberculosis. Selected cases from a report entitled Collective Investigation on Tuberculosis. By John Aulde, M.D. Philadelphia. 1904.

Practical Clinical Notes on the Administration and Action of Iodo-Nucleoid or Organic Iodine. By G. Frank Lydston, M.D. Reprint.

Is the Journal of the American Medical Association a Partisan Organ? By G. Frank Lydston, M.D. Reprint.

How to write a Medical Article; a Plea for Plagiarism. By G. Frank Lydston, M.D. Reprint.

Out of Door Treatment for Tuberculosis at the Columbus State Hospital. By George Stockton, M.D. Reprint.

Elettricità Medica. Dr. A. D. Bocciardo. Illustrated. Milano: Ulrico Hoepli. 1904.

Thirty-fourth Annual Report of the Massachusetts Homœopathic Hospital. For the year ending December 31, 1903.

Proceedings of the American Medico-Psychological Association at the Fifty-ninth Annual Meeting, held in Washington, D.C., May 12–15, 1903.

University of California Publications: Physiology. On the Influence of the Reaction of the Sea-Water on the Regeneration and Growth of Tubularians. By Jacques Loeb. The Influence of Saline Purgatives on Loops of Intestine Removed from the Body. By John Bruce MacCallum. The Secretion of Sugar into the Intestine caused by Intravenous Saline Infusions. By John Bruce MacCallum. Berkeley, The University Press, 1904.

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## Clinical Lecture.

### DR. WATSON AND MR. HOLMES; OR THE WORM THAT TURNED.

BY J. W. COURTNEY, M.D., BOSTON.

"Ah, good morning, Holmes," said Dr. Watson, without even raising his eyes from the paper which lay before him on the table, at his clinic for diseases of the nervous system. "Somewhat surprised, I see, that I should know who it was," he continued, as he went on reading. "It's very simple, as you are wont to say." He pushed back his chair, looked up and extended his hand. "In the first place, I had just looked at my watch and seen that it was a quarter after eleven. Now under no circumstances is a patient admitted after eleven; and when I looked over the assembly on the benches some ten minutes ago, there wasn't a soul there that didn't have some defect in his gait. My assistants and the hospital attendants are trained not to enter without knocking. What's more, there came to my nostrils, above the stuffy odor of the clinic, the smell of that awful Red Herring brand of cigarettes, which you alone of all my extensive acquaintance are able to smoke. Now, my dear fellow, as to your being surprised. You can't deny that since your awful experience with our late friend, Moriarty, your nerves have got the faintest bit on edge. As I read, your legs from the knees up fell just in range of vision from the tail of my eye, and I was able to see that my salutation produced the faintest upward twitch of your trousers through an involuntary contraction of the thigh muscles. 'Pon my word, though, you are the most unsatisfactory fellow! I've been begging you to come here for years to see the only really interesting phase of human morbidity, and you have persistently denied yourself this intellectual treat. And now you drop in upon me from the clouds, when I haven't a bally thing on hand that's worth while."

During this outburst, so astonishingly long-winded for the erstwhile shrinking and self-effacing Watson, Sherlock the magnificent stood gazing at him with the well-known look of amused superiority which he invariably kept on tap for his mix-ups with the upstart Lestrade. Not a muscle of his long, keen face relaxed, but his pallor deepened, until Watson, who watched him narrowly, wondered if he really did have pernicious anemia, or if his lemon-yellow complexion were merely the result of the excessive use of breakfast food subcu, coupled with the inhalation of the fumes of Red Herring cigarettes. He knew that his quondam mentor was decentering the tigroid bodies of his higher cortical cells in the act of thinking, but just what was at the bottom of these obvious mental gymnastics eluded his penetration.

For the benefit of our readers, we will explain. Holmes was miffed, for it was now disagreeably obvious to this twentieth century prodigy that during his long demise his microcephalic ex-serf, the doctor, either by the excessive use of that minute portion of his anatomy which lay under his thatch, or by the vicarious function of some other organ, had developed his rudimentary faculty of thought. It was also annoyingly evident to him that the pathways between the place — wherever it might be — that Watson used in thinking, and the organs whereby he externalized thought, had been thoroughly cleared of all the tangle and pseudo-intellectual underbrush which formerly so effectually impeded them. In his wildest flights of cocainized fancy no such thing as a rival had ever taken shape. And now suddenly to bump into the possibility, so to speak, in tangible form, and that, too, in the form of this low-grade idiot of a Watson, made him feel like a four-ply Rip Van Winkle.

During this prolonged fit of abstraction Holmes had made up his mind on at least one point: Watson must be squelched, once and for all.

"You're right, my dear Watson," he said finally, with assumed cordiality. "I ought to have come round before, but you know how many really important things I have to disentangle, and how little time I have to waste on the obvious, but I've made up my mind to devote a morning to you, and if you'll name a day I'll be here."

"Any day will suit me," said Watson, politely refusing a proffered Red Herring cigarette. "I'll go along with you now and we'll decide as we walk."

Watson rang the bell for an assistant, left the remaining patients in his charge, and started from the hospital with Holmes, arm in arm.

It was Monday and the throng about the doors was of the usual large proportions after the Sunday inactivity of the out-patient departments. At the exit from the lodge the way was temporarily blocked to Holmes and his *fidus Achates* by a burly fellow on crutches, who seemed to handle the one under his right arm with peculiar difficulty for a man of his powerful build. As they went along Holmes turned to Watson and said with a tinge of malice, "Why can't the duffers of surgeons give these poor devils proper crutches? It's bad enough to think of that chap's family being without his support for a long time on account of his foot, but an extra two months' loaf with a crutch-maimed arm is an outrage. There are an awful lot of incompetents in your profession, Watson."

Watson stopped and eyed the man with the crutches keenly, his face flushed with indignation at Holmes' sneer at the profession.

"I think you're entirely wrong in your conclusions, my friend," was his only reply. Then as the object of their remarks came along, he stopped him and said, "You'd have been better off without the liquor, wouldn't you, my good man?" Watson's question was accompanied by a significant glance in the direction of the big fellow's right hand.

The lout, with the instinct of his class, at once recognized the professional calling of his questioner, hung his head sheepishly and replied, "I guess it was the booze that did me up all

right, for I was doing fine with the foot till I got out with a crowd of my friends Saturday night. Nothing would do them but they must stand treat to celebrate the getting better with the foot. I was loaded when I got home, but the hand seemed all right then. Yesterday morning, though, when I woke up, it was all numb and deadlike, and it ain't been no use to me since."

During this reply Holmes appeared restless and uneasy, and at its conclusion he took Watson by the arm and said, "I'm in quite a hurry, old man, and if you're coming along with me, you'll have to come at once."

Watson hastily directed the man to come to his clinic the next day and started along with Holmes.

Holmes was consumed with inward rage; he knew that Watson would rough him at the earliest opportunity, and decided to give him no opening. He immediately started in and talked a blue streak on the probable cost of the midnight oil consumed by Homer while writing the "Iliad." He figured it out by a secret process of calculation, which he knew would excite Watson's envy, and this in itself brought a certain amount of balm to his wounded feelings.

Watson let him rattle on until they were near Holmes' lodgings, and then butted in with "I say, old chap, do you still hold the views on surgical incompetency that you expressed a while ago, and do you still feel that you should not waste your time on the obvious?"

Holmes grunted and quickened his pace.

"Because if you do," went on the imperturbable doctor, "I think a morning at my clinic will prove a strong mental corrective. By the way, I must make a note to send you a reprint of my lecture on the fallaciousness of the apparently obvious in clinical diagnosis. This case we just saw exemplifies my teachings beautifully, and you must confess, my dear Sherlock, that you did not give due consideration to all the factors entering into it. Had you noticed the soiled condition of the padding on the tops of the crutches, it would have been obvious to you that the padding had been put there at the time the crutches were given. This fact in itself demonstrates that the surgeon was cautious, and precludes to a large extent the possibility of crutch paralysis; now this is Monday, and the day on which we usually get a crop of Saturday-night paralysis, that is to say, paralysis of the radial nerve caused by a drunk's sleeping on his arm; but enough of this. You come round on Friday and I'll try to show you something interesting."

On Friday morning Watson left the place that most people call home, but which with him was merely a place to stay when he wasn't needed by Holmes. He proceeded to the latter's lodgings in Baker Street, and the two went on together to the hospital. Arrived there, Watson cast a searching glance over the benches and ushered Holmes into the consulting room. Then he rang the bell and ordered the externe to show in first the musician on the front seat.

"I'm sorry, sir," said the externe, "but I haven't had time to take any histories, and I don't know who you mean."

Watson walked to the door, threw it open, and beckoned to a man sitting on the front seat. The patient entered and sat before Watson's table.

"Musician, did you say?" asked Holmes apathetically.

"Yes, musician, and I should add, a player on a wind instrument."

Holmes examined the man's buccinators in their normal condition, and then got him to puff out his cheeks. He appeared satisfied with his examination, and when Watson asked him if he had made up his mind as to how he, Watson, had arrived at his conclusion as to the man's occupation, he answered in a tired way, "Why, certainly, you have only to look at the muscles of his lips and cheeks; they tell the story."

"Wrong," said Watson; "it's much simpler than that. Just observe the little goatee he wears. I venture to say he believes the loss of that would prevent his playing for a week. Am I right?" he asked, turning to the man.

"Oh, yes, sir. I wouldn't cut that off for the world; it's strengthening to the lip, and I shouldn't be able to play till it grew again."

Watson soon got at the facts of the case, examined and disposed of it.

During this time Holmes looked absently out of the window.

The next patient was ushered in, and without speaking, presented a note to Watson. The latter, without looking at the note, exclaimed, "Ah, a teamster, I see."

"That observation was superfluous," broke in Holmes superciliously. "I knew he was a teamster the moment I saw him. He has the complexion of a man much exposed to the weather and wears the sort of clothes common to people of that class."

"That may all be true, but it would apply equally well to a cabman; and it is dangerous to draw conclusions on such general grounds. Perhaps you did not notice that this man took the note he brought me out of his hat — a typical teamster trick."

Holmes made no reply, but bit his lips furiously while Watson read the note. Watson turned the case over to his assistant and called for the next patient. It proved to be a man with a marked tremor of the right hand. Without a word, Watson took hold of the trembling hand and observed it closely for a few moments. Then he said quietly, "Here, my dear Holmes, is an interesting tremor in a left-handed plasterer, who has done no work for some time. Am I right, my man?"

"Quite right, sir," was the answer. "I'm left-handed and I'm a plasterer by trade, but this cursed shaking has laid me up for nearly six months now." At this point Holmes was about to say something, but hesitated and looked the man over carefully in silence. Watson sat quietly back in his chair and observed his friend's

scrutiny of the patient with an amused twinkle in his eye.

Holmes' face was a study. It had grown several shades yellower than usual, and again made Watson think of pernicious anemia. The powerful magnifying lens was now brought into play and the man's nails, ears and eyebrows thoroughly examined by its aid. Obviously Holmes was stumped. By this time he was breathing hard and mopping his brow.

After a time Watson broke in with: "Well, my dear Holmes, what do you say?"

"Nothing, except that it's beastly stuffy in this room," growled Sherlock, the peerless.

"Well, let's have a window open, and then, perhaps, I can show you a thing or two of interest about this man that you may have overlooked with your glass. You will first observe that the tremor involves the right hand. On looking at this hand closely, you will see a half-softened callus over each joint of the thumb, and similar ones over the root joint and the one next to it of the forefinger. You see none over any other joints. This shows that these particular joints mentioned must habitually come in contact with some hard surface. Now, from my study of artisans' hands, I know that this condition is peculiar to the plasterer, and that it is brought about by the contact of the mortar board. In this case it is the right hand that shows the condition, so the man must do the actual plastering with the left. I hardly need mention that the somewhat softened condition of the calluses indicates this man's abstinence from work for some time."

While Watson was engaged in demonstrating the reasons for his conclusions, Holmes paced rapidly up and down the room, apparently paying not the slightest attention. Finally he whipped out his watch, looked at it, and said, "By Jove, Watson, I must go. I've got an important engagement that I had almost forgotten."

"Oh, don't be in such an infernal rush," replied the doctor. "I've got to get away early myself. I'll tell you what I'll do. I'll just turn this man over to my assistant, see the next case or two hurriedly, and then go along with you."

At Watson's order the next case was led in. "This man," said the externe, "is a rubber-cutter, and his complaint is of headache and dizziness."

"Now, Holmes," said the doctor, "won't you just look at this fellow's gums with your glass and see if you don't see a dark line at the junction of the gums and teeth. You do — thank you. It's a clear case of lead poisoning, just as I thought. Now, my man, let me look at your tongue."

A sudden exclamation from Holmes caused Watson to look at him. As he did so he noticed that his friend's face had suddenly taken on an expression very like what one might expect to see in a mummy that had been spoiled in the making. "Did you speak?" he asked, somewhat maliciously.

"No," growled Holmes between his clenched teeth, "but the diagnosis in this case is too al surdly clear. This man has either been doin some painting at home, or else he uses a ha wash containing lead. Isn't that so, my goo fellow?" asked Sherlock, addressing the patien

"Aw, I never washes me hair," was the reply "and I have enough to do in the shop withou bothering with no painting at home. It ain't i my line."

Holmes collapsed in his chair.

"Perhaps if he will tell us just what h functions as a rubber-cutter are, it will help yo to arrive at a correct solution of the problem, put in the doctor, dryly. "Exactly what your work, my man?"

"I just puts the patterns down on the shee rubber and cuts around them with a knife," was the answer.

"Does that help you, Holmes?" asked Wa son.

The great detective sat dejectedly and mad no reply.

"Well, we won't waste any more time on it, rattled on Watson, "but the situation is jus this. From your extensive reading and obse vations, you must know that in the preparatio of rubber there is used a considerable amoun of litharge, or the red oxide of lead. Now yo don't have to examine this fellow's hands ver closely to conclude that soap is not a large facto in his items of expenditure. My glance at h tongue showed me that he is an habitual tobacc chewer. On the basis of these two observation I concluded that the transference of really con siderable amounts of the lead from fingers t mouth was a daily occurrence. And now I'm about ready to toddle along with you. From certain sounds I have heard in the last few min utes, I think there's a deaf man with genera paralysis in the further room. I'll just run i and look at him, and then I'm at your service." Watson rose from his chair and went towar the door. As he was about to turn the knob he heard a low moan followed by a thud, an looking round, he saw that Holmes had falle apparently lifeless on the floor.

## Original Articles.

### SULPHUROUS ACID AND ITS SALTS AS FOOD PRESERVATIVES, AS AIDS TO FRAUD, AND AS POSSIBLE CAUSES OF LESIONS OF THE KIDNEYS.

BY CHARLES HARRINGTON, M.D., BOSTON,
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Sulphurous acid and its sodium and calcium salts have long been used as preservatives of various articles of food and drink, as fish, meat, sausages, fruits, jams, dried vegetables, cider and wines; and, more especially, for their action in producing an improvement in appearance suggestive of superior quality. Thus, canned corn

and canned asparagus are bleached to a uniform white, and meats are made to acquire the redness of arterial blood. The salts are used both in powdered form and in solution, and sometimes in conjunction with borax and boric acid.

In the treatment of meat, the sodium salt ($Na_2 SO_3 . 7H_2O$) is the compound most commonly employed. While this is used to some extent in and on meats as commonly bought and sold, its chief field of usefulness is in the preparation of minced or ground meat, which is sold to an enormous extent on the Continent under the name "Hackfleisch" and in this country as "Hamburg steak." This is made in great part from trimmings and various inferior parts not otherwise salable, which accumulate in the receptacles for waste in meat stalls and naturally acquire an extensive bacterial flora. Without the addition of a chemical preservative, the commercial life of the finished product would necessarily be very short. But this is not the sole, nor the main, reason for the employment of this particular agent, than which several more efficient preservatives are known. The chief incentive to its use is the fact that it exerts a preservative influence on the hemoglobin and favors the formation of the markedly redder oxyhemoglobin, and thus causes the meat to look invitingly fresh, even though the original material was stale, of bad appearance, and swarming with bacteria. Moreover, it acts as a deodorant. Not only does it cause the characteristic, faint and not unpleasant odor of fresh meat to disappear very quickly, but it masks the foul odors of decomposition. Thus, although apparently fresh to the eye and nose, the prepared mass may be well advanced in decay and teeming with bacteria. Altschuler [1] found that untreated meat yielded 1,829,100,000 bacteria per gram at the stinking stage, while another portion which had been treated with 1% of the salt did not stink until its bacterial content was 4,757,000,000 per gram. Long before this stage is reached, however, a physical change occurs, which reveals itself to the touch. Fairly fresh Hamburg steak feels but faintly moist; it can be handled without adhering to the fingers. Very stale specimens, on the other hand, feel slimy, and particles thereof adhere to the fingers with such tenacity that scraping is necessary for their removal.

The red color which is produced is most intense on the exterior of the mass; indeed, the interior may be quite dark in color; but exposure of the inner portions to the air brings about a rapid change to bright red. The persistence of the redness is dependent largely upon the amount of the salt used.

As a preservative, sodium sulphite is not powerful. Various observers, including Landolt and Rubner, Kisskalt, Gartner and Kionka, say that it can confer redness without exerting much action as a preservative. Altschuler finds that it has an appreciable influence due to its power to inhibit bacterial multiplication; that when present even to so slight an extent as 0.05% it is more or less active; that its maximum influence is exerted when it is present to the extent of 0.5%; and that more than 0.5% confers no additional power. He saw untreated meat grow in bacterial content from 1,200,000 per gram on the first day to 1,829,100,000 on the fourth, while that to which 0.5% of the salt had been added yielded but 2,500,000 on the fourth and 300,-500,000 on the ninth. In my own laboratory, a piece of solid meat (round of beef) was hashed and then divided into two equal portions, one of which was treated with 0.2% of the sulphite and the other left as it was. The two portions were kept in a refrigerator under precisely similar conditions, and the number of bacteria per gram was determined from day to day, as follows:

| | Plain Meat. | Treated Meat. |
|---|---|---|
| After 1 day | 610,000 | 1,760,000 |
| ,, 2 days | 1,045,000 | 1,600,000 |
| ,, 3 ,, | 2,709,000 | 2,709,000 |
| ,, 4 ,, | 6,579,000 | 3,999,000 |
| ,, 5 ,, | 10,346,000 | 2,322,000 |
| ,, 6 ,, | 26,313,000 | 3,483,000 |
| ,, 7 ,, | Very foul odor | Faint mouldy odor |

It must be remarked, however, that the influence of the salt is seen to best advantage when the meat is kept at a low temperature, for at ordinary room temperature it appears to lose its power very markedly. Indeed, by itself at room temperature, it appears to have less preservative influence than the low temperature of a refrigerator, as was shown by Gartner,[2] who found that untreated meat kept at 39° F. in a refrigerator yielded 320,000 bacteria per gram after twenty-four hours and 575,000 after forty-eight hours, while meat not so stored, but containing 0.09% of the sulphite, yielded 448,750 and 5,385,000, and containing 0.36% yielded 448,750 and 678,000. Janke,[3] too, experimenting with meat containing 0.2, 0.4, and 0.6%, found its preservative effect to be slight, but agreed that the salt can cause decomposing meat to have a normal appearance. Lange [4] found that in the decomposition of treated and untreated meat there was but a slight difference in time when 0.5 and 1.0% of the sulphite was employed, but that when as much as 2.0 to 4.0% was added the meat kept well for a time and then broke down suddenly. Stroscher [5] found that treated meat decomposed about as quickly as that to which nothing was added. Mayer [6] found that 10 samples containing from 0.304 to 0.573% of sulphite yielded from 1,695,000 to 471,511,000 bacteria per gram, whereas home-made specimens yielded from 4,560 to 890,154. The latter retained the natural red color for a time and then changed to the brownish tint that untreated meat acquires on standing, but the admixture of 0.5% of the sulphite after twenty-four hours produced the abnormal redness described. Portions kept forty-eight hours and then treated did not change their color.

[1] Archiv. fur Hygiene, xlviii, p. 114.

[2] Zeitschrift fur Untersuchung der Nahrungs- und Genussmittel, March 15, 1901, p. 241.

[3] Chemiker Zeitung, 1901, No. 794.

[4] Archiv. fur Hygiene, xl, p. 143.

[5] Archiv. fur Hygiene, xl, p. 291.

[6] Hygienische Rundschau, September 15, 1901, p. 877.

Contrary to what one would naturally suppose, the bacterial content of a specimen bears no relation to the amount of added preservative, as has been shown by Stroscher and others. Thus, Stroscher determined the number of bacteria per gram in 16 samples which contained from 0.029 to 0.520% of sodium sulphite. The two highest counts, 62,096,000 and 54,056,000, were yielded, it is true, by samples containing but 0.065 and 0.075% of the salt, but the next highest, 50,917,000, was yielded by one that contained the largest addition (0.52%). That which contained 0.43% yielded but 147,000, while that with 0.47% gave 14,138,000, or about 600,000 more than one that contained but about a sixth as much (0.08%).

The reason why no such relationship exists is, however, very clear, for, as has been said, much of the material used in manufacture may be swarming with a rich bacterial flora before it is introduced into the hashing machine.

For the production of the desired effects, the presence of at least 0.1% of the salt is necessary, but the addition of 0.2% is generally recommended. It would appear, however, that the manufacturers adhere pretty strictly to the rule of thumb, for the amounts used are very widely variable; and although less than 0.1% is often found, it is more commonly the case that far more than the recommended 0.2% is employed, and even as much as 4.0% has been found. Quantitative determinations in the foreign food laboratories show how generously the salt is administered. Thus, reports from Dresden show that of 54 samples, 38 contained less than 0.4%, 11 contained between 0.4 and 0.6, 1 contained between 0.6 and 0.8, and 4 contained between 0.8 and 1.0%. From Breslau come reports of 0.4 to 0.8% in 7 samples, and of 0.856, 1.708 and 2.80% in others; from Weimar, 0.612, 1.024, and 1.50; from Essen, 0.52 and 0.6; from Aachen, 0.44 and 0.64; from Dusseldorf, 0.156 to 0.960; from Crefeld, 0.28, 0.44, 0.48, 0.56, 0.64 and 0.68; from Cologne, 2.24; from Hamburg, 5 samples with less than 0.4, and 11 with from 0.4 to 1.02; from Altenburg, 1.756. In a number of places in Germany it has been proved that the great majority of meat dealers use it, and in Dantzig no fewer than 112 of the 121 butchers were haled to court therefor a year after its use was forbidden by the German government. So far as I am aware, the subject has received but slight attention in the United States and no statistics are to be had; but in Boston as will be seen — and the conditions here will doubtless be found to be the same elsewhere — its use is the rule, 50 samples examined by me showing its presence in amounts ranging from 0.061 to 1.225%, with not a single one free from it. They were collected in different parts of the city from dealers supplying all classes of customers — from stores and market-stalls patronized by the rich and well-to-do, and from small shops in the poorer quarters. The prices paid ranged from 7 to 15 cents per pound, but 10 cents was the rule. In the following table, the samples are placed in the order of their content of sodium sulphite, from the lowest to the highest.

| Sample Number. | Percent Sodium Sulphite. | Sample Number. | Per cent Sodium Sulphite. |
|---|---|---|---|
| 22 | 0.061 | 1 | 0.300 |
| 16 | 0.078 | 40 | 0.301 |
| 32 | 0.081 | 8 | 0.304 |
| 45 | 0.099 | 50 | 0.322 |
| 14 | 0.172 | 11 | 0.338 |
| 18 | 0.179 | 12 | 0.355 |
| 19 | 0.196 | 33 | 0.360 |
| 17 | 0.199 | 2 | 0.372 |
| 35 | 0.208 | 20 | 0.388 |
| 9 | 0.210 | 37 | 0.390 |
| 38 | 0.241 | 31 | 0.392 |
| 48 | 0.241 | 36 | 0.400 |
| 44 | 0.246 | 34 | 0.405 |
| 43 | 0.251 | 26 | 0.415 |
| 46 | 0.251 | 27 | 0.436 |
| 23 | 0.255 | 30 | 0.436 |
| 10 | 0.257 | 15 | 0.442 |
| 41 | 0.261 | 49 | 0.446 |
| 47 | 0.266 | 5 | 0.463 |
| 29 | 0.267 | 6 | 0.466 |
| 24 | 0.271 | 28 | 0.527 |
| 7 | 0.277 | 4 | 0.581 |
| 13 | 0.287 | 21 | 0.628 |
| 25 | 0.290 | 3 | 0.648 |
| 39 | 0.297 | 42 | 1.225 |

Average — 0.335.

The most brilliantly red specimen, Number 16, contained but 0.078%, and owed its intense color, which was uniform throughout the mass, chiefly to the presence of an anilin dye. Many of the specimens were sticky and slimy and gave off peculiar, disagreeable odors. Several gave off the characteristic odors of putrefaction. Number 42, which was richest of all in sulphite, was exceedingly sticky and slimy, and had a very peculiar odor, but was of pleasing appearance.

In the stomach, sulphites are attacked by the gastric juice, with liberation of sulphur dioxide. The energy with which the gastric juice acts is dependent upon its content of hydrochloric acid, which averages about 0.2%. In conditions of hyperacidity, therefore, such as are common to a number of pathological conditions, the decomposition of the salt occurs at the maximum rate. Stroscher asserts that the presence of even 1% of acetic acid is sufficient to bring about the change; and hence when sulphited meat is prepared as beefsteak à la Tartare the opportunity for the disengagement of sulphur dioxide is thereby increased. It would appear from various writings on the subject of sulphited meat that the influence of sulphur dioxide on the system was shown first in 1869 by Bernatzik and Braun,[7] who administered 80 mgm. of free sulphurous acid in 360 cm. of sugar-water in divided doses extending over twenty-four hours to each of 14 women with various disorders of pregnancy. Only two could bear the dose at all well; the others bore it very badly and suffered from eructations of sulphur dioxide, unpleasant taste, violent diarrhea, vomiting, and general discomfort lasting a whole day. Doses of 1 gm. of magnesium sulphite also were badly borne, the chief manifestation of ill effects being vomiting and diarrhea. Doses of 3.75 gm. of sodium

[7] Wiener medicinische Wochenschrift, xix, 1869.

bisulphite were given to 12 women, but only 4 showed no ill effects; several were purged soon after the first dose. In 1884, Ogata [8] showed that sulphur dioxide is an active poison to animals when inhaled, the lesions appearing in the lungs. Pfeiffer,[9] experimenting with aqueous solutions of sulphur dioxide applied to the gastric mucous membrane, observed remarkably intense action, even with very dilute solution of the gas. Intense gastritis was produced by 0.5 to 1.0% solutions, and death was caused in a very short time by a 5% solution, with marked corrosion not only of the several layers of the stomach wall but even of the surface of neighboring organs.

Borntrager [10] states that he cannot eat certain sausages nor drink certain Rhine and Moselle wines without suffering from eructations of sulphur dioxide and hydrogen sulphide, and from weight in the stomach, discomfort and headache lasting for some hours. Pfeiffer asserts that he and others suffered from oppression and discomfort after a half gram of sulphite in very dilute solution, and Leuch,[11] that wines containing free sulphur dioxide cause discomfort much more readily than those that contain it in combination, 45 mgm. of the former being equal in power to 250 of the latter. These amounts, taken in about a third of a quart of wine, caused irritation of the throat and headache; and 55 and 350 mgm., respectively, caused more severe headache with diarrhea. He observes that individuals vary widely in susceptibility.

The fact that many persons show distinct evidence of disturbance from as little as 0.01% of the anhydride or 0.04 of the salt, leads Borntrager to the conclusion that the continued ingestion of small amounts of sulphites causes serious injury to the organs without the manifestation of any outward sign of sickness.

It is true that after the addition of sodium sulphite to meat it becomes slowly oxidized to sulphate and then loses its toxic properties, since in that form it cannot be split up by the gastric juice. Gartner states that he has recovered from 56.8 to 87.3% of the original amount as sulphite, twenty-four hours after the admixture to meat, but Polenske [12] recovered no less than 81% from a sausage after three months, and from 72 to 77% after six months. Borntrager states that about a third of the amount present is lost during cooking.

The first to show definitely what harm may result to the system from the continued ingestion of sulphited meat was Kionka,[13] who, in 1896, reported that repeated small doses administered to dogs produced serious lesions in various parts of the system. In 1898, the use of sulphites in foods was forbidden by the German Imperial Board of Health, which body, in answer to the assertion of the butchers that the addition of a sulphite to minced meat is necessary, replied that it is possible to prepare minced meat from freshly slaughtered meat without the use of chemical preservatives, but with the observance of strict cleanliness, and that on storage at low temperatures its natural red color can be retained longer than twelve hours; that the addition of sulphites and of preservative preparations containing them tends to improve the color but not the meat itself, and to give the meat an appearance of superior quality; and that the constant use of minced meat containing sulphites can injure the system, especially in the case of the weak and sick.

The findings of Kionka and the Imperial Board of Health have been attacked by Liebreich and others as unwarranted. Kionka's experiments were repeated by Lebbin and Kallmann,[14] one of whom is a chemist and the other a veterinarian, but neither of them a pathologist, who reported an entire absence of lesions on autopsy. A new series of experiments on a more extensive scale gave Kionka and Ebstein [15] results identical with those obtained before, which were confirmed also by Schultz.[16] In both of Kionka's series of experiments and in those of his opponents as well, the dogs employed showed at no time any outward appearance of injury, but on the contrary, in one series, gained in weight up to the ninth week, when they were killed. Two of Schultz's dogs soon showed evidence of illness; they were purged and were reluctant to eat, but all showed a gain in weight at the end. In all of Kionka's and Schultz's dogs, nephritis was a constant result. In my own experiments, which were begun before I knew of Schultz's paper and of Kionka's second series, I employed cats, which have the advantage over dogs in experimental feeding that they are not subject to idiopathic nephritis, which occurs in about 25% of dogs kept under observation in cages. Six cats were fed for twenty weeks, five receiving six feedings weekly of meat containing 0.2% of sodium sulphite, and the sixth receiving the same meat with no addition. The latter showed a constant gain in weight to the end; the others gained until about the ninth week and then began to lose ground, frequently refusing food or leaving it largely uneaten, but otherwise they showed no evidence of injury. At the end of twenty weeks they were killed with chloroform and examined by Dr. E. E. Tyzzer of the Department of Pathology of the Harvard Medical School. There was no macroscopic evidence that the chemical had produced any changes in the organs, but thin slices were cut from each of the organs of each cat, fixed in Zenker's fluid, and then imbedded in paraffin and cut. Eosin and methylene blue were used for general staining, and Mallory's stain was employed, also. The microscopical findings were by no means so extensive as those yielded by Kionka's dogs. Indeed, apart from some slight inconstant variations in the spleens, all of the organs of each animal were

[8] Archiv. fur Hygiene, ii, p. 223.
[9] Archiv. fur experimentelle Pathologie und Pharmakologie, xxvii, 1890.
[10] Die Beurtheilung des Zusatzes schwefligsaurer Salze zum Fleische vom Sanitatspolizeilichen Standpunkte. Leipzig, 1900.
[11] Correspondenzblatt fur Schweitzer Aertze, 1895, No. 15.
[12] Arbeiten aus dem Kaiserlichen Gesundheitsamte, xvii, 1900, p. 568.
[13] Zeitschrift fur Hygiene und Infectionskrankheiten, xxii, p. 351.
[14] Zeitschrift fur öffentliche Chemie, 1901, p. 324.
[15] Zeitschrift fur Hygiene und Infectionskrankheiten, xli, p. 123.
[16] Deutsche medicinische Wochenschrift, 1902, p. 265.

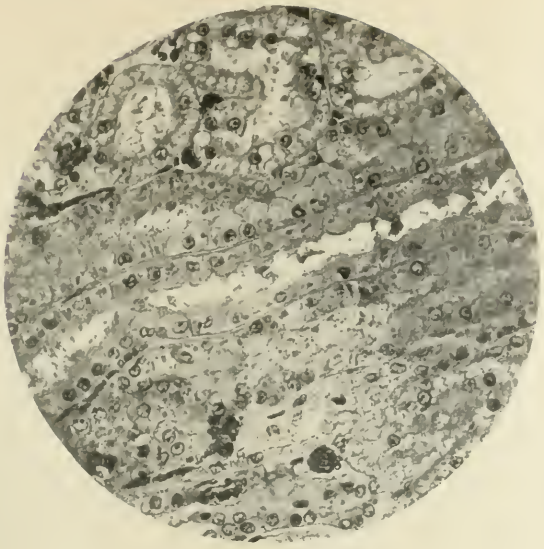


FIG. 1.

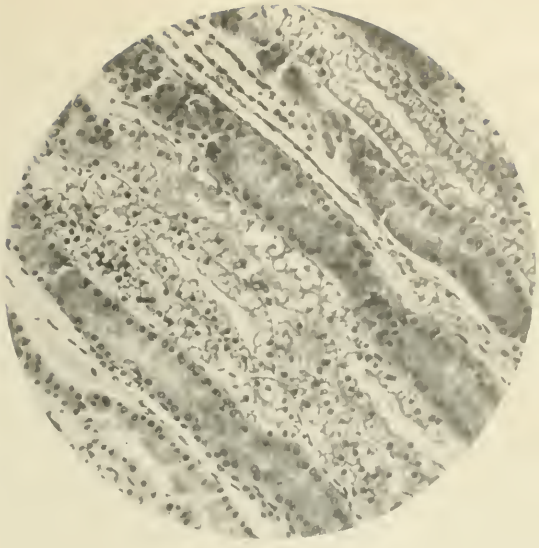


FIG. 2.

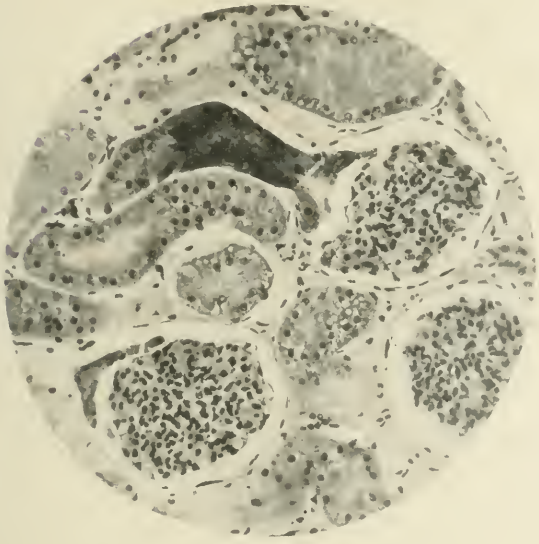


FIG. 3.

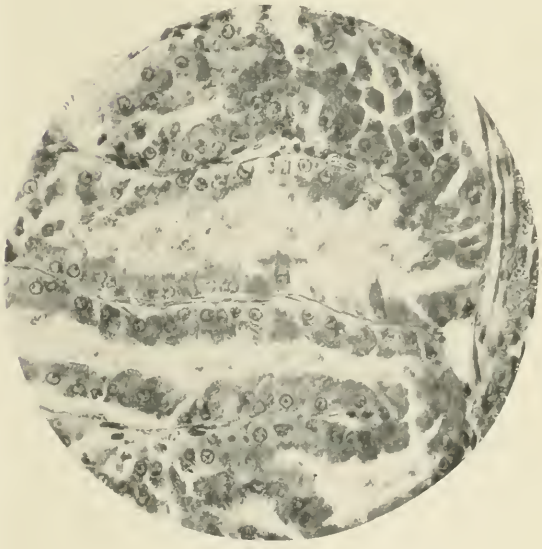


FIG. 4.

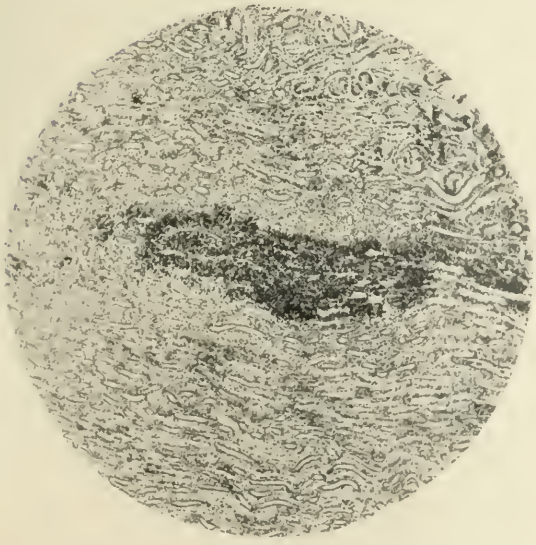


FIG. 5.

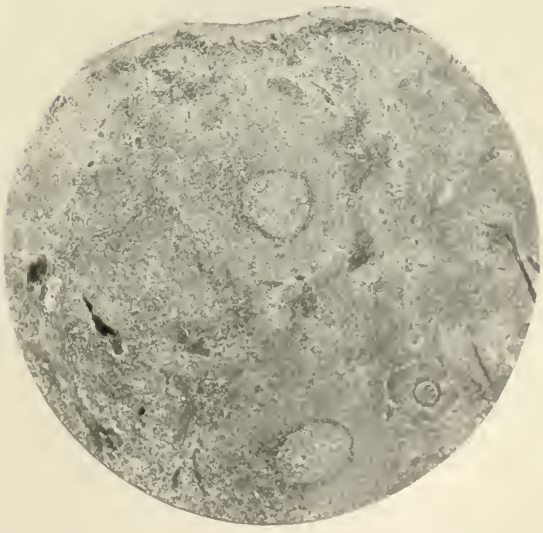


FIG. 6.

perfectly normal, with the exception of the kidneys, which in all but the control cat, showed marked changes. Following are the findings as to this organ:

Cat No. 1. (*Control.*) Kidney. The epithelium the convoluted tubules contains fat, but in small nounts as compared with the other five, and there e no accompanying degenerative changes.

Cat No. 2. Kidney hyperemic, especially in inter- ediary zone. Vessels of glomeruli dilated. All ibules of labyrinth extremely fatty. Tubules of edullary rays give evidence of marked cloudy swell- . The cells of the collecting tubules are irregular d dissociated and much larger than normal. They ain deeply and the nuclei are shrunken and irregular n places. These tubules contain collections of fibrin in the shape of small needles, which sometimes are collected in the lumen of the tubule, sometimes between and sometimes enmeshing groups of cells.

Cat No. 3. Kidney. Vessels injected. Bowman's capsules are somewhat dilated and contain collections of large fatty epithelial cells, which have been pushed in from the neighboring tubule. These are not attached to the capsule and are dissociated one from another. The epithelium of the convoluted tubules is loaded with fat. In places, this is accompanied by considerable degeneration of the cells. There is marked cloudy swelling of the tubules of the medullary rays, *i. e.*, Henle's loop, and more marked of the collecting tubules. On account of the increased thickness of the epithelium, the tubules are larger, with smaller lumina. The epithelium is tall, columnar, due probably to proliferative changes. The cells stain deeply, are dissociated, and in places are desquamated in masses. Nearly all of these tubules contain masses of fibrin in the lumen or enmeshing cells.

Cat No. 4. Kidney. A few Bowman's capsules contain desquamated epithelium from the adjoining tubule. The convoluted tubules are very fatty and there is marked cloudy swelling of the tubules of the medullary rays, identical with the changes found in the preceding cases. In addition, there is infiltration of areas of interstitial tissue with lymphoid and plasma cells. These foci are elongated and extend parallel to the tubules. The lesions are most numerous near the line of junction of the medulla and cortex, but some are situated wholly in the medulla and others extend into the cortex almost to the capsule in the kidney. These lesions bear no relation to the larger blood vessels and are probably secondary to parenchymatous changes.

Cat No. 5. Kidney. The convoluted tubules are extremely fatty. Tubules of the medullary rays show marked cloudy swelling, as in the other cases. Interstitial tissue is not affected.

Cat No. 6. Kidney. The convoluted tubules are very fatty. Cloudy swelling is marked in the medullary rays, especially in the first portion of the collecting tubules (the so-called intercalated tubules). In these the cells are desquamated, swollen and irregular, and the tubules contain fibrin.

DESCRIPTION OF PLATE.

No. 1. Normal kidney of cat, multiplied 175 diameters. In the normal kidney there is a slight amount of fat in the cells, shown by the vacuolation in the epithelium. (From Cat No. 1. Control.)

No. 2. Kidney of cat with intense fatty infiltration of tubules in the pyramid. Multiplied 175 diameters. (From Cat No. 5.)

No. 3. Kidney of cat. Degeneration of proximal convoluted tubules. In most of the tubules there is an increased amount of fat, shown by the vacuolation, with separation of cells from their attachment. The attached masses of cells press into the capsular space of the glomerulus. Multiplied 175 diameters. (From Cat No. 3.)

No. 4. Kidney of cat. Degeneration and partial desquamation of cells of intercalated tubules, with granular detritus in lumen. Multiplied 250 diameters. (From Cat No. 2.)

No. 5. Kidney of cat. Focus of lymphoid cellular infiltration in pyramid. Multiplied 60 diameters. (From Cat No. 4.)

No. 6. Spleen of cat. Large foci of epithelioid cells and slight necrosis of follicles.

## NOTES ON RADIUM.

### Production of the Gamma Rays from the Beta Rays of Radium; Use of Radium in Some Diseases of the Eye.

BY FRANCIS H. WILLIAMS, M.D., BOSTON.

Physicists now consider that the beta rays from radium correspond to the cathode rays and the gamma to the x-rays. The cathode rays strike the platinum anode of a vacuum tube and x-rays are produced. It seems, therefore, reasonable to suppose that if a plate of heavy metal were put in the path of the beta rays, not only would a part of them be reflected, but a portion also would be converted into gamma rays. In order to test this supposition I made last winter the following experiment:

A mass of lead, L, 6 inches (15 cm.) thick from end to end, was placed on the apparatus as shown in Fig. 1, so that practically no rays from the specimen of 50 mgm. of pure radium bromide, R, could reach the barium platinocyanide screen S.

The radium R, in a metal box with a mica cover, was wrapped in black paper and so placed that the rays emitted issued at right angles to the long axis of the apparatus and toward a lead plate, P, standing at an angle of 45° to the rays. Under these conditions, when the room was dark, the screen of barium platinocyanide S, which was 48 cm. from the middle of the lead plate P and the radium R, was brightly illuminated. Second: If, however, a plate of aluminum, A (see Fig. 2), $\frac{3}{16}$ inch ($\frac{1}{2}$ cm.) thick (this thickness of aluminum absorbs all the beta rays, but the gamma rays pass through), was interposed between the plate P and the fluorescent screen S, most of the light was shut off from the screen S.

Third: With the aluminum plate A still placed as in Fig. 2, the fluorescent screen S was moved toward the plate P until the screen S seemed to be as bright as when the apparatus was arranged as in Fig. 1, that is, when no aluminum plate was interposed between S and P. Under these conditions, the scale on the apparatus showed that screen S was 25 cm. distant from the center of plate P. Fourth: If the plate of aluminum A

was removed from the position shown in Fig. 2, and placed between the radium R and the lead plate P, the fluorescent screen S was not illuminated at all.

The different results observed on the fluorescent screen S, with the different positions of the aluminum plate A or its removal altogether, prove that gamma rays were produced when the beta rays struck the lead plate P. Let us go over the process, step by step. If the aluminum plate A is placed between the radium R and the lead plate P, the fluorescent screen S is dark, because the beta rays are absorbed by this thickness of aluminum before they can reach plate P. That is to say, when the beta rays were prevented from reaching plate P, no gamma rays were produced, and likewise, of course, there were no beta rays at P to be reflected on to screen S. (The alpha rays need not be considered, as they are absorbed by the mica covering the radium.) To make this clear, let us remove the aluminum plate A from its position between R and P and place it, as once before, between S and P. (See Fig. 2.) By thus changing the place of the screen A, we have allowed the beta rays to strike the lead plate P, and as a result the screen S is illuminated, but only faintly so, because though the beta rays have reached the lead plate P, owing to the removal of the plate A from between R and P, they are unable to reach the screen S, because the aluminum plate A has now been placed in their path between S and P. (See Fig. 2.) Therefore, the illumination observed in this case is due to the gamma rays that were produced when the beta rays struck the lead plate P; the remaining beta rays that were reflected as such from plate P being absorbed by the aluminum plate A on their way to screen S. Now let us remove the aluminum plate A altogether. (See Fig. 1.) The screen S, under these circumstances, is brightly illuminated, because the beta rays, no longer being absorbed as in the previous instance, have added their brilliancy to the fainter light from the gamma rays.

The brightness of the fluorescent screen S, when illuminated by the gamma rays alone, seemed in one instance, as we have seen, equal to the amount of brightness observed when screen S was struck by both the beta and the gamma

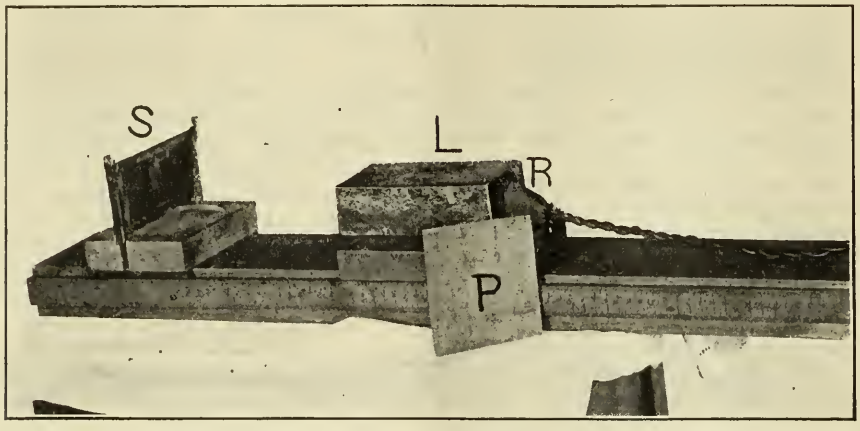



Fig. 1 shows a base of wood with a centimeter scale attached to its side. On its upper surface is a block of wood, which may be slid lengthwise, and which carries a screen of barium platinocyanide, S. Another block supports a mass of lead, L, and 50 mgm. of pure radium bromide, R. Standing at an angle of 45° with the long axis of the apparatus is a lead plate, P.

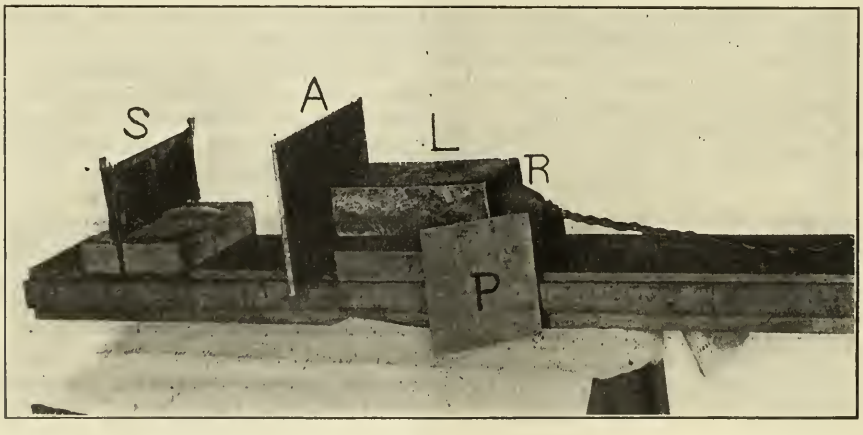



Fig. 2 is the same as Fig. 1, with the addition of the aluminum plate A.

rays. This will be readily understood when we remember that the amount of light diminishes as the square of the distance, and that the brightness resulting from the gamma rays alone, in this case, was due to the fact that the fluorescent screen S was moved from the position which it held, when struck by the beta and gamma rays, of 48 cm. distance from the centre of the lead plate P to within 25 cm. distance from the center of plate P.

The following experiment that I have made with radium will also be of interest, I think: It is well known that when strong radium is held near the closed eyes of an individual who has been for some time in a dark room it causes a well marked sensation of light. I placed a specimen of 50 mgm. of pure radium near one of my eyes, and this sensation of light was produced. I then interposed a plate of aluminum that was thick enough to absorb all the beta rays, but allowed the gamma rays to pass. Under these circumstances the sensation of light produced in my eye was the same as before the interposition of the plate of aluminum. This experiment shows that the sensation of light in the closed eye can be caused by the gamma rays alone.

The beta rays seem likely to prove a convenient and useful remedy in certain diseases of the eye, particularly those which have not yielded to other methods of treatment. Among these I may mention trachoma, a very obstinate and difficult disease to treat, and one that requires many months or even one or two years, — opacity of the cornea, and inflammatory conditions of the neighboring parts. Four or five years ago I used the x-rays in some diseases of the eye with good effect, and recently I have applied the rays from radium.

In trachoma I have found that good results have followed promptly from exposures of two or three minutes to 50 mgm. of pure radium bromide, given at first once a week and later twice a week. The radium was held about ½ cm. from the everted lid, or was placed even nearer to the closed lid opposite the diseased area.

A very good example of the usefulness of the radium rays in opacity of the cornea and inflammation of the neighboring parts is afforded in a case brought to me by my brother, Dr. Charles H. Williams. The patient was a woman of middle age, who was suffering from a rather severe uveitis and an opacity of the cornea, which involved the lower and outer quadrant, and was so great that through portions of it the iris could not be distinguished. This opacity also included to some extent the central portion of the cornea. At this time the vision was less than 0.1. As the patient had only one eye, I felt that I was taking a good deal of responsibility in deciding either to use the radium or to decline to use it, but I determined on the former course, as Dr. Williams told me that everything that had offered hope of relief had been tried without success; therefore the use of radium seemed the only chance of saving the patient from blindness. My experience in employing radium was at this time sufficient to make me confident that I could use it with such ca e as to do no harm.

The exposures were made at intervals of three to seven days, the lids being held apart and the radium placed first about ½ cm. from the cornea, later about 1 cm., and still later 2 to 3 cm. Slight improvement was noticeable within two weeks, and at the end of ten weeks the improvement was marked; the inflammation had decreased throughout, the opacity of the whole cornea had diminished greatly, and the vision was 0.4. The patient at this writing has a vision of more than 0.5, and can read ordinary print. I hope that Dr. Williams will report fully on this case.

It is hardly necessary to mention the great convenience of using radium as compared with the x-rays. The output of the rays from radium is uniform, and the rays may be easily applied. The greatest care should be employed when diseases of the lids or eyes are treated with this powerful agent.

The use of radium in the fluorometer, an instrument for estimating the output of x-rays of a given vacuum tube, I have already described in the third edition of "The Roentgen Rays in Medicine and Surgery," pages 640–642.

Radium is also of use as a test for determining whether or not the eyes of the practitioner are in a suitable condition for making fluoroscopic examinations. This test can be carried out by means of the spinthariscope, which contains a small amount of radium. If the scintillations appear bright to the practitioner, his eyes are ready for use; if dull, he must wait for a while longer in the dark room before attempting to make a fluoroscopic examination.

## VAGINAL SECTION IN THE TREATMENT OF EXTRA-UTERINE PREGNANCY.*

BY FRANK A. HIGGINS, M.D., BOSTON.

In reporting these few cases of extra-uterine pregnancy treated by vaginal section, it is not my intention to appear in any way as an advocate of the vaginal operation for this condition. But the experience in these cases has been somewhat unusual, to me at least, has shown certain difficulties and contingencies in the way of treatment which had not been met with before, and also reveals certain errors of diagnosis which are not uncommon, and which serve mainly to emphasize the frequently repeated statement that a correct diagnosis of extra-uterine pregnancy is often impossible. It has been the usual experience, however, that other conditions in the pelvis are more often taken for extra-uterine pregnancy than that extra-uterine pregnancy is overlooked.

There are still a few men who advocate and perform the vaginal operation for nearly every abnormal condition in the pelvis. Yet I believe

*Read at the meeting of the Obstetrical Society of Boston, January 19, 1904.

it is now pretty generally recognized that in the main the advantages of vaginal section are confined to those cases in which there is an acute collection of pus in the pelvis, the removal or drainage of which is necessary, which is of comparatively easy access from below, and where an operation by the abdominal route would result in an incomplete operation with drainage, and also in considerable danger of infection of the general peritoneal cavity. In such cases the collection of pus is usually quickly and readily reached and evacuated by means of a posterior vaginal incision.

By the vaginal operation for pus accumulations, there is only slight hemorrhage and rarely any serious amount of shock. With care there is little danger of infecting the general peritoneal cavity, and the drainage is thorough if the incision is ample. The convalescence also is usually rapid, but of course largely dependent upon the general condition of the patient previous to operation. These are, in brief, the chief conditions which favor the vaginal operation for pus collections in the pelvis, but on the other hand the operation is often an incomplete one and it may be necessary to open the abdomen later for relief of pain or other symptoms.

Vaginal operation or exploration in extra-uterine pregnancy has been advocated chiefly for diagnosis in doubtful cases by means of a small puncture, and also for those cases in which the hemorrhage has not been free or severe and has been confined to the pelvic cavity or other limits. It is to be presumed that few men, if any, would advocate a vaginal operation for a condition involving free hemorrhage into the peritoneal cavity, because of the manifest difficulties in reaching and controlling the source of the hemorrhage, and also because of the practical impossibility of draining into the vagina free blood which has escaped high into the abdomen.

With respect to diagnosis, so much has already been written that there is nothing new of value which can be said at present. Frequently abnormal conditions of the tubes and ovaries cause symptoms strongly pointing to extra-uterine pregnancy before rupture. Conditions in the pelvis giving rise to a mass with an acute pelvic tenderness, and also in many cases showing some evidence of slight, general peritonitis, which are accompanied by irregularities in the menstrual flow, are the ones which are most likely to occasion difficulties in diagnosis in differentiating for extra-uterine pregnancy.

Within the last few months, the writer has had three cases of extra-uterine pregnancy operated upon in the acute stage in the presence of profound shock, but in the absence of the other typical symptoms of ruptured extra-uterine pregnancy.

These cases, briefly reported, are as follows:

The first patient was seen May 14, 1903. A. A., thirty-one years; married seven years; three normal labors; the last menstrual period occurred March 31, about six weeks before. Six days ago she began to flow and continued flowing a little but only when passing water. Two days later began to have pains resembling labor pains, and these have continued ever since intermittently. Four days ago her pain becoming so severe, she sent for a physician who etherized her and took "the child away," that is, I suppose, emptied the uterus probably by curettage. Since then, her abdomen has become distended, she has had several slight chills and has vomited constantly for three days. Bowels have moved once, and then from an enema.

The hospital records say that the patient looks very sick, emaciated and extremely pallid; marked anemia of mucous membranes; eyes normal; tongue dry, white coat; pulse rapid, regular, of poor volume and tension; heart and lungs negative; abdomen markedly distended, tympanitic and moderately tender to pressure over all portions.

The writer saw the patient shortly after her entrance to the hospital. There was no question as to her extreme condition. There was constant and most severe vomiting. Abdominal examination gave no more evidence than is stated above. On vaginal examination, there was general pelvic tenderness with induration and bogginess of the vaginal vault, especially posterior. In view of the history of curettage four days previous, it seemed probable that we had to do with a case of acute pelvic infection with an abscess following the operation, and with some extension into the general peritoneal cavity. A vaginal section with drainage which could be rapidly performed appeared to offer the best hope of relief, but even this was believed to be very slight in the patient's extreme condition.

A transverse incision was made posteriorly close to uterus, opening directly into the peritoneal cavity, and a large amount of dark fluid blood immediately escaped. It was found possible without much difficulty to forcibly retroflex the uterus into the vagina through the incision, and a mass consisting of tube distended with blood clot attached to the ovary was brought into view and shelled out from the right side. The tube and ovary were ligated en masse and removed. The hemorrhage apparently being controlled, the uterus was replaced and the pelvis irrigated and iodoform gauze drainage inserted. The operation was short, being completed in about ten minutes and practically under primary anesthesia. The patient was in a critical state for some time after the operation, but slowly gained in general condition, and the abdominal distention gradually subsided.

The patient improved steadily for about two weeks when suddenly she developed a high temperature with abdominal pain and tenderness, and a mass tender to palpation could be felt about midway in the abdomen between the pubes and the umbilicus. The abdomen was opened at once with a median incision into a cavity containing a considerable amount of old bloody fluid, with clots and foul smelling débris. Connecting with this cavity was a fistulous opening into the small intestine. This cavity was thoroughly sponged and washed out with hot salt solution and drained with iodoform gauze wicks. The patient made a good recovery from this second operation, and was discharged in about two months after her entrance, the fecal fistula eventually healing without operative closure.

Before the vaginal operation, the question of the possibility of extra-uterine pregnancy was considered, but it was given up in view of the history of probable abortion and curettage. It was plain after the operation, however, that the case was undoubtedly a typical one of ruptured

extra-uterine pregnancy, and it was believed that if the patient had been seen at the onset of her symptoms, and a good history could have been obtained, there is little doubt but what we should have performed an abdominal section primarily. But taking into account the fact that the patient had been etherized and curetted for a supposed abortion four days before, it seemed natural to ascribe her symptoms to a pelvic infection originating in the uterus. I was also convinced at the time that she would not be able to withstand an abdominal operation, so extreme was her condition, but in looking back at the case and comparing her condition with other patients operated upon for extra-uterine pregnancy, I am not as strong in my opinion on this point, as I was at that time. Many very desperate cases recover after abdominal section if the hemorrhage is quickly stopped, and the free blood evacuated from the peritoneal cavity.

It was a simple matter in this case to retroflex the uterus into the vagina, to ligate off the bleeding tube and remove it, and then replace the uterus and insert gauze drains around the stump. But the so-called toilet of the peritoneum cannot be effectively accomplished from below, and free blood may remain in the abdominal cavity as a source of trouble later, as occurred in this case. The collection of blood high in the abdominal cavity became infected possibly from the vaginal drainage, or probably from the bowels as they were found to be connected by a fecal fistula which had evidently ulcerated through.

As the patient ultimately recovered, I do not think it can be said that the vaginal operation was in any way detrimental to her, and it may be considered a successful case as she might not have recovered had the abdomen been opened when she was first seen, so critical was her condition.

This was the only case in which I was able to bring the uterus down into the vagina in the operation, in the others it apparently being firmly fixed forward. It is interesting to know, however, that this procedure in no way interfered with the return and maintenance of the uterus in normal position, as on a recent examination of the patient, about eight months after operation, the uterus was found in good position anterior, and the patient well and free from symptoms.

The second case, F. B., entered the hospital Sept. 28, 1903. Twenty-four years; married two years; one induced abortion. Two days before entrance, she was taken suddenly with very severe pains in the lower portion of the abdomen, accompanied by nausea and vomiting. Patient believed she had an accidental miscarriage a few weeks earlier when about six weeks pregnant. There had been constant flowing necessitating two or three napkins a day for about four weeks, or since the time of her supposed miscarriage. Nausea and vomiting for three weeks with more or less fever and chills.

The patient appeared to be very sick, there was intense pallor of face and her features were pinched. The pulse very rapid, irregular and scarcely perceptible at the wrist. Lungs and heart negative. Abdomen not much distended, somewhat rigid and very tender, especially on the right where a mass could be felt above the groin, through the abdominal wall, about the size of a navel orange. A boggy, indurated mass on the right could also be felt on vaginal examination. Leucocytosis 23,600. The probable diagnosis was made of an acute pyosalpinx, and a vaginal operation decided upon.

Under light anesthesia in the Pean position, the uterus was curetted with very little material being obtained. The usual incision was made behind the cervix, enlarged with the scissors, and dissection carried on with fingers. The large mass described above was entered and considerable blood evacuated. The ruptured sack was then clamped at both ends and clamps left in position, as the mass could not be quickly shelled out and there appeared to be some recent hemorrhage. The cavity was left tightly packed with iodoform gauze. Salt solution under breasts was given during the operation, as well as other stimulants, and the patient put to bed immediately and treated for severe shock. The pulse which at the end of the operation was 160, dropped under this treatment to 140 and improved in quality. Patient passed a fairly comfortable night, the pulse coming to 120 finally, and the temperature slightly above normal. Her color was much better early the next day, but towards night, however, the abdomen became distended and she complained of considerable pain and vomiting began, and there was marked palor.

Accordingly as it seemed evident that hemorrhage had begun again, the abdomen was opened by a short median incision, and the peritoneal cavity found filled with blood. There was fresh hemorrhage from the right tube which was tied off and removed. The intestines were found to be somewhat injected with evidence of beginning peritonitis. The abdominal cavity was thoroughly flushed out with hot saline solution, and about 50 cm. of a saturated solution of Epsom salts were injected directly into the intestine. Wick drainage and mass sutures.

Patient made a very good recovery from ether, and for twenty-four hours did well, when she ceased to gain and began to go to pieces and died forty-eight hours after the second operation.

This second case illustrates the impossibility in most cases of controlling hemorrhage from below even when its origin is in the pelvis, as well as the dangers and disadvantages of the vaginal operation. In certain cases it may be possible to accomplish it, but one has no assurance of being able to do so, and the danger of secondary hemorrhage is undoubtedly much greater than when the hemorrhage is controlled from above. It is also evident from this case that even in the presence of a definite mass in one side, we cannot by any means be sure that hemorrhage is not still going on, and that we have a hematoma which is walled off from the general peritoneal cavity. It seems probable now that this patient would have stood a very good chance of recovery had the abdomen been opened at the first operation, and the hemorrhage controlled from above.

Case III. H. V. H., entered hospital Nov. 17, 1903. Thirty-six years; married eighteen years; six pregnancies; last, ten years previous. Nearly constant flowing for one month, accompanied by slight general abdominal pain. Two days ago was taken with very

severe general abdominal pain and patient thinks she fainted. Pain is still very severe and is apparently becoming localized in the left lower quadrant. Considerable vomiting.

Appeared very sick; pulse rapid, regular, of fair volume and tension; dyspnea and pallor; heart and lungs negative. Abdomen not distended but lax, although there was considerable tenderness on pressure over entire surface, but especially over lower portions. In left inguinal region a distinct mass could be outlined, somewhat tender to palpate. She was given salt solution, strychnine, and a shock enema to improve her condition. Leucocytosis 26,200. Vaginal examination showed cervix pushed forward by a large bulging mass behind the uterus extending outward towards the left side. The patient rallied somewhat after a few hours from her profound shock, and vaginal section under light anesthesia was performed. A cavity was opened, walled off from the abdomen, and containing a large amount of old clotted blood. There was no fresh bleeding, the cavity was irrigated with salt solution and left packed with iodoform gauze. The patient rallied quickly and eventually made a good recovery.

This last case illustrates very well, I believe, a type of case in which if we could be absolutely sure of the condition in the pelvis before operation, the vaginal operation would be satisfactory and be safer and simpler than an abdominal operation. That this cannot always be determined beforehand is shown by the second case. The patient was undoubtedly suffering from severe shock as the result of hemorrhage, probably into the broad ligament. Such a cavity after being evacuated of its contents can be packed and the hemorrhage controlled in that way very well from below.

It is rather difficult to see just why there should be so much shock as there was in this case without free hemorrhage into the peritoneal cavity, or without large loss of blood, but we know that we do sometimes get practically the same amount of shock in either condition. I have had several cases of pelvic hematocele, one of which was in rather an acute condition, which have been opened by vaginal section. But as in none of these cases was it possible to determine positively that the condition arose from an ectopic pregnancy, they have not been included in this paper. The experience gained in these three cases is of course not large, but it is quite enough even with two recoveries in three desperate cases, to convince me that the abdominal route is by far the safer and more satisfactory method when once the diagnosis is made, even though it seems scarcely possible for the patient to undergo the shock of a laparotomy. The time required is a little more by the abdomen but the results in the control of hemorrhage are much more certain.

I am not sure, however, that if one, in a mistake of diagnosis, opens by vaginal section into a ruptured extra-uterine pregnancy, he should always immediate y follow it up by an abdominal operation. I should say not if he feels certain that he has been able to control the hemorrhage, or unless the patient is in unusually good condition, or later she shows evidence of continued hemorrhage.

We must, I believe, continually keep in mind the possibility of extra-uterine pregnancy in a woman exposed to pregnancy, and in the presence of severe abdominal pain and tenderness, a rapid pulse, vomiting, or other peritoneal symptoms, a rupture of a pregnant tube can never be absolutely excluded.

## Clinical Department.

### CLINICAL REPORT FROM THE WARD FOR SKIN DISEASES AT THE MASSACHUSETTS GENERAL HOSPITAL.

#### A CASE OF CUTANEOUS TUBERCULOSIS OF REMARKABLE EXTENT. DERMATITIS HERPETIFORMIS OF TWO YEARS' DURATION. ULCERATED NEVUS VASCULARIS.

BY JOHN T. BOWEN, M.D., BOSTON.

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Since the opening of the ward for skin diseases, in October, 1903, many interesting cases have been received and treated. The following are among those observed during October, November and December:

#### A CASE OF CUTANEOUS TUBERCULOSIS OF REMARKABLE EXTENT.

The patient is a man of thirty-two, born in Massachusetts, who has nothing of importance in his family history, with the exception that his mother died with pleurisy. He has one brother and three sisters living and well. When eight years old, he had lung fever, and was ill three months, but recovered perfectly. When ten years old, a small nodule appeared on the nose, on the right side, which steadily spread. This was followed by swelling of the nose, and by similar small nodules on the lower lip. At this time the diagnosis of lupus was made, and he came to the Massachusetts General Hospital, where the lesions on the lower lip were curetted. From this time onward the lesions constantly extended, spreading outward over his face. When fifteen years of age, the middle finger of his right hand swelled, became sore, stiff, and then contracted. The next lesion to appear was on the right buttock, a little later than the finger. Next, the front of the upper arm was attacked, and this was followed by a lesion at the flexure of the elbow, which healed spontaneously.

When admitted to the ward, on Oct. 10, his face from the eyebrows to the middle of the under part of the chin, was a mass of scar tissue of a pale red, clear in the center, but with scattered cutaneous nodules. The lower part of the nose was entirely gone, exposing the nasal septum, and the lips tightly drawn and contracted, with some crusted lesions at the edges. There was marked ectropion, especially of the right eye. There were extensive infiltrations of tuberculous tissue over the sternum, right upper arm, right wrist, left upper arm, and the outer and inner sides of both thighs and buttocks. Intermixed with these more or less active lesions was a large amount of cicatricial tissue. The hands were greatly distorted, anchylosed, and presented a striking resemblance to the main-en-griffe of leprosy.

This man had visited various parts of Europe in search of a cure, and had been an inmate of several of the better known dermatological institutions. His

general health had always been good. During his stay in the hospital an epithelioma has developed upon the right cheek near the angle of the mouth, which thus far has proved rebellious to the x-ray treatment which has been of much value for many of the tuberculous lesions. Different parts of his body have been treated by the Finsen light method and by the high-frequency current.

DERMATITIS HERPETIFORMIS OF TWO YEARS' DURATION.

This patient is a man of thirty, born in England, and first affected in March, 1902. The disease first made its appearance on the scalp in the form of blisters, which rapidly followed one another. In August of that year, the bullæ were present on the arms, ankles and also the toes; and afterwards the eruption spread rapidly to the back. This patient was seen by me in 1902. At that time his body was pretty well covered with a purely bullous eruption, grouped in places, as about the mouth and nose and in the groin. The patient stated that he had been unable to work, and at one time had been hardly able to move on account of the extent of the eruption. Very little multiformity was seen, the lesions being pure bullæ and vesicles. There were large areas of erythema and pigmentation, which represented the areas that had been affected by the disease. At one period, the affection had almost disappeared, and the patient thought that he was surely going to recover, but another attack quickly followed.

When admitted to the ward on Oct. 9, the eruption was situated upon the neck, where confluent clusters of vesicles and bullæ on an erythematous base were seen. Vesicles were also clustered about the mouth; the scalp was crusted, with the appearance of new vesicles; the abdomen was free. There were numerous bullous lesions on the back, more or less grouped. Mingled with crusts and erythema, there were very numerous pigment stains over the entire body. Upon the lower limbs, the affection was grouped about the genitals and the inner surface of the thighs, consisting of large and small closely clustered vesicles and bullæ. In general, the type was that of medium sized bullæ. On the thighs and buttocks the lesions are very numerous, so that sitting down is very painful.

This patient has never suffered in his general health; in fact, he has gained weight since the affection began two years ago. No abnormal signs were found on physical examination. Examination of the blood showed polynuclear leucocytes, 63%; lymphocytes, $19\frac{5}{10}\%$; cosinophiles, $17\frac{5}{10}\%$; white blood corpuscles, 25,500. An examination of the contents of the bullæ gave polynuclear leucocytes, 46; lymphocytes, 4; cosinophiles, 50.

The patient remained in the ward until Jan. 21, 1904, when he was discharged, relieved. During this time, the skin affection went through various phases. At first new lesions were constantly appearing, generally over the parts mentioned above. It was noted that there was a marked tendency to grouping and that the bullæ, especially the larger ones, had an angular outline. He developed, also, a few lesions on the mucous membrane of the mouth. The anterior surface of the trunk remained pretty free from the lesions, while the back was at times almost completely covered. The groins continued to be a very favorite site for the appearance of the lesions.

Various methods of treatment were tried, both internally and externally. The x-ray seemed to have no effect either on the duration of existing lesions or on the appearance of new ones. Burow's solution, a mixture of acetate of lead and alum, was of much value in combating the odor of the macerated epidermis and as a soothing dressing. It was thought at one time that arsenic was exerting a somewhat controlling effect, but the appearance of an active new outbreak dispelled these illusions. Quinine, which has had an effect in certain cases of this character, was tried for a considerable time without result. When discharged, he had only a few scattered lesions over the areas that had been generally affected before. As the eruption became less, the percentage of eosinophiles diminished, so that there was only about 5% when he left.

On the ninth of March he was readmitted with a fresh attack. Up to three days ago the affection had been confined to the chin. Now it has appeared in both groins, extending over the perineum. There are also lesions on the back and on the lower limbs. The patient is still in the hospital, repeating his experience of three months before. There has never been very marked pruritus, although he has complained of some at times.

The affection must be classified with dermatitis herpetiformis on account of its recurrence, its grouping, and the general well-being of the patient. The multiformity was not marked in this case. Apart from some few areas of erythema, the affection has been vesicular and bullous or pustular from the start. It will be noted, also, that the itching is not severe.

ULCERATED NEVUS VASCULARIS.

This occurred in an infant of eleven months, of foreign parentage, with no obtainable history except that she had been born with a birth mark of the left cheek, which had grown rapidly with the growth of the child, and had become ulcerated three months ago. On examination the infant, who was poorly nourished, presented over the left cheek an area of about four by one and one-half inches deeply ulcerated, with a thin secretion. Surrounding this ulcerated area, there was a small area of angiomatous tissue; but most of the tumor had become ulcerated. The case was interesting on account of its unexpectedly favorable termination. The child being poorly nourished and the ulceration extending rapidly when she was admitted, it could hardly be expected that the process would be stopped. Undoubtedly the improved hygienic conditions had much to do with the continuous improvement that took place. It was treated locally with sulphonapthol and myrrh wash and a borated ointment. The patient was admitted on Dec. 7, 1903, and on Jan. 1, 1904, the ulcer had practically healed, leaving a red cicatrix.

## THREE CASES OF HEMORRHAGIC DISEASE OF THE NEW-BORN.

BY HENRY B. STEVENS, M.D., WEST ROXBURY, MASS.

The following brief reports of cases are of some interest:

Case I. C. B., was born April 8, 1901. First child; normal delivery; O. D. P., male.

On the second day child vomited small amount of bloody matter of a dark color, followed after a while by more of same nature and accompanied by frequent tar-colored stools. Moderate fever. A diagnosis of hemorrhagic disease of the new-born was made. Dr. J. L. Morse was called in consultation. Supporting and stimulating treatment advised, and the child was kept perfectly quiet in its basket, fed with diluted breast milk by dropper and given small doses of

brandy. Continued to vomit bloody matter and tar-colored stools kept up. Marked yellowish pallor developed with extreme prostation. Child gradually failed and died on April 11.

Case II. A. O., was born Jan. 5, 1902, in immediate neighborhood of Case I, the two houses being within stone's throw. Third child; normal delivery; female.

Case presented almost identical symptoms with Case I, the hemorrhage commencing after about thirty-six hours.

Gelatine, moderately thin solution in water in teaspoonful doses was fed freely to the baby, who took it readily. Dialized iron and Fl. Ex. Ergot in drop doses were given every hour alternately.

After a few doses of gelatine the hemorrhage from the bowel, which had been alarming, began to abate while the vomiting stopped entirely after the first dose. The characteristic pallor became marked, prostration and emaciation were extreme, so that death seemed imminent, but the treatment was kept up faithfully and the child lived.

Case III. G. B., brother of Case I, was born June 19, 1902, in same house and room. Normal delivery.

A few hours after birth, with the idea of possibly forestalling trouble, gelatine was given in teaspoonful doses about once in three hours. Baby took it well. After about forty-eight hours there was a bloody movement, followed shortly by another. Gelatine was increased. Baby had in all but three movements of blood, did not vomit bloody matter nor show any appreciable effect from the hemorrhage. Gained and developed as a normal baby. Dr. C. W. Townsend saw the case in consultation.

All three children were well developed and nourished when born. Family history was negative. There was no sepsis in any of the cases, no bleeding from cords or evidence of hemorrhage other than as stated.

Three cases are hardly enough to build theories upon; but perhaps the circumstance of three cases of a rather rare disease, occurring in one practice, in one neighborhood, all within fifteen months, may add weight to the theory already advanced that hemorrhagic disease of the newborn is of an acute infectious nature. Gelatine in these cases seemed to act almost as a specific. It was readily taken, well borne and certainly merits a trial.

## Medical Progress.

### THE PROGRESS OF SURGERY.

BY HERBERT L. BURRELL, M.D., AND HAYWARD W. CUSHING, M.D.

(Continued from No. 20, p. 543.)

#### ON THE OCCURRENCE AND SIGNIFICANCE OF CUTANEOUS HYPERALGESIA IN APPENDICITIS.

Very little attention seems to have been paid by surgeons to the subject of cutaneous tenderness in appendicitis, and in the more recent textbooks of surgery and monographs on appendicitis no mention is made of it. In order to discover the frequency with which this sign is present in appendicitis and to test the teaching that it disappears on perforation of the appendix, Mr. Sherren [15] undertook this research, hoping to find an additional guide to operation in appendicitis. For this purpose, during the time that he was surgical registrar at the London Hospital, he examined all the cases of appendicitis that were admitted to the hospital, as far as circumstances would permit. He based his observations entirely upon cases in which the notes were taken by himself and in which the diagnosis of appendicitis was confirmed by operation at which he was present. He has also included those cases of appendicitis operated on by himself since that time, as assistant surgeon to the hospital.

Two varieties of tenderness are met with in appendicitis — the superficial, or cutaneous hyperalgesia, and the deep. The laws which govern the appearance and distribution of deep tenderness in connection with affections of the peritoneum have been worked out by Head. Sherren's observations confirm the statements of Head in every particular with regard to the appearance of this form of tenderness as a consequence of diseases of the appendix. He confines his attention to the conditions associated with the appearance of cutaneous hyperalgesia. Cutaneous hyperalgesia is tested by gently pinching or stroking the skin, beginning, if possible, in an area which is not tender and working towards the suspected tender area and so marking out its boundaries. Care is necessary, in order to avoid bringing out any deep tenderness which may be present. The skin only must be stimulated and all pressure on deeper structures avoided. In appendicitis, cutaneous hyperalgesia varies from a complete band extending on the right side from the middle line below the umbilicus in front to the lumbar spines behind, down to a small circular spot a little above the middle point between the umbilicus and the anterior superior spine. This band corresponds to the eleventh dorsal area of Head. Very often the tenderness extends somewhat into the tenth dorsal area also and occasionally, but not often, into the twelfth dorsal area, sending a tongue-shaped process over the gluteal region. The width of the band is in an adult about three inches.

This wide area, however, is not the one that is most often present. The usual area is on the right side of the abdomen and of a triangular shape. So often is this triangular area present that Sherren is in the habit of describing it in his notes as the "appendix triangle" of cutaneous tenderness. This triangle is situated in the right iliac region. Its lower boundary reaches almost to Poupart's ligament, its inner almost to the middle line, and its apex is a little outside the anterior superior spine, sometimes extending to the mid-axillary line.

He fortunately has been able to watch cases in which the hyperalgesia diminished from the complete band to the small circular area and many cases in which the "appendix triangle" gradually disappeared, leaving the small circular spot. He never examined a case of cutaneous hyperalgesia in appendicitis in which the posterior area alone was present. Cutaneous tenderness in appendicitis is occasionally bilateral.

[15] London Lancet, Sept. 19, 1903, p. 816.

Mr. Sherren has had the opportunity of seeing two such cases, in both of which the hyperalgesia was most marked on the right side.

He has never yet seen a case in which the hyperalgesia was present on the left side alone. This hyperalgesia is probably present in the majority of cases of first attacks of appendicitis, but in the gangrenous type of the disease no such tenderness can be discovered when the patient comes under observation, and it is probable that this form of the disease does not lead to the conditions which can produce reflected pain and superficial tenderness. If a patient is progressing favorably the hyperalgesia clears as the other symptoms of the disease improve, rarely persisting in the first attack after the sixth or seventh day. In subsequent attacks, however, where a stricture has been produced as the result of the first attack, it may persist much longer and remain after all the other symptoms of the disease have disappeared.

This hyperalgesia accompanies the reflected pain due to the changes in the appendix in exactly the same way as the reflected pain produced by the diseases of the stomach or other parts of the intestinal tract may be associated with superficial tenderness. It may, however, persist after all pain has ceased, especially where the appendix has been inflamed previously. Like all visceral hyperalgesia it is caused by the close association between the nerves which conduct impulses from the appendix and those which conduct similar impulses from the skin to the same segments of the central nervous system. When the otherwise painless stimuli from the skin reach those segments of the central nervous system which are directly connected with the appendix the skin appears to be tender. If a peripheral nerve be inflamed the skin within its distribution may become tender. But the cutaneous tenderness seen in appendicitis is not due to inflammation of the nerve trunks as is sometimes seen in cases of pleurisy (Head). For it may occupy the territory of the posterior primary division as well as that of the anterior division of the nerve, and it is inconceivable that the former division could ever be directly affected in appendicitis, and it appears early in the disease while the inflammation is still limited to the appendix. The reason for the anterior area remaining longer than the posterior and often being the only one present seems to be anatomical and to depend on the comparatively greater importance of the anterior primary division of the dorsal nerves.

Cutaneous tenderness does not vary with the positon of the appendix and is the same whether the appendix is in its normal position, pointing into the pelvis, on the outer side of the cecum or curled up behind it. Mr. Sherren has seen it typically present in a case of appendicitis where the cecum was undescended. Here, although the cecum was in close relationship to the liver, the superficial tenderness occupied the usual band in the eleventh dorsal area. The stimulus necessary to call forth this reflected pain and cutaneous hyperalgesia seems to be that of tension and not of irritation of the nerve endings in the appendix by the inflammation. Head has already shown this to be true for other hollow viscera, particularly the heart. That the stimulus is one of tension is seen by the fact that with perforation or gangrene of the appendix the superficial tenderness completely disappears, even although the perforation be small and the remainder of the appendix not gangrenous. This could not be explained on the supposition that the stimulus is one of irritation, the result of inflammation.

It is anatomically possible for other portions of the lower intestinal tract to cause cutaneous hyperalgesia in a similar situation to that caused by the appendix and Head has recorded such cases. Sherren has examined all the cases of abdominal disease which have come under his notice in the surgical wards of the London Hospital and has never met with cutaneous hyperalgesia in other diseases of the intestinal tract from the duodenum downwards.

The cutaneous hyperalgesia met with in renal colic might be mistaken for that seen in appendicitis, but as a rule it is higher, is more widespread, and tends to pass down into the first lumbar area, and where an anterior area only is left it is over the margin of the bony thorax about the situation of the tenth and eleventh ribs. The areas met with occasionally in gallstones and gastric ulcer are too high to be mistaken for that of appendicitis, and in gastric ulcer is often present only on the left side. Inflammation of the uterine appendages may give rise to cutaneous hyperalgesia but its occurrence is rare and it is, as a rule, bilateral.

It is well known that pleurisy at the base may cause pain over the abdomen. Head states that "if a pleurisy is acute the intercostal trunks may become implicated in the inflammation and pain appear over their terminal distribution, exactly as pain appears in the little finger when the ulnar nerve is injured. Thus an acute pleurisy may cause pain over the abdomen or even the iliac fossa of the same side. This is not a visceral reflected pain, for it is only present over that portion of the nerve trunk distal to the inflammatory lesion and is not present over the back. It may occasionally be accompanied by superficial tenderness. But unlike the superficial tenderness that is associated with true visceral reflected pain the tenderness that may accompany a pleurisy is only present in front of (on the distal side of) the patch of pleural inflammation." But, in Sherren's experience, the pain of pleurisy referred to the right iliac fossa is rarely associated with superficial tenderness that could be mistaken for that of appendicitis. Barnard has recently drawn attention to the simulation of appendicitis by "pleuro-pneumonic disease."

As an aid in determining operation the disappearance of hyperalgesia is of the utmost importance. If well-marked superficial tenderness disappears without coincident amelioration of the general condition of the patient it is a sign of

perforation or gangrene of the appendix. Unfortunately, a large number of cases of appendicitis which come under the care of the surgeon are not seen when hyperalgesia is present. But the absence of hyperalgesia is as important an indication of operation as its disappearance. In cases such as these coming under observation usually about the third or fourth day, with the signs of appendicitis well marked, Mr. Sherren considers absence of hyperalgesia the determining factor in operation. In over twenty cases of early appendicitis without superficial tenderness on which he has operated, he has found perforation or gangrene in the appendix without exception.

*Conclusions.* — 1. Cutaneous hyperalgesia is probably present at some time during all first attacks of appendicitis, except perhaps in the fulminating type, and depends upon tension within the appendix. 2. It may be absent in attacks after the first, if the first attack was of sufficient severity to destroy nerve tissue in the wall of the appendix. 3. When present in attacks subsequent to the first it often persists long after all other signs of the disease have gone, owing to the tension within the appendix being kept up by the presence of a stricture. 4. It gradually disappears during convalescence as the other signs of the disease clear up. 5. Disappearance of cutaneous hyperalgesia without improvement in the general condition of the patient is a sign of perforation or gangrene of the appendix and should be a signal for immediate operation. 6. The presence of cutaneous hyperalgesia is no contra-indication to operation. Abscesses may form and general peritonitis may develop while it is present. 7. Its absence, on the other hand, is of great importance. Absence of cutaneous hyperalgesia, the patient coming under observation early in the first attack of appendicitis, is a sign of gangrene of the appendix unless the case is obviously a mild one and the patient is rapidly getting well. 8. Cutaneous hyperalgesia is, as a rule, absent in cases of abscess of the appendix. 9. The age of the appendix and the position of the appendix have no influence upon the cutaneous hyperalgesia. 10. It is occasionally of use as an aid to the diagnosis of appendicitis.

### THE BEST METHOD OF DEALING WITH THE STUMP IN APPENDECTOMY.

Dr. Lilienthal[16] in an article on this subject emphasizes the following points: — He speaks in favor of treatment of the stump by ligation and cauterization. He claims from examination of specimens of appendices treated by ligature and from the results of his observations clinically, that the ligature cuts through the mucous membrane and destroys it at the point of constriction. In each case the submucous fibrous coat and the peritoneum were uncut and held firmly. In regard to cauterization, he recommends the application to the mucous lining of the stump of 95% carbolic acid, applied with the tip of a closed artery clamp. According to his observations the stump so ligated was found to be cast off with its ligature and only a smooth cicatrix on the surface of the cecum remained. He also notes that he has never found an adhesion in this location, no matter how numerous they were in other parts of the abdomen. He claims that the stump formed by ligation, as described, is cast off completely in six days and with it any temporary adhesion that may have formed disappears. He recommends this method after a satisfactory test of ten years' use in many hundred cases.

[16] Medical News, Nov. 28, 1903.

### COLOPEXY IN TREATMENT OF RECTAL PROLAPSE.

The resection operation in extreme cases of rectal prolapse is not without danger, is followed at times by stricture formation at the suture line, and does not always produce a permanent cure. Colopexy is regarded as an operation far less dangerous and yielding good results. J. Roller, who has written an interesting article on this subject,[17] mentions the Eiselsberg operation which consists of suturing the sigmoid by its lower end to the parietal peritoneum through an incision in the left hypogastrium. But he has noticed that the adhesions thus formed were not very firm while the scar between the peritoneum and the surface uncovered by it showed unusual firmness. Taking this fact into consideration Roller has operated in two cases where he has sutured intentionally the sigmoid to the abdominal wall which was denuded of peritoneum. For the details of technique of these cases (in one of which an anastomosis between the colon and the pelvic portion of the sigmoid in addition to the parietal fixation was made) the reader is referred to the original article. The results were satisfactory in both cases.

[17] Deutsche Med. Wochenschr., 1903, no. 32.

### THE TREATMENT OF ACUTE PERFORATION — PERITONITIS.

The treatment of acute peritonitis resulting from perforation due to typhoid ulceration and necrosis by laparotomy and the formation of an artificial anus has been discussed by Escher.[18] He reports three recoveries in four cases. The patients' ages ranged from eight to nineteen years. The operation was done in the end of the third or the beginning of the fourth week. The favorable results are attributed to the omission of the primary suture of the intestine, which shortens the operation, and the formation of a fecal fistula, which overcomes the obstruction to fecal circulation in the intestine. He considers that the suturing at the site of the perforation not only prolongs the operation and thus increases the risk to the patient but also favors the further development of the intestinal pariesis. It is only under special favorable circumstances completed. On the other hand the fixing to the abdominal wall of the diseased intestine by the above recommended operation and the packing off of the peritoneum with gauze tampons is the surest protection against danger from subsequent

[18] Mittheilungen a. d. Grenzgeb. der Med. und Chir., Bd. xi.

perforations. The healing of the intestinal ulcers is also favored by the temporary removal of the fecal contents of the intestine.

RECOVERY FROM TUBERCULOUS PERITONITIS.

H. W. Freund has described in a recent article [19] different stages in the healing process in cases of tuberculous serous, ulcerative, suppurative and adhesive peritonitis and illustrates each type by quoting cases. All of these three varieties he considers amenable to operative treatment. This relieves the abdomen of the presence of the effusion with or without its pathogenic germs and the intervention is followed by proliferation of connective tissue which destroys or encapsulates the morbid products. Mild cases may be treated conservatively but severe ones require surgical aid. In a series of fifteen cases he tries to emphasize the beneficial results obtained. In some the cure has persisted for years. Concomitant tuberculous lesions in pleura or lungs have healed with the healing peritoneum. Experiences of many surgeons to date show that 65% of these cases have been cured by operative treatment and 25% permanently for years to date.

RECURRENT RETROPERITONEAL LIPOMA.

Heinricius [20] reports two cases of this unusual neoplasm in which the disease recurred. The site of recurrence was at the site of the original tumor. The point of origin of such lipomata is in the depth of the retroperitoneal fat. The portion of the intestine with which they are found in contact is the ascending colon or the sigmoid flexure. In a majority of cases the tumor appears to have developed behind the cecum, or ascending colon, and pushes it forward before it or to the left side. In 1900 Heinricius collected (and described) thirty-five cases of the class of growth.

FIRST SUCCESSFUL LIGATION OF THE HEPATIC ARTERY FOR ANEURISM.

The result indicated by the above title is reported by Kehr.[21] After removing a distended gall bladder the hepatic artery, portal vein and common duct were isolated. Then after ligating the artery in two places and dividing it between the ligatures the sac was opened and emptied. This operation is reported to have been followed by an uneventful recovery. The difference between this satisfactory result and the results obtained by animal experimentation is thought to be due to the fact that in pathological cases the gradual progress of the disease gives an opportunity for the collateral circulation to be sufficiently established to permit the ligation of the main vessel.

THE RESULT OF LIGATION OF THE FEMORAL VEIN BELOW POUPART'S LIGAMENT.

Halberstædter [22] calls attention to the fact that while in some cases of ligation of the femoral vein close below Poupart's ligament this operation is not followed by any especial disturbance in others it causes severe disturbance of circulation, even of gangrene. In 54 cases collected by him of ligation of the vein gangrene occurred twice. When the artery and vein were ligated simultaneously gangrene was observed in 14 out of 24 cases.

Finally while removing a tumor, after being compelled to resect a portion of the femoral vein and seeing septic gangrene of the extremity follow, Halberstædter attempted by experimentation to ascertain the reason why the femoral ligation was followed by so different results in different cases. He found [23] that the restoration of the circulation depended on the amount of blood pressure, the function of the valves, and finally on the extent of previous ligation of veins in separate tracts.

In consequence of such investigation Halberstædter concludes that in cases where the femoral vein is injured the method of controlling the hemorrhage should be selected which preserves the lumen of the vessel, indeed lateral closure, and best by venous suture. When operating for the removal of tumors the femoral vein is enveloped in a neoplasm, Halberstædter advises to save as much as possible of the vein trunk and especially of its lateral branches. The surgeon must under all circumstances make every effort to save the femoral artery. The most careful antisepsis must be observed and all hemorrhage entirely controlled in order to avoid extravasation into the cellular tissue. When the artery is saved and the blood pressure good the limb should be elevated after the operation. Under conditions of lowered pressure or simultaneous ligation of the artery the elevation of the limb is contra-indicated.

LIGATION OF THE FEMORAL VEIN AT POUPART'S LIGAMENT.

Contrary to the purely anatomical investigations of Braune, both the injection experiments of Braun as well as fifty-three actual successful clinical results of the ligation of the vein in man (Dr. Franz's [Berlin] case being included in this list) have demonstrated that the ligation of the femoral vein at Poupart's ligament is possible without danger to the life of the extremity involved.[24]

This knowledge of this freedom from danger after ligation is of especial importance to military surgeons. The work of Halberstædter gives one indeed the impression that one should almost always avoid using a ligature and should substitute the vein suture. This is indeed possible in many cases but not when the vein wall is stiffened or changed by inflammatory processes. The suture holds surely only when the vein wall is elastic and normal. When these conditions do not obtain the surgeon must choose between a lateral clamp or ligation. A lateral ligature is possible only with an elastic vein wall. Now, if in the regulated conditions of a hospital the

[19] Beitrage z. Geb. und Gynakologie, vii, 3.
[20] v. Langenbeck's Arch., Bd. lxxii, Heft 1.
[21] Munch. med. Woch., Oct. 27, 1903.
[22] Königsberg, Wiener Med. Presse, 1903, Bd. xliv, 2314.
[23] Beitr. z. Klin. Chir., 1903, Bd. 38, H. 2.
[24] Deutsche Militararztl, 1903, no. 10.

lateral compression has the disadvantage that one does not know when to remove the clamp without danger of secondary hemorrhage, how much more difficult would it be for the surgeon in the field where the vessel is clamped to-day and five to seven days later the patient is transferred to another hospital where the surgeon there has not to check hemorrhage temporarily but to treat the case to the end. It is gratifying to learn, says Dr. Frank, that (if experience does not refute the above statement) the femoral vein can be ligated at Poupart's ligament without dangerous conditions resulting from the procedure.

*(To be continued.)*

## Reports of Societies.

### THE OBSTETRICAL SOCIETY OF BOSTON.

MALCOM STORER, M D., BOSTON, SECRETARY.

MEETING of January 19, 1904, Dr. G. H. Washburn, in the chair.

DR. F. A. HIGGINS reported "Three Cases of Extra-uterine Pregnancy treated by Vaginal Section."[1]

DR. F. H. DAVENPORT: I think the lesson to be learned from these cases is that in the majority of cases the abdominal route is the safer. I have been noticing lately that there is a reaction in France and Germany against the vaginal route. In Boston we have never been especially enthusiastic about that route, and it is pleasant to see that in the countries where it has been most in favor the tide is apparently swinging the other way. In these cases the difficulty of diagnosis between pus and extra-uterine pregnancy is very great, yet it is of the highest importance.

DR. F. S. NEWELL: I have operated upon only one case of extra-uterine pregnancy by the vaginal route and then I thought I was going to find pus. The patient had been in the hospital six months previously with a pus tube. During the operation a severe hemorrhage occurred which it was thought was controlled by packing. The patient was watched for an hour, and as then no improvement was apparent I opened the abdomen to find that the packing only partially controlled the bleeding. The patient made a good recovery but I was impressed with the difficulty of being certain that by packing we are really stopping a hemorrhage.

DR. CHARLES M. GREEN: I should agree that the abdominal route is the safer, and should attack from below only when I thought pus was present. I have only once operated from below and then I thought pus was present. If there is any question as to the nature of the mass, preparations should be made to open the abdomen if necessary. The difficulty in diagnosis between extra-uterine pregnancy and inflammatory masses is all the greater because the two are often associated.

DR. EDWARD REYNOLDS: I too have only once attacked an extra-uterine pregnancy from below and then it was thinking that pus was present. The symptoms were strongly pointing to pus. On turning out an old clot from the broad ligament an alarming hemorrhage began which was finally controlled by packing. This packing was removed twenty-four hours later through a misunderstanding of orders, and another severe hemorrhage began which was very difficult to control.

DR. J. B. SWIFT: I see that Dr. J. R. Goffe in advocating the vaginal route says that it is not necessary to get all the blood clots out of the peritoneal cavity as it can safely take care of a certain amount of blood. I am interested in these cases as I have now under my care a case where an extra-uterine pregnancy was left alone with recovery. The patient first came to the hospital in December with no evidence of trouble but moderate pain in the side. She stayed only a few days. Later in the month she returned with a history of flowing and now a mass was to be felt. This was thought to be a fibroid and the abdomen opened. The pelvic cavity was found to be entirely walled off by adherent intestines and the diagnosis was changed to pelvic abscess. The abdominal wound was closed and the mass attacked from below. A cavity was opened full of blood clot into which a tube was inserted and the patient finally went home recovered. The tube had undoubtedly ruptured into the broad ligament. I feel myself that the abdominal is the safer route.

[1] See page 561 of the JOURNAL.

## Recent Literature.

*The Practice of Obstetrics.* Designed for the Use of Students and Practitioners of Medicine. By J. CLIFTON EDGAR, Professor of Obstetrics and Clinical Midwifery in the Cornell University Medical College; Attending Obstetrician to the New York Maternity Hospital. Octavo, with 1221 illustrations, many being in colors. 1111 pages. Philadelphia: P. Blakiston's Son & Co. 1903.

This book by Dr. Edgar is the most elaborate and comprehensive work on obstetrics from a single author, which has come to us for review. It is so comprehensive in its size, scope and material, as to make it a most valuable volume for extended reading and for a book of reference for the library, but at the same time it is questionable if the work is as well fitted for the average undergraduate medical student as a more concisely written textbook. This criticism, however, in no way detracts from the great merit and value of the book, which has no doubt required years of labor on the part of the author in its preparation.

In place of the usual chapters the volume is divided into ten parts, each of which is suitably subdivided into sections. Each part has its own table of contents, but these would be improved if the page references were given in connection with them. The author has adopted for part headings the names, Physiological Pregnancy, Physiological Labor, and Physiological Puerperium, instead of using the terms Physiology of Pregnancy, Physiology of Labor, etc. This is an improvement, we believe, over the old terms. The arrangement of the subject matter in the book does not at all times tend to increase the ease of reference or the conciseness of the volume, but otherwise than this the general plan of the book is excellent. For example, the usual section on the anatomy of pregnancy is omitted,

but the same material is introduced in appropriate places under the physiology of pregnancy and of labor. An instance where a subject seems to be apparently misplaced is that of the treatment of placenta previa which is taken up in the early part of the book in the chapter on the Anomalies and Diseases of the Placenta, bringing it even before the treatment of normal labor.

The author's asepsis is thoroughly modern, and the details of his practice are carefully explained. He strongly urges the use of rubber gloves as a routine measure. He accepts the belief that the vagina does not contain pyogenic cocci under normal conditions, and that autoinfection is impossible. He asserts that the physician in a majority of cases is the responsible person, but that even with sterile gloves danger of infection still remains. The importance of the shower over the tub bath in preparing the patient for labor is well emphasized from the danger of the soiled and infected water entering the vagina, a point which has recently been brought to the front by foreign writers.

Several pages are devoted to the subject of cephalometry, and although the proceeding has not gained much standing otherwise than in the hands of a few French writers, yet Edgar says the results go to show that the method is of undoubted value in determining the relative size of the fetal head and maternal pelvis and the choice of time for the interruption of pregnancy.

In his treatment the author is thoroughly modern and yet conservative. He takes a broad view of the subject of pregnancy and tuberculosis, and while he says that future generations must decide on the propriety of the interruption of pregnancy in tuberculous subjects as a routine measure, yet the obstetric treatment has now come to be regarded, theoretically at least, as the proper course; it still meets, however, with considerable opposition from conservative sources.

In the discussion on the determination of sex, there is considerable space allotted to the theories of Schenk, more we think than is necessary or warranted by Schenk's methods or results which are now pretty generally discredited.

The author rejects the time honored theory that flexion of the fetal head begins with labor, and says that he believes that flexion is complete or nearly so before the onset of labor, a position which we believe will ultimately be found to be correct.

Another example, showing perhaps the author's over-enthusiasm on the subject, is the devotion of ten complete pages of illustrations to various monstrosities and deformities, many of which have no bearing whatsoever on the subject of obstetrics.

Obstetrics is a subject which well repays good illustrating, and the book is very thoroughly provided for in this respect, and the majority of the illustrations are above criticism. Some might as well be omitted, as Fig. 195 which shows two tin cans of chloride of lime and sodium carbonate, also certain obsolete and discarded forms of instruments and methods. If only the better ones are shown and illustrated in modern books, the older and poorer ones will eventually disappear. This must necessarily of itself tend to improve obstetric practice, and obstetric books as well. This book is, however, a splendid one as it is, and worthy of very high commendation, but in our opinion would be improved by considerable elimination, and by a rearrangement of its matter.

*The Treatment of Neurasthenia.* By A. Proust and Gilbert Ballet. Translated by Peter Campbell Smith, L.R.C.P., L.R.C.S., Edinburgh. 12mo. pp. xiv, 213. New York: Edward R. Pelton. 1903.

This little volume is really a treatise upon the whole subject of neurasthenia, nearly half of it being devoted to a discussion of the nature, causes and symptoms of the disorder. It is written, of course, from the French point of view, and some of the statements seem strange to the American physician, namely, that neurasthenia is commoner among men and very rare in the laboring class. The book is very suggestive, and the discussion of the various forms of treatment, dietetic, psychical, hydrotherapeutic and the like, is sound and full. The translation is satisfactory, but the proofreading is defective. The intelligent compositor had perhaps a method in his madness when he substituted "painist" for pianist.

*Roger on Infectious Diseases. Their Etiology, Diagnosis and Treatment.* By G. H. Roger, Professor Extraordinary in the Faculty of Medicine of Paris, etc. Translated by M. S. Gabriel, M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co.

This volume of 874 pages, Dr. Roger's work on Infectious Diseases, is translated into English by Dr. M. S. Gabriel. The book occupies a somewhat unique position among medical publications in that it combines in rather unusual degree the results of laboratory investigation with a wide and well digested clinical experience. This double function, so often missed in the modern textbook, Dr. Roger is peculiarly capable of undertaking, since his work has led him not only into the study of cases at the bedside, but also into the fundamental problems underlying the causation of disease. With this equipment he has produced a book certainly of much value, and one which in reality covers a far wider field than its title would indicate. The practical study of the subject is also given due weight in the final chapters devoted to a consideration of the therapeutics of infectious disease.

The book is excellently printed, liberally supplied with large type as an aid to the reader, rather sparingly illustrated as books now go, and with relatively few references to original sources, although the names of investigators are freely used throughout the text. We cordially recommend the book to those desiring to base their information upon broad and solid foundations.

*The Practical Medicine Series of Year Books.* Issued monthly under the general editorial charge of Gustavus P. Head, M.D. Vol. IX. Physiology, Pathology, Bacteriology, Anatomy. Edited by W. A. Evans, M.D., Adolphus Gehrmann, M.D., and William Healy. August, 1903. Chicago: The Year Book Publishers. 1903.

Though this series is intended primarily for the general practitioner, this small volume is of value also to the specialist. The editors have been very successful in offering reviews which are not only readable but far more accurate than the average.

The section devoted to physiology in its seventeen well chosen reviews hardly covers the extensive recent literature on this subject. In the 100 pages on pathology are given the newer methods of technique and laboratory diagnosis, as cyto-diagnosis, cryoscopy, and improvements in blood examination. The questions of paratyphoid fever and certain parasitic diseases are well discussed. The few pages devoted to hygiene and anatomy emphasize the recent advances in these lines. The glossary of newer medical terms is fairly complete and forms a valuable feature. That the volume is well up to date is evident from the fact that there are many reviews of papers published the month in which the book was brought out.

*The Elements of Pathological Anatomy and Histology for Students.* By Walter Sydney Lazarus-Barlow, B.A., B.C., M.D., F.R.C.P. Philadelphia: P. Blakiston's Son & Co. 1903.

This book deals both with general and special pathological anatomy. All physiological considerations have been excluded, and the present treatise forms a complementary volume to the author's well known manual of general pathology. The two books together cover the entire field of pathological anatomy and pathological physiology.

The author believes, and rightly we think, that it is better to present to the elementary student clearly and fully the fundamental pathological alterations than to burden and confuse his mind with the names and definitions of relatively unimportant subvarieties. Special attention is given to those pathological conditions that are of greatest interest and importance to the clinician, and the book may be recommended to the practicing physician and clinical student because the subject is presented from their point rather than that of the laboratory worker.

The subject of retrograde change is first considered. This is followed by excellent chapters on inflammation and its sequels. One of the best sections is that devoted to tumors. The etiology of neoplasms is well discussed. The author regards the parasitic theory of cancer-formation as resting upon a very slender foundation. About two thirds of the volume are devoted to the pathological anatomy of the various organs and tissues. The author evidently has a first hand knowledge of the subject and these pages contain original observations of value, but it is a pity he has not inserted the results of important pathological studies made during recent years by European and American pathologists. For example, in discussing the relation of diabetes to lesions of the pancreas there is no mention of the Islands of Langerhans; and no reference is made to the characteristic proliferation of endothelial cells in the lymphatic apparatus of the intestine in typhoid fever which Mallory has shown to be the essential lesion.

The book is profusely illustrated with admirable drawings, all of which are original. The histological pictures represent faithfully the actual appearance of corresponding sections and will be an aid to all students of pathological histology who select this book as their guide.

*Anesthesia in Dental Surgery.* By Thomas D. Luke, M.B., F.R.C.S.E. New York: Rebman Company, 10 West 23d St. 1903.

The opportunity for witnessing the methods of using the different kinds of anesthetics and of studying their action must necessarily be limited up to the time the recently graduated dentist begins his practice. With the best of facilities and the best of instruction it is not possible to drill the average dental student so that awkwardness and apprehensiveness will not affect his early efforts in administering anesthetics.

This little book furnishes so much accurate information that it will serve in many cases in lieu of experience. The descriptions of the apparatus in use are clear and sufficient. The comparative values of the different agents are well drawn and the dangers are pointed out without prejudice and in such a way as to warn the practitioner without alarming him.

The book is essential to the young dentist, and the older man in the profession will find many suggestions that will enable him to improve his practice. The suggestions as to sterilization of mouthpieces when using nitrous-oxide are most timely. S. A. H.

*Lectures on Diseases of the Lungs and the Heart.* By James Alexander Lindsay, M.D., F.R.C.P., (Lond.) M.A., Professor of Medicine, Queen's College, Belfast, Physician to Royal Victoria Hospital, Belfast, etc. New York: William Wood & Co. 1904.

A pleasant, readable book, covering many points of diagnosis and treatment in an adequate manner. It has the disadvantages but, also, in large measure, the advantages of lectures put into book form; lacks the systematic, comprehensive presentation but carries a certain individual charm which, of course, finds its most ready recognition in the appreciation of those who have been students of the author. It offers no new facts, lays no special claim to originality, leaves out inevitably some points of diagnostic value, and very wisely neglects controversial issues. It is a book for general reading rather than for reference.

THE BOSTON

# Medical and Surgical Journal.

THURSDAY, MAY 26, 1904.

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## LABORATORIES OF PATHOLOGY AND PHARMACOLOGY AT THE UNIVERSITY OF PENNSYLVANIA.

The new laboratories of pathology, physiology and pharmacology at the University of Pennsylvania will be dedicated and opened for inspection on June 10. In connection with the opening of these very extensive and fully equipped laboratories it is of interest to call attention to the increasingly important place which laboratory teaching is taking in the modern medical curriculum. Even within the memory of men who are still young a great part of the teaching was done without the assistance afforded by laboratory methods, and it is sometimes hard to realize that the vast development of this type of instruction has come within the last two decades.

Tracing the methods of teaching in the University of Pennsylvania, which is the oldest medical institution in the country, we find that for upwards of one hundred years, from 1765 to 1868, the methods of instruction were relatively little changed in spite of the great accessions to medical knowledge during that time. Didactic lectures were the essential basis of the medical course, together with clinics at the Pennsylvania and Philadelphia Hospitals, which were at first optional and later obligatory. No systematic teaching was done at the bedside, and practical work in laboratories was unknown. A new method developed in 1868, exactly one hundred years after the graduation of the first class. The change consisted in certain lectures in pathology and in microscopy, together with practical demonstrations. In the years from 1868 to 1873 laboratories of chemistry, physiology, histology, pathological anatomy and pharmacology were established, and succeeding years saw their full equipment. This was a pioneer step on the part of the University of Pennsylvania. A further development of the laboratory method from the years 1877 to 1903 was inaugurated by the completion of the new medical department in West Philadelphia. It was then supposed that the facilities for teaching would be adequate for a period of fifty years. This, however, proved not to be the case, and the necessity for a new and much more extensive laboratory building has become apparent within the last few years, with a result that funds were obtained for the building of the new laboratories which are now completed and about to be put to practical use.

We have before commented on this building, and certain of its architectural features, and therefore we simply call attention to some of its main characteristics. It is two stories in height, and measures 340 feet front by 200 feet depth, the front exposure facing north for the purpose of securing the best light for microscopic work. Physiology and pharmacology occupy the first floor, and the second will be devoted exclusively to pathology and pathological bacteriology, with special provisions for surgical pathology, neuropathology and practical clinical pathology. A museum of pathology is arranged in close connection with the laboratory for purposes of teaching. Abundant private rooms for special research are provided, and in general, although prophecies in such matters have again and again proved fallacious, would seem to be adequate for any expansion which these subjects are likely to undergo in the future.

It is not to be expected that any definite reaction from the stress now laid upon laboratory teaching is likely to take place. At the same time it must be acknowledged that we are now seeing a phenomenal and possibly somewhat disproportionate devotion to what is popularly known as the theoretical side of medicine. There is danger that the sense of proportion may be lost in our enthusiasm for the type of research which such laboratories as this under consideration represent. At any rate, it behooves the great mass of medical men, whose interests may include but still lie beyond the laboratory, to see that facilities for practical instruction do not take a secondary place, and that the proper proportion be established and maintained between the all-important theoretical side of medicine

and its practical application. The simultaneous development of hospitals is an indication that this end is likely to be realized. We congratulate the University of Pennsylvania on this accession to its facilities for teaching, an accession which has a bearing on medicine far wider than the region which will be immediately benefited thereby.

## DEVELOPMENT OF FREE PUBLIC BATHS.

After a delay of one year, largely on account of the building trade strikes, the Milbank Memorial Free Public Baths were opened in New York with appropriate ceremonies on May 19. The building, which is on East 38th Street, is the gift of Mrs. Elizabeth Milbank Anderson. It was erected at a cost of $150,000, and will accommodate 4,800 bathers daily. This, together with the Rivington Street public baths and others established by various charitable societies, provides in New York, it is stated, facilities for every person in the city, not otherwise provided, to have a cleansing bath twice each week. The opening ceremony consisted in the formal presentation of the property by Mr. A. G. Milbank to the New York Association for Improving the Condition of the Poor, which has been entrusted with the management of the institution, and Mr. R. Fulton Cutting, as president of the association, accepted the gift. Dr. Darlington, president of the Board of Health, made a short address, and among the physicians present was Dr. Simon Baruch, who was the originator of the free "rain bath" in this country and to whose persistent efforts is due the present free bath system of New York City.

The history of Dr. Baruch's fight for free public rain or shower baths dates back to August, 1889, when through a Philadelphia medical journal he made the first plea of the kind. Shortly afterward he spent a year in Europe studying the systems of the public baths there, and he returned convinced that his original idea of the rain bath for public use was the best. The chief advantages of this form of bath are economy of space, water and care, without the danger of communicating disease through careless attendants. The temperature may be gradually reduced after the cleansing; it is more refreshing than a tub bath, and prevents danger from relaxation. "Tubs," says Dr. Baruch, "are not the proper thing for a free bath for the poor. If you have tubs you must employ a force to fill and empty them, and if they are to be kept in strictly sanitary condition they must be cleansed after each bather. With the rain bath, as fast as one person takes his scrub, another may step up." With several city administrations he labored persistently, but accomplished little. Then the New York Academy of Medicine gave formal approval of his method, while two or three charitable societies took it up and constructed public baths in accordance with his ideas. In 1895 a mandatory public bath bill was passed by the Legislature, but it was not until two years afterward that a committee was named to wait on Mayor Strong to urge the building of a public bath under the provisions of the law. The mayor gave his permission, and the same day steps were taken toward the building of the bath in Rivington Street. Last year 700,000 working people made use of this bath, and in the public schools 30,000 children used the rain baths which have recently been established in the schoolhouses through Dr. Baruch's efforts. On the occasion of the opening of the Milbank bath Dr. Baruch said: "Naturally enough, it is a matter of considerable satisfaction to me to be able to tell you that outside of New York there is no city in the world where anybody may go into a public bath, as he goes into a public park, and enjoy its privileges without cost. I think the realization of that fact alone is ample compensation for all the years of hard work it has cost, to say nothing of what has been achieved in other communities all over the world."

It is worthy of note that on the day following the opening of the Milbank bath, May 20, the Board of Estimate and Apportionment appropriated more than $1,000,000 for the construction of new public baths. Of this sum, $633,000 is for four baths in the Borough of Manhattan, $345,000 for three in Brooklyn, and a large sum for one in the Bronx.

## BULLETINS OF THE OREGON STATE BOARD OF HEALTH.

We are in receipt of four pamphlets from the Oregon State Board of Health, published as bulletins and concerning themselves respectively with Smallpox in Oregon, Hints upon School Hygiene, the Prevention of Typhoid Fever, and the Prevention and Cure of Consumption. Our object in calling attention to these publications is not only for the intrinsic interest which they have for professional men, but also to bring to notice the excellent missionary work which such

statements of fact are likely to accomplish, not only in the special community concerned but in the country at large. The campaign of education which has received renewed stimulus of late in connection with certain prevalent diseases, notably tuberculosis and typhoid fever, should certainly be extended, and there is no better means of accomplishing this end than through the publication by persons in authority of plain statements which may be read and appreciated by the laity.

Among many interesting statistics regarding the prevalence of smallpox in the state, and its relation to vaccination, the following incident is significant: In an epidemic of 29 cases there were 9 deaths, a mortality of over 30%. Of these 29 cases 12 were unvaccinated, 9 of whom died, a mortality of 75%. Of the vaccinated cases not one died, and none were at any time dangerously ill. In the pamphlet on school hygiene much good and sound advice is given upon many points relating to school life, all of which is calculated to be of interest to parents without unduly exciting them as to the dangers to be met with in schools. Suggestions on the prevention of typhoid fever and of consumption are similar to those with which we are now perfectly familiar. Their wide dissemination is certainly to be desired. If knowledge is power, and there is undoubted truth in the aphorism, there can be no question that, as the people come to know the nature of prevalent and fatal diseases, they will on the one hand take rational methods of precaution, and on the other not be unduly alarmed when such diseases appear.

## AWARD OF THE WARREN TRIENNIAL PRIZE.

The Warren Triennial Prize of $500 in the gift of the Massachusetts General Hospital has just been awarded to Prof. Max Borst, Professor in the University of Wurzburg, Germany.

This prize was founded by the late Dr. J. Mason Warren in memory of his father, and his will provides that the accumulated interest of the fund shall be awarded every three years to the best dissertation, considered worthy of the premium, on some subject in physiology, surgery or pathological anatomy; the arbitrators being the physicians and surgeons of the Massachusetts General Hospital. The dissertations must be submitted anonymously.

The title of Professor Borst's dissertation is "Neue Experimente zur Frage nach der Regenerationsfahigkeit des Gehirns," in which the regeneration of medullated nerve fibers in the central nervous system after trauma is conclusively demonstrated.

Professor Borst is a pathologist of established reputation and is the author of an extensive work upon the pathology of tumors, recently published.

The number of dissertations submitted was larger than ever before. They came from widely distant parts of Europe as well as from America. The widespread interest thus shown in the prize, as well as the great merit of many of the dissertations, is gratifying.

## MEDICAL NOTES.

Decennial of Discovery of Roentgen Rays. — The tenth anniversary of the discovery of the Roentgen rays is to be celebrated in Berlin in 1905. Professor von Bergmann will preside at the congress and exposition which it is proposed to hold.

Examination for Director of Pathological Laboratories, Bellevue Hospital. — It is announced that a civil service examination will be held June 7 for the position of director of pathological laboratories in Bellevue and allied hospital in New York. The salary of this position is $5,000 a year, and its incumbent is required to devote all his time to the work of the laboratory and is not permitted to hold a position in a medical school.

Manila Mortality Statistics.—The monthly report of the Board of Health for the Philippine Islands gives the following death statistics for January of this year:

Convulsions of children, 272; pulmonary tuberculosis, 78; eclampsia, nonpuerperal, 47; chronic bronchitis, 46; congenital debility, 40; acute bronchitis, 34; diarrhea and enteritis, 31; meningitis, 25; beri-beri, 25; dysentery, 18; malarial fevers, 13; endocarditis, acute, 12; pneumonia, 11; Bright's disease, 8; bubonic plague, 7; cerebral hemorrhage, 6; puerperal septicemia, 5; typhoid fever, 5; Asiatic cholera, 3; tetanus, 4; leprosy, 3.

Of the above mentioned causes and deaths the following occurred in infants prior to the completion of the first year of life: Convulsions of children, 272; eclampsia, nonpuerperal, 47; chronic bronchitis, 32; congenital debility, 40; acute bronchitis, 32; diarrhea and enteritis, 24; meningitis, 15; dysentery, 1; pneumonia, 1;

tetanus, 4. Of the 796 deaths occurring among inhabitants of the city, 475 or 59.6%, occurred in children less than twelve months of age.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, May 25, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 68, scarlatina 19, typhoid fever 5, measles 129, smallpox 0.

A Centenarian. — Mary Canney, reputed to be about one hundred and one years old, died in Woburn, Mass., recently.

Opening of the Corey Hill Hospital. — The Corey Hill Hospital will be opened Wednesday, June 1, and guests will be received at the building from three until six o'clock. This is a private institution erected under the auspices of certain physicians in Boston.

Surgical Out-Patient Departments, Boston City Hospital. — New buildings for the surgical out-patient department and three new wards are opened to-day. The trustees of the hospital have sent out invitations for the ceremonies in the afternoon. To-day is also the fortieth anniversary of the dedication of the hospital.

Mortality Rate of Diphtheria. — In the annual report of the Board of Health of Worcester, Mass., the mortality statistics for diphtheria are given as 3.84 for 1903, as contrasted with upwards of 8 in 1897 and 1898. In general there has been a constant decrease in the number of deaths from this disease, with a record for 1903 which is nearly two points better than any preceding year of which the statistics are given.

Epidemic of Cerebro-spinal Meningitis in Connecticut. — A recent bulletin of the Connecticut State Board of Health discusses the question of an epidemic of cerebro-spinal meningitis in that state. During the first three months of the present year but six cases were reported. In April the disease assumed an epidemic character and 43 cases were reported in Hartford alone, with 20 deaths. Since April 1 reports of its presence have been received from various towns, with a total of 76 cases.

### NEW YORK.

Prevalence of Meningitis. — Within the last three weeks there has been a very great increase in the number of cases of cerebro-spinal meningitis in the city, with a large number of deaths, said to have been one hundred and fifty, in a space of two weeks. Measures are being taken by the health department to check, if possible, the spread of the disease.

Reception Hospital for the Insane. — It is gratifying to learn that Governor Odell has approved the bill passed by the Legislature authorizing the City of New York to acquire a site and to lease it to the state for the establishment thereon of a reception hospital for the insane, and authorizing the State Commission in Lunacy to erect such a hospital. It was generally understood that the governor had decided to veto this bill, fearing that it carried with it an appropriation of $300,000. It is stated, however, that recently Dr. Samuel B. Ward of Albany labored with the governor for an hour, explaining the necessity of a detention psychopathic hospital in New York, and assuring him that the purport of the bill was simply to authorize the city to acquire a site.

Bequest to Manhattan Eye and Ear Hospital. — At a meeting of the board of directors of the Manhattan Eye and Ear Hospital held May 17 it was announced that a gift of $40,000, pledged by Edward R. Thomas, had saved the institution the loss of $125,000 in donations conditionally promised for a new building. The $125,000 was not to be given unless a total of $165,000 could be raised. Last year the Thomas family gave $50,000 to the same hospital to endow a ward, to be known as the Samuel Thomas Memorial Ward, and this latest gift from Mr. Thomas is a personal memorial to his father, the late General Thomas. The Manhattan Eye and Ear Hospital is to be removed from its present location on Park Avenue, near the Grand Central Railroad Depot, and steps will immediately be taken to purchase a plot of land for the new building. The site selected is in East 59th Street, within a block of the projected laboratories of the Rockefeller Institute for Medical Research.

## Obituary.

### A TRIBUTE TO BENJAMIN H. HARTWELL, M.D.

BY THE MASSACHUSETTS MEDICO-LEGAL SOCIETY.

The Massachusetts Medico-Legal Society, recognizing the deplorable loss which Forensic Medicine has suffered in this Commonwealth through the death of the late Benjamin H. Hartwell, M.D., of Ayer, one of the original members

and the fourth president of this Society, desires to record, in this permanent form, its tribute to Dr. Hartwell's character and its estimate of the rare traits which endeared him to his fellows.

We recall the stern conscientiousness which animated his conduct of life and was a controlling characteristic. We remember how amply he exemplified the statutory qualifications of "ability, discretion and learning" which led to his selection from among all his professional neighbors in the Fourth Middlesex District, fitting him to discharge acceptably the responsible functions of a medical examiner, and which from 1877 to his death retained him as a conspicuous exponent of the trustworthy servant of the Commonwealth. We remember with gratitude the earnest, cordial, dignified manner in which he lent himself to the promotion of every good cause. Loyalty to duty was to him a passion and an inspiration. Simple honesty, his mental frankness and intellectual humility, dominated him. Fidelity to his memory and what it represents is the truest evidence that he has not lived in vain.

## Correspondence.

### SANITARIUM viz. SANATORIUM.

Arlington Heights, May 18.

Mr. Editor: We are frequently asked, "What is the difference between Sanitarium and Sanatorium?" Gould's dictionary of medicine gives the following definitions: "*Sanitarium*, — A health station — a place or institution where the conditions are such as especially to promote health and vigor. The word is often incorrectly employed for Sanatorium, which is a hospital or place for curing those who are sick. A Sanitarium may be used for a Sanatorium, but it is not necessarily the same thing." Also, "*Sanatorium*, — An establishment for the treatment of the sick; especially a private hospital." In England and on the Continent, sanatorium is largely used to designate a hospital for the treatment of consumptive patients. And in this country the word has been seized upon for the same purpose, and is rapidly becoming associated in the public mind with "retreats" for cases of tuberculosis. So prevalent is this idea becoming that a large institution in New York State, which for half a century has been designated a Sanatorium, has found it advisable to drop the name and substitute the word, "Retreat."

This state of affairs is unfortunate, for while sanatorium rightly includes the treatment of consumptive cases, it by no means excludes other diseases.

The word "hospital" is so entirely associated with the idea of acute and surgical illness, with bedridden patients and red tape, that its use is rightly restricted to this kind of work. "Asylum" has come to be entirely given over to places caring for the insane; and in the minds of many, "retreat" conveys the similar idea when attached to a private institution. Various private places have endeavored to surmount this difficulty by substituting fancy names ending in "hurst" or "croft" or "hall"; none of these, however, convey any idea of the end sought. If, then, we relegate the word "Sanatorium" to the institution for consumptives, what are we to do for a word to convey the idea of an institution where, amid congenial, semi-homelike surroundings, the chronic sufferer — nervous, rheumatic, cardiac, dyspeptic, etc. — can secure that environment and scientific treatment which his case demands?

Arthur Hallam Ring.

### RECORD OF MORTALITY
For the Week ending Saturday, May 14, 1904.

| Cities. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Erysipelas. | Measles. |
|---|---|---|---|---|---|---|---|---|
| New York . . | 3,908,644 | 1,587 | 503 | 28.16 | 20.54 | 3.21 | .25 | 2.83 |
| Chicago . . . | 2,021,086 | 531 | 108 | 20.15 | 22.97 | .94 | .37 | .18 |
| Philadelphia | 1,407,968 | 520 | 129 | 28.46 | 14.81 | 1.73 | .38 | 1.54 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 217 | 47 | 25.34 | 12.90 | .92 | .46 | — |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 136 | — | 25.73 | 11.03 | 1.47 | — | 1.47 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 73 | 16 | 19.18 | 16.44 | — | — | — |
| Boston . . . | 617,950 | 218 | 54 | 20.18 | 16.51 | .92 | .46 | .46 |
| Worcester . . | 136,925 | 25 | 7 | 16.00 | 4.00 | — | 4.00 | — |
| Fall River . . | 119,349 | 33 | 15 | 27.27 | 18.18 | 3.03 | — | — |
| Lowell . . . | 104,402 | 31 | 10 | 16.13 | 12.88 | — | — | 3.22 |
| Cambridge . | 100,998 | 16 | 6 | 6.25 | 25.00 | 6.25 | — | — |
| Lynn . . . . | 73,875 | 24 | 8 | 16.67 | — | — | 4.16 | — |
| Lawrence . . | 72,348 | 25 | 8 | 8.00 | 24.00 | — | — | — |
| Springfield . | 72,020 | 15 | 5 | 40.00 | 20.00 | 6.67 | — | — |
| Somerville . | 70,413 | 24 | 9 | 20.83 | 20.83 | 4.16 | 4.16 | — |
| New Bedford | 68,863 | 31 | 12 | 19.35 | 19.35 | — | — | — |
| Holyoke . . . | 50,538 | 18 | 7 | 5.55 | 16.67 | — | — | — |
| Brockton . . | 46,601 | 6 | 1 | 16.67 | 16.67 | — | — | — |
| Newton . . . | 39,310 | 10 | 3 | 10.00 | 10.00 | — | — | — |
| Haverhill . . | 39,061 | 12 | 3 | 8.33 | 8.33 | — | — | — |
| Malden . . . | 37,205 | 7 | 1 | — | 28.60 | — | — | — |
| Salem . . . . | 37,188 | 15 | 3 | — | — | — | — | — |
| Chelsea . . . | 36,499 | 7 | 0 | 14.30 | — | — | — | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | — | — | — | — | — | — | — |
| Everett . . . | 30,209 | 8 | 2 | — | — | — | — | — |
| North Adams | 29,201 | 13 | 3 | 15.40 | 38.50 | — | — | — |
| Quincy . . . | 26,798 | 8 | 5 | 12.50 | — | — | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 5 | 1 | 40.00 | — | — | — | — |
| Brookline . . | 23,576 | 4 | 1 | 25.00 | — | 25.00 | — | — |
| Pittsfield . . | 22,870 | 9 | — | 11.11 | 22.22 | — | — | — |
| Medford . . | 21,956 | 1 | 1 | — | 100.00 | — | — | — |
| Chicopee . . | 21,692 | 6 | 2 | 16.67 | 16.67 | — | — | — |
| Northampton | 20,314 | 2 | 0 | — | — | — | — | — |
| Beverly . . . | 15,807 | 3 | 1 | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 4 | 1 | 25.00 | — | — | — | — |
| Adams . . . | 14,745 | 4 | 1 | 25.00 | 25.00 | — | — | — |
| Attleboro . . | 14,561 | 3 | 1 | — | — | — | — | — |
| Hyde Park . | 14,500 | 6 | 1 | 16.67 | 16.67 | — | — | — |
| Newburyport | 14,478 | 5 | 0 | — | 20.00 | — | — | — |
| Woburn . . . | 14,315 | 6 | — | — | — | — | — | — |
| Melrose . . . | 13,819 | 1 | — | — | — | — | — | — |
| Westfield . . | 13,809 | 6 | — | 33.33 | 16.67 | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 8 | 1 | 25.00 | 12.50 | — | — | — |
| Revere . . . | 13,609 | 2 | 1 | 50.00 | — | — | — | — |
| Framingham | 12,974 | 2 | — | 50.00 | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 6 | 2 | 33.33 | — | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 1 | 0 | 100.00 | — | — | — | — |
| Weymouth . | 11,350 | 1 | 0 | — | 100.00 | — | — | — |
| Plymouth . . | 11,189 | — | — | — | — | — | — | — |

Deaths reported, 3,695; under five years of age, 982; principal infectious diseases (smallpox, measles, scarlet fever, cerebro-spinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 917; acute lung diseases 674, consumption 411, scarlet fever 51, whooping cough 8, cerebro-spinal meningitis 102, smallpox 8, erysipelas 13, puerperal fever 23, measles 59, typhoid fever 61, diarrheal diseases 102, diphtheria and croup 76, influenza 3.

From whooping-cough, New York 1, Philadelphia 3, Baltimore 1, Pittsburg 1, Boston 1, Springfield 1. From smallpox, Philadelphia 5, Baltimore 1, Pittsburg 2. From cerebro-spinal meningitis, New York 97, Philadelphia 1, Baltimore 1, Lynn 1, Somerville 1. From erysipelas, New York 4, Chicago 2, Philadelphia 2, Baltimore 1, Boston 1, Worcester 1, Lynn 1, Somerville 1. From typhoid fever, New York 10, Chicago 6, Philadelphia 25, Baltimore 3, Pittsburg 12, Providence 1, Boston 2, Lynn 1, Chelsea 1. In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending April 30, the death-rate was 16.3. Deaths reported 4,785; acute diseases of the respiratory organs (London) 100, whooping cough 213, diphtheria 49, measles 155, smallpox 8, scarlet fever 40.

The death-rate ranged from 7.5 in Reading to 25.9 in Wallasey; London 15.6, West Ham 15.2, Brighton 19.0, Southampton 13.4, Plymouth 21.0, Bristol 16.0, Birmingham 19.4, Leicester 12.1, Nottingham 15.7, Liverpool 21.8, Bolton 17.8, Manchester 20.9, Salford 18.2, Bradford 20.7, Leeds 17.0, Hull 17.0, Cardiff 13.3, Rhondda 16.6, Wigan 20.8, Marthyr Tydfil 12.9, Whillesden 8.3, Warrington, 20.9.

## METEOROLOGICAL RECORD.

For the week ending May 14, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S.. 8 | 30.02 | 68 | 78 | 57 | 66 | 72 | 69 | S W | S | 16 | 12 | C. | C. | 0 |
| M.. 9 | 29.76 | 54 | 59 | 50 | 97 | 96 | 96 | N E | N W | 14 | 8 | R. | R. | .91 |
| T.. 10 | 29.89 | 61 | 72 | 50 | 82 | 94 | 88 | N W | E | 12 | 8 | F. | O. | .12 |
| W.. 11 | 30.06 | 58 | 67 | 50 | 90 | 87 | 88 | N | S E | 12 | 6 | O. | C. | .14 |
| T.. 12 | 30.10 | 58 | 66 | 51 | 85 | 65 | 75 | N | S E | 11 | 4 | O. | C. | 0 |
| F.. 13 | 30.08 | 58 | 63 | 53 | 70 | 88 | 79 | E | E | 10 | 4 | C. | C. | 0 |
| S.. 14 | 30.06 | 52 | 55 | 50 | 88 | 96 | 92 | N E | N E | 12 | 10 | O. | O. | T. |
| ☞ | 30.00 | | 66 | 52 | | | 84 | | | | | | | 1.17 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING MAY 21, 1904.

J. J. SNYDER, passed assistant surgeon. Detached from the "Kearsarge" and ordered to the "Maine."

W. H. BUCHER, surgeon. Detached from the Naval Station, Cavite, P. I., and ordered to the Naval Hospital, Yokokama, Japan.

E. THOMPSON, surgeon. Commissioned surgeon, with the rank of lieutenant commander, from March 3, 1903.

F. M. FURLONG, passed assistant surgeon. Detached from duty with the marine battalion on the "Dixie" and ordered home and to await orders.

C. ST. J. BUTLER, passed assistant surgeon. Commissioned a passed assistant surgeon with the rank of lieutenant, from October 26, 1903.

R. O. MARCOUR, assistant surgeon. Detached from duty with the marine battalion on the "Dixie" and ordered to the "Hancock."

P. S. ROSSITER, assistant surgeon. Detached from the naval recruiting station, Baltimore, Md., and ordered to the naval station, Honolulu, H. I., sailing from San Francisco, Cal., via steamer "Abarenda," June 4.

W. D. OWENS, assistant surgeon. Appointed assistant surgeon with rank of lieutenant, junior grade, from May 17, 1904.

F. E. SELLERS, acting assistant surgeon. Appointed acting assistant surgeon from May 17, 1904.

## OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING MAY 19, 1904.

CARTER, H. R., surgeon. To report at Washington, D. C., for special temporary duty. May 13, 1904.

WOODWARD, R. M., surgeon. Granted leave of absence for three months from June 14. May 13, 1904.

EAGER, J. M., passed assistant surgeon. Reassigned to duty at the port of Naples, Italy, effective March 25, 1904. May 14, 1904.

FRANCIS, EDWARD, assistant surgeon. To proceed to Martinsburg, W. Va., for special temporary duty. May 11, 1904.

BURKHALTER, J. T., assistant surgeon. Ten days' extension of leave of absence, granted by bureau telegram of May 9, 1904, revoked. May 17, 1904.

ALEXANDER, E., acting assistant surgeon. Granted leave of absence for seven days from May 19. May 17, 1904.

KENNARD, K. S., acting assistant surgeon. Granted leave of absence for fourteen days from May 22. May 17, 1904.

WALKER, R. T., acting assistant surgeon. Granted leave of absence for four days from May 31. May 19, 1904.

WALKLEY, W. S., acting assistant surgeon. Granted leave of absence for nine days from May 24. May 19, 1904.

RODMAN, J. C., acting assistant surgeon. Granted leave of absence for four days from May 24. May 18, 1904.

CARLTON, C. G., pharmacist. Granted leave of absence for thirty days from June 1. May 12, 1904.

BIERMAN, C. H., pharmacist. Granted leave of absence on account of sickness, for one day (May 9). May 13, 1904.

VAN NESS, G. I., Jr., pharmacist. Granted leave of absence for thirty days from June 1. May 17, 1904.

### BOARDS CONVENED.

Board convened to meet at Baltimore, Md., May 18, 1904, for the physical examination of cadets in the Revenue Cutter Service. Detail for the Board: Surgeon H. R. Carter, chairman; Assistant Surgeon C. W. Wille, recorder.

Board convened to meet at Stapleton, N. Y., May 18, 1904, for the physical examination of an officer of the Revenue Cutter Service. Detail for the Board: Surgeon Preston H. Bailhache, chairman; Passed Assistant Surgeon A. C. Smith, recorder.

Board convened to meet at Washington, D. C., May 18, 1904, for the physical examination of applicants for appointment in the Revenue Cutter Service. Detail for the Board: Assistant Surgeon-General L. L. Williams, chairman; Assistant Surgeon-General W. J. Pettus, recorder.

## RECENT DEATHS.

CHARLES WARREN WHITE, M.D., M.M.S.S., died in Fairhaven, May 15, 1904, aged forty-four years.

THOMAS J. FITZMAURICE, M.D., of Paterson, N. J., died on May 20, from cancer of the liver. He was thirty-five years of age, and was graduated from Bellevue Hospital Medical College, New York, in 1891. At the time of his death he was a member of the Paterson board of aldermen.

## SOCIETY NOTICES.

AMERICAN DERMATOLOGICAL ASSOCIATION. — The twenty-eighth annual meeting of the American Dermatological Association will be held at Niagara Falls, June 2 and 3, at the International Hotel.

CHARLES J. WHITE, M.D., Secretary.

ASSOCIATION FOR THE STUDY AND CONTROL OF TUBERCULOSIS. — A meeting will take place in Atlantic City on Monday evening, June 6, at 8 o'clock, in the Public School Building, for the organization of the National Association for the Study and Prevention of Tuberculosis. A Constitution and By-Laws will be submitted by the committee in charge.

## BOOKS AND PAMPHLETS RECEIVED.

Fifth Annual Report of the State Board of Insanity of the Commonwealth of Massachusetts for the year ending September 30, 1903.

The Hayfield Mower and Scythe of Progress. By the Mower-Man. Vol. I, Nos. 1 to 26. Boston: The Hayfield Mower, 1904.

The Mothers' Manual. A Month by Month Guide for Young Mothers. By Emelyn Lincoln Coolidge, M.D. Illustrated. New York: A. S. Barnes & Company, 1904.

Adolescence. Its Psychology and its Relations to Physiology, Anthropology, Sociology, Sex, Crime, Religion and Education. By G. Stanley Hall, Ph.D., LL.D. Vols. I and II. Illustrated. New York: D. Appleton & Co., 1904.

The Closure of Laparotomy Wounds as practised in Germany and Austria. Including Detailed Methods and Views communicated by over Fifty Leading Surgeons. Edited and translated by Walter H. Swaffield, F.R.C.S. Ed., M.D. Ed. Philadelphia: P. Blakiston's Son & Co., 1904.

Department of the Interior, Bureau of Government Laboratories. Biological Laboratory. Entomological Division. Bulletin No. 1. Preliminary Bulletin on Insects of the Cacao. Prepared especially for the benefit of Farmers. By Charles S. Banks, Manila, 1904.

The Decrease of Consumption in New England. By Dr. S. W. Abbott, Boston, 1904.

A Manual of Fever Nursing. By Reynold Webb Wilcox, M.A., M.D., LL.D. Illustrated. Philadelphia: P. Blakiston's Son & Co., 1904.

Additional Papers on the Blood. By Edward T. Williams, M.D. A Sequel to Studies on the Leucocytes. Reprint.

The Shattuck Lecture. The Changes in the Spinal Cord and Medulla in Pernicious Anæmia. By Frank Billings, M.D. Reprint.

Twenty-sixth Annual Report of the State Board of Health of the State of Connecticut for the year 1903. New Haven, Conn., 1904.

A System of Practical Surgery. By Prof. E. von Bergmann, M.D., Prof. P. von Bruns, M.D., and Prof. J. von Mikulicz, M.D. Vol. II. Translated and edited by William T. Bull, M.D., and Carlton P. Flint, M.D. Illustrated. New York and Philadelphia: Lea Brothers & Co., 1904.

# Original Articles.

## A STUDY OF CERTAIN CASES OF SARCOMA OF THE LONG BONES FROM THE MASSACHUSETTS GENERAL HOSPITAL CLINIC.

BY CHARLES L. SCUDDER, M.D., BOSTON,
*Surgeon to the Massachusetts General Hospital.*

The final results in this series of cases under the care of certain members of the surgical staff represent all those patients who could be traced or whose records were complete after several years. Most of these cases came to the hospital after having had the disease for some months, and in whom there was no doubt as to the diagnosis. This group of cases is made up of unselected instances of sarcoma of the long bones. I have avoided speaking of any of the cases which are well to-day as "cured cases," no matter how long a time may have elapsed since the operation for the removal of the disease, for it has seemed to me hardly accurate to place a time limit within which any case may be regarded as cured, for it is common knowledge that metastases occur after many months or several years. There is one case recorded in which metastases became evident even five years following the operation.

I was led to a study of these cases because of the findings offered by several authors (König, Kramer, Mikulicz, Wiesinger) in demonstration of the proposition that there is a group of malignant tumors of bone which should be treated by excision and preservation of the extremity, rather than by amputation. There is no doubt that the sarcomata of bone are of varying degrees of malignancy. Should these differences in malignancy influence surgical treatment?

In this series of cases there were five giant-cell sarcomata.[1] All of these are at present in good health, three years and four months, three years and two months, three years and two months, six years, fifteen years, respectively, after operation. In one of these cases the sarcoma was in the upper third of the humerus and an amputation was done at the shoulder joint. In two of the cases the sarcoma was in the tibia. In one of these resection was done and in one amputation of the thigh. In one of these cases the lower end of the ulna was involved. In this case resection was done. In one case the lower end of the radius was involved and amputation above the elbow was done.

In the remaining ten cases the disease was located in the lower end of the femur once, and this case died with metastases in the lungs about thirteen months after the operation. The disease was in the tibia four times. In three of these amputation was done, in one a partial operation.

Of the three amputated cases, one was in good health two years and five months after the operation; a second was in good health three years and six months after the operation; and a third died with lung metastasis one year and three months following the operation. The case of partial operation is living, five years and three months having elapsed since the operation. There is local recurrence in the wound and the general health is poor.

The sarcoma was located four times in the humerus. In all these cases amputation at the shoulder was done. One of the cases did not reply. In one case there was a recurrence in the axilla ten months after operation. In another case death occurred from metastasis in the lung two years and four months following operation. In still another, death occurred from metastases in the lung.

In one of these ten cases the sarcoma was in the forearm. Amputation of the upper arm was done. A local recurrence took place in the stump and an amputation at the shoulder joint was done. This patient was well four years after operation and died then of acute pneumonia.

To summarize this group of cases:

There were *six amputations at the shoulder joint* for sarcoma of the humerus. There was no reply from one case. There was recurrence in the axilla in one case. There was one case of giant-cell sarcoma, in apparent health three years and four months after the operation. There were metastases in the lungs in two cases and probably in a third.

There were *four amputations of the thigh* for sarcoma of the tibia. One giant-cell sarcoma, in good health six years after the operation. One lived two years and five months and was drowned. One is living three years and six months, in good health. One died of metastases in the lungs.

There was *one amputation at the hip joint* for disease in the lower end of the femur. This patient died thirteen months after the operation.

There were *two resections*,— one of the tibia, one of the ulna; each a case of giant-cell sarcoma. Each is at present well,— one three years and two months after the operation and the other also three years and two months after the operation. There was *one partial operation* upon the tibia. This case is in fair health five years after the operation, although a probable recurrence is present in the leg; there was *one amputation above the elbow* in perfect health fifteen years later.

In case fourteen the small metastatic foci discovered at autopsy were not only not detected in the very careful examination of the patient previous to operation, but they were not even suspected; death probably was due to shock and not to these metastases. Cases six, eight and thirteen all died with lung metastases, thirteen, fifteen and twenty-eight months, respectively, after operation. Case fifteen is said to have died of acute pneumonia; it is not known by autopsy whether or not there was lung sarcoma in this case; it was thought at the time, by the attending physician, to be a simple acute pneumonia. There were no metastases in the giant-cell sarcoma cases.

[1] The microscopical preparations from four of these cases have been recently examined, with special reference to this paper, by Dr. J. H. Wright, Director of the laboratory of the Massachusetts General Hospital.

Dr. Wright states that they all have essentially the same histological structure; that they are all typical examples of that definite form of sarcoma with giant cells, which is the typical giant-cell sarcoma of the textbooks, and which may be readily differentiated histologically from other forms of sarcoma with giant cells.

Cases one, two, four, five, six, eight and ten gave a history of trauma to the part in which the new growth subsequently developed; in other words, seven out of fifteen cases gave a history of trauma preceding the appearance of the tumor. The etiological relationship between trauma and the development of sarcoma is an interesting one, but not yet satisfactorily demonstrated.

That there is a difference in the malignancy of the sarcomata of bone has for some time been recognized (König). The giant-cell sarcoma is less malignant than the round- and spindle-cell sarcomata. The series of cases here recorded illustrates this anew. In view of this fact the very important question arises, Is it wise for the surgeon to treat the giant-cell sarcoma of the long bones by an operation less extensive than has formerly been adopted in this type of malignant disease? Hitherto, as illustrated in a number of the cases of this series, the surgeon has removed the extremity well above the disease, making no distinction in his treatment between the giant-cell sarcoma and the more malignant spindle- and round-cell sarcoma. From a study of the facts, emphasized by Kramer [2] in a paper upon the treatment of sarcoma of the hollow bones, and a paper by Jenckel,[3] who studied the sarcoma of the femur, and from the cases reported by Bloodgood, from Halstead's clinic,[4] and from the series of cases here reported from the Massachusetts General Hospital clinic, it seems to me that if the giant-cell sarcoma of a long bone is limited to the bone and is localized in the bone, involving only a small area, a resection or partial operation is justifiable, *vide* Greenough's case; but if the soft parts are in any way involved, or the disease in the bone is extensive and of long duration, that then an amputation is the best treatment; an amputation in the continuity of the bone, if the lower end of the diaphysis is involved, or an amputation at the joint above the disease, if the disease is high in the shaft. Exarticulation at the joint above the disease, at the shoulder or at the hip, is indicated only in those cases in which the disease cannot otherwise be completely removed. I should limit the excision or partial operation to a considerably narrower class than it is limited by Bloodgood. It is true that it has been pointed out that local recurrences after the conservative treatment can be satisfactorily handled. There appears also to be no increase in the likelihood of metastases following local recurrence. A careful study of the evidence presented does not, however, make me enthusiastic for the employment of the partial operation, excepting in the most carefully selected cases. It is always to be kept in mind that metastases may exist, and in the large proportion of late cases coming to the hospital clinic do already exist in the lung, only to make themselves known some time after operation. Exploratory incisions for diagnostic purposes in this group of cases is to be avoided. It is possible that metastases have been occasioned by these exploratory incisions. The x-ray is of great value in diagnosis, particularly early in the development of the disease, and in those cases in which no positive diagnosis has been made. The value of the x-ray in the diagnosis of bone lesions has been especially studied by Dr. E. A. Codman. [See Johns Hopkin Bulletin May, 1903.] The cases of this group are here presented in detail:

[2] Archiv. f. klin. Chirurgie, 1902, Band 7, xvi, p. 792.
[3] Deutsche Zeitschrift f. Chirurgie, 1902, Band 7, xiv, p. 66.
[4] Bulletin of the Johns Hopkins Hospital, May, 1903, p. 134.

CASE I. Woman. Tumor of upper arm, probably malignant. Amputation at the shoulder joint. Recovery. Result three and one-third years after operation.

R. B., fifty-nine years old. Service of Dr. S. J. Mixter. Four months ago, after a fall, she noticed a weakness and limitation of motion of the right arm, which have increased gradually. Three months ago she first saw a swelling of the upper arm, which has increased a little since that time.

Examination finds, at the junction of the middle and upper thirds of the right humerus, a hard fusiform swelling of the bone. The movements of the forearm are limited. The x-ray shows a fusiform swelling of the bone and a thinning of the cortex by pressure of the tumor from within.

*Operation.* — Amputation at the shoulder joint.

*Pathological Report* by Dr. Jas. Homer Wright:

*Diagnosis.* — Myelogenous round-celled sarcoma.

The shaft of the humerus is the situation of a tumor growth, largely replacing the bone so that fracture has occurred. The tumor growth is situated in the upper half of the shaft of the bone and involves a length of the bone about 8 cm. The bone, over a great part of the area involved in the tumor, is somewhat greater in diameter than normal. On sawing through the bone and the tumor in a longitudinal direction, the following appearances are noted: Occupying the marrow cavity of the bone and to a great extent replacing the cortical bone is a tissue which is partly grayish to reddish, translucent and partly dark red in color. The tumor, on section, has a fusiform or oblong outline and measures in the longitudinal direction 8 cm. as before stated. The central portion of the tumor is softer than the periphery, and dark red to blackish, and moist in appearance as from hemorrhage. In consistency the tumor mass is generally soft and somewhat elastic, but not diffluent. It is also somewhat fleshy. It contains no bony spicules. Throughout the greater portion of its length, it pushes before it the remains of the cortical portion of the bone and the periosteum. The cortical bone in this situation is very much thinned, being represented, over a greater portion of the length of the tumor, as spicules, or thin plates, beneath the periosteum. At the upper extremity of the growth the marrow cavity is invaded without distortion of the outward appearances of the bone for a length of a few millimeters. The upper extremity of the growth reaches to about 3 cm. of the anatomical neck. The growth generally can be well separated and differentiated from the marrow and from the cortical bone. It can also be sharply differentiated from the spongy bone, which abuts upon it near the surgical neck at the upper extremity of the growth.

*Microscopical Examination.* — Sections of the tissue hardened in Zenker's fluid and afterward decalcified. The tumor tissue consists of closely packed, medium-sized polyhedral cells with a moderate amount of cytoplasm. The polyhedral shape of the cells seems to be due to mutual pressure, and it seems possible that in the fresh state they were spherical. There is little or no stroma. Here and there among the cells are spaces more

or less completely lined with thin cells, resembling endothelium. The nuclei of the tumor cells vary somewhat in size, are generally oval in shape and do not contain a large amount of chromatin. The nuclear membrane is very thin and not prominent. The cells are clearly not plasma cells and not like the cells described by J. H. Wright in a case of so-called "Multiple Myeloma."[5]

The thin and more or less perfect shell of bone investing the tumor seems to be, not the remains of the original bone, but a new formed bone.

*End Result.* — Three years and four months after the operation the patient replies to inquiry, "I am used up by rheumatism and pleurisy for a year." Friends of the patient write that her general health is excellent. There is no recurrence of the disease.

Case II. Child; girl. Injured knee; tumor of upper end of the tibia; malignant disease suspected. Partial operation at two different times. Recovery. Well after three years.

L. T., service of Dr. W. M. Conant; sixteen years old. One year ago she fell downstairs striking the left knee. Two months ago she noticed a small hard swelling just below the left knee, over the tibia. There has been tenderness in this region for eight months; the swelling has increased very slowly. She has lost no weight, but rather gained in weight.

*Examination.* — Well-developed and well-nourished girl. Anteriorly just below the knee is a swelling of the tibia 3 by 2 inches in size. This swelling is tender. The overlying skin is normal in appearance. Two small glands are felt in the groin.

*Operation.* — At operation the external layer of bone over the tibia was found to be a mere shell. Beneath the bone was a cavity the size of an egg. The softened bone was chiselled away, the material within was curetted out, the cavity remaining was wiped dry and painted with tincture of iodine and packed with iodoform gauze. The pathologist reported giant-celled sarcoma.

One month later a second curetting was done and the material removed at this time was reported to show no evidence of malignant disease. One year later the wound is reported as entirely closed for six months previously, with no evidence of malignant disease. She has some little pain at the seat of the wound.

*Pathological Report* by Dr. W. F. Whitney:

*Diagnosis.* — Typical giant-celled sarcoma.

A few small bits of bone and soft tissue received for examination.

Microscopical examination shows typical giant-celled sarcoma.

*End Result.* — Three years and two months after the first operation and three years and one month after the second operation the general health is good, and there is no trouble with the wound. She considers herself well.

Case III. Young adult; woman. Tumor of the lower end of the ulna. Excision of tumor. Recovery. No recurrence three years and two months after operation.

M. C., twenty-four years old. Patient of Dr. R. B. Greenough, service of Dr. J. C. Warren. For three months there has been soreness in the wrist. On the ulna side of the right wrist is a hard swelling. There is no redness of the skin. Over the swelling there is some tenderness on deep palpation. The bone feels thickened for a distance of 2 or 3 inches. The x-ray shows a disease of the head of the ulna. There is a suggestion of fluctuation over the swelling.

*Operation.* — An excision of the tumor was done. There has been no recurrence of this growth, three years and two months after operation.

*Pathological Report* by Dr. James Homer Wright:

*Diagnosis.* — Typical giant-celled sarcoma.

A portion of the ulna about 5 cm. long, including its lower extremity, received for examination. The lower extremity is about twice the normal size and is the seat of a neoplasm which largely replaces the substance of the bone, but does not extend beyond the periosteum. It extends only a very short distance into the shaft.

Microscopical examination shows typical giant-celled sarcoma.

*End Result.* — There has been no recurrence after three years and two months. The patient is in good health.

Case IV. Young adult; man. Injury to knee; tumor of head of the tibia; malignant growth. Amputation of thigh. Recovery; at present general health good, six years after operation.

R. O., twenty-four years old. Service of Dr. S. J. Mixter. Sixteen months ago he fell while running upstairs and struck his knee right. Three or four months later pain appeared in the knee. Six months ago he fell on the same knee. The knee was incased in plaster of Paris. Since then the pain has been getting worse.

*Examination.* — There is a swelling on the outer side of the head of the tibia about 2 inches in diameter. This swelling is hard and bone-like. Just above the tumor there is a semi-fluctuating spot. A button of bone was removed from the tibia and a red, soft, pulsating mass was discovered inside a thin shell of bone. The diagnosis was made of a giant-celled sarcoma. Patient was discharged untreated as he refused amputation. He received the Coley treatment for three weeks.

Amputation on account of the great vascularity of the tumor and because its growth was apparently not controlled by the toxins.

*Pathological Report* by Dr. J. H. Wright:

*Diagnosis.* — Giant-celled sarcoma.

Microscopical examination of a section of the neoplasm shows typical giant-celled sarcoma like that of an epulis.

*End Result.* — Six years after operation general health is good. There is no trouble with the stump wound. Has had some pain in hip and back when lying a long time at night. Has had this aching for a long time; otherwise perfectly well.

Case V. Man. Tumor lower end of the radius. Curetting and cauterization; then amputation above the elbow. Well fifteen years later.

C. D. S., thirty-three years old. Service of Dr. C. B. Porter. One month previously wrenched his hand, which swelled considerably and was painful for a few days. For two weeks past the hand continued swollen and more pain has been felt, sufficient to keep him awake.

Examination finds a small diffused swelling of the lower end of the radius, near the wrist. The swelling is tender to touch. There was an indistinct sense of fluctuation and pulsation of the swelling. The swelling was aspirated. Nothing was obtained from the aspirating needle.

*Operation I.* — Whole lower end of the radius was occupied by a semi-solid mass of vascular medullary tissue. Whole cavity was curetted out and cauterized

[5] "Contribution to the Science of Medicine dedicated by his Pupils to William Henry Welch upon the Twenty-fifth Anniversary of his Doctorate and Volume IX of the Johns Hopkins Hospital Reports."

with the actual cautery and packed with iodoform gauze.

*Operation II.* — Amputation two days later above the elbow joint.

*Pathological Report* by Dr. W. F. Whitney:

Soft, slightly translucent medullary looking masses. Microscopical examination showed it made up of a mass of large oval cells with a slight fibrillated or granular intercellular substance between them, and large multinucleated giant-cells.

*Diagnosis.* — Myelogenous giant-cell sarcoma.

*End Result.* — The patient is alive and perfectly well fifteen years after operation.

CASE VI. A young adult. Injury to knee; tumor of femur, close to knee joint. Amputation at hip joint. Recovery.

J. C., nineteen years old. Service of Dr. J. C. Warren. Three months ago he stepped in a hole and wrenched his knee. After this he had slight pain in the knee, in the morning, on attempting to straighten the leg. He was gradually unable to completely straighten the leg and for two weeks past he could just bend the leg to a right angle. He has been on crutches for six weeks.

*Examination.* — The left leg is bent at a right angle. Upon attempting to passively extend the leg he complains of pain. There is a swelling over the external condyle of the femur. The skin over this swelling is slightly blue, tender, and there is a sense of fluctuation. There are a few glands to be felt in the left groin. The tumor is regarded as malignant.

*Operation.* — Amputation at the hip joint. Recovered from the operation and returned to his home.

*Pathological Report* by Dr. W. F. Whitney:

*Diagnosis.* — Osteo-sarcoma originating in the trabeculæ of the bone.

Fragments removed from a hemorrhagic new growth apparently originating in the neighborhood of the condyles of the femur and just above the knee posteriorly.

Microscopic examination showed the trabeculæ of bone almost entirely decalcified and replaced by a growth of irregular round cells, many of them of large size and occasionally distinctly spindle shaped. There was extensive hemorrhagic areas among these which seem to have originated in the medullary cavity of the bone and infiltrated this new growth, which, in places, was very necrotic. The cells of this new growth have neither the characteristic shape of cartilage, nor of bone corpuscles, but in places it seems as if they originated in a proliferation of the bone corpuscles.

The lymph nodes removed from the groin showed nothing but a proliferation of the endothelium of the lymph spaces to account for their increased size.

*The End Result.* — This boy could not be found after careful inquiry.

CASE VII. Child; a boy. Tumor of the head of the tibia. Amputation of the thigh. Recovery. Accidental death two years and five months after operation.

R. L. T., fifteen years old. Service of Dr. John Homans. Three months ago there was tenderness below the right knee over the tibia. A tumor developed at this point. For two months he has been unable to walk upon his leg. He has lost considerable flesh.

Examination found a well-developed but somewhat emaciated boy. A globular swelling is seen just below the head of the right tibia; the circumference of the right leg at the seat of the tumor is 12¾ inches; the left leg 11¼ inches. The tumor is soft, elastic, and the skin is not adherent to it. Tumor is apparently of the bone; tumor extends back toward the popliteal space but is most prominent in front at the head of the fibula. The surface temperature of the tumor is considerably increased. The glands of the right groin are slightly enlarged.

*Operation.* — Amputation of the thigh just above the knee. A bit of the tumor removed before the amputation was examined and found to be a large, round-celled sarcoma.

*Pathological Report* by Dr. W. F. Whitney:

*Diagnosis.*— Round-celled sarcoma, probably of periosteal origin.

A piece removed by the Mixter punch, showing the growth to be composed of a solid mass of large round cells with a little intercellular substance, here and there; buried in the growth were spiculæ of bone, evidently extensively destroyed.

*End Result.* — This boy wore an artificial leg, had no trouble from the stump and was always well after the operation. He lived two years and five months after the operation and then was drowned.

CASE VIII. Young adult; man. Fracture of leg below the knee; tumor at seat of fracture; malignant. Amputation of thigh. Recovery; lived one year and three months.

J. D., thirty-three years old. Service of Dr. F. B. Harrington. Three and one-half years ago the left leg was broken just below the knee. He was then laid up for three or four months. Six months later he noticed a lump over the left tibia anteriorly, which has been growing slowly ever since. There is not much pain. Eight weeks ago this swelling was incised by a country doctor, and the bony mass scraped. The wound has never healed. There is considerable discharge and hemorrhage from this wound.

*Examination.* — Well-developed and well-nourished. The leg is considerable enlarged just below the knee. The tibia is increased in size. There is a large ulcerating surface which bleeds easily, at the center of this swelling. The skin is considerably discolored. The skin is infiltrated with firm nodules in the immediate vicinity of the ulcerated part. No enlarged glands can be felt in either groin or along the iliac vessels.

*Operation.* — Amputation of thigh.

*Pathological Report* by Dr. William F. Whitney:

A soft, grayish growth filling a cavity which it had apparently excavated in head of the tibia, breaking through the articulating surface and infiltrating the tissues about the joint. Spindle-celled sarcoma.

*End Result.* — He lived one year and three months. He died with "the disease" in the other thigh and leg. He had much pain for six months previous to his death.

CASE IX. Young adult; woman. Tumor of the leg below the knee; malignant. Amputation of the thigh. Recovery; good health at present.

K. M., twenty-six years old. Service of Dr. A. T. Cabot. Five months ago she first noticed a swelling of the left leg extending from the knee to the ankle. Four months ago the upper third of the tibia began to enlarge. There was great pain of a grinding character, particularly at night. One month ago she was obliged to give up work because of the pain and loss of sleep. A bit of the growth removed from the head of the tibia was found to be sarcomatous.

*Examination.* — The upper third of the right tibia is uniformly enlarged; there is no fluid in the knee joint; there is no glandular enlargement. The x-ray shows a bony thickening of the upper end of the tibia. The center of the tumor is of great density.

*Operation.* — Amputation above the condyles of the femur.

*Pathological Report* by Dr. W. F. Whitney:

*Diagnosis.* — Osteo-sarcoma.

The head of the tibia invaded by a new growth which had increased it to about the size of the fist. The section showed a very dense bone replacing the spongy tissue and filling the medullary cavity for the distance of several centimeters.

Between it and the medullary cavity was a zone of grayish, opaque tissue of distinctly different character from the medulla and composed microscopically of a mass of large round cells with a little intercellular substance.

Enlargement of the bone was chiefly caused by an irregular deposit of new bone. On the outside of the outer surface was a zone of the same soft grayish tissue seen in the medulla and composed of the same structure.

*End Result.* — Three years and six months after the operation the patient is in good health, with no local trouble.

Case X. Adult; male. Fracture of leg; injury to seat of fracture. Tumor at seat of fracture; malignant. Partial operation; recovery; general health good.

M. B., fifty years old. Service of Dr. J. W. Elliot. Nine years ago the left leg was broken at the junction of the lower and middle thirds by the kick of a horse. Four years ago he was kicked by a horse in the same place and has been unable to put any weight upon the leg for some time. One year and a half ago he noticed a swelling over the site of the old fracture; this swelling increased slightly, was moderately tender, but not painful. A little less than a year ago the surface of the swelling ulcerated. The glands in the groin have been tender and somewhat enlarged; he has had some pain at night in the leg.

*Examination.* — Marked thickening of the left leg in the lower third. The skin over this area is bluish in color. At the center of this bluish and discolored area is an ulcerating and fungus mass about the size of a silver dollar. The glands in the groin are not particularly enlarged.

*Operation.* — An elliptical area of skin surrounding the disease was incised and granulation tissue was removed with the curette; bits of diseased bone and old granulation tissue were found in the depths of the wound; the diseased parts were removed with the bone chisel and curette; the wound was cleansed with peroxide and corrosive. The diagnosis of osteoid sarcoma was made.

*Pathological Report* by Dr. James Homer Wright:

*Diagnosis.* — Osteoid sarcoma.

The sections of the tissue received for examination Aug. 31, 1898, show a sarcomatous neoplasm identical with that in the specimen described below.

Specimen received Sept. 4, 1901. The tibia in its lower third is greatly thickened and is the seat of a tumor growth occupying the narrow cavity over a length of perhaps 8 or 9 cm. This tumor growth extends into the shaft of the bone and involves the skin on the anterior aspect of the leg where there is considerable ulceration.

The tumor growth consists of a firm, grayish, translucent tissue in parts of which a few fine, bone-like spicules are perceptible to the touch. At the periphery of the tumor, where it impinges upon the thickened bone, the tumor tissue occupies rounded depressions, with smooth walls, in the bone.

Microscopical examination of hardened sections shows that the new growth consists essentially of a tissue that at first sight resembles spongy bone. A large part of the tissue consists of closely packed cells, which cells are divided into larger and smaller groups by columns and trabeculæ of a tissue very suggestive of the trabeculæ of spongy bone and regarded as a form of osteoid tissue. These trabeculæ are composed of a fibrillary substance staining with eosin in which well separated, elongated, vesicular nuclei are distributed. With Mallory's connective tissue stain these trabeculæ take a deep blue coloration and are seen to consist mostly of fibrillary substance. In one of the sections the tissue of the trabeculæ is seen to become continuous with a small mass of bone. The other constituent of the tumor lying between the trabeculæ consists of closely packed cells. These cells contain elongated faintly staining vesicular nuclei of good size and a very small amount of cytoplasm, which is seen with difficulty as a more or less reticular substance between the nuclei. The nuclei show a marked tendency to be arranged with their long axes parallel to one another.

*End Result.* — Five years after operation the wound was still open. The general health was good except for a sore upon the leg. During the past three months — that is, three years since the first operation — he has had more or less trouble with the wound and is not feeling well. Patient will not consent to amputation.

Case XI. Young adult. Tumor of humerus, thought to be malignant. Amputation at the shoulder joint; recovery.

L. S., sixteen years old. Service of Dr. J. C. Warren. One year ago the patient first noticed a swelling of the right arm above the elbow. Six weeks ago this swelling began to be painful. The swelling has grown steadily larger.

Examination finds the entire humerus uniformly much enlarged. There are glands in the axilla.

*Operation.* — Amputation at the shoulder joint. The mass of new growth is found to infiltrate the muscles without a sharp boundary line. The periosteum is very much thickened. The medullary cavity is involved by the new growth. The axillary glands are also involved.

*Pathological Report* by Dr. W. F. Whitney:

*Diagnosis.* — Large round-celled sarcoma.

A spindle-shaped growth surrounding the humerus at its middle and about 6 cm. in diameter. It is of a grayish, slightly opaque, homogeneous surface and infiltrates the muscles without a sharp boundary line. The shaft of the bone is roughened but not destroyed, and in places shows a distinct periosteal thickening. In the medullary cavity is a similar new growth. The axillary lymph glands are also infected.

Microscopic examination shows it to be a large, round-celled sarcoma.

*End Result.* — No reply received after careful inquiry.

Case XII. An adult. Swelling of the whole upper extremity, thought to be a periostitis. Amputation at the shoulder joint; recovery.

J. I. C., thirty-three years old. Service of Dr. H. H. A. Beach. Sharp shooting pains in the limbs for many years. Three months ago this pain was most marked in the right upper extremity. The pain was sharp, localized at different times in the elbow, forearm and upper arm. Four weeks ago the arm began to swell; there were soreness and tenderness.

Examination finds the whole upper extremity swollen. There is marked tenderness on the inner side of the arm above the elbow. The superficial veins are prominent over the arm. The disease is thought to be a periostitis. There is limitation of motion at the elbow-joint due to the swelling of the upper arm.

*Operation.* — Amputation at the shoulder joint. Axillary vein involved in malignant thrombus. Pronounced malignant by the pathologist. Recurrence in the axilla after a little over a month. The Coley serum was used without benefit after the operation.

*Pathological Report.* — Pronounced malignant by the pathologist. The axillary vein was filled with a thrombus which was thought by the pathologist to be malignant. No glands were found enlarged in the axilla.

*End Result.* — In ten months recurrence in axilla.

CASE XIII. Woman. Tumor of the upper arm. Partial operation; Coley treatment; amputation at the shoulder joint; recovery. Died three months ater from lung metastases.

C. O., thirty-eight years old. Service of Dr. F. B. Harrington. Sixteen months ago she had pain in the right arm. Six months later she was operated upon for tumor of the soft parts and later the humerus was curetted. An x-ray was taken then and the patient told that she had malignant bone disease, and a radical operation was advised. This was refused and she was treated in New York by the Coley serum. She now has great pain at night, which keeps her awake. The swelling of the arm is slowly increasing.

Examination finds, upon the outer aspect of the upper arm, a little below the head of the humerus, a hard, firm swelling, not tender, not movable, and apparently connected with the bone. The x-ray shows a thickening of the bone like a periostitis.

*Operation.*— Amputation at the shoulder joint. One year after the amputation re-entered the hospital for a short time, with some trouble with the chest. Two years after the operation re-entered the hospital for recurrence in the stump.

Microscopical examination of this specimen showed a spindle-celled sarcoma.

A partial operation was done. The patient died three months later, evidently from metastases in the lung and stomach.

*Pathological Report* by Dr. James Homer Wright:

*Diagnosis.* — Periosteal fibro-sarcoma with metastasis in a regionary lymphatic gland.

Dissection shows a tumor involving the periosteum of the humerus and the insertion of the deltoid.

This tumor consists of an elongated mass continuous with the periosteum, about 6 cm. in length and 2½ cm. in greatest width. It is not sharply defined from the surrounding muscular tissue. It has been partly separated from the bone by the surgeon. On section through the tumor in a longitudinal direction, it is seen to consist of a grayish, translucent, gristle-like, fibrillated tissue fading out into the muscular tissue like scar tissue. Where it has been in apposition with the bone the tumor tissue becomes softer and reddish in color. The denuded bone surface is somewhat irregular, but presents no necrosis nor evident invasion by the neoplasm. At the lower extremity of the growth and just outside of the periosteum is a sharply outlined nodule about 7 mm. in greatest diameter and composed partly of a dark red and partly of a grayish translucent tissue.

The shaft of the bone contains normal marrow.

Microscopical examination of sections of the growth, hardened in Zenker's fluid, shows the neoplasm to consist of cells and a relatively large amount of connective tissue. The cells vary considerably in size and shape and very atypical in appearance. In places the cells are very numerous and form more or less well defined islands in the midst of the connective tissue. In other places the cells are scattered throughout the connective tissue. The connective tissue itself, in places, forms the most prominent feature of the growth and is very dense and coarse.

Sections of two small lymphatic glands, presumably from the axilla, show in one of them a small secondary tumor, identical, in structure, with that of the growth on the bone.

*End Result.* — About three months after the operation she died. The wound appeared healed and normal. There were evidences of trouble with the lungs and stomach, suggesting very strongly that metastases had occurred in these situations.

CASE XIV. A boy. Tumor of the shoulder region; malignant. Amputation at the left shoulder joint; died.

A. L., fifteen years old. Service of Dr. C. B. Porter. A tumor of the shoulder was first noticed two years ago. This has grown slowly and painlessly.

Examination finds a poorly-nourished, anemic boy; he has lost flesh and strength during the past two years. The region of the left shoulder is occupied by a large, round, smooth mass which completely obliterates all the outlines of the shoulder joint. The overlying skin is white and the superficial veins are enlarged. The mass involves not only the shoulder and the scapula but also the tissues below and above the clavicle. The circulation of the left arm is poor; there is slight numbness of the left upper arm and forearm.

*Operation.*— Amputation at the left shoulder.

*Pathological Report* by Dr. W. F. Whitney:

*Diagnosis.* — Osteo-sarcoma (round celled).

A lobulated dense new growth, which had entirely replaced the scapula and upper part of the humerus. On section, a portion of it was soft, rather myxomatous looking, while the rest was made up of an osteoid tissue with little islands of cartilage here and there. The mass measured 18 by 21 by 24 cm. and weighed 7,000 gm.

The autopsy, by Dr. J. H. Wright, showed a small metastasis in each lung.

CASE XV. Woman. Tumor of lower end of the radius and ulna. Amputation of the forearm. Recurrence one year and a half later in the stump. Amputation at the shoulder joint. Recovery. Lived six years after the first operation. Died of acute pneumonia.

T. A. P., sixty-seven years old. Service of Dr. J. W. Elliot. Two years and a half ago there was pain in the thumb. Two months later the wrist began to swell and throb. To-day there is a tumor involving the ends of the radius and ulna. The pathologist, Dr. Mallory, pronounces it to be osteo-sarcoma.

*Operation No. I.* — Amputation above the elbow joint.

A year and a half after the first pain the arm began to swell again and has slightly increased in size.

Examination finds a well-preserved old woman. The stump of the amputated arm is the size of a large cocoanut. The skin over the stump is tense, tender, and the surface temperature is increased. The skin is ulcerated in two places; there are no glands in the axilla or above the clavicle.

*Operation No. II.* — Amputation at the shoulder joint, two years after the first operation.

*Pathological Report.* — There is unfortunately no complete descriptive pathological report. Dr. F. B. Mallory reported, after an examination of the first specimen only, that the tumor was an undoubted osteo-sarcoma.

*End Result.* — The patient lived six years after the first operation. She then died of acute pneumonia.

SARCOMA OF THE LONG BONES. MASSACHUSETTS GENERAL HOSPITAL CASES.

| CASE. | AGE. | OPERATING SURGEON. | SEX. | REGION. | KNOWN DURATION OF GROWTH. | PATHOLOGICAL REPORT. | OPERATION DONE. | IMMEDIATE RESULT. | REMOTE RESULT. |
|---|---|---|---|---|---|---|---|---|---|
| 1 R. B. | 59 | S. J. Mixter | F. | Humerus, upper third | 4 mos. | Myelogenous round-celled sarcoma | Amp't at shoulder joint | Recovery | 3 yrs. 4 mos., rheumatism, otherwise fair health. |
| 2 L. T. | 16 | W. M. Conant | F. | Tibia | 2 mos. | Giant-celled sarcoma | Resection | Recovery | 3 yrs. 2 mos., good health, no recurrence. |
| 3 M. C. | 24 | R. B. Greenough | F. | Ulna, lower end | 3 mos. | Giant-celled sarcoma | Resection | Recovery | 3 yrs. 2 mos., no recurrence. |
| 4 R. O. | 24 | S. J. Mixter | M. | Tibia | 13 mos. | Giant-celled sarcoma | Amp't thigh | Recovery | 6 yrs. 3 mos., good health. |
| 5 C. D. S. | 33 | C. B. Porter | M. | Radius Forearm | 1 mos. | Giant-celled sarcoma | Partial operation, amp't above elbow | Recovery | 15 yrs., perfect health. |
| 6 J. C. | 19 | J. C. Warren | M. | Femur, lower end | 3 mos. | Round-celled sarcoma | Amp't at the hip joint | Recovery | Died about 13 mos. Lung metastases. |
| 7 R. L. T. | 15 | John Homans | M. | Tibia | 3 mos. | Round-celled sarcoma | Amp't thigh | Recovery | 2 yrs. 5 mos., good health. Drowned. |
| 8 J. D. | 33 | F. B. Harrington | M. | Tibia | 36 mos. | Spindle-celled sarcoma | Amp't thigh | Recovery | 1 yr. 3 mos., died, metastases. |
| 9 K. M. | 26 | A. T. Cabot | F. | Tibia | 6 mos. | Round-celled sarcoma | Amp't thigh | Recovery | 3 yrs. 6 mos., good health. |
| 10 M. B. | 50 | J. W. Elliot | M. | Tibia | 18 mos. | Osteoid sarcoma | Partial operation | Recovery | After 5 yrs. 3 mos., health poor; local trouble at operation site. |
| 11 L. S. | 16 | J. C. Warren | M. | Middle Humerus | 12 mos. | Large, round celled sarcoma | Amp't at shoulder joint | Recovery | No reply. |
| 12 J. I. C. | 33 | H. H. A. Beach | M. | Humerus | 3 mos. | Sarcoma | Amp't at shoulder joint | Recovery | Recurrence axillary in 10 mos. |
| 13 C. O. | 38 | F. B. Harrington | F. | Humerus, upper third | 16 mos. | Fibro-sarcoma | Amp't at shoulder joint | Recovery | 2 yrs. 4 mos., died, metastases in lungs. |
| 14 A. L. | 15 | C. B. Porter | M. | Humerus, upper third | 24 mos. | Round-celled sarcoma | Amp't at shoulder joint | Died | Autopsy; metastases in lungs. |
| 15 T. A. P. | 67 | J. W. Elliot | F. | Forearm | 6 mos. | Osteo-sarcoma | Amp't upper arm amp't shoulder joint | Recovery | 4 yrs. after last operation died of acute pneumonia. |

## DISINFECTION OF THE CLINICAL THERMOMETER.

BY FRANCIS P. DENNY, M.D., BROOKLINE, MASS.

In a letter to the Philadelphia *Medical Journal*, Dec. 15, 1903, Dr. W. H. Dyer called attention to a method of disinfecting the clinical thermometer by putting a few drops of formalin in the thermometer case. As this convenient method has not received the recognition that it deserves it has seemed well to again call attention to it, and report the results of some tests of its efficiency.

If two or three drops of formalin (40% solution of formaldehyde) are put in the thermometer case, they are taken up by the absorbent cotton usually kept at the end of the case, which will remain moist for a number of days. Formaldehyde gas is freely given off from the formalin, but is confined in the air-tight chamber of the case. If the formalin has been freshly added the surface of the thermometer when taken out of the case is often covered with minute sweat-like drops of fluid, showing the high humidity. The small size of the chamber, the high humidity, and the high temperature if the thermometer is carried in the vest pocket, furnish conditions very favorable for the disinfectant action of formaldehyde.

The tests which are here reported show that the disinfectant action of the formalin remains active for several weeks or as long as the pungent, irritating odor of the gas is marked. In practice it is well to add the formalin about every two weeks or oftener if the odor seems at all weak, and the cap should be kept on the case when the thermometer is being used in order to prevent evaporation. The thermometer should be washed in water both before and after using. If by mistake the thermometer is put directly into the patient's mouth, the taste is somewhat unpleasant but no serious effects result.

Where the thermometer has been used for a patient known to have a contagious disease it is best to disinfect it outside the case, or at least fresh formalin should be added and the thermometer exposed to the gas a longer time than usual (several hours) before being used again. This method should not be employed when it is desired to use the same thermometer within a few minutes for another patient; for example, in hospitals and dispensaries, or when a physician is attending two patients in the same family. Under such circumstances disinfectant solutions should be used.

*Tests.* — The organisms used and the number of tests made with each were as follows: *Staphylococcus pyogenes aureus* 4, P. *typhosus* 3, B. *subtilis* (spores) 3, B. *diphtheriæ* (pure) 4, mixed cultures from throats of diphtheria patients 8; and in 3 tests the thermometer was infected by putting it for a moment in the mouth of a healthy person.

When cultures were used a few drops of an emulsion of the growth were put on a sterile glass slide and a clinical thermometer, or a glass rod of similar size, was rubbed in this. When partially dried the thermometer was put into the case with the infected end uppermost — that is, away from the moist cotton — so that the disinfection would have to be gaseous rather than from the direct action of the solution. For a control a second thermometer was similarly infected and

put in a case in which there was no formalin. Both cases were then put in the vest pocket. The exposure to the gas varied from five to twenty minutes; in most cases it was between ten and fifteen minutes. On being removed from the case the thermometer was emersed in a tube of bouillon and rinsed, in order to remove any traces of the disinfectant that might have been carried over from the case. The thermometer was next rubbed over the surface of a serum or agar tube, and then dropped into a fresh bouillon tube. The control thermometers were similarly treated, and all the tubes were then incubated.

All the controls showed growth. Of the exposed thermometers three showed growth, these having all been exposed in cases in which the formalin had been added several weeks before, and where the odor of the gas was very faint. That the absence of growth in the other cultures was not due to the presence of a small amount of the disinfectant which had been carried over from the thermometer case, was shown by the fact that there was growth in them when the same cultures were inoculated from the controls.

The following table shows in detail the tests which were made and the results obtained:

| Test No. | Bacteria used in Test. | Minutes Exposed. | Result. | Remarks Formalin in the Thermometer case. |
|---|---|---|---|---|
| 1 | B. Diphtheriæ (pure) | 17 | — | 3 weeks |
| 2 | ,, ,, | 15 | — | 3 ,, |
| 3 | ,, ,, | 15 | — | 3½ ,, |
| 4 | ,, ,, | 12 | — | Faint odor |
| 5 | ,, (mixed) | 10 | — | 10 days |
| 6 | ,, ,, | 10 | — | 2 weeks |
| 7 | ,, ,, | 10 | — | 2 ,, |
| 8 | ,, ,, | 15 | — | 4 ,, |
| 9 | ,, ,, | 12 | — | 4½ ,, |
| 10 | ,, ,, | 12 | — | Fresh |
| 11 | ,, ,, | 10 | — | Faint odor |
| 12 | ,, ,, | 5 | — | Fresh |
| 13 | Staph. py. aureus | 15 | — | 2 weeks |
| 14 | ,, ,, ,, | 15 | — | 2 ,, |
| 15 | ,, ,, ,, | 10 | — | Fresh |
| 16 | ,, ,, ,, | 10 | — | 2 weeks |
| 17 | B. Typhosus | 15 | — | 4½ ,, |
| 18 | ,, | 15 | — | Fresh |
| 19 | ,, | 10 | — | 1 week |
| 20 | B. Subtilis (spores) | 10 | — | Fresh |
| 21 | ,, ,, | 12 | — | ? |
| 22 | ,, ,, | 15 | — | Faint odor |
| 23 | Secretions of mouth | 20 | — | 2 weeks |
| 24 | ,, ,, ,, | 15 | — | 2 ,, |
| 25 | ,, ,, ,, | 15 | — | 2 ,, |

The convenience as well as the efficiency of this method should secure it more general use by medical practitioners. The time consumed in mixing disinfectant solutions is so great and their action so slow, that most physicians merely rinse their thermometers in water except when they have used them for a contagious case. The fact that contagious diseases cannot be diagnosed in their earliest stages, and also that apparently healthy persons may harbor in their mouths the organisms of diphtheria, influenza, pneumonia, tuberculosis, and probably also of syphilis and other transmissible diseases, shows the importance of disinfecting each time after use.

By this method the thermometer is always disinfected after it is used with no loss of time to the physician except the time it takes once in two weeks to add three drops of formalin to the case.

## Clinical Department.

### A SECOND CASE OF PUERPERAL ECLAMPSIA SUCCESSFULLY TREATED BY RENAL DECAPSULATION.[1]

BY GEORGE M. EDEBOHLS, M.D., NEW YORK.

A YEAR ago I had the honor of presenting for your consideration a report of the first case of renal decapsulation for puerperal eclampsia. The account of this first case, as published in the New York *Medical Journal* of June 6, 1903, may be epitomized as follows: Primipara, aged twenty-three. Typhoid fever during the fourth month of pregnancy. Symptoms of nephritis first noted during the seventh month. Uremia and eclamptic seizures near the end of eighth month. Five severe convulsions within sixteen hours, followed by forced delivery during fifth convulsion. Freedom from convulsions for forty-six hours after delivery. Then return of convulsions, six severe convulsions, not counting minor manifestations, occurring in eighteen hours. Decapsulation of both kidneys. No further convulsions, and rapid restoration of complete health.

I may add that I have seen the patient within the present month (May, 1904), and that she enjoys perfect health, with urine free from albumin and casts, fifteen months after operation.

In presenting the case I concluded with the following remarks: "The practical deduction from the happy result obtained is that we possess in renal decapsulation an additional potent resource in the treatment of puerperal eclampsia of renal origin." Personally, I should not hesitate to apply it again in a similar instance. I would even go further and propose a trial of renal decapsulation in puerperal convulsions of nephritic origin occurring prior to the beginning of labor. The mother would certainly be benefited, and the occurrence of premature delivery or the necessity of inducing it might possibly be averted.

On the first day of the present year the opportunity presented and was embraced of performing renal decapsulation for puerperal eclampsia upon the undelivered woman. The result is recorded in the following history of the case:

On Jan. 1, 1904, I was asked by Dr. N. R. Dann to aid him in a case of puerperal convulsions. The patient, W. N., a primipara of twenty, was married on Feb. 2, 1903, menstruated last on April 4, 1903, and expected to be confined on Jan. 9, 1904. Preg-

[1] Read before the American Gynecological Society, Boston, May 24, 1904.

nancy progressed smoothly until the occurrence of vulvar pruritus in November, 1903. Examination of the urine made by Dr. Dann at the date last named gave normal results, neither albumin nor sugar being present. On Dec. 20, 1903, the patient complained of specks before the eyes and dizziness. The urine was again examined and found to contain a trace of albumin. On Dec. 28, 1903, edema of the feet, puffiness of the eyelids, beginning coma, and total blindness supervened. The dropsy increased, the coma deepened, and the patient remained blind until Jan. 1, 1904, on which day at 10 A.M. the first convulsive twitching occurred. An hour later I saw the patient with Dr. Dann who had exhausted all the usual resources in attempts to dispel or lessen the uremia.

The patient's mental condition varied between stupid semi-consciousness and muttering active delirium. She was totally blind, with labored breathing, full, soft pulse, and temperature but slightly above the normal. The abdomen was of unusually large size even for a nine months' gestation; the dimensions of the patient were suggestive of hydramnios or twins. The lower extremities, the abdominal walls, and the back were dropsical in the extreme, while the upper extremities and face were only slightly edematous. Fetal movements, though not vigorous, could be plainly felt, and the fetal heart sounds were clear, distinct and regular. The cervix was tightly closed and there was not the slightest indication of beginning labor. During the twenty-four hours preceding my first visit the patient had voided in all 360 cc. of urine containing four tenths of one per cent of urea, making a total output of only 1.44 gm. of urea in twenty-four hours. During our examination a second general twitching occurred.

Renal decapsulation was offered the family and friends of the comatose patient as the most certain, prompt and efficacious measure to increase the urea output and thus to avert impending death from uremia. The offer was accepted, and hurried preparations were at once made for operation at the home of the patient.

The operation was performed on Jan. 1, 1904, at 11.30 A.M., Dr. Thomas L. Bennett administering chloroform, and Drs. W. G. Vincent and S. W. Adams assisting. On account of the enormous size of the abdomen, and of the danger of injuring the fetus by pressure, the lateral decubitus was the only position available. The left kidney was first operated upon, the patient lying on her right side. The extreme dropsy of the back, by increasing the depth of the wounds, and the convulsive twitchings of the patient even under chloroform, made the work rather more difficult than usual. The left kidney was increased in volume to about 50% above the normal. The capsule proper was found thick, strong, and loosely gathered or wrapped around the kidney. It was so loose indeed as to be slightly corrugated, and it could be pinched up in folds. There was no bleeding, not even oozing, from the kidney surface on stripping off the capsule, although the hemorrhage in cutting through the abdominal parietes had been unusually free. This hemorrhage, by the way, was purposely encouraged, and was only checked when it was judged that a sufficient amount of blood had been lost to confer on the patient the benefits of a moderate venesection. The capsule was separated from the kidney over the entire surface of the latter and was excised in toto. The kidney surface, after removal of the capsule, presented everywhere a dirty-gray, turbid, sluggish and stagnant appearance, the entire organ being choked with inflammatory exudate.

After completion of operation upon the left kidney the patient was turned upon her left side, the right lumbar region was rendered aseptic, and incision was made down upon the right kidney. The right kidney and its capsule were found in identical condition with that recorded for the left kidney, except that the right kidney was not quite as large as the left. Operation upon the right side was easier than on the left, the right kidney being readily delivered well into the wound, while the left kidney which could not be so delivered had proved more difficult of access. The operation upon the left kidney required fifteen, that upon the right fourteen minutes. Altogether, including the time required for washings and posturings, the patient was under the anesthetic for forty-five minutes. At the conclusion of operation the patient was returned to bed in good condition. The operative diagnosis was right and left acute or subacute parenchymatous nephritis.

During the twenty-four hours following operation there was almost complete suppression of urine, only 30 cc. of gelatinous, semi-solid, coffee-colored urine being obtained by catheter. Notwithstanding this, the patient's condition changed visibly for the better. During the same twenty-four hours of suppression following operation, the general restlessness and delirium disappeared, there were no further twitchings or convulsions, sight was restored following four days of total blindness, and the patient was able to recognize those around her. At the end of twenty-four hours after operation the urine began to flow freely, 1,000 cc. being drawn by catheter and a great deal more being voided into bed during the second twenty-four hours following operation, while the improvement of the patient's general symptoms became more and more marked and her condition no longer gave rise to immediate anxiety.

The next event of importance was the spontaneous commencement of labor forty-eight hours after operation. The beginning of cervical dilatation at 10 A.M. of Jan. 3, 1904, was marked by a petty convulsion quickly controlled by chloroform. At 10.30 A.M. and at 11 A.M. two further slight twitchings, the last in the history of the case, occurred. They were regarded as the response of the nervous system, still very susceptible by reason of uremic intoxication, to the ushering in of the parturient act. They gave rise to no anxiety as the patient's condition was otherwise satisfactory. At 1 P.M., the fetal heart sounds having all along remained distinct, and the cervix having spontaneously dilated to a sufficient degree, the forceps were applied to the presenting head, and a male child weighing 2,640 cc. was delivered. The partly asphyxiated child was revived by assiduous work on the part of Dr. Dann. An examination of the woman now showed a second head presenting. The fetal heart sounds remained clear. After a short period of rest for the mother and a little time granted for spontaneous birth, it was thought advisable in the interests of the second child to deliver. The forceps were applied to the head of the second child, and delivery was effected at about 3 P.M. The second child, of the same sex and weight as the first, was born alive but breathed only a few times after its birth, all efforts at resuscitation failing. The two placentæ were next delivered, after which the uterus contracted firmly and satisfactorily. The dressings of the lumbar wounds, which had become disarranged during labor and as a consequence of the immense shrinkage in size of the abdomen, were changed and the patient was allowed a much needed rest. She slept a natural sleep for the greater part of the twenty-four hours after delivery and awoke a changed, bright woman, in full possession of all her faculties.

The further progress of the case was uneventful. There was no recurrence of twitchings or of any unfavorable symptom, and the remaining edema rapidly disappeared. During the four or five days immediately following delivery a perfect deluge of urine, loaded with casts of all kinds and containing albumin in quantities varying between 0.05 and 0.6%, came down from the kidneys. The urine, mixed with blood and the lochial discharges, was not in favorable condition for satisfactory examination. Much of the urine also was lost with the fecal discharges which were abundant and frequent for some days. The exact daily amount of urine, therefore, could not be determined with anything like precision. Three days after operation, from Jan. 5 to 6, the amount of urine voided in twenty-four hours, as estimated by the nurse, was not less than 6,800 cc. One uncontaminated specimen of no less than 1,680 cc., obtained at a single catheterization on Jan. 6, was submitted to careful analysis with the following result: Specific gravity, 1,016; total solids in this one voiding, 62.63 gm.; urea, 1.3%; total urea, in one voiding, 21.84 gm.; albumin, 0.6%; numerous hyaline, epitheliated, fine and coarse granular casts, many of the latter with fat droplets; a few waxy, epithelial, blood and mixed casts; numerous isolated red blood cells; moderately frequent leucocytes. Numerous renal cells.

The output of solids and of urea during the first days after operation was simply enormous. Presuming that the specific gravity and the urea per cent above noted for a single voiding apply to the entire quantity estimated to have been passed during the third day after operation, we have an output for the third twenty-four hours after operation of no less than 253.5 gm. of solids and of 88.4 gm. of urea. By the end of a week after operation the daily excretion of solids and urea had gradually returned to about the normal. Owing to the presence of the lochial discharges, and to unwillingness to draw all of the urine by catheter, a full and valid twenty-four-hour specimen of urine was not obtained for examination until Jan. 14. Prior examinations of single voidings obtained by catheter showed a steady diminution from day to day of the amount of albumin and of the number and variety of casts. Examination of a full twenty-four-hour specimen, made Jan. 14, 1904, gave the following result: Total quantity of urine, 5,000 cc.; specific gravity, 1,011; total solids, 128.15 gm.; urea, 0.3%; total urea, 15 gm.; albumin, a marked trace; sugar, none; casts: occasional hyaline and granular, rarely a waxy; red and white cells, due to contamination with lochia.

On Jan. 31, 1904, the total amount of urine was 1,700 cc.; specific gravity, 1,015; total solids, 59.42 gm.; total urea, 11.9 gm.; albumin, a faint trace; rarely a hyaline cast; a few mucous cylindroids; no renal elements; still some lochial cells. An examination, made April 9, 1904, showed the urine to be practically normal; no albumin, no casts, a few mucous cylindroids, no renal elements.

The progress of improvement in the patient's general condition kept pace with that of the urine. At no time after delivery was there any cause for anxiety. The puerperium ran a normal course. Both lumbar incisions healed by primary union throughout, in spite of much unavoidable disturbance of the dressings during labor and immediately afterward. Three weeks after operation the patient left her bed and a week later resumed her duties in life.

Last report, May 14, 1904, four and a half months after operation. Patient has nursed her child continuously from its birth to date of report. Mother and child are enjoying most excellent health; the child weighs 9½ kg. Examination of the mother's urine gives the following results: Total quantity voided in twenty-four hours, 1,950 cc.; specific gravity, 1,012; total solids, 54.52 gm.; total urea, 21.45 gm.; no albumin; an occasional hyaline cast.

The case just narrated speaks for itself. Further comment appears unnecessary, and further valid deductions cannot be drawn from a single case. One fact stands forth prominently as absolutely proven and firmly established by the case, namely, that renal decapsulation can arrest the progress of uremia and of puerperal convulsions of renal origin *in the undelivered woman*. The deduction is self-evident. The production of abortion and the induction of premature labor, with all that those procedures imply for mother and child, need not henceforth be our only ultimate resources in the treatment of puerperal eclampsia.

## A CASE OF TUBERCULOUS CONTAGION.

BY SARAH ELLEN PALMER, M.D., BOSTON,

*Surgeon to the New England Hospital for Women and Children; Assistant Surgeon to the Women's Charity Club Hospital; Physician and Surgeon to the Pope Dispensary.*

A. N., single; thirty-five. Came to my office in November of 1901, complaining of an uneasiness in the left axilla. I found the axillary glands slightly enlarged, and a faint line of redness and tenderness extending from a small abrasion on the wrist to be lost in the glands. The glands increased steadily in size, and at the instance of her family she consulted Dr. William Osler of Baltimore. He agreed with me that extirpation of the glands was the only treatment indicated, and early in February, I dissected out the axillary space. The more superficial glands, owing to the long delay, were about to break down and the deeper lymphatics were much engorged. Pathological report showed the glands to be tuberculous. Neither at the time nor subsequently has the patient shown evidence of general infection, and we are ready to hope that the tuberculous condition was limited to local manifestation. Investigation showed that my patient employed as maid a poor girl who had tuberculous glands in the neck which were suppurating. The wound was dressed daily, no special care being taken. This was the only direct exposure known.

After talking to Dr. Theobald Smith, I am confirmed in my idea that contagion is possible in just such a case as this reported, and that an unusual strain of bacteria might, though rarely, exist in a suppurating, tuberculous gland and thus communicate tuberculosis to others.

Dr. Osler of Baltimore, in a recent article on "Home Treatment of Tuberculosis," gives details of a plan in the city to investigate by house to house visits of trained workers the homes of the poor. They teach methods of precaution where tuberculosis is found in the family. Dr. John Russell of New York, in his School for Consumptives at the Post-Graduate Clinic of that city, has a plan of instructing the sick which is detailed in the reports of that Institution. In other cities the subject of prevention is agitated, as by the Society for the Relief and Control of Tuberculosis in Boston. It is, I believe, to the destruction of the sputa that attention is paid

most especially. In this instance reported, one of the most prominent physicians of Boston assured my patient that there was no danger to the other members of the family, although he knew the suppurating glands to be tuberculous. The belief in immunity from such a condition is evidently prevalent, because I am sure that infection from suppurating glands is rare. It is in the hope of adding an especial caution to the teachers of preventive methods, that this case is offered.

## Medical Progress.

### THE PROGRESS OF SURGERY.

BY HERBERT L. BURRELL, M.D., AND HAYWARD W. CUSHING, M.D.

(Concluded from No. 21, p. 570.)

#### TREATMENT OF EMBOLISM OF THE LIMBS BY IMMEDIATE AND PROLONGED MASSAGE.

M. Pierre Merklen[25] has recently called attention to the treatment of embolism of the arteries of the limbs by massage, a method suggested to him by Prof. Paul Berger who thus successfully treated embolism of the posterior tibial artery. When an artery is obliterated by an embolus a proximal clot forms and extends as far as the nearest branch given off by the artery; a distal clot also forms which is more extensive. If it extends very far it helps to prevent the establishment of the collateral circulation. Hence the indication is to break up the embolus or to drive it towards the periphery and to prevent the formation of the secondary clots. This result may be achieved spontaneously. M. Merklen related the case of a man suffering from mitral regurgitation which had existed for twenty-two years. He was suddenly seized with severe pain in one of the lower limbs which became cold and anesthetic up to a distance of several centimeters above the knee. The pulsations of the dorsalis pedis artery were absent but those of the femoral artery were retained. For nearly two hours M. Merklen and a colleague, relieving one another so as to avoid interruption of the process, practiced energetic petrissage of the femoral, popliteal and posterior tibia arteries until the patient declared that he was relieved. The limb was then wrapped up in cotton-wool. On the following day the relief had remained permanent and heat and sensibility had returned to the limb. The circulation evidently was re-established, although there were numbness and formication and the pulsation of the dorsalis pedis could not be felt until several months later. The patient regained complete power in the limb. Probably the massage acted by breaking up as well as by moving the embolus which was driven towards the periphery to a point where arterial obstruction did not, thanks to the collateral circulation, interfere with the nutrition of the limb.

[25] Lancet, Nov. 28, 1903.

#### TREATMENT OF FACIAL PARALYSIS BY NERVE TRANSPLANTATION.

Dr. Hackenbruch,[26] Wiesbaden, reported the results of an implantation operation in which he had united the spinal accessory nerve into the facial. The patient was a girl, eight years of age, in whom facial paralysis had existed for seven and three-fourths years. He implanted two thirds of the spinal accessory nerve into a cleft in the facial. Improvement was noticed at the end of four and one-half months. After a period of nine months the angle of the mouth could be voluntarily drawn outward. He also reported a subsequent case in which he had implanted, on account of infantile spinal paralysis, one third of the tibial nerve into the paralyzed peroneus nerve. At the end of three months there was some improvement. This was particularly noticed as regards position of the foot. An additional case was reported by Körte, Berlin, who showed a patient in whom, one and one-half years before, he performed an anastomosis between the facial nerve and the hypoglossal. The result showed that the muscles of the cheek and the angle of the mouth were distinctly mobile. The orbicularis oculi could be moved feebly while the frontal muscles were without motion. It was stated that the accessory nerve was a better nerve to graft than the hypoglossal. Dollinger, Budapest, called attention to the danger of dividing the accessory nerve before it passes through the sternomastoid muscle causing an incurable paralysis and atrophy of that muscle. He recommends making the division of the nerve as distal as possible and then turning it upward to unite it with the facial.

#### REPLACEMENT OF THE RADIAL DIAPHYSIS BY IVORY.

K. Vogel,[27] Bonn, claims to have successfully replaced the diaphysis of the radius in a case of traumatic necrosis of that bone. The patient, a little girl, was injured by a fall. The diaphysis as a sequestrum was removed subperiosteally and was replaced by an ivory rod which was fitted into the epiphysis at either end. The result is stated as quite satisfactory. The child uses the hand as before and plays like other children. Pronation and supination are somewhat restricted. The other motions of the hand are normal. Radiographic examination after one year showed considerable proliferation from the periosteum and from the epiphyses. The slight functional disturbance had then entirely subsided. The author considers that the experience has thus been found a success.

#### THE SEMI-LUNAR CARTILAGES OF THE KNEE.

F. F. Burghard, in an interesting article,[28] while discussing the modern treatment of several injuries thus speaks of the dislocation of the semilunar cartilages in the knee. The symptoms occur when the cartilage is bruised, torn, free, or

[26] German Surgical Congress, 1903.
[27] Deutsche med. Wochenschrift, B. xxix, Heft 46.
[28] Lancet, Dec. 19, 1903, p. 1703.

even when the synovial membrane alone is nipped between the articular ends of the bones. The writer does not consider the treatment by apparatus, pads, etc., of any especial value. He recommends conservative treatment if the patient is seen after the first injury and outlines his method of treatment. For the recurrent cases he proposes operation. After opening the joint he removes as much as possible of the injured semilunar cartilage. He discards the method of suturing. He in addition emphasizes the importance of trimming away the hypertrophied synovial fringes which hang into the joint cavity, especially in the region of the ligamentum mucosum and alaria, which may be caught between the bones and cause a return of symptoms after the removal of the cartilage. Careful search should be made for these, especially behind the ligamentum patillæ, before the joint is closed. The after treatment is also considered important, for the capsule of the joint is often relaxed and the thigh muscles atrophied. Hence a regular course of massage and exercise should be employed till these conditions are relieved. When relief is not obtained after the above methods it is generally due to the fact that an osteo-arthritis is present which has progressed in spite of the operative treatment.

### REMOVAL OF AN OPEN SAFETY-PIN FROM A CHILD'S ESOPHAGUS.

Dr. A. H. Traver [29] has published an interesting case in which an open safety-pin was removed from the esophagus of an infant, nine months old. The pin was plainly seen, open, by radioscopic examination, located about half-way down the esophagus, the point toward the mouth. Its position prevented its being extracted through the mouth. The difficulty was overcome in the following manner: The child was chloroformed and placed on a table, underneath which a Roentgen ray tube had been placed, so that the pin could be seen without difficulty. While thus keeping watch of the pin, a whalebone bougie, also plainly visible, was passed down the esophagus till it came in contact with the safety-pin. Then by means of the bougie, the pin was carefully pushed down into the stomach and was seen to fall into the cardiac end. The bougie was then withdrawn. The child was now taken to the operating room, the abdomen opened in the median line, the pin located and removed through an incision one-fourth of an inch long in the stomach wall. This incision was closed with Lembert sutures and the abdomen sutured. The wound was dressed in the usual way. The child made an uneventful recovery and left the hospital on the seventh day.

### POINTS IN THE TECHNIC OF MURPHY BUTTON ANASTOMOSIS.

O. Neuweiler [30] mentions the following details of technic which he considers important in the use of this surgical device: (1) The purse-string suture should not be inserted too far back from the margin of the intestine, so that a redundant mass of intestinal wall is not gathered into the cavity of the buttons around the cylinders; (2) contrarywise, also, the purse-string suture should not be too close to the margin of the intestine, so that when the button halves are apposed, the thread pulls out and permits the bowel to slip away from the grasp of the button; (3) in cases of circular anastomosis (end-to-end anastomosis) care must be taken that the mesentery is well grasped by the suture and drawn into the button, so that only serous membrane is against serous membrane; (4) a mucous membrane which bulges into the wound should be resected before the suture is passed and after the buttons are united and masses of tissue in the way should be carefully removed; (5) the pushing of the buttons together should be done not by a single powerful pressure, but gradually and cautiously. The fingers should not press too vigorously at the mouth of the ring, so that the intestine will slip off it, or so that the purse-string suture is torn out; (6) in all cases in which an absolutely uniform apposition of the serous surfaces, each to each, has not been obtained, a supporting safety suture should be carried out to prevent late accidents.

### DANGERS OF THE TRENDELENBURG POSTURE.

Professor Kraske at the 1903 meeting of the German Surgical Congress,[31] while acknowledging the value of this position, comments on its dangers under certain circumstances. Twice during operations for suprapubic cystotomy there had been a fatal increase of existing myocarditis. In neither case was chloroform used and the loss of blood was not excessive. He considers that the increased hydrostatic pressure resulting from the posture caused a flow of blood from the inferior vena cava sufficient to result in acute fatal dilatation of the feeble heart. He also has observed intestinal obstruction apparently as a result of this position also in two cases. These were not patients notably fat. He, therefore, recommends that the position should be used with caution and for a short time in cases where serious disease of the myocardium is present or when it is believed that the omentum, mesentery and appendices of the cloaca are notably fat. During the discussion which followed, Trendelenburg doubted the correctness of Kraske's conclusions in regard to the cardiac cases. He admitted the possibility of intestinal obstruction, although stating that he had never seen such a result follow. He reported gastric hemorrhage following the use of the position. Konig at Berlin spoke warningly against this position in cases of abscess. Kümmel differed from Kraske in regard to the above mentioned ill effects. He claims never to have seen ill results from the use of the position, and did not believe that intestinal obstruction could follow.

[29] American Medicine, July 11, 1903, p. 53.
[30] Archiv. f. klin. Chir., 1903, B. 69, H. 4.
[31] Proceedings of the German Surgical Congress, 1903.

THE TREATMENT OF GRANULATING WOUNDS.

Under this title H. Wagner of Breslau describes what he terms his "open air" treatment.[32] He claims that by this method a clean granulating surface the size of the palm of the hand can be covered with epidermis in eight to ten days. He has not observed during five years' experience any trouble from infection. He thinks that the danger of infection from air is slight, and quotes several authorities in support of this opinion. He claims that the usual moist and ointment dressings macerate and destroy the new forming epidermal cells. Also that they retain under the dressing the secretion of the glands in the deep layers of the skin. His method briefly is to daily clean the edges and surrounding skin with ether and then place the wound so that no clothing touches it. The dryer the room the more marked is the effect on the wound. He even, in suitable weather, places his patient out of doors. At night the wound is covered by powder, iodoform, or dermatol, or lime and starch and a bandage. The kind of powder is considered immaterial. He states that in spite of the dry bandage each morning the wound is moist. The secondary slough disappears, the granulations grow rapidly and the epidermis closes in daily from the edges, often several millimeters. He has no trouble, he claims, from retention of wound discharge under crust formation and infection. He thinks that the conditions of dryness inhibit the growth of bacteria. He would not conduct this open treatment, however, in wards where erysipelas or acute infectious patients were treated. For the exact details the reader is referred to the writer's original article which contains some interesting clinical observations of cases treated by ointment dressings and moist bandaging.

SEVERE BURNS.

M. M. Dieterichs[33] reports the results of an investigation for the purpose of learning the cause of the chemical conditions in very extensive and severe burns, especially the toxic changes in the blood. He reports to have found such substances in the blood of severely burned animals and in greatest abundance during the first five to ten hours. Agglutinine appeared somewhat later than lysine. For the full details of the conditions of the experimentation and the results the reader is referred to the original article.

In the second part of the report the writer applies the results of his work to the practical treatment of these cases and concludes that the conditions which call for relief are:

First. That the blood pressure should be raised preferably by the use of normal salt solution by rectum or by intravenous infusion. By this also the toxins are excreted by the kidneys.

Second. The deficiency of oxygen and the resulting destruction of the red blood globules must be relieved by a liberal use of oxygen.

Third. An excessive loss of bodily heat must be prevented.

As local treatment of the burn Dieterichs strongly recommends the aseptic dry treatment, avoiding as far as possible the use of drugs.

THE TREATMENT OF BURNS BY THE DRY METHOD.

Dr. M. Sattler in an interesting article has recently discussed this subject.[34] He calls attention to the fact that the chief symptom calling for relief in these cases (after "shock") is pain, and that most methods of treatment fail to relieve it. That treatment to be satisfactory must prevent infection, relieve pain, favor and hasten the removal of necrotic tissue and cicatrization of granulation tissue. The writer contrasts what he terms the "dry bandage" treatment with the other usual methods. He states that of 33 cases treated by water bath and other methods, 9 died, while of 29 cases by the "dry" method, no deaths occurred. In a later series there was a mortality of 8.8%. This dry method has been advocated at times by Lustgarten, Mosetig-Morrhof, Bardeleben, Eichhoff, and others. It was claimed to produce a dry slough and to hinder decomposition. Many observers claimed that the iodoform treatment of Morrhof in 1887 had a pronounced effect in quieting pain and preventing infection. Substitutes for iodoform were aristol, bismuth subnitrate, dermatol, xeroform and thiol. Dr. Sattler's method, briefly stated (for details the reader is referred to the original article), is to thoroughly clean the burnt area, open the blebs and remove all tags of epidermis with sterile scissors. The gelatinous exudation under the epidermis is wiped off with dry compresses. The surface surrounding the burn is then thoroughly cleaned. The affected area is thus made as far as possible aseptic. The injured surface is now covered with a thick layer of xeroform and after being thickly sprinkled with powder is covered with a covering of sterile gauze over which a layer of sterile cotton is fastened with a bandage. This bandage is changed generally after four to six days; in cases of much wound discharge oftener. In order to avoid pain and bleeding the patient is put in a bath when the bandage is removed and the dressing renewed. By this method it is claimed that infection is prevented, the necrotic areas are thrown off rapidly, that granulations form rapidly and defects are rapidly closed so that subsequent cicatricial contraction is prevented. The hypertropic growth of granulation tissue and profuse exhausting suppuration are avoided or essentially limited. If exuberant granulation tissue does form it is controlled with silver nitrate or a thermocautery. Strict attention is also paid to the function of the heart, kidneys and expectoration. This treatment has been now employed in one hundred cases to the exclusion of other methods. When contrasted with other methods such as ointment dressings, etc., on the same patient the result as regarded rapidity of healing, absence from pain, and the

[32] Centbl. f. Chir., 1903, Bd. xxx, 1361.
[33] Russisches Arch. f. Chir., 1903, Russian.
[34] Wiener Med. Presse, 1903, Bd. xliv, s. 2262.

character of subsequent scar formation was so markedly in favor of the "dry method" that finally other methods were discarded. The xeroform and powder dressing has a marked power in controlling pain which generally ceases shortly after the dressing is applied. The sloughs are separated in a shorter time, the granulation growth is more rapid and vigorous and the lesions cover in with epidermis quickly. The scars show no tendency to contraction. The xeroform is non-toxic. It diminishes the wound secretion thus avoiding frequent change of dressing. The histories of several cases of severe burns are published with the article illustrating the author's method, and showing his results.

### ANTISEPTIC DRESSINGS.

Nœtzel [35] concludes from experimental research that the secretions of a wound are drawn up into a moist dressing better than into a dry one. Virulent anthrax bacilli placed on an artificial wound in rabbits were absorbed into these dressings and infection of the animals was prevented. Both the moist and the dry proved equally effective in this respect, but the germs were drawn up into the outer layers of the moist gauze while they were found only in the layers closest to the wound in the dry dressings.

### THE ANTISEPTIC ACTION OF IODOFORM.

Dr. B. Heile [36] asks, Why does iodoform prove a good antiseptic in the clinic, and in the laboratory lag behind all other antiseptics in virtue? Heile's investigations show that when mixed with tissue juices in the *absence* of oxygen iodoform becomes decomposed in three to five days, and that it now kills both staphylo- and streptococci, while under the same circumstance neither the tissue juices nor the iodoform alone have any effect. Of the body juices, that from the liver decomposes iodoform most powerfully, that from the brain or from fat least powerfully. Granulation tissue acts similarly to juices from organs, and tuberculous granulation tissue seems to have the most intense decomposing power. The degree of decompositon was found by the quantitative test for iodine. Corresponding to the antiseptic action of iodoform is the degree in which iodine is set free. The antiseptic action is, however, not due to the free iodine, since iodine is set free in the presence of oxygen, and iodoform is no longer an antiseptic when oxygen is present. Further, iodine, in the form of tincture or in solutions of KI or NaI, of much greater concentration than can be obtained by the decomposition of iodoform, is not antiseptic.

The author thinks it most probable that the decomposition of iodoform sets free di-iod-acetylene (CHI-CHI). This is very powerfully bactericidal, and is rendered inert by oxidization. These experimental findings correspond with clinical experience. Iodoform has much value in cavities, but none in superficial wounds. In internal organs, viz., liver and kidneys, iodoform is most powerfully decomposed, so powerfully, in fact, that it sometimes acts not merely as an antiseptic, but as a caustic.

The author concludes that iodoform is truly one of our best, if not the best, of our antiseptics.

### MODIFICATION OF EYE OF SURGICAL NEEDLE.

The slipping of thread and unthreading of needle during the suturing of wounds is often a source of great annoyance to the operating surgeon. To obviate this difficulty Dr. Marsh [37] has modified the eye of the surgical needle in such a way that this slipping of the thread is prevented. This he has accomplished by narrowing the eye end of the usual oval-shaped eye to a point. During suturing the traction on the thread forces it into this narrow portion of the eye by which it is grasped and slipping prevented.

### OPERATIVE TREATMENT OF EXSTROPHY OF THE BLADDER.

E. Orloff [38] in a comprehensive monograph has included all the cases he has been able to find in which Maydl's method of transplanting the ureters has been employed with or without modifications. The total number of cases included is 61, which list includes 5 from his own records. Three of his patients died shortly after operation. He reports excellent results in two others. He also reviews other operative methods to date giving the results.

### A NEW CYSTOTOMY OPERATION.

R. Frank [39] recommends a novel procedure, particularly applicable to old people with thick abdominal walls in whom a median cystotomy would be attended with considerable risk on account of possible complications. The operation is practically a perineal cystotomy and the main points are as follows: A transverse perineal incision is made and the rectum separated from the prostate, the blunt dissection being carried back until the posterior bladder wall, the seminal vesicles and Douglas' pouch are exposed. The section of exposed bladder wall is now incised in the median line, and the interior of the viscus explored. The author has used this method in two cases of vesical calculus, and in one of papilloma of the bladder, with good results. The operation requires more skilled technic than the median section, but the author thinks that is compensated by the simplicity of the after-treatment, more favorable drainage and cutting short the period of healing. The patients need to be kept in bed about eight to ten days, but during this time they may change their position, and from the beginning lie on the side.

### THE PATENCY OF THE VAS DEFERENS AFTER SECTION, RESECTION AND SUTURE.

H. Vulliet has attempted to demonstrate that the vas deferens after resection can be sutured so that its canal is patent.[40] First this was ac-

[35] Archiv. f. klin. Chir., lxxxi, no. 1.
[36] Proceedings of the German Surgical Congress of 1903.
[37] Journal of American Medical Association, vol. xli, p. 1413.
[38] Revue de Gynecologie, Paris, vol. vii, no. 5.
[39] Archiv. f. klin. Chirurgie, vol. 71, no. 2.
[40] Centbl. f. Chir., 1904, vol. xxxi, p. 36.

complished in dogs successfully. The suture was very fine. The diameter of the vas was not more than 2 mm. and that of the canal ½ mm. The wall was, however, rather thick which made it possible to suture it without the needle penetrating the canal. As just stated the needle and suture must be very small. In four operations the duct was shown histologically to be open and the canal lined with normal epithelium in three. Dr. Möhrlen in Lusanne also succeeded in finding live spermatozoa in the ejaculated seminal fluid in two dogs in whom the vaso deferentia had been resected and sutured, thus adding the physiological to the histological proof that this restoration of the duct is possible.

## Reports of Societies.

### ASSOCIATION OF AMERICAN PHYSICIANS.

The nineteenth annual meeting was held at Washington, May 10, 1904.

The meeting was called to order by the President, Dr. Wm. T. Councilman, of Boston.

The first feature of the program was the delivery of the president's address. In this, Dr. Councilman reviewed the condition of the association and called particular attention to the disadvantages resulting from the limitations upon membership. He asked that careful consideration be given to the question of increasing the number of members, and suggested, as one means whereby the end might be accomplished without detriment to the work of the society, that a class of associate members be established from which future members should be chosen, and that active membership be limited to twenty years; at the end of that period members to be transferred to the roll of honorary membership. This would about cover the average active period of a man's professional life and provide regularly a sufficient number of vacancies to accommodate the desirable portion of those on the waiting list.

THE INFLUENCE OF SUPRA-RENAL EXTRACT UPON ABSORPTION AND ELIMINATION; WITH DEMONSTRATIONS. DRS. S. J. MELTZER AND JOHN AUER.

Dr. Meltzer explained the experimental work whereby it was shown that the action of certain drugs was very much retarded when they were given in association with supra-renal extract. It was shown that this action was not a matter of chemical neutralization but due to biological changes. If small doses of adrenalin be injected into a frog, it becomes paralyzed in a few moments, but this is not a muscular paralysis since stimulation of the sciatic nerve causes the muscle to contract in a normal manner. If the effect of the adrenalin be allowed to wear off now, and strychnia given, even in more than the usually fatal dose, it produces no effect or only after a long period of delay.

In order to determine whether this was really a matter of delayed absorption experiments were made with a substance which is ordinarily very rapidly taken up by the tissues. If fluorescin be injected subcutaneously into a rabbit the conjunctivæ and mucous membranes very quickly take on the characteristic yellow stain and the Ehrlich's line appears in the pupil. If, however, such an animal be previously given adrenalin the coloring effects do not appear for a much greater length of time. As this coloring matter has first to be absorbed into the blood and then eliminated through the tissues of the organs, this may not have been purely a matter of delayed absorption but rather one of delayed elimination. By carefully timing, on a series of animals, the appearance of the color in the serum and later in the tissues it was demonstrated that both absorption and elimination are delayed by the adrenalin. These differences were most strikingly shown in the tissues of the kidney; the studies upon the urine were not so distinctive because even a minute portion of the fluorescin colors the fluids of the body intensely.

An effort was then made to determine whether transudation would also be delayed by adrenalin. For this purpose salt solution was introduced into the peritoneal cavity where, as we know, it ordinarily changes very rapidly with the blood, and fluorescin was injected into the vessels. Specimens were shown demonstrating that the fluid from the peritoneal cavity of the control animals contained more coloring matter after eight minutes than that from the adrenalin injected animal after sixteen minutes.

The work seemed to show that the use of adrenalin delays the absorption, elimination and transudation of other substances introduced in the body. The principal practical conclusion drawn was that in certain cases toxic materials introduced into the tissues might be delayed in their action by the use of adrenalin.

*Discussion.* — Dr. W. Gilman Thompson said that in his use of adrenalin therapeutically he had not observed that it had any effect whatever upon the kidneys and that it might do so experimentally because of the large dose or its continuous employment, but he doubted if it would do so in therapeutic doses.

Dr. H. A. Hare said that his conception of the action of adrenalin had been that it was quite brief in its effect and he was surprised to hear that it could prolong the effect of other remedies. He also called attention to the belief that the local application of adrenalin, through the ischemia produced, seemed to increase the danger of infection.

Dr. Meltzer, in closing, said that the popular conception of the action of adrenalin, as expressed by Dr. Hare, had its origin in a knowledge of its action on the blood pressure only. In some experiments he had been able to watch its effect upon the blood vessels for several hours. The effect upon non-striated muscle was much longer than that upon the striated muscles. He explained the delayed absorption and transudation by the theory that there exists a ring of contractile tissue around the pores of the capillary endothelium, and that the varying size of this ring, under the stimulus of the adrenalin, determines the rapidity with which other substances may pass through the pores.

POLYURIA IN TYPHOID FEVER. DRS. F. H. FUSSELL, H. S. CARMANY AND HUDSON.

Dr. Tyson reviewed the literature of typhoid fever to show the general opinion that as a rule the quantity of urine passed during the first week or ten days of this disease is usually diminished, that after the second week the quantity increases and that during convalescence it is almost invariably copious and of low specific gravity. Some authorities were quoted to show that polyuria occurs in a small percentage of cases and that, rarely, the amount passed may be as great as 10,000 cm.

The case which he reported was that of a married man aged forty, admitted to the hospital on about the eighth day of his typhoid fever with a temperature of 103°. On the day after admission his polyuria began and continued during the height of the fever. The

largest amount passed during one day was 7,200 cm. The amount of urea excreted was constantly normal in percentage. The polyuria lasted, to a greater or less degree, for a month, and during this period he was nervous and extremely thirsty. The patient has been under observation for a year since his recovery from typhoid and presents no evidences of organic kidney disease or diabetes.

*Discussion.* — DR. DOCK called attention to some work which had been done in regard to the retention of waters in fever, at the result of which the rule has been laid down that at first there is an actual retention of fluid in the body but that after defervescence the amount secreted increases until there may be a polyuria. He had been interested in noticing the effect of cold baths in typhoid upon the excretion of urine, and had found that where these were used there was not much retention during the fever. He therefore believed that the theory of treating fevers by " washing out " is to a certain extent possible. Dr. Withington inquired as to the nervous condition of the patient preceding the onset of polyuria, and Drs. Cabot and Osler both asked as to the connection between the polyuria and the typhoid, Dr. Osler pointing out the fact that in certain conditions, such as tuberculous peritonitis and retroperitoneal tumors, polyuria frequently occurred as the result of local irritation.

DR. W. S. THAYER remarked that the quantity of water the patient is drinking might play an important part in these cases, and spoke of some observations made by Dr. Cushing of Cleveland in this connection. He pointed out that typhoid fever patients probably do not always get as much water as they desire in spite of the liberal attitude of the physician in charge. Dr. Cushing has been carrying a rubber tube from the water tank to the bedside and attaching it so that the patient may suck water from it whenever he desires. He has found that these patients drink enormous quantities of water and pass large quantities of urine, and he is also under the impression that this is a beneficial feature in their treatment.

### CASES OF VENOUS THROMBOSIS OCCURRING IN THE COURSE OF TYPHOID FEVER. DR. W. S. THAYER.

DR. THAYER presented an analysis of 42 cases of venous thrombosis occurring in the course of typhoid fever. Thirty-nine were instances of venous thrombosis that occurred among the 1,463 cases of typhoid treated in the Johns Hopkins Hospital; two were instances of this complication which were admitted during the period of convalescence and one was a man who had suffered from double iliac thrombosis coming on during typhoid fever but who entered the hospital for treatment two years later. In 5 of the 39 cases occurring in the hospital there was a fatal result; mortality 12.3%. In two instances the thrombus was the primary cause of death. As to the distribution of the lesions, the thrombus occurred in the lower extremities in 40 instances; in the upper extremity in one instance; and in the pulmonary artery in one instance. The vessel occluded was located on the left side of the body in 26 cases; on the right side in 5 cases; on both sides in 9 cases; no record in 2 cases. The particular vessels affected were: the femoral vein in 21 instances; the popliteal vein in 5 instances; the iliac vein in 5 instances; the internal saphenous in 3; the veins of the calf alone in 5; the axillary vein in 1; the pulmonary artery in 1; and the pulmonary artery and common iliac in 1.

In 36 of the 39 cases the development of the thrombosis was associated with fever. In 11 cases it was associated with chills. The first definite symptom of thrombosis in every instance was pain. In all of the cases there was swelling of the affected part and in some instances there was redness over the affected vessel. In 16 cases the thrombotic mass was felt as a palpable cord. Leucocytosis was almost always present and its extent depended, in part at least, upon the extent of the lesion, the highest count noted being 25,000 and the average count above 10,000. A study of the prognostic features showed that venous thrombosis in the lower extremity is always a serious complication of typhoid fever, and although the immediate danger is not great the after results are often grave; the affected extremity is often considerably and permanently enlarged, there is marked varicosity and usually more or less permanent disability when the femoral or iliac veins are affected. Thrombosis of the veins of the calf is less severe.

*Discussion.* — DR. PEABODY referred to the belief that the coagulability of the blood is increased by the presence of an increased amount of the calcium salts in the blood and to the possibility that this could be overcome and thrombosis prevented by the administration of sodium citrate.

DR. STENGEL said that he had had a number of experiences with the appearance of the general symptoms produced by the thrombus before the local symptoms were noted. He had seen two cases of thrombosis of the pulmonary artery.

DR. WELCH called attention to the accumulating evidence in support of the old theory that the thrombosis in these cases originates from a primary inflammation of the walls of the vein — an infective phlebitis. This theory was once supposed to have been overthrown by Virchow, but the recent work of the French school, in particular, tends to show that although the question is by no means settled the inflammatory theory must be reconsidered. One of his assistants, Dr. Longcope, had recently gone carefully over these pathological specimens in his laboratory and demonstrated the presence of bacteria in over 70% of the cases.

DR. PRINCE said that, in this connection, he would like to report a case of typhoid that began with phlebitis of the veins of the leg. The patient was one who had previously suffered a number of attacks of phlebitis and presented the history of a gouty diathesis.

DR. CAREY referred to the marked disproportion between the general systemic symptoms and the local condition. He recalled one case where the local trouble did not seem to be very great but where the chills were as violent as in the vicious types of malaria. He believed, however, that most of these cases recovered entirely from the local edema.

DR. THOMPSON differed with Dr. Carey as to the ultimate results.

He had eight cases under observation for from six to ten years and in no one was there anything like complete recovery. All of them are weak and show edema after any exertion.

DR. TYSON questioned whether the pain which was such a marked feature of the thrombosis might not be due to the sudden vascular obstruction, and explained in the same way as that which accompanies angina pectoris.

DR. OSLER called attention to the difference in clinical picture between the hard, swollen, painful leg of phlegmasia albadolens and the condition described as occurring in typhoid. He said that he did not believe that the average experience with this condition would show quite such hopeless results as appeared in the report. He had known of a number of cases in private practice that had shown complete recovery and thought that the hospital had simply had an experience of an unfortunate series of cases.

CLINICAL STUDIES IN ARTERIO-SCLEROSIS. DR. ALFRED STENGEL.

The author had carefully studied the blood in a series of these cases. In measuring the blood pressure he used Stanton's apparatus in preference to the Riva-Rocci because it is devised to estimate both the diastolic and systolic curves. He does not believe that there is always high pressure where there is arterio-sclerosis. He had observed that the diastolic pressure is always high but the systolic pressure is not necessarily so; the mean pressure is generally high. He found a marked contrast between the appearance of the patient and the condition of the blood. In spite of the very marked anemia of the advanced cases there is often a high blood count and high percentage of hemoglobin. He had also noted that one of the first signs of arterio-sclerosis was a sustained first sound of the heart, and this prolongation was considered an important point in determining the early development of arterio-sclerosis.

*Discussion.* — Dr. Kinnicutt asked whether the cases of low blood pressure that Dr. Stengel had encountered were in what might be called senile arterio-sclerosis, and said that his own observations had been that the blood pressure in senile arterio-sclerosis has been rather lower than that seen in pathological sclerosis.

Dr. Cohen called attention to the fact that many elements enter into the production of high or low blood pressure, and that as only the net results are expressed by the measurements it is impossible to say whether the changes from normal are due to alterations in the vessel wall, the innervation or the cardiac force. He agreed with Dr. Stengel in the observation regarding the prolongation of the first cardiac sound and added that the sound is often impure in character.

Dr. Stengel replied to Dr. Kinnicutt that the cases of low pressure he had referred to were in pathological and not senile sclerosis.

AN INVESTIGATION OF THE EFFECTS OF CARDIAC STIMULANTS, ESPECIALLY STRYCHNINE, ON THE BLOOD PRESSURE IN FEBRILE CONDITIONS. DR. R. C. CABOT.

The cases included in this study were all febrile: 31 of typhoid, 4 of pneumonia and 15 with various diagnoses. In 32 instances the strychnia was given by mouth; in 18, subcutaneously. The records were kept for days and sometimes weeks before and after the drug was given. The measurements were taken with the Stanton modification of the Riva-Rocci instrument. The observations extended over eight months and included over 5,000 measurements.

Dr. Cabot's conclusions are, that strychnia does not raise or in any way affect the maximum or minimum blood pressure when given in the usual manner and dose.

*Discussion.* — Dr. Stengel confirmed these observations and said that in some of his own work he had noticed that while this drug and others, even emotion, might cause a slight rise in the systolic pressure there was little or no influence exerted upon the diastolic pressure.

Dr. Hare said he considered this paper of considerable value to the general profession as they had within the past few years come to look upon strychnia as a cardiac stimulant and to use it with the same energy they had formerly applied to the use of digitalis. Personally, he had been convinced that it not only did not act as a stimulant in fevers but that it sometimes retarded the patient's advance.

A SUPPOSED CAUSE OF HIGH TENSION PULSE IN NEPHRITIS. DR. W. H. THOMSON.

Dr. Thomson offered the following conclusions:

(1) High tension pulse occurs too early in nephritis to be due to any other cause than the presence in the blood of a general vaso-constricting agent, similar in its properties to adrenalin.

(2) Such an agent would also produce constriction of the renal vessels and general shrinkage of the kidneys, causing interference with the excretion of urea.

(3) Prolonged presence of such an agent in the blood would lead ultimately to endarteritis with degeneration of the vascular walls and to cardiac changes.

(4) Acute cardiac dilatation may occur from the effects of such a general vaso-constricting agent in the circulation before extensive alterations in the blood vessels have taken place.

(5) Aconite is the best vaso-dilator in nephritis, much more effective than the nitrites.

*Discussion.* — Dr. Peabody said that experience had taught him that aconite would materially increase the urea output even in cases where the arterial tension is abnormally low. The reason for this he could not give.

POISONING BY ILLUMINATING GAS. DR. W. G. THOMPSON.

Dr. Thompson's investigation was undertaken to determine the cause of death and of certain symptoms that are characteristic of poisoning by illuminating gas. The series of cases included 90, of which 17 were fatal. In New York there were 288 fatal cases in 1901, and probably 2,000 cases of gas poisoning occur there annually. This is due to the prevalent use of the gas stove and to the ignorance of the foreign population coming into the city. He described the effects upon the blood, and looked on carbon monoxide as the particularly poisonous element. He believed its action upon the nervous system is more important than the changes produced in the blood. A leucocytosis that lasts for many days is one of the features. The character of the fever is varied. A subnormal temperature may exist for hours and then be followed by a fever that persists high for a week or more. One case of hyper-pyrexia — 110° — reported. The nervous symptoms are varied and inconstant. They consist of tremors, anesthesia, rigidity, opisthotonos, headache, coma, mental disturbance, etc. Peripheral neuritis, sclerosis and changes in the brain and cord may follow as sequelæ.

The most satisfactory form of treatment had been phlebotomy and infusion of salt solution.

*Discussion.* — Dr. Stengel called attention to some experimental work that had shown that the transfusion of defibrinated blood had saved animals poisoned by coal gas even when venesection and infusion with salt solution had failed.

Drs. Weir Mitchell and Solis Cohen each called attention to the varying composition of illuminating gas in different cities, and even in a given city at different times. The last-named speaker and Dr. Peabody spoke of the difficulties in the way of procuring and using defibrinated blood.

Dr. Thompson said, in conclusion, that these cases must be treated promptly, and salt solution is more convenient than defibrinated blood.

AN ANTITOXIN FOR SNAKE VENOM. A PERSONAL COMMUNICATION FROM DR. NOGUCHI TO DR. MITCHELL.

Dr. S. Weir Mitchell read to the society a letter just received from Dr. Noguchi detailing the results of experimental work which he had been conducting under the auspices of the Carnegie Institute, in the

laboratories at Copenhagen. Dr. Mitchell explained that Dr. Noguchi had engaged upon this work with Dr. Flexner at the University of Pennsylvania two years ago, and having demonstrated his fitness to conduct such a scientific investigation and having outlined his plan of work the Institute had, at Dr. Mitchell's request, decided to provide him with the means.

The report of his studies was eminently satisfactory. He believes he has succeeded in preparing a certain antidote to the venom of the rattlesnake. The antitoxin will not operate against the toxins of other varieties of snakes, and he questions the work of others who have claimed to have discovered a universal antitoxin.

## AFTERNOON SESSION. TUESDAY, MAY 10, 1904.

### ABDOMINAL PAIN FROM UNSUSPECTED IRRITATION OF THE INTERNAL INGUINAL RING. DR. CHAS. G. STOCKTON.

The class of cases to which DR. STOCKTON referred presents the clinical picture of pain, generally located in the lower quadrant of the abdomen but occasionally in the upper as well, sometimes described as colicky, sometimes as misery, and, at others, as burning; there is rarely localized tenderness; occasionally there is a sense of abdominal uneasiness, a vague unrest, difficult to describe; at times the patient speaks of moderate disturbance of the intestine as though occasioned by intestinal flatus; generally these symptoms are relieved when the patient lies down, and, as a rule, exercise increases the distress; there is a marked tendency to recurrent attacks and the patient wanders from doctor to doctor, or becomes a drug fiend. The anatomical basis for these symptoms is to be found in a slightly over-patulous state of the internal hernial ring; not a condition so advanced as to admit of evident and easily recognized protrusion of the intestine or omentum, but one in which a slight bulging may be detected on palpation, when the patient undergoes abdominal strain such as is produced by coughing or bearing down. The sensation communicated to the finger is often quite unlike that of ordinary hernia. It is as though a very thin and almost unappreciable membrane presented at the opening with a sensation of elasticity as though a moderate gaseous pressure was operating behind it.

The symptoms presented so closely simulate serious abdominal conditions that many cases have come to unnecessary operation. The proper treatment is the application of a carefully fitted truss. The histories of twelve cases were given in detail.

*Discussion.* — DR. CAREY related the history of one case which had come to operation after the patient had become addicted to morphia and the mere trace of a hernial sac found and removed; the condition was relieved.

DR. PEABODY reported a case that had long been suspected of being appendicitis but was finally properly diagnosed and relieved by the use of a truss.

DR. BOND described a case simulating intestinal flatulence that was discovered to belong to this class.

DR. DOCK saw one in which the diagnosis was made, but, in addition, the man was supposed to have gallstones. The hernia was operated upon first and investigation of the gall bladder failed to disclose any trouble there. It was concluded that the colic in that region was simply reflex pain from the inguinal trouble.

### THE MECHANISM OF EXOPHTHALMOS. DRS. W. G. MACCALLUM AND W. B. CORNELL.

An effort was made to determine experimentally the mechanism of exophthalmos by arranging an apparatus that would mark upon the smoked drum any movement of the eye, and then proceeding to alter the normal vascular and muscular conditions. It was shown that obstruction to the outflow of blood from the veins of the orbit produces at once exophthalmos which is relieved by the establishment of collateral circulation. This process is completed, however, so slowly that in the meantime the orbital tissue as well as the tissue of the face becomes very edematous, thus adding to the exophthalmus. Furthermore, entirely independent of any circulatory changes, there is an exophthalmos produced directly by the stimulation of the cervical sympathetic nerve. This protrusion is due to the peristaltic contraction of the orbital muscle tissue.

From these experiments no conclusions could be drawn as to the mechanism of exophthalmos in Grave's disease, but the possibilities are more closely defined.

### DIABETES INSIPIDUS. DR. THOMAS FUTCHER.

DR. FUTCHER called attention to the fact that animal experiments have shown that polyuria follows lesions of a point in the floor of the fourth ventricle a little in front of the glycosuria center; also after injuries to various portions of the middle lobe of the cerebellum; and, after injuries to the posterior portion of the pons and the anterior part of the medulla. He divided the cases of diabetes insipidus clinically into two groups, the idiopathic cases, or those without evident cause and the secondary or symptomatic cases, those referable to some organic lesion or some known cause. Tumors of the medulla and floor of the fourth ventricle, basilar meningitis and cerebral hemorrhage are the commonest organic lesions causing the disease. He believed that cerebral syphilis is a cause in a much larger percentage of cases than has been generally suspected. A basilar syphilitic meningitis he considered to be frequently the lesion and looked upon a transitory bitemporal hemianopsia in a case of diabetes insipidus as strong evidence in favor of the disease being due to syphilis.

He stated that diabetes insipidus belongs to the rarest of the medical diseases. In fifteen years there have been but seven cases recorded in the Johns Hopkins Hospital and Dispensary out of a total of 403,535 patients. Five of these cases belonged to the symptomatic group, and of these four were undoubtedly syphilitic in origin. Thirst appeared to be the first symptom complained of in the majority of cases. In considering the treatment, Dr. Futcher stated that while it is very unsatisfactory as a rule, the cases which appear to do best are those of luetic origin; anti-luetic treatment almost invariably relieves the cerebral symptoms and occasionally causes a reduction in the thirst and polyuria.

*Discussion.* — DR. BAUMGARTEN asked if Dr. Futcher had observed any connection between diabetes insipidus and saccharine diabetes. He related the history of a case which first came under his observation twenty years ago as a young man with diabetes insipidus. A year or two later the disease took on the attributes of saccharine diabetes. There was never any suspicion or evidence of syphilis or cerebral disease in this case, and the patient eventually died of tuberculosis.

DR. THOMPSON related a case which was hereditary in character and in the treatment of which he had made careful estimations of the food and water taken and the amount of polyuria, and had shown that actually more fluid was excreted than was ingested.

DR. TYSON said that he had only seen six or seven cases in the whole course of his practice, but that in these he had been impressed by the fact that they were so largely relieved by potassium iodide.

Dr. Dock spoke of the prognostic differences of these cases and of the satisfaction with which he elicited the history of syphilis in any case, because he felt that the syphilitic cases were more favorable for treatment.

Dr. Jacobi thought that the frequency of diabetes insipidus is very much greater than hospital records would seem to imply, and gave as his reason the belief that the disease is quite frequent in childhood. He had seen it follow chorea minor, whooping cough, falls upon the occiput and probable cerebral tumors.

Dr. Futcher said that he did not wish to give the impression that the vast majority of cases of diabetes insipidus are due to lues, but merely that there are a greater number of cases due to that disease than has been generally supposed.

A CASE OF PROLONGED MALE HYSTERIA: WITH AUTOPSY.
DRS. S. WEIR MITCHELL AND W. G. SPILLER.

Dr. Mitchell related in detail the clinical history of an hysterical man who had been under his observation more or less constantly for thirty years. He had watched it from the appearance of the first nervous symptoms to the development of peculiar muscular movements that were constant in character and uncontrollable by the patient except by the greatest effort on his part, or under the influence of hypnotism. The patient requested that after his death an autopsy should be performed under Dr. Mitchell's direction, and this was done, Dr. Spiller making a most careful examination of the brain and cord. Absolutely no lesion could be found.

*Discussion.* — Dr. Prince related the history of a similar case.

Dr. Putnam expressed the feeling that these continuous movements, which hysterical patients sometimes carry on, and the fact that they are carried on by dissociated centers and without signs of fatigue on the part of the patient are important, and that the so-called professional neuroses cause effects from much less motion than these hysterical patients are accustomed to carry out.

Dr. Wood said that in order to account for this thing it would seem reasonable to suppose that the nerve centers of organic life may take on some of the functions of the centers of inorganic life. He referred to the fact that the heart beats constantly for a period of many years, but leaves no record of its contractions, and suggested that perhaps, after all, it is not the muscular movement that leaves a cerebral record, but the volition thereto.

Dr. Mitchell thought that we might have expected to find some marked pathological evidence resulting from such long continued muscular actions, and in support of this view referred to the work of Dr. Hodge on the effects of fatigue upon the nerve cells.

SOME UNUSUAL FORMS OF ACUTE MYELITIS.
DR. B. SACHS.

Dr. Sachs defined the term "acute myelitis" as a disease process causing a more or less rapid or a more or less complete destruction of the substance of the spinal cord at any given level, excluding, however, those forms which are due to large hemorrhages and to the breaking down of neoplasms.

The clinical histories of two very unusual cases were given, the first being a senile form of myelitis which had the characteristics of a spinal counterpart of the cerebral apoplexies which occur at that time of life, and the second was the record of a sudden development of myelitis in a young girl who presented the complication of multiple streptococcus abscesses.

*(To be continued.)*

## Recent Literature.

*Atlas of Operative Gynecology.* By Dr. Oskar Schaeffer, Privatdocent of Obstetrics and Gynecology in the University of Heidelberg. Authorized translation from the German with editorial notes and additions. Edited by J. Clarence Webster, M.D. (Edinburgh), F.R.C.P.E., F.R.S.E., Professor of Obstetrics and Gynecology in Rush Medical College; Obstetrician and Gynecologist to the Presbyterian Hospital, Chicago. With 42 colored plates and many text illustrations. 138 pages. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

This little book is a companion to the Atlas of Gynecology, by the same author and same publisher, which appeared in 1900.

The plates are carefully executed and show the steps of the operations clearly and the explanatory text is terse and satisfactory.

A noticeable feature of the operative technic is the use of double tenacula to bring the tissues into view, displacing the speculum almost entirely, in some of the operations as many as ten pairs being figured.

Although many of the operations are not those commonly practiced in this country, the book should prove of value to the medical student in making him familiar with the minutiæ of gynecological operating, an opportunity which is but scantily afforded him in most of the hospital clinics.

*The Self Cure of Consumption.* By Charles H. Stanley Davis, M.D., Ph.D. New York: E. B. Treat & Co. 1904.

This book adds another to the long list of those which have already appeared upon the treatment of tuberculosis, and barring some rather sweeping statements and inaccuracies, both typographical and otherwise, it will be of use in circulating knowledge about the disease and its treatment.

In Chapter VII the author declares that "without full and free exposure to outdoor air, regardless of all weather, no case of tuberculosis has been cured," a statement which can be disproved in many cases, while granting that the exceptions to this rule are decidedly in the minority.

The advocates of the use of tuberculin and of the x-ray as means of diagnosis will not agree to his sweeping condemnation of the former and his entire skepticism as to the efficacy of the latter in detecting pulmonary disease in its incipiency.

Inaccuracies like the statements of the altitude of the State Sanatorium at Rutland, the inexcusable mistake of using the word "sanitoria" in two places and several instances of vague and poorly expressed sentences suggest carelessness in preparation and the need of an intelligent proofreader before publishing a book which has a good deal that is useful in suggestion to the general reader.

THE BOSTON

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## NEWER METHODS OF WATER PURIFICATION.

ONE of the most difficult problems presented to chemists, engineers, microscopists and others who are engaged in the study of public water systems is the prevention of the bad taste and foul odor which frequently prevail in the many water supplies throughout the country. In some instances the appearance of such foul tastes and odors is a matter of yearly visitation, and not infrequently is of such intensity as to induce very many to resort to the use of spring waters, some of which have been drawn from polluted sources, so that epidemics of disease have resulted from the use of waters, which, although clear and sparkling to the taste, yet were dangerously polluted.

The cause of the foul taste and odor is invariably found to exist in the presence of different sorts of algæ, which multiply rapidly in open reservoirs and ponds, and especially in ground waters which have been stored in such open reservoirs after pumping from the ground. This serious trouble has occurred in connection with many of the different water supplies of Massachusetts, notably at Springfield, Fitchburg, Brockton, Holyoke, Haverhill, Woburn, Waltham, Amherst, Orange, Concord and other places. At Newton, Brookline, Wellesley and Hyde Park the difficulty has been overcome by the introduction of covered reservoirs to exclude the light. But in the case of large, open reservoirs, this course is impracticable.

Within the past three years a series of experiments has been instituted by the Department of Agriculture at Washington, supplemented by the State Board of Health of Massachusetts, for the purpose of determining whether this condition might not be prevented. The report of Prof. George T. Moore and Karl F. Kellerman, published May 7, 1904, gives the results of these experiments, to the effect that extremely dilute solutions of sulphate of copper may be depended upon to accomplish the desired result of destroying objectionable algæ and preventing their reappearance. In addition to this valuable discovery is the possibility of employing the same agency, not only for the destruction of pathogenic organisms, but for the treatment of certain germ diseases. Dr. Salomon of New Orleans claims that by the administration of salts of copper, severe cases of typhoid fever became converted into a simple, benign fever, with recovery in ten or twelve days.[1]

The following summary of experimental investigations is published in the report of Professor Moore:

The disagreeable odors and tastes so often present in drinking water are due almost exclusively to algæ, although the economic importance of studying these plants has not been recognized until recent years.

These algal forms are widely distributed, and reservoirs in many states have been rendered unfit for use by their presence.

The methods now known for preventing or removing the odors and tastes caused by algæ have proved unsatisfactory, either because of prohibitive expense or failure to accomplish result.

It is, therefore, desirable that some new, cheap, harmless and effective method be devised for ridding reservoirs of these pests.

It has been found that copper sulphate in a dilution so great as to be colorless, tasteless and harmless to man, is sufficiently toxic to the algæ to destroy or prevent their appearance.

The mode of application makes this method applicable to reservoirs of all kinds, pleasure ponds and lakes, fish ponds, oyster beds, water-cress beds, etc. It is also probable that the method can be used for the destruction of mosquito larvæ.

At ordinary temperatures, 1 part of copper sulphate to 100,000 parts of water destroys typhoid and cholera germs in from three to four hours. The ease with which the sulphates can then be eliminated from the water seems to offer a practical method of sterilizing large bodies of water, when this becomes necessary.

The use of copper sulphate for the prevention of disease is regarded as incidental, and is not designed in any way to supplant efficient preventive measures now in use. It is believed, however, that up to this time no such satisfactory means of thoroughly, rapidly and cheaply sterilizing a reservoir has been known. Since the selective toxicity of copper sulphate renders it fatal to pathogenic forms peculiar

[1] New Orleans Medical and Surgical Journal, June, 1902.

to water, while the saprophytic or beneficial bacteria are unaffected, the method is particularly well adapted for this purpose.

Definite knowledge in regard to what organisms are present, the constitution of the water, its temperature, and other important facts are necessary before it is possible to determine the proper amount of copper sulphate to be added. A microscopical examination thus becomes as important as a bacteriological or chemical analysis.

No rule for determining the amount of copper sulphate to be added can be given. Each body of water must be treated in the light of its special conditions.[2]

In an editorial in the *Medical Record* of April 16,1904, we are surprised to find Professor Moore's announcement characterized in the most hasty manner as absurd " and contrary to all scientific views on the subject of water purification." But science is progressive, and the great discoveries of past centuries, the different applications of steam and electricity to locomotion and other purposes, the discoveries of medicine, anesthesia, and even vaccination have all been ridiculed in their turn. So far as Massachusetts is concerned, remarkable progress has been made in the study of its many public water supplies in the past twenty years. Its methods and discoveries have been adopted far and wide, since the state, through its board of health, has become recognized as a leader in scientific progress. The principles involved in the discovery of the normal chlorine of different regions, the covering of ground water reservoirs, the value of sand filtration, and other important matters connected with the study of water supplies, have proved to be of great value in securing to the people abundant supplies of pure water, and in reducing to a minimum epidemics of disease which in early years were of frequent occurrence.

The " simple, safe, effective and available " plan advised by the *Medical Record,* that of boiling the water, is applicable only to the individual taker, and is, consequently, utterly unheeded in the majority of instances. It cannot be applied to large bodies of water at the source or fountain head. Moreover, the foul tastes and odors for which a remedy was mainly sought by Professor Moore are but little influenced by the process of boiling. The dogmatic assertion of the *Record* that " simple drainage is always available for stagnant bodies of water of any sort," and that " scum can be easily disposed of by ordinary filtration," show a surprising lack of knowledge, both of chemical and engineering problems, " equalled only by the absurdity of the proposition."

The work of Professor Moore has passed the laboratory stage, and he reports several successful instances of the application of the copper treatment to large bodies of water, in proportions varying from 1 to 4,000,000 to 1 to 50,000,000. When we consider that millions of pounds of French vegetables, treated with quantities of the same substance in proportions vastly larger than those recommended by Professor Moore, are eaten without obvious harm to the consumer, the danger apprehended by the *Medical Record* fades out of sight.

[2] " A Method of Destroying or Preventing the Growth of Algæ and Certain Pathogenic Bacteria in Water Supplies," by Geo. T. Moore and Karl F. Kellerman. U. S. Dept. of Agriculture, Bureau of Plant Industry, Washington, May, 1904.

## REPORT OF THE MASSACHUSETTS STATE BOARD OF INSANITY.

A public document of perennial interest is the report of the State Board of Insanity, which has now completed its fifth year of service. The general activity which has been manifested during the past few years in the more adequate care and closer study of the insane is well exemplified in this yearly report, which shows unremitting activity on the part of those in charge in the attempt to solve the difficult problems which this class of dependents presents. A comparison of statistics for the last five years shows that there is an average annual increase of about four hundred individuals for whom public provision is required. This naturally leads to the complaint, which apparently can never be wholly allayed, of overcrowding in the public hospitals and asylums. At present there are in use 1,733 beds in corridors and day rooms, of which upwards of a thousand must be removed each morning to make sufficient space for patients during the day. The operation of the new State Care Act has furthermore led to the necessity of receiving at the state institutions about 650 insane inmates of almshouses. It, therefore, becomes at once apparent that there is imperative need of further accommodations, although the present situation will be in a measure mitigated by the liberal appropriation made by the last legislature. The board recommends that provision for the annual increase should be made in connection with existing institutions as follows: Hospitals for the acute curable class; industrial and home colonies for the quiet, harmless and able-bodied insane; infirmaries for the sick and feeble; buildings especially adapted for the care and treatment of chronic patients who are disturbed; farm houses for farm working patients; tuberculosis pavilions. In addition it

is recommended that separate houses be provided for nurses and private residences for superintendents.

On Oct. 1, 1903, the total number of insane in public institutions was 8,610. Adding to this number those in private institutions and certain others not counted in the original estimate, the total number is raised to 9,802, of whom 9,729 were permanent residents of the state. Interesting and important statements follow regarding the present status and the needs of the individual hospitals of the state, and statistics are also provided of smaller private institutions. The method of so-called farm care of the insane has apparently justified the hopes of its promulgators. One hundred and forty-four patients were so treated during the year, which was a gain of 26 over the preceding year. In general, this report affords information of the work being done throughout the state in this increasingly important department of medicine, and one may no longer doubt that the insane are receiving the care and attention and even the personal study and investigation which not many years since was certainly not the fact. It is to be hoped that this work, closely allied as it is in many respects to the other branches of medicine, may come into closer and closer relationship with the investigation of other forms of disease, and that a completer co-operation may exist between hospitals devoted to the insane and hospitals from which this class is excluded.

## MENTAL DISEASE IN GENERAL HOSPITALS.

THE suggestion made in the preceding paragraph has been realized for many years in certain European hospitals, and is coming at last to be recognized as feasible in America. We refer especially to the possibility of a ward or wards in connection with general hospitals where insane patients may be studied and treated under the same conditions as those suffering from bodily disease of other character. A very interesting statement has recently been made in the May number of the *Albany Medical Annals* by Dr. J. Montgomery Mosher regarding the success of such an experiment at the Albany Hospital. Dr. Mosher describes the working of what is known as pavilion F of that hospital, which is devoted to the treatment of mental disease. He makes the comment that an illustration of the fellowship of mental and physical disease is given by the fact that twenty-four patients have been transferred to pavilion F from the other wards of the hospital. Certain patients, on account of the undesirability of forcible detention, are not received in this ward, but there are left, as a glance at the table of diseases shows, a large number of mental and quasi-mental conditions which might be treated with advantage not only, we believe, to the patients, but also to the hospital as a center of general medical effort. Naturally, these cases are largely of an acute sort, as are the other cases in the ordinary general hospital, and the element of observation and proper disposition must play an important part in the work of such a ward. Furthermore, this department of the Albany Hospital has been open to students of medicine under the same conditions as the other departments. The extraordinary neglect which the general subject of mental disease receives at the hands of the ordinary medical student is thereby in great measure obviated, and, even more important than this, the medical student is made to realize that diseases of the mind should be regarded as in the same general category with the diseases of the body.

We are glad to call attention to this progressive step on the part of the Albany Hospital. A similar plan was discussed some years ago in connection with the Boston City Hospital, but no definite action has, as yet, been taken. The example will, however, undoubtedly be followed by other prominent hospitals, and we may surely look forward to the time when this type of disease, as well as certain others which now are excluded in many institutions from the wards, will be given equal privileges with those diseases which apparently at the present time enjoy a special prerogative. A step in this direction has also recently been taken by New York in the approval by Governor Odell of a bill authorizing the city to establish a reception hospital for the insane. It is not our purpose, at this time, to discuss the relative merits of a system which will provide a separate hospital building for the observation of mental disease or the plan of devoting a ward in an already established institution to the same end. In general, however, we are inclined to think that the multiplication of institutions is undesirable, both for financial and scientific reasons, if arrangements in existing nstitutions may be made. The question is certainly one which must be seriously considered by all large communities in the very near future. The apparent success of the Albany experiment should at least serve as a stimulus to the more conservative.

## ANNUAL REPORT OF THE SURGEON-GENERAL OF THE UNITED STATES.

The report of the Surgeon-general of the Public Health and Marine Hospital Service of the United States for the year 1903 is published in the same form as for previous years, with the exception that no transactions are included beyond the end of the fiscal year, thereby reducing somewhat the bulk of the annual report. Much of the matter heretofore published in the annual report is now presented in the several bulletins of the service, which also tends to reduce the size of the report. Naturally in a publication of this character a large part of the contents is concerned with statistical matter. That part which appeals rather to the general physician is the division of scientific research. This division of the service includes in its work a review of medical and scientific journals and careful indexing of all subjects concerning communicable diseases in relation to the public health. These references are naturally growing rapidly and should prove of positive value. It is clear from the perusal of these pages that there is much activity in various lines of original research, which is certainly one of the ends for which this department of the public service exists. The section of the report which is given the general heading of " miscellaneous division " includes various contributed articles and reports of autopsies, which is not only valuable as a report of unusual cases, but is again significant of the careful work which is now being done in the marine-hospital department. The report is embellished with a few excellent half tone microphotographs illustrating a case of *lipoma arborescens*.

## MEDICAL NOTES.

Sir Henry Thompson's Memoirs and Fortune. — It is reported that Sir Henry Thompson, of London, left a fortune of £223,000, and some personal memoirs which are not to be published for ten years.

A Centenarian Life Insurance Policy Holder. — Charles Henry Booth died recently in Englewood, N. J., in his one hundred and first year. He took out a life insurance policy in the New York Mutual in 1843, and was supposed to be the oldest holder of a life insurance policy in the world.

Faculty Re-organization — University of Pennsylvania. — A plan for the re-organization of the Faculty has just been approved by the Board of Trustees, whereby the Faculty membership has been extended to the Clinical Associated and Assistant Professors, to the Associates and Lecturers, and to limited representation from the subordinate staff. The scheme provides for an executive body or council, to be composed of the heads of the departments in the fundamental subjects and two representatives of the specialties. The plan will be put into effect Sept. 1, 1904.

Monument to Benjamin Rush. — The Rush monument committee of the American Medical Association announces that the projected monument to Benjamin Rush will be unveiled and dedicated June 11, on the grounds of the Naval Museum of Hygiene and Medical School in Washington. The introductory address will be made by the president of the American Medical Association; a eulogy of Rush will be given by Dr. J. C. Wilson, and the monument as a gift to the nation will be accepted by the President of the United States.

Dr. Charles A. Oliver Guest of the British Medical Association. — Dr. Charles A. Oliver of Philadelphia, Pa., has been chosen by the British Medical Association as its official guest from the United States for its seventy-second annual meeting, which is to take place in Oxford, England, in July. With him are associated Professor Hirschberg of Berlin, representing Germany, and Dr. Javal of Paris, representing France. During his stay Dr. Oliver will reside at Keble College as the personal guest of Mr. Robert Walter Doyne, the president of the ophthalmological section of the association and lecturer on ophthalmology at Oxford University.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, June 1, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 58, scarlatina 18, typhoid fever 7, measles 96, smallpox 0.

Death from Glanders. — A death from glanders is reported from Fall River, Mass.

Trauma as a Cause of Appendicitis. — A verdict for $4,000 damages was recently awarded by the Supreme Court, sitting in Boston, to the driver of a brewery wagon who was injured by collision with a car of the Elevated Railroad Company in August, 1890. The injured man had previously been in good health. There was

a blow upon the abdomen. In November, 1902, he was operated upon for appendicitis. The attending physician testified that the plaintiff had symptoms of appendicitis between the time of the accident and the time of the operation. The operating surgeon testified that trauma was a cause of appendicitis. For the defence there was expert surgical testimony that trauma was not recognized as a cause of appendicitis. The case apparently turned upon the question whether trauma was or was not a cause of appendicitis, and has an especial interest from that point of view.

NEW YORK.

A CENTENARIAN. — Carlos P. Scovill, the oldest ex-member of the legislature in New York State, died on April 27 at Lowville, N. Y., at the age of one hundred years. He was born in Collinsville, Lewis County, N. Y., on Feb. 26, 1804. Mr. Scovill served for some time in both the Assembly and State Senate, and afterwards as Surrogate Judge of Lewis County for eleven years.

PRESIDENT OF BOARD OF POLICE SURGEONS. — At a meeting of the Board of Police Surgeons held on May 23 Dr. Stephen G. Cook was elected president of the board for the eighteenth time. During the last municipal administration an innovation was made as regards the long prevailing custom of permitting the police surgeons to choose their own president, and General Greene, the police commissioner under Mayor Low, appointed Dr. Edward T. T. Marsh the chief executive of the board. The present commissioner, Mr. McAdoo, returned to the former practice and Dr. Cook was again elected president. It is announced that Dr. Marsh will shortly be retired on a pension.

## Correspondence.

### THE GAME OF QUARANTINE AS PLAYED AT NAPLES.

ROME, May 17, 1904.

MR. EDITOR: Before my vivid impressions of a recent experience fade, I am impelled to record a roughly outlined sketch, although I can do but scant justice to a scene in which were condensed more extraordinary and absurd incidents than are presented in the average comic opera.

Before going aboard a Messageries steamer at Alexandria which was bound for Marseilles via Naples, a few days ago, all passengers were required to sign a paper declaring upon honor that they had not visited certain ports on the Red Sea littoral (where the existence of bubonic plague was more than suspected) within ten days. This was truthfully done, in my own case at least, and the incident regarded as closed.

Next day, however, the ship was full of rumors of impending trouble with the quarantine authorities at Naples (of all places!), but reassured by past experience, and the well known laxity of the port officials, we settled down to the enjoyment of fine weather and a very fair sea boat. Three days later we came to anchor about a mile from the city and sat down to dinner while the (presumably) perfunctory sanitary inspection should be carried out.

The Naples contingent was looking forward with pleasurable anticipation to getting ashore at a seasonable hour and sleeping in comfortable beds, when a peremptory summons of "All table stewards on deck for quarantine inspection," left us to digest as best we could such portions of the meal as had been served. The worst had come, and gloomy predictions of long detention and inconveniences of all sorts were rife.

Half an hour later our waiters reappeared and the dinner ended far less cheerfully than it had begun; the tables were hastily cleared and all hands bidden to remain in the dining saloon, the doors of which were closed and guarded by quarantine officials of unsanitary aspect.

Presently we were herded on the upper deck, our numbers being loudly proclaimed as we filed up the gangway. Here we remained for quite a time, those of us who were near the staircase constantly peering over the railing and trying to see what was going on at the foot of the steps where three Italian officials were holding earnest council which lasted for what seemed an interminable period of time.

Suddenly they were joined by one of the ship's officers, who shouted: "But one hundred and seventy-seven and five, plus the insane English tourist, make a total of one hundred and eighty-three!" a statement which was instantly greeted with derisive laughter, and cries of "Bravo," "*Bien raisonne*" and "Quite right you are, old man," on the part of the passengers who, having failed thus far to extract much fun from the situation, now cut loose and entered into the spirit of the occasion which was almost unique, comprising as it did an attempt by the Neapolitan quarantine officials to be taken seriously, and to play the game for all it was worth. So general hilarity prevailed and we swarmed below again and awaited the next move.

There was apparently nothing doing, when I was casually informed by a fellow passenger (no announcement having been made) that it would be well to communicate with a solemn-looking person who was seated at one of the tables with official-looking papers spread out before him.

In answer to my inquiries he told me that such of us as intended disembarking at Naples must appeal before him to obtain their sanitary clearance papers, and at once proceeded, without question or delay, to furnish me with a document to which I shall refer later on. Soon the entire Neapolitan contingent was similarly equipped, the doors were thrown open and we were permitted to wander at will over the ship, but not to leave her until something further (nobody seemed to know just what) should be accomplished. At this junction about forty itinerant vendors of tortoise-shell and coral ornaments swarmed up the ship's side; but upon being asked if they "wished to acquire the bubonic plague" fled precipitately to their boats, the usual floating orchestras and singers, meanwhile, regaling all and sundry with "Santa Lucia," etc.

An hour passed when there suddenly appeared several reincarnations of Morgan and Kidd arrayed in particularly dirty yellow blouses reaching nearly to their boots. Some carried paste pots and pink labels, while others had bottles of disinfectants in the form of powders. What was done (if anything) with the latter I cannot say (if the bottles contained bichloride of mercury and they had swallowed it, I am confident that it would have been beneficial to the public health), but such of the buccaneers as carried the paste pots proceeded to affix the pink "etiquettes" (certificates of disinfection) to all the hand luggage.

At last we were free to depart? Not so, for one of the ship's officers rushed up and asked me, "What I supposed they said now, those idiots of sanitation?" and not waiting for a reply: "*Que toute la linge sale doit passer par l'éuve!*"

'But," I objected, "everything is packed and each piece

is already certified." "That makes no difference — they are crazy — I have been here many times before, and have never seen anything like this — I beg you, for the love of God, to go and find something — an odd sock, an old undershirt, what you will, and deposit it on that commode at the foot of the stairway. Persuade your friends to do the same, or you will never get ashore, and we shall never get this sacred ship out of port!" I at once complied, but so far as I observed, with the exception of a young lady who tossed some sort of a garment from which hung a narrow blue ribbon near my personal offering to Hygeia and hastily withdrew, nobody paid the least attention to the order, and again we waited. Nobody's pulse or temperature had been taken, and aside from the names of the hotels where we intended staying, no questions had been asked. All at once a lot of children *from the steerage* were brought into the saloon for inspection. One of them had such a well-marked case of measles that a second year medical student could have diagnosed it correctly at a distance of twenty feet. This was the last straw, and the Latin element among us expostulated vigorously. One Frenchman made a speech in which the words "*terrible*," "*ignoble*" and "*effroyable*" were prominent. A lady of noteworthy pulchritude whom I tried to reassure by saying that it was only measles (a majority apparently thought it was a case of bubonic plague) immediately became quite hysterical — she had three children in Paris, and of course would carry it to them! But upon being told by a gallant fellow countryman that it was simply impossible that one so young could by any chance be "*mère de famille*," she calmed down, and smiled through her tears.

Meanwhile the children had been hustled out, the excitement gradually ceased, and at midnight a weary and angry crowd were landed in a tug. At the custom house the usual bribe produced the usual result. Nobody paid the slightest attention to our pink "etiquettes" or to the documents to which I have referred.

Mine informs me that "El Signor Smith e Signora are to be subjected to sanitary vigilance for the space of six days," and that "in accordance with the ordinance of Maritime Sanitation of Feb. 23, 1902, he must report himself to the health authorities of each commune that he may visit for a further period of ten days, or be denounced to the judiciary," etc. Something (surely it cannot be my New England conscience) tells me that I shall *not* report myself nor be "denounced" any more than I have been "subjected to sanitary vigilance." "What would you do," I asked the proprietor of my hotel, "if you had been served with a document like this?" His answer was a shrug and a motion to deposit it in the waste paper basket; but I reclaimed it and send it to you as documentary evidence,— a sort of "Exhibit A," — and remain,

Yours truly,

James A. Smith, M.D.

## TECHNICAL TERMS MAY BE MISINTERPRETED.

The following correspondence, sent to us by a surgeon of the Boston Dispensary, explains itself:

To the Doctor at Dispensary: Please give this boy's hand attention as I think a bone is out of place.

Respectfully,

K. E. L., *Teacher, Public School.*

The note was endorsed by the surgeon: "There seems to have been a 'green stick' fracture of the metacarpal," and sent back to the teacher by the scholar. In due time it was brought back to the surgeon by the scholar with this addendum from the teacher: "I can't quite understand the chirography. Is that 'queer stick' or 'green stick'? In either case I am *happy* to say that the learned M.D. is mistaken as to the cause. Little 'Abie' loves his teacher and his teacher reciprocates to the extent of 'sparing the rod' in this particular case. All masculines are not exempt, however." K. E. L.

## RECORD OF MORTALITY
For the Week ending Saturday, May 21, 1904.

| Cities. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Erysipelas. | Measles. |
| New York | 3,908,644 | 1,566 | 467 | 29.82 | 18.39 | 3.13 | .25 | 2.49 |
| Chicago | 2,021,086 | 483 | 121 | 21.73 | 16.97 | 1.44 | 1.03 | .20 |
| Philadelphia | 1,407,968 | 477 | 132 | 31.86 | 15.09 | 2.72 | .41 | 1.25 |
| St. Louis | 633,606 | — | — | — | — | — | — | — |
| Baltimore | 542,229 | 185 | 43 | 27.56 | 7.57 | — | — | — |
| Cleveland | 444,251 | — | — | — | — | — | — | — |
| Buffalo | 400,645 | — | — | — | — | — | — | — |
| Pittsburg | 362,403 | 112 | — | 20.53 | 16.07 | 2.67 | .89 | 2.67 |
| Cincinnati | 338,277 | — | — | — | — | — | — | — |
| Milwaukee | 325,990 | — | — | — | — | — | — | — |
| Washington | 300,776 | — | — | — | — | — | — | — |
| Providence | 196,744 | 65 | 20 | 13.84 | 18.45 | — | — | — |
| Boston | 617,950 | 203 | 33 | 23.15 | 14.28 | 2.46 | .49 | 1.97 |
| Worcester | 136,925 | 25 | 12 | 4.00 | 16.00 | — | — | — |
| Fall River | 119,349 | 28 | 10 | 42.85 | 14.28 | 7.14 | — | — |
| Lowell | 104,402 | 26 | 9 | 15.38 | 7.69 | — | — | 3.84 |
| Cambridge | 100,998 | 20 | 6 | 25.00 | — | 5.00 | — | — |
| Lynn | 73,875 | 23 | 3 | 13.04 | — | — | — | — |
| Lawrence | 72,348 | 15 | 4 | 20.00 | 6.67 | — | — | — |
| Springfield | 72,020 | 19 | 1 | 5.26 | 15.79 | — | — | — |
| Somerville | 70,413 | 19 | 3 | 26.05 | — | — | — | — |
| New Bedford | 68,863 | 24 | 7 | 12.50 | 33.33 | — | — | — |
| Holyoke | 50,538 | 12 | 6 | 16.67 | 8.33 | 8.33 | — | — |
| Brockton | 46,801 | 16 | 2 | 25.00 | 6.25 | — | — | — |
| Newton | 39,310 | 10 | 2 | 20.00 | — | — | — | — |
| Haverhill | 39,061 | 13 | 0 | 15.40 | 15.40 | — | — | — |
| Malden | 37,205 | 12 | 1 | 16.67 | — | — | — | — |
| Salem | 37,188 | 7 | — | 14.30 | 14.30 | — | — | — |
| Chelsea | 36,499 | 13 | 3 | 15.40 | 15.40 | — | — | — |
| Fitchburg | 36,335 | 8 | 1 | — | 12.50 | — | — | — |
| Taunton | 34,577 | — | — | — | — | — | — | — |
| Everett | 30,209 | 5 | — | — | — | — | — | — |
| North Adams | 29,201 | 9 | 3 | 33.33 | 33.33 | 11.11 | — | — |
| Quincy | 26,798 | 5 | 2 | 80.00 | — | — | — | — |
| Gloucester | 26,121 | — | — | — | — | — | — | — |
| Waltham | 25,797 | 4 | 1 | 25.00 | — | — | — | — |
| Brookline | 23,578 | 9 | — | 33.33 | — | — | — | — |
| Pittsfield | 22,870 | 10 | 2 | 30.00 | 10.00 | — | — | — |
| Medford | 21,956 | 3 | — | 33.33 | 33.33 | — | — | — |
| Chicopee | 21,892 | 3 | 1 | — | 33 33 | — | — | — |
| Northampton | 20,314 | 10 | 1 | 20.00 | — | — | — | — |
| Beverly | 15,807 | 5 | — | — | — | — | — | — |
| Leominster | 15,711 | — | — | — | — | — | — | — |
| Clinton | 15,694 | 4 | 2 | — | — | — | — | — |
| Adams | 14,745 | — | — | — | — | — | — | — |
| Attleboro | 14,561 | — | — | — | — | — | — | — |
| Hyde Park | 14,500 | — | — | — | — | — | — | — |
| Newburyport | 14,478 | 6 | 1 | 16.67 | — | — | — | — |
| Woburn | 14,315 | 4 | — | 50.00 | — | — | — | — |
| Melrose | 13,819 | 4 | — | — | 25.00 | — | — | — |
| Westfield | 13,809 | 4 | — | 25.00 | — | — | — | — |
| Milford | 13,771 | — | — | — | — | — | — | — |
| Marlboro | 13,609 | 4 | 4 | 75.00 | — | — | — | — |
| Revere | 13,609 | — | — | — | — | — | — | — |
| Framingham | 12,974 | 1 | — | — | — | — | — | — |
| Peabody | 12,406 | — | — | — | — | — | — | — |
| Gardner | 12,324 | 2 | 2 | — | — | — | — | — |
| Southbridge | 11,716 | — | — | — | — | — | — | — |
| Watertown | 11,575 | 5 | — | 20.00 | — | — | — | — |
| Weymouth | 11,350 | 3 | 0 | 33.33 | — | — | 33.33 | — |
| Plymouth | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,481; under five years of age, 905; principal infectious diseases (smallpox, measles, scarlet fever, cerebro-spinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 927; acute lung diseases 556, consumption 444, scarlet fever 32, whooping cough 9, cerebro-spinal meningitis 87, smallpox 5, erysipelas 15, puerperal fever 13, measles 53, typhoid fever 54, diarrheal diseases 132, diphtheria and croup 82, influenza 1.

From whooping cough, New York 5, Chicago 1, Philadelphia 1, Pittsburg 1, Lowell 1. From smallpox, Philadelphia 5. From cerebro-spinal meningitis, New York 82, Philadelphia 1, Boston 1, Lowell 1, Marlboro 2. From erysipelas, New York 4, Chicago 5, Philadelphia 2, Pittsburg 1, Boston 1, Lowell 1, Weymouth 1. From typhoid fever, New York 8, Chicago 5, Philadelphia 30, Baltimore 1, Pittsburg 6, Boston, Brockton, Medford and Newburyport 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending May 7, the death-rate was 14.9. Deaths reported 4,359; acute diseases of the respiratory organs (London) 83, whooping cough 195, diphtheria 51, measles 158, smallpox 5, scarlet fever 32.

The death-rate ranged from 43 in Smethwick, to 26.5 in St. Helens; London 14.9, West Ham 13.7, Brighton 12.4, Southampton 16.7, Plymouth 21.5, Bristol 13.1, Birmingham 17.0, Leicester 11.9, Nottingham 9.6, Liverpool 18.6, Bolton 13.9, Manchester 23.1, Salford 20.0, Bradford 16.3, Leeds 17.5, Hull 17.7, Cardiff 10.4, Rhondda 13.6, Wigan 19.1, Merthyr Tydfil 23.7, Reading 15.7, Wallasey 12.1.

## METEOROLOGICAL RECORD.

For the week ending May 21, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S..15 | 29.82 | 49 | 50 | 48 | 87 | 100 | 94 | N E | N E | 14 | 15 | O. | R. | T. |
| M..16 | 29.80 | 56 | 62 | 49 | 84 | 57 | 70 | N E | W | 7 | 11 | O. | C. | .27 |
| T..17 | 30.02 | 58 | 68 | 48 | 59 | 65 | 62 | S W | S W | 8 | 2 | O. | O. | 0 |
| W..18 | 29.95 | 52 | 56 | 49 | 92 | 97 | 94 | N E | N E | 18 | 8 | O. | R. | .12 |
| T..19 | 29.82 | 49 | 51 | 47 | 90 | 96 | 93 | N | N | 11 | 6 | O. | O. | .98 |
| F..20 | 29.70 | 60 | 69 | 50 | 86 | 69 | 78 | S W | W | 7 | 6 | O. | C. | .03 |
| S..21 | 29.84 | 66 | 78 | 54 | 61 | 51 | 56 | N W | S | 10 | 14 | F. | O. | T. |
| ☞ | 29.85 | | | 62 | 49 | | 78 | | | | | | | 1.40 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † indicates trace of rainfall. ☞ Mean for week.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING MAY 28, 1904.

C. D. LANGHORNE, passed assistant surgeon. Detached from the "Monongahela" and ordered to the "Denver."

H. L. BROWN, assistant surgeon. Detached from the "Lancaster" and ordered to the Naval Station, Guantanamo, Cuba, with additional duty on the "Monongahela."

J. H. IDEN, assistant surgeon. Ordered to the Naval Hospital, Philadelphia, Pa.

J. FLINT, assistant surgeon. Ordered to the Naval Hospital, Chelsea, Mass.

H. A. MAY, assistant surgeon. Ordered to the "Franklin."

E. EAGLING, pharmacist. Retired. Detached from the Naval Hospital, Yokohama, Japan, and granted leave abroad.

C. T. HIBBETT, surgeon. Detached from the "Franklin," June 1, and ordered to duty in charge of the Naval Hospital, Cavite, P. I., sailing from San Francisco, Cal., June 11.

A. R. WENTWORTH, surgeon. Ordered to the "Franklin," June 1.

P. A. LOVERING, surgeon. Detached from duty in charge of the Naval Hospital, Cavite, P. I., and ordered home to wait orders.

F. M. FURLONG, passed assistant surgeon. Ordered to the Naval Museum of Hygiene and Medical School, Washington, D. C., for temporary duty.

P. E. MCDONNOLD, assistant surgeon. Ordered to the Naval Museum of Hygiene and Medical School, Washington, D. C., for temporary duty.

J. L. BELKNAP, assistant surgeon. Ordered to the Naval Hospital, New York.

L. H. WHEELER, assistant surgeon. Ordered to the Naval Hospital, Chelsea, Mass.

E. EAGLING, pharmacist, having been examined by a retiring board and found incapacitated for active service, on account of disability incident thereto, is retired from active service, May 19, 1904, under the provisions of section 1453, revised statutes.

## OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING MAY 28, 1904.

CARTER, H. R., surgeon. Two days' leave of absence from May 26, 1904, under paragraph 189 of the regulations.

NYDEGGER, J. A., passed assistant surgeon. Granted leave of absence for fifteen days from May 6, 1904, on account of sickness. May 20, 1904.

CLARK, TALIAFERRO, passed assistant surgeon. To proceed to Duluth, Minn., for special temporary duty. May 20, 1904.

ANDERSON, J. F., passed assistant surgeon. To proceed to Hartford, Conn., for special temporary duty. May 20, 1904.

DUFFY, FRANCIS, acting assistant surgeon. Granted leave of absence for two days from May 25. May 23, 1904.

HOUGH, J. S., acting assistant surgeon. Granted leave of absence for thirty days. May 23, 1904.

HUNTER, W. R., acting assistant surgeon. Granted leave of absence for seven days from May 22. May 21, 1904.

WETMORE, W. O., acting assistant surgeon. Granted leave of absence for seven days from May 17, 1904, under paragraph 191 of the regulations.

HALL, L. P., pharmacist. To report to Chairman of Examining Board at Norfolk, Va., May 31, 1904, for examination to determine his fitness for promotion to the grade of pharmacist of the second class. May 23, 1904.

### BOARDS CONVENED.

Board convened to meet at Washington, D. C., May 26, 1904, for the physical examination of candidates for admission into the Revenue Cutter Service. Detail for the board: Assistant Surgeon-general L. L. Williams, chairman; Assistant Surgeon-general W. J. Pettus, recorder.

Board convened to meet at Norfolk, Va., May 31, 1904, for the examination of Pharmacist L. P. Hall to determine his fitness for promotion to the grade of pharmacist of the second class. Detail for the board: Surgeon J. B. Stoner, chairman; Assistant Surgeon J. S. Boggess, recorder.

## RECENT DEATHS.

THEODORE OSGOOD CORNISH, M.D., M.M.S.S., died in South Boston, May 23, 1904, aged eighty years.

EDWIN GAILLARD MASON, M.D., of New York, died at the home of his father, Dr. A. S. Mason, at Hagerstown, Md., on May 24. He was born at Hagerstown and was thirty-nine years of age. He was graduated from Bellevue Hospital Medical College in 1887, and practiced in New York throughout his professional career. For several years he was assistant professor of diseases of the nervous system at the New York Polyclinic Medical School and one of the editors of *Gaillard's Medical Journal*. Among the other positions that he held were those of vice-president of the New York County Medical Association and vice-president of the Southern Society of New York.

## SOCIETY NOTICES.

AMERICAN GASTRO-ENTEROLOGICAL ASSOCIATION. — The annual meeting of the American Gastro-Enterological Association will be held at Atlantic City, June 6 and 7, 1904.

AMERICAN OTOLOGICAL SOCIETY. — The thirty-seventh annual meeting of the American Otological Society will be held this year at the Hotel Chelsea, Atlantic City, N. J., on Monday and Tuesday, July 11 and 12, at 10 A.M.

FREDERICK L. JACK, M.D., Secretary.

CONFERENCE OF STATE AND PROVINCIAL BOARDS OF HEALTH OF NORTH AMERICA. — The nineteenth annual meeting of this organization will be held at Washington, D. C., Friday and Saturday, June 3 and 4.

GARDNER T. SWARTS, M.D., Secretary.
Providence, R. I.

## APPOINTMENT.

Dr. Charles M. Green has been appointed Associate Professor of Obstetrics and Professor of Clinical Gynecology at the Medical School of Harvard University.

## BOOKS AND PAMPHLETS RECEIVED.

The Therapeutics of Mineral Springs and Climates. By I. Burney Yeo, M.D., F.R.C.P. Chicago: W. T. Keener & Co., 1904.

The Practical Application of Cryoscopy to Medicine. By Henry W. Cattell, A.M., M.D. Reprint.

Annual Report of the Surgeon-General of the Public Health and Marine-Hospital Service of the United States. For the fiscal year 1903. Washington, 1904.

Transactions of the American Pediatric Society. Fifteenth Session. Held at Washington, D. C., May 12, 13 and 14, 1903.

The Extra Pharmacopœia of Martindale and Westcott. Revised by W. Harrison Martindale, Ph.D., F.C.S., and W. Wynn Westcott, M.B. Lond., D.P.H. Eleventh Edition. London: H. K. Lewis. 1904.

Radium, Radio-active Substances and Aluminum with Experimental Research of the Same. By Myron Metzenbaum, B.S., M.D. Reprint.

Specimen of Pseudarthrosis or False Joint of the Ulna. By Myron Metzenbaum, B.S., M.D. Reprint.

Malposition of the Head (Torticollis, Canted or Tilted Head), with resultant Ill-health, Spinal Curvature, etc., due to Eye-strain. By George M. Gould, M.D. Reprint.

## Address.

### PROGNOSIS; ITS THEORY AND PRACTICE.[1]

BY GEORGE DOCK, M.D., ANN ARBOR, MICH.

The topic I have ventured to bring before you is "Prognosis; Its Theory and Practice." As a text, let me quote from the oldest work we have on this subject,[2] which, though old, still has the freshness and modernism that genius gives to human productions:

It appears to me [said the Father of Medicine] a most excellent thing for the physician to cultivate prognosis; for by foreseeing and foretelling, in the presence of the sick, the present, the past and the future, and explaining the omissions which patients have been guilty of, he will be the more readily believed to be acquainted with the circumstances of the sick; so that men will have confidence to entrust themselves to such a physician. And he will manage the cure best who has foreseen what is to happen from the present state of matters. For it is impossible to make all the sick well. This indeed would have been better than to be able to foretell what is going to happen; but since men die, some even before calling the physician, from the violence of the disease, and some die immediately after calling him, having lived perhaps only one day or a little longer, and before the physician could bring his art to counteract the disease, it therefore becomes necessary to know the nature of such affections, how far they are above the powers of the constitution. Thus a man will be the more esteemed to be a good physician, for he will be the better able to treat those aright who can be saved, from having long anticipated everything; and by seeing and announcing beforehand those who will live and those who will die, he will thus escape censure.

In this Hippocrates describes the essential importance of prognosis to the patient and the physician in relation to treatment. Besides this, prognosis is often important to relatives and dependents, not merely for reasons of sentiment, but in order to protect property and prevent unhappiness and destitution that would be as painful for the patient to contemplate as for the others to suffer. There is another aspect not present in the time of Hippocrates — giving the patient an opportunity to prepare himself for the anticipated life beyond the grave. In many cases, too, prognosis may have important bearings on political parties or for the commonwealth.

The patient very often ignores these needs. If he asks for anything, it is usually either the name of the disease or that of the medicine the physician intends to use. He really understands as little of the significance of the name as he does of the action of the drug, and is often more quickly satisfied in proportion as both answers are occult.[3] What really should interest him is, as clearly as his mental development permits, some idea of the changes in his body, anatomic and functional, their present seriousness, the chances of death, or of complete or partial recovery, with, in the latter case, the probability of temporary or permanent disability, near or remote, in some organs or functions.

Within the last century prognosis has lost some of its relative importance. Unlike etiology, diagnosis, prophylaxis and treatment, it has no special literature, and is only occasionally the subject of addresses or essays. But much of the so-called prognosis of the earlier periods was really diagnosis, as in Hippocrates' vivid description of empyema, and his remarks in regard to other diseases of the respiratory organs. It also seems a mistake to assume that practical prognosis was more accurate at any period than in later ages of equal enlightenment. While we may admit that great masters, like Hippocrates himself, Galen, Sydenham and Boerhaave, were remarkably accurate in their prognostications, there is no reason for thinking that the rank and file, following their rules without having their keenness of observation and precision of reasoning, were more accurate, or as accurate as physicians of a later period when the formal study of prognosis was neglected, but when other means of knowledge were greater than before. We must bear in mind a fundamental difference in methods. The older prognosis was based on the observation of symptoms alone, and consciously or unconsciously took the standpoint of humoral pathology or some equally imperfect theory. One charge against ancient prognosis is not as serious as some have thought, viz., that the prognosis was made without a definite diagnosis. Even now we sometimes have to be satisfied with a very imperfect diagnosis, and yet may make a very good prognosis, at least for the immediate future. But the older prognosis was almost wholly lacking in anatomic and totally without chemical basis. Realizing how far short of accuracy the diagnosis must have been in many cases, we can understand that prognosis must have failed almost as often. Moreover, in early medicine, most attention was paid to acute diseases, or the acute terminations of chronic diseases, so that the many important chronic diseases that now make so much of medical practice were comparatively neglected.

Whatever shortcomings medicine may have — and those who cultivate the subject most thoroughly feel the needs most deeply — it must be admitted that diagnosis is much more certain than ever before. Not only are we able to distinguish more quickly and more accurately many diseases long known, such as some of the acute fevers, malarial disease, tuberculosis, diphtheria and pneumonia, but we have learned

[1] Oration in medicine at the fifty-fifth annual session of the American Medical Association at Atlantic City, June 7 to 10, 1904. Published through the courtesy of the Journal of the American Medical Association.

[2] The Book of Prognostics: the genuine works of Hippocrates, Adams' translation, vol. i.

[3] Striking examples of the virtue of mysterious names are conspicuous in the practice of the popular sect of osteopaths. I could give many examples of the license with medical terms among these people, but as the evidence is derived wholly from patients I cite only one that can be vouched for by medical eye-witnesses. A hospital patient with typhoid fever, with the neck pain not infrequently felt in that disease, requested that his osteopathic physician be allowed to treat him. I was not unwilling, especially as the osteopath gave assurances that he would not attempt to treat the typhoid fever. Two internes "assisted" at the treatment. The osteopath, one of the *sang azul* of his class, after feeling the neck, announced that the transverse processes of three cervical vertebræ were displaced on one side. After some manipulation he pronounced the displacement relieved, though I was sorry to see that the pain was not much less than before.

the existence and the means of detecting many diseases formerly confused with others. As examples, let me name only a few, such as the diseases originating in the vermiform appendix and the gall bladder, diseases of the pancreas, many diseases of the blood, a large number of diseases of the nervous system and of the ductless glands, and many diseases caused by animal parasites, of which the sleeping sickness is the most striking example at present.

The older prognosis, far from being negligible, is really of fundamental importance. It gives the accumulated experience of ages that, untrammeled by detail, carefully noted broad and elementary features of disease. As gathered together in the aphorisms and prognostics of Hippocrates, and in the numerous commentaries on them — not always improving the original — it furnishes a fund of inestimable value, but like everything else in medical art, this knowledge is less useful when applied mechanically than when worked over in the crucible of personal experience, tested by other methods and transposed into current formulæ.

Older prognosis was possible to collect into fairly circumscribed space, but this is no longer true.[4] In proportion as diagnosis has become subdivided, specialized and enlarged, and as knowledge of morbid processes has become more complex, so prognosis has become more intricate. Older prognosis was based on broad, symptomatic lines, qualified in practice, we may be sure, by a consideration of the patient's constitution. The present basis is diagnosis, but of a different kind. It means not merely a recognition of the name of the disease, but a knowledge of the nature of the disease, still incomplete, but rapidly gaining in fullness and accuracy. In many cases we know the causes, and a good deal of the nature of the causes; in many more we know the seats of the disease, and the anatomic, chemical and functional changes that result directly and indirectly. It is by the study of the altered functions that we can make a prognosis and plan useful treatment without knowing the name of the disease. Clinical and anatomic investigations have been aided by experiments and observations on lower animals, without which our knowledge would have been much less certain than it is. Scores of technical methods have been devised for reactions and explorations; natural forces previously unknown, such as the x-rays, have quickly been pressed into service. Long and painstaking observations have thrown much light on complications and sequels, their nature and detection. From all these things the prognosis proceeds naturally in most cases, but here again an indispensable part is a just recognition of the patient's constitution. It is probably true that in this connection we unduly neglect some prognostic aids furnished by the patient, such as changes of the physiognomy. But, on the other hand, we have much more accurate methods of ascertaining the constitutional factor than were formerly available. Constitution is still a somewhat vague term, but we can speak of it here as the result of the functions of all the organs. While the method of representing these functions is still inadequate, we can safely assert that we have much more accurate means of determining the condition of the heart, arteries and veins and the force of the circulation than we had before; we have gone considerably beyond the recognition of the apoplectic habit in foretelling the danger of vascular disease. We can usually estimate fairly well the efficiency of the blood-forming organs; we can determine with reasonable accuracy the capacity for work of the stomach and intestines, as well as a few details of nutrition and metabolism; we are rapidly getting beyond the limitations of Falstaff's water doctor in fixing the anatomic and functional ability of the kidneys, and we are working toward methods of testing the functions of liver, muscles and nerves. When we have all these factors thoroughly investigated it is probable there will be little need of the *vis medicatrix naturæ*, now an essential part of prognosis.

In the conclusion resulting from these things there is no room for a supposititious clairvoyance, an intangible gift of prophecy, a hypothetic intuition that trained intelligence cannot equal or industry surpass. We have a positive foreknowledge, a prescience, a prognosis, corresponding in accuracy and usefulness to our diagnosis and often in advance of our treatment.

In the foregoing I have spoken of the theory. In the practical use of prognosis the first to profit by that function is the physician. With an accurate prognosis, based on exact and thorough examinations, knowledge of the natural course of the disease and of the patient, the physician foresees the course of the malady and is prepared for changes, emergencies and complications. He is thus enabled not only to preserve his imperturbability, so essential in carrying out necessary measures of treatment, but he can also prepare the patient to meet coming events in better physical and mental condition than otherwise, and, what is often of even greater importance, the self-confidence thus shown stimulates the efforts and the compliance of others concerned in the case.

It is not easy to say how much the patient should share this foreknowledge, and how it should be conveyed to him. In many cases the patient does not ask an opinion, and in many others, either because the present disease seems too slight or for other reasons, the physician does not proffer one. Yet it is good mental discipline to work out the prognosis in every case, as a complement to the diagnosis, and in many the results should be stated to the patient. Many things may conspire to make such statements act either favorably or unfavorably on the patient as on the physician.

Physicians, like other people, can often be classified as either optimists or pessimists. Not

[4] I have not attempted to include prognostic details, but would refer those interested to "Observations on Prognosis," by P. H. Pye Smith, Guy's Hospital Reports, vol. xliv, 1887, as one of the most comprehensive and suggestive articles in modern literature.

that these tendencies affect all parts of the individual's activities. One may be a perfect Pangloss in sociologic, political or climatic matters, and yet take a gloomy view of all his patients. (I am not speaking of those who, rarer in the profession than in some of its parasitic growths, habitually exaggerate the danger of their cases, making every angina a diphtheria, every erythema an erysipelas and every bronchitis a threatened pneumonia.) Another who is perpetually cast down by the failure of democratic government or the need of a stronger one, the immorality of the rich and the rule of the bosses, may meet every case with hope and cheer.

But the practice of prognosis should be cultivated as objectively as any other part of medicine. Not only the therapeutic indications suggested by it, but also the human ones, should be carried out without fear or timidity, without unnecessary harshness, but also without the false benevolence that often does more harm than brutal frankness or ignorance. Here, as in other departments of medicine, the welfare of the patient must be the touchstone by which the action proposed should be proved.

No disease should be looked on as insignificant. Nothing seems less becoming than to hear medical men speaking lightly of disease in general, or of any disease in particular. It is no consolation to the mother whose child has died of one of the rare complications of chickenpox to find that many physicians think that too trival to concern themselves with it. Nor does it increase confidence in the profession to have hysteria and neurasthenia considered imaginary and ridiculous evidences of perversity, while the impatience, not to say lack of scientific interest, sometimes shown toward other less well-defined neuroses, undoubtedly has some relation with the crowded ranks of followers of isms of all kinds.

In acute diseases the best general rule is still that of Hippocrates (Prognostics; 19, sect. II): "In acute disease it is not quite safe to prognosticate either death or recovery." A case of this kind, however, should not be considered likely to die unless from a complication, or from the effect of a pre-existing disease, though in certain diseases, such as scarlet fever and diphtheria, the danger of a sudden change and of death should be made known in the beginning. Of course, in cholera and plague, and even in cholera infantum, such information is rarely necessary. In some other acute diseases the study of prognosis prepares the physician not to be unduly elated by the remissions that are so reassuring to relatives. The temporary amelioration in meningitis and peritonitis, in which the patient seems almost free from symptoms, may be mentioned. Less disappointing, but still ominous, is the occasional lull in bronchopneumonia. But in the cases I have just mentioned it is rarely advisable to bring the unfavorable probabilities too strongly before the patient. In these we often need the effects of reassurance and of hope. For the latter, as we see it in medical practice, is not merely the "kind nurse of old age — hope — which," as Pindar says, "more than aught else steers the capricious will of mortal man"; in acute cases especially it is distinctly stimulating to physical and mental processes. Sir Dyce Duckworth,[5] speaking from a ripe experience, recently gave an address on "Hopefulness in Medicine," in which he emphasized this fact, and Niemeyer, equally successful in his career, at his medical promotion defended among others the thesis *medicus semper hilaris*. On the other hand, it is a serious error not to point out, after recovery from certain acute diseases, the possibility of sequels, sometimes months or years afterward, and the advantage of examinations at intervals for the purpose of detecting them before they become inveterate. The thorough examination of the urine at intervals after scarlet fever, of the lungs after pleurisy and all bronchitic diseases, of the heart and arteries after many infectious diseases, often has great practical value.

In chronic diseases there are few exceptions to the rule that the patient should be told the nature of his case as fully as possible. At least, in patients who can be made to understand, and who have a possibility of recovery, of definite improvement or of long duration, there are only individual exceptions. Patients with tuberculosis, heart disease, kidney disease, and disease of the alimentary tract cannot get the best possible results unless they understand why and how they should do certain things and why they should avoid others. Tact and patience and a knowledge of human nature are essential in this. The statements made should be as simple as possible, as brief as definiteness permits, without pathologic explanations. Better no statement than an unconsidered or an unintelligible one.

In talks of this kind we too often forget how different are the ideas of non-medical persons, even those who have studied physiology in the public schools, from our own, regarding the body, its functions and diseases. I am always interested in seeing how soon medical students lose the lay point of view, just as one forgets an unused foreign language, and how sometimes they never recover it. Yet unless they do, they lack valuable means of giving aid. Darwin has noticed how everyone who studies profoundly a subject often becomes unaware on what points the ignorant require information. Carlyle, as John Beattie Crozier tells us, imagined his stomach as some old teakettle, thickly encrusted with fur, and I have seen an otherwise intelligent man on the point of using strong sulphuric acid for a cough, because he found by experiment that oil of vitriol dissolved sputum more quickly than any other reagent he had tried. Nor is it enough to make the explanation. We must ascertain whether the statements are understood, and, if possible, whether they are accepted. How often, even with an intelligent individual, after we have stated the existence of a small tuberculous focus, and described the results of rational treatment, we

[5] Duckworth, Sir Dyce: Opening of University of Liverpool Medical School, British Medical Journal, Oct. 3, 1903.

find the patient shutting himself in a dark and close room, taking "lung cures," cough syrups and more or less medicated cod-liver oil; and how often, after demonstrating the sufficiency of dietetic treatment in a digestive disease, we find the patient taking bitters, digestive ferments, usually well neutralized by alcohol, antiseptics and other drugs less easy to classify. So time and patience must be devoted to this part of the work, and we should never be discouraged by failure. I am convinced that there is an improvement in the possibility of carrying out rational treatment, notwithstanding the insidious propaganda of useless or dangerous methods in and out of medical journals.

It is much easier to advise in cases that have a strong tendency to recovery than in those that have not, and there is room for difference of opinion and of practice in the latter, because the conditions vary with patients according to individuality and accidental factors. A number of aspects present themselves for consideration. In the first place, there is often an element of diagnostic or prognostic uncertainty, where the prospects are better than they seem. Sir Dyce Duckworth [6] has formulated universal experience in pointing out the advantages of the "cautious 'if,'" and if the alternative accepted is the hopeful one, much good can be accomplished in many cases. An interesting example is given by Kussmaul in his fascinating "Jugenderinnerungen." Having made a reputation as a zealous dissector, and having won over his confiding peasants to the many advantages of post-mortem examinations, he was asked by the father of a girl with advanced tuberculosis of the peritoneum to arrange for an autopsy on the daughter, when she died. Although Kussmaul, too, thought the daughter was lost, he retorted that he could not speak of an autopsy until the patient was dead. Notwithstanding many obstacles, the girl recovered. The tendency to take the less hopeful alternative is still shown in some cases of tuberculous disease in stages not far advanced, though it is not so common, fortunately, as it was not many years ago, to see such patients given over either to a life of dissipation or of abject despair. The prognosis of valvular disease of the heart is also in a much more optimistic vein than it was fifty or even twenty-five years ago. However, in many cases the prognosis needs to be tested by a therapeutic "if" that is not as well recognized as it deserves. The physical conditions may seem hopeless, and yet if the action of the heart can be improved the case may assume a very different aspect. The advantages of trying were well illustrated by a case in which a woman with aortic and mitral insufficiency and moderately severe loss of compensation was given up as beyond treatment by her family physician. Not knowing this I told the relatives the impossibility of complete recovery, the danger of sudden death or more probably rapid failure at any time, but also the possibility of improvement and a fairly comfortable life for some time, all the more worth trying to realize, because the condition was not complicated by medicinal action, and the other important organs showed no serious alteration. The family physician then wrote me admitting that he had stated improvement was out of the question, and treatment not worth trying, although under subsequent treatment the patient lived two years and nine months.

In cases hopeless in a more certain degree than such as I have just mentioned, it too often happens that treatment is abandoned too early in the case. Patients with cancer of the stomach or other inoperable tumors, cirrhosis of the liver, and many other diseases are permitted to drag out their existence without relief. There are several reasons for this. Sometimes families, having been told the truth about such a patient, refuse all further medical aid, even when the conscientious physician who gives the information points out what can still be done.

Many physicians voluntarily discontinue attendance when they realize that the end is inevitable, with the feeling, doubtless, expressed by Sir William Temple. The latter said that "an honest physician is excused for leaving his patient when he finds the disease growing desperate, and can, by his attendance, expect only to receive his fees, without any hopes or appearance of deserving them." This, however, ignores the fact that in such cases the accomplished physician can often do more real good to the patient than in many cases that recover, while the opportunities for obviating despair, alleviating pain and soothing mental anguish, and for exhibiting thoughtfulness, gentleness, persistence and variety of resources, are more valuable to the physician than any fee. Even in acute cases it sometimes happens that the physician is either discharged or withdraws because the indications seem hopeless, and I have known of patients with pneumonia living for one or two days in this way, the family waiting for the end of a life that with greater effort might have been saved. Sir Francis Bacon described this tendency as one of the deficiencies of medicine, "so that Sylla and the triumvirs never proscribed so many men to die as physicians do." For, as he continued, "the office of a physician is not only to restore health, but to mitigate pain, and not only when such mitigation may conduce to recovery, but when it may serve to make a fair and easy passage."

Improvement in methods of treatment have an important relation to prognosis, in that many diseases, considered hopeless at one stage of knowledge, may in another offer many chances for recovery or alleviation. In this connection a critical knowledge of current medical literature is necessary, and a realization of the value of medical evidence. Few things can be more disastrous to the physician's mental development — never completed — than constant change of therapeutic method, but there are differences. One need not try every drug proposed for the treatment of typhoid fever or pneu-

[6] Duckworth, Sir Dyce: Address on Medicine, British Medical Journal, 1896, ii, p. 251.

monia, nor every new antipyretic or hypnotic. But the physician who does not inform himself quickly of the value of surgical treatment in various diseases as it is developed, in pelvic diseases, brain diseases, diseases of the appendix, biliary tract, stomach and pancreas, comes very near deserving the reputation of an unscrupulous practitioner. In these departments, too, mistakes are made and exaggerations are inevitable concomitants of progress, but the gain is often distinct and unmistakable, and often changes the prognosis from one extreme to the other.

It may seem that I have taken a too purely medical view of the practice of prognosis. Can we always act from the standpoint of simple diagnosis and prognosis, or must we not at times take into consideration the weakness, fears and prejudices of people? In trying to get the best light on this subject I have for many years noticed the opinions of patients and their relatives, as well as of non-medical writers, and it is instructive to learn how those who are not physicians approach the subject. Many physicians have been influenced by the views of Percival, from whose interesting work on Medical Ethics some of the best parts of the old Code of the Association were taken. Percival said:[7]

A physician should not be forward to make gloomy prognostications, because they savor of empiricism, by magnifying the importance of his services in the treatment or cure of the disease. But he should not fail, on proper occasions, to give to the friends of the patient timely warning of danger, when it really occurs, and even to the patient himself, if absolutely necessary. This office, however, is so peculiarly alarming, when executed by him, that it ought to be declined whenever it can be assigned to any other person of sufficient judgment and delicacy, for the physician should be the hope and comfort to the sick; that by such cordials to the drooping spirit he may smooth the bed of death, revive expiring life and counteract the depressing influence of those maladies which rob the philosopher of fortitude and the Christian of consolation.

In general, this furnishes a useful guide to conduct, but nevertheless requires some examination. Part of it reminds one of the maxim of John Halle, who as far back as 1596 wrote:

> With one consent uniformlye
> Comfort the wounded man,
> But unto some good friend of hys
> Express all that you can.

In the first place, the truth is not always so alarming to the patient, painful as it often is to the physician. In fact, it seems to me this is one part of our duties that does not become less trying with increasing experience. To the sick man, whose thoughts have been turned toward the end longer than others suspect, intimation of a fatal end often brings no shock, but rather relief from the ending of a painful uncertainty. According to the rules of the Roman Catholic Church, a timely announcement should always be given, and those who have witnessed the last days of members of this faith can confirm the statement that good often follows, speaking merely from the medical standpoint, and rarely harm, while the same thing is true of many of other faiths or of no faith. Even where we have to give a fatal prognosis there are certain mollifying influences that can be introduced, aside from those that spring from a tender heart. A hope can be expressed based on the fallibility of human knowledge in general and medical knowledge in particular.

The rule in regard to giving the patient a good prognosis and the relatives a bad one, can often be followed, but is a very fallacious one on the whole. It is often more necessary to keep up the spirits of the relatives, especially those who have to nurse, than those of the patient, so that sometimes the rule can be reversed with advantage. Darwin[8] cites some interesting and instructive examples of this kind, from his father's practice, and Billroth[9] has expressed himself with much feeling in one of his letters. Moreover, the relatives informed, either from a feeling of compassion or otherwise, may not bring the patient to act on the information, and I have known of serious financial loss befalling a family because the relative entrusted with the task of breaking the news to the patient did not do this. Another risk is that the relatives may divulge the fatal prognosis in such a way as to put the physician in the light of a heartless deceiver, and thereby cause the patient to lose all confidence in him. On the whole, in cases where the patient should know the truth the physician is often the best one to state it, and he should see that this is done before it is too late.

Exceptions to the rule of candor may occur in the case of children, in women with no spiritual obligations or business responsibility, or in

[7] Medical Ethics: or a Code of Institutes and Precepts, adapted to the professional conduct of physicians and surgeons, with an appendix containing a discourse on hospital duties: also notes and illustrations, by Thomas Percival, M.D., Manchester, 1803, p. 31.

[8] The Life and Letters of Charles Darwin, edited by his son, Francis Darwin, New York, 1887, vol. i: "Called in to see a patient who had been given up to die by the family physician, Dr. Darwin took a different view of the matter and maintained that the man would recover. He was found quite wrong in all respects, and owned his error. He was convinced that he should never again be consulted by this family, and was much surprised at being called in after a few months by the widow. He asked a friend of the widow to find out why he was again consulted. The widow answered that she would never again see the odious old doctor who said from the first that her husband would die, while Dr. Darwin always maintained he would recover. In another case Dr. Darwin told a lady that her sick husband would certainly die. Some months afterward he saw the widow, who was a very sensible woman, and she said, 'You are a very young man, and allow me to advise you always to give, as long as you possibly can, hope to any near relative nursing a patient. You made me despair, and from that moment I lost strength.' 'My father,' continued Darwin, 'said that he had often since seen the paramount importance for the sake of the patient of keeping up the hope, and with it the strength, of the nurse in charge.'"

[9] Briefe von Theodor Billroth, 1902: Speaking of the slow decline of Professor Breisky, and of the attending physician telling the whole truth to the wife, he remarked: "I admit that under certain circumstances this is necessary: but here I do not think it is necessary. How can the poor wife, without a glimmer of hope, bear the weeks until the Liberator of all sorrows gently approaches the husband. We should give her courage, and the poor patient morphine. A hard task. But let us remember that every family physician is in this situation hundreds of times, and often has to see his incurable patients daily. If the young man suspected these mental tortures when he enthusiastically enters the temple of Æsculapius he would surely often turn back. To face the unveiled figure of Sais requires all the undaunted resignation that we slowly win in our profession."

exceptional cases in men. No general rule can be laid down, but that such exceptions occur can be confirmed probably by every physician. A striking example of this is quoted by Darwin.[10]

Of course, this part of the subject is closely related to the theory of ethics, and many writers on this subject have touched directly on the question of medical veracity with, as one might anticipate, diametric differences of opinion. Some moralists of the strict school of Kant and Fichte insist that any deviation from the absolute truth is wrong in medicine, as they assert that it would be wrong even for the purpose of saving the whole race. Others believe with Paulssen, who says: " There is not a physician in the world who does not give deceptive answers to his patients, who does not excite hopes that he does not share. He does not blame himself, nor do others, for everyone does the same." Johnson, " the stern old moralist," in his remarks on the subject, laid open a serious flaw in his own logic: " You have no business with consequences, you are to tell the truth." But surely the physician's chief interest is with the consequences, and if he thinks the patient can gain only by misrepresentation, it is just as proper for him to use it as it would be to give a medicine that in other cases might be quite improper. But the physician in such a dilemma would do well to bear in mind the next sentence in Johnson's *ipse dixit:* " You are not sure what effect your telling him that he is in danger may have. It may bring his distemper to a crisis, and that may cure him." Jonathan Dymond, as strict as any one in his morality, threw a gleam of stern humor into the discussion: " Persons frequently employ falsehoods to the sick man who cannot recover, lest it should discompose his mind. This is called kindness, though an earnest preparation for death may be at stake on their speaking the truth. There is a peculiar inconsistence sometimes exhibited on such occasions. The persons who will not discompose a sick man for his interest in futurity, will discompose him without scruple if he has not made his will."

This part of the discussion might be indefinitely prolonged, but I think we can never get far away from the principle I intimated in the beginning — that in practical prognosis we must individualize, just as we have to in therapeutics, with the patient's welfare ever the object of our activity.

Accidents that follow an unfavorable prognosis occasionally suggest a revision of methods. I have already alluded to the error formerly not uncommon in the treatment of tuberculous patients. More acute results sometimes follow a fatal prognosis, as in two of my patients who resorted to suicide. One was a man with far-advanced carcinoma of the stomach, to whom I recommended palliative treatment and advised against a useless effort at radical treatment. The patient left for his home, but threw himself from a fast train and was killed. In another patient, a man with a large kidney tumor, apparently with many adhesions, my surgical colleague and I advised against an operation. The patient went to another hospital, and apparently received similar advice, for he shot himself through the tumor, and died in a short time. From a broad biologic standpoint it does not, of course, make any difference whether an individual organism dies as either one of these, or as it would if left to its fate. But no matter how one may feel on the subject of suicide, I have always thought these men less fortunate than another patient with carcinoma of the stomach, also far advanced. To him, in advising against an operation, I added that if he could find a good surgeon who was willing to operate, he might submit. He underwent the operation at the hands of one of the most distinguished surgeons in the country, and died on the table. In such a case the result is often unfortunate, because it prevents operations on other and more promising cases, but for the man himself, fighting to the last, it seems to me one can have only respect.

This brings up a question on which a few words may be proper — the question of euthanasia. Every few months some one — usually not a physician — proposes that people with incurable diseases should be killed by some painless method. The plan offers so many opportunities for crime that it would be difficult to carry out, but aside from that it involves important principles. The difficulty of telling when the proper time had come would often be insuperable. Aside from examples of fortitude and other virtues exhibited by the dying, how much the world would have lost if a chronic invalid like Stevenson had the cord of his life snapped at one of the times when the *aes triplex* of his soul seemed battered through! To take a less selfish view, we can think of the " pictures of human patience, the visions of ripened character, which have been revelations and inspirations to generations of mankind " (Phillips Brooks), and see these repeated daily in sick rooms of all degrees, while the self-sacrifice and kindness developed in others at such times cannot but be of untold benefit to the race. To most physicians the suggestion of any planned shortening of life must be abhorrent. For countless generations they have been doing their utmost to lengthen life and lessen disease. They have shown how to prevent the plagues that formerly made life almost as bad as a perpetual illness for the survivors, and they have also shown how many deaths can still be prevented. On the other hand, they can, in most cases, so treat the dying man that the bitter anguish often associated with death is absent, that life is not only less painful but, actually longer, so that they will continue to follow the rule of the Father of Medicine, and " give no deadly medicine to any one, even if asked, nor suggest any such counsel."

[10] *Op. Cit.* " He was sent for by Mr. P., who said, 'From all that I have seen and heard of you I believe that you are the sort of man who will speak the truth, and if I ask you will tell me when I am dying. Now I much desire that you should attend me, if you will promise, whatever I may say, always to declare that I am not going to die.' "

# Original Articles.

## CARCINOMA BASOCELLULARE.

### A Group of Superficial Gland-like Tumors of the Skin, of Relatively Slight Malignancy, Including Rodent Ulcer.

BY S. C. EMLEY, M.D.

*From the Pathological Laboratory of Rush Medical College, Chicago.*

Krompecher [1] has called attention to a peculiar superficial tumor of the skin, which he places in a class by itself because it is neither typical carcinoma nor typical adenoma. Clinically they appear as fungoid tumors or as ulcers occurring most frequently in the skin of the face or of the female breast. They may occur on other parts of the body, but never at the junction of mucous and epidermal surfaces. Histologically they originate from the Malpighian basal layer or its embriologic equivalents. These tumors have been observed and described by several authors, but Krompecher was the first to give a full description and recognize their peculiarities. Since the appearance of Krompecher's article, I have examined thirty-seven tumors of this variety occurring in thirty-five cases. The tissues were fixed in alcohol, formalin, solutions of mercury and Zenker's fluid and stained with various reagents. They were infiltrated with either paraffin or celloidin, and studied in serial sections in all cases except one in which only two sections of the tumor were obtained.

Because of the great similarity of these cases clinically, the chief features pertaining to their clinical course are summarized in the following table:

[1] Ziegler's Beitrage, 1900, xxxviii, 1.

CLINICAL NOTES.

Case I. The tumor became painful a year before the operation, and during the last three months was growing; at the time of the operation the surface was nodular, shining, elevated .5 cm. above the skin level and extending .5 cm. below, and caustic.

Case II. A slightly elevated tumor, having an ulcerated center and a slight depression around it.

Case III. Began as a papule, and after first removal by caustic three years ago grew more rapidly; was excised one year ago when it appeared as a fungoid ulcer 2 mm. above the skin level, having irregular raised edges.

Case IV. Began as a small nodule, which ulcerated and was removed after a few months. At the time of removal there was an ulcer with moist, crusted, raised floor and irregular, indurated edges.

Case V. A flat ulcer with irregular, indifferent edges and moist floor.

Case VI. Began as a papule, which ulcerated and grew slowly, involving the nose and cheek to the outer side; the base was seropurulent.

Case VII. Began as a pin-head-sized papule, which ulcerated and was twice removed. It now has a moist, grayish floor with raised indurated edges.

Case VIII. Began as a small "sore" and grew slowly till the present time, now being an irregular ulcer with raised and telangectatic edges.

Case IX. Began as a small papule, which soon ulcerated, then slowly extended over the surface. The floor is now covered with a thin, shiny epidermis, broken in many places, forming small ulcers. The border is nodular, infiltrated and 2 mm. thick.

Case X. The tumor had existed as a red spot for ten years; six months ago it began to grow. The tumor is firm, movable, superficial, elevated ½ cm. above skin level and has no line of demarcation. The summit is depressed and ulcerated, the surface being fungoid in appearance.

Case XI. Began as a small papule, which soon

| NO. | AGE. | SEX. | OCCUPATION. | DURATION OF TUMOR. | RECURRENCES. | SIZE CM. | LOCATION. | CLINICAL DIAGNOSIS. |
|---|---|---|---|---|---|---|---|---|
| 1 | 43 | F | Housewife | Many years | | 1 x ¾ | Left side of the nose | Epithelioma |
| 2 | 47 | F | Housewife | Many years | | 1 x 1 | Right ala of the nose | Tubereulous ulcer; fibrosarcoma |
| 3 | 51 | M | Iron moulder | 4 years | 2 | 1 x 1.5 | Left ala of the nose | Nasal tumor |
| 4 | 55 | M | Farmer | 12 years | Several | 3 x 3 | Right forehead | Epithelioma |
| 5 | 34 | F | | 5 years | | 3 x 3 | Bridge of the nose | Carcinoma |
| 6 | 65 | M | Laborer | 5 years | | 4 x 3 | Lower eyelid | ? |
| 7 | 64 | M | Miner | 11 years | 3 | 1 x 1.5 | Over malar bone | Epithelioma |
| 8 | 36 | M | Iron moulder | 6 years | | 2 x 2 | Right cheek | |
| 9 | 38 | M | | Many years | 3 | 2.5 x 3 | Outer right canthus | Carcinoma |
| 10 | 66 | M | Farmer | 10 years | | 1 x ¾ | Malar region | Epithelioma |
| 11 | 73 | M | Farmer | 6 years | No | ¾ x ¾ | Outer right canthus | Carcinoma |
| | | | | 2 years | 1 | 4 x 4 | Outer left canthus | |
| 12 | 34 | M | | 11 years | | 2 x 2.5 | Lower eyelid | Carcinoma of the eye |
| 13 | 55 | M | Painter | 3 years | 1 | 3 x 4 | Lower eyelid | Epithelioma |
| 14 | 78 | F | | 20 years | | ¾ x ¾ | Side of the nose | Epithelioma; adenocarcinoma |
| 15 | 38 | M | Laborer | 2 years | | 2 x 2 | Right eyelid | Adenocarcinoma |
| 16 | 19 | M | Electrician | 10 years | 2 | 2 x 2 | Right ala | Epithelioma; lupus, carcinoma and adenocarcinoma |
| 17 | 60 | M | Farmer | Several yrs. | | 2 x 2 | Right lower lid | Epithelioma |
| 18 | 74 | M | None | 10 years | | 1 x 2 | Left ear | ? |
| 19 | 51 | F | Housework | 12 years | | 1.5 x 1.5 | Right malar region | ? |
| 20 | 71 | M | Laborer | 2 months | | 1 x 1 | Right lower lid | Epithelioma |
| 21 | 43 | M | Cornetist | 13 years | | 3 x 3 | Upper lip and cheek | Lupus, endothelioma |
| 22 | 22 | F | None | 21 years | No | 1.5 x 1.5 | Right ala | Adenocarcinoma |
| | | | | 2 years | | 2 x 3 | Right cheek near angle of month | Adenocarcinoma |
| 23 | 46 | M | | 3 years | No | 1 x 1 | Right upper lip | Epithelioma |
| 24 | 43 | F | Housewife | 12 years | No | 3.5 x 3 | Left temple | Melanotic sarcoma |
| 25 | 68 | M | Farmer | 15 years | No | ¾ x ¾ | Left malar region | Epithelioma |
| 26 | 62 | M | Foreman | 1½ years | No | 2 x 2 | Tip of left ear | Epithelioma |
| 27 | 40 | M | | 3 years | No | 1 x 1 | Cheek below right eye | Epithelioma |
| 28 | 39 | M | Cabinet maker | 1 year | No | 3 x 4 | Left cheek | Ulcer |
| 29 | 69 | M | Farmer | 40 years | No | 2 x .5 | Right lower lid | Adenocarcinoma |
| 30 | 43 | F | Housewife | 19 years | No | 1 x 1 | Right cheek | Wart |
| | | | | 6 years | No | 2 x 2 | Left malar region | Atheroma |
| 31 | 68 | F | Housewife | 4 years | No | 1 x 1 | Right forehead | Epithelioma |
| 32 | 54 | M | Carpenter | 5 years | No | 1.5 x 2 | Left parotid region | Carcinoma of parotid |
| 33 | 54 | F | | 6 years | | 1 x 1 | Left cheek | Carcinoma |
| 34 | 53 | F | Housewife | 3 years | | 3 x 3 | Left eyelid | Rodent ulcer |
| 35 | 52 | M | Civil engineer | 38 years | 2 | | Left malar region | Epithelioma |

For Case 8 I am indebted to Dr. Hugh E. Montgomery, and for cases 6, 9, 11, 12, 13, 33 and 34 to Dr. E. V. Brown.

ulcerated; when it reached the size of a nickel it was removed by a plaster.

Began as a small papule and soon ulcerated; it grew until now there is an ulcerated, cauliflower-like mass filling the orbit.

CASE XII. Beginning as a dark papule, which remained stationary for several years; it suddenly began to grow, and in six years from its appearance it had involved the entire orbital contents, producing an ulcerating fungoid mass.

CASE XIII. A small pimple was first noticed; this ulcerated and was cauterized two years after. At the time of operation there was present an ulcer with moist, scaly floor and indurated, raised borders, involving both eyelids and the outer canthus.

CASE XIV. Began as a small pimple and grew till time of operation; it never ulcerated nor caused pain.

CASE XV. Began as a small pimple and grew steadily. At the time of operation it appeared as a flat tumor with pebbly surface, ulcerated in small areas and in part covered with a thin, shining, bluish skin.

CASE XVI. Began as a small tender area, which was removed while no larger than a grain of corn. At the time of operation there was a bleeding and sloughing ulcer 1 cm. deep, the edges being hard and red.

CASE XVII. A small growth was present on the eyelid for several years; it then ulcerated and gradually grew in size.

CASE XVIII. A pimple was noticed in the external meatus, which broke down, forming a shallow, painless and slowly growing ulcer.

CASE XIX. At the time of operation there was a slightly nodular tumor, painless and with a small ulcer at its summit; the cut surface was caustic.

CASE XX. A slight swelling first appeared, which in two weeks broke down and would not heal. At the time of the operation the floor of the ulcer was covered with a serous exudate; the edges were raised and indurated. The lesion was painless. The cut surface was striated.

CASE XXI. There was a slowly growing, painless tumor for twelve years. Nine months ago the lip was struck, and the abrasion produced over the tumor refused to heal. At the time of the operation there was an ulcerating, papillomatous tumor.

CASE XXII. Began as a small pigmentation, painless and slowly growing. The surface was rough and covered with comedones. It was raised 1 mm. above the skin and freely movable with it.

First noticed as a small ulcer, which grew slowly and was attended by itching. The surface was depressed and granular; the edges were indifferent.

CASE XXIII. Began as a small, bluish pimple attended with pricking sensations. A year ago it was punctured and healed over. At the time of operation it was an elevated nodule, rough and telangectatic. The cut surface was cystic.

CASE XXIV. First noticed as a pin-head-sized, painless papule, bleeding easily when irritated. At the time of operation it was a flat nodular tumor elevated ½ cm., the surface covered with rough, pebbly growths, hair and dirty sebaceous material. The overlying skin was thin, shiny and tender.

CASE XXV. Began as a shot-like papule, which grew slowly for years. During the last six months it has ulcerated with a sticky secretion. At the time of operation there was a small, elevated, painless nodule, freely movable and ulcerated at the summit.

CASE XXVI. Scratched the ear on the limb of a tree. The wound healed but remained tender. Three months ago it broke down, forming a crater-like ulcer.

CASE XXVII. Began as a pimple, which grew slowly. Three months ago it became an ulcer with moist, granular floor and raised indurated edges.

CASE XXVIII. Began as a pimple, which, after being repeatedly shaved off, formed a shallow, bleeding ulcer, slowly increasing in size.

CASE XXIX. A small swelling had been present for twenty-four years, then it began to grow slowly. Sixteen years later it ulcerated, forming crusts, but was never painful. At the time of removal there was a clean, ulcerating surface along the margin of the lower lid, which was slightly indurated, the edges being irregular, but neither undermined nor elevated.

CASE XXX. Had existed for many years as a papillomatous growth without pain and with only slight increase in size.

Was first noticed as a hard nodule, which slowly increased in size without ulceration or pain. At the time of removal it was subcutaneous and movable with the skin, the summit soft and the base hard. The cut surface was caustic and calcareous.

CASE XXXI. First noticed as a small sore which would heal at times. It was never painful, but a week before removal presented prickling sensations. At the time of removal there was a thin, flat growth with an ulcer in the center, having an irregular, indifferent edge and a scale-covered floor. It was freely movable.

CASE XXXII. Three years ago two warts on the left cheek began to grow, soon ulcerated, and coalesced two years ago. They were slightly painful. At the time of removal there was an elevated, fungoid ulcer with a purulent floor and indurated telangectatic edges.

CASE XXXIII. Began as a small raised point which grew slowly and ulcerated later. The ulcer was shallow and moist with indifferent, irregular edges.

CASE XXXIV. Began as a small "sore" on the lower lid, finally involving both lids, the eyebrow and a portion of the cheek. The ulcer was grayish, purulent, fungoid mass with irregular raised edges.

CASE XXXV. Began as a small, painless, scaly wart and grew slowly for years, healing and ulcerating alternately. Six months ago it was treated with an electric needle, and a month ago with paste, which aggravated the condition. It is now an ulcer, ½ cm. deep, with a clean granular floor and irregular, slightly indurated, elevated edges.

As may be seen by a study of this table, some very interesting facts, associated with the clinical histories of these cases, are made apparent. Surgical intervention was sought, as a rule, only after the tumors had existed for a number of years; this is directly attributable to their seeming insignificance. The duration of the growths, which was obtained in all but four cases, varied from forty years to two months and averaged over eight years. The average age of the patients was fifty-one years. Recurrence was observed in eight cases, and in a few the time is so short since removal that no statement concerning the tumor would be of value. Where careful search for the involvement of the lymphatic glands was made, it was invariably wanting. The tumors are all small, and in all cases were located on the upper two thirds of the face. In four cases there were two tumors at the same time; in Case XXII the elevated tumor on the right ala had existed for a number of years before the ulcerated, depressed tumor, 1 cm. above and external to the angle of the mouth, developed. The structure of the growths in this case is somewhat differ-

ent, although they both belong to the class under consideration. In Case XXX the tumors were on opposite sides of the face, and in Case XXXII there were at first two separate growths, which later coalesced. In Case II, four years after the removal of the first tumor from the lower lid of the right eye, one correspondingly located appeared on the other side. Other observers have also noted their occurrence as multiple growths (Fordyce, Bowen, Brooke).

Krompecher distinguished six forms of these tumors according to whether they grow as anastomosing papillæ and cords, sheet-like folds, invaginations from the surface, styloid accumulations of cells or cylindrical-celled tubules, or as combinations of these. It has seemed to me, from my study, that insufficient notice has been given by Krompecher to the fact that most of the tumors of this variety are made up of rounded aggregations of cells possessing an elongated neck-like connection. The tumors showing a preponderance of such flask-like masses of cells, and most of the thirty-seven tumors studied do, I shall designate as " bulbous "; those which are not characterized by such formations correspond to the " cystic " or " styloid " varieties of Krompecher. The majority of the tumors are mixtures of these, although the styloid form is found sometimes quite pure.




Fig. I. — The Bulbous variety, from Case XIV. The form taken by the groups of cells is well shown.
*a*. — Degenerative changes.

*The Bulbous Form.* — As an example of the bulbous form of superficial adenocarcinoma, the tumor in Case XIV will serve. The growth (Fig. 1) is entirely encapsulated with connective tissue; and the overlying epithelium, where present, is reduced to a few layers of flattened cells; the sudoriparous and sebaceous glands at the periphery, outside the capsule, show no changes except those of compression and displacement. The tumor cells are elliptical and small with very few mitotic figures. The stroma consists of a few narrow bands of mature fibrous tissue carrying blood vessels. Between these are solid masses of tumor cells, those at the periphery being perpendicular to the stroma. In a few places (*a*, Fig. 1) the cells have undergone degenerative changes and necrosis, and are represented by granular material and fragmented nuclei. In this variety the aggregations of tumor cells, as seen in serial sections, possess a rounded form with narrow, slender bridges uniting them to other collections.

Careful study of serial sections has demonstrated that these growths originate from more than one point of proliferation. Grouped islands of tumor cells, which appear separately in single sections, when studied in series, are found to be connected, each island directly or indirectly, with every other island of its group, all having a common point of origin. In most of these tumors, however, there is more than one point from which tumor cells arise, and the connected masses of tumor cells from one origin are separate from those of a different origin. Thus, in studying one half of a tumor from center to periphery, seven separate masses of tumor cells were found.




Fig. II. — The Cystic form, from Case I. The cyst-like cavities are formed by alterations in the stroma, chiefly due to circulatory disturbances.
*a*. — Swollen and degenerated (edematous?) connective tissue.
*b*. — Narrow parallel rows of tumor cells.

*The " Cystic " Form.* — In single sections from many of the growths the appearances are entirely different from those described for Case XIV, on account of the predominance of cavities instead of bulbous aggregations of tumor cells. When a freshly removed growth of this character is examined, the cavities are sometimes found to contain a turbid, slightly opalescent, thin gray fluid. The methods of fixation have evidently not preserved this fluid, for, as a rule, empty cyst-like spaces are found when these tumors are examined microscopically. One of the largest of these spaces measures 5 mm. across, but generally they are much smaller. These cavities usually possess a thin wall of epithelial cells; in some the lining is in part formed by swollen and degenerated connective tissue (*a*, Fig. II). The facts that the innermost row of epithelium lining these cavities is columnar, that many of them contain blood and some remnants of connective tissue, point to an origin through an interference with the circulation in the vessels of the stroma. Sometimes, in the study of serial sections, a mass of connective tissue is found almost surrounded by tumor cells and connected with the rest of

the stroma only by a narrow, compressed strand. The cavities are not always, therefore, as casual examination would indicate, spaces within the tumor cell masses, but, instead, are located in the stroma, which has entirely disappeared from many of them.

There may be found in both the bulbous and so-called "cystic" varieties collections of degenerated tumor cells, which simulate the above described cavities due to edema and other circulatory disturbances of the stroma. Even cursory examination demonstrates the difference between these. The cavities inside the tumor cell masses caused by degenerative processes always contain necrotic cells their lining, instead of being columnar cells, shows only a gradual transition of granular débris in the center to the well-preserved tumor cells; there is no sharp line of demarcation between the central cavity and the unchanged tumor cells. True retention cysts are also occasionally met with, formed from portions of sebaceous glands or their ducts, which have been enclosed by the growing tumor. In these the lines of demarcation between tumor cells and the enclosed mass of necrotic sebaceous cells and sebaceous material is distinct and sharp.

Another characteristic of the "cystic" form is the occurrence, as seen in single sections, of narrow, parallel rows of tumor cells (*b*, Fig. II), which may be at right angles, obliquely placed, or even parallel to the surface. They are very long in many sections, in one instance measuring 1 mm. Study of serial sections shows that these are sheets of epithelial cells and not cylinders, and that they anastomose. They are usually parallel at their beginning, but growing downward their direction becomes tortuous, and at their deepest parts they are greatly folded and compressed and not infrequently end as compact masses of cells, resembling the formations characterizing the bulbous variety.



FIG. III. — The Styloid form, from Case III. The compression of the tumor cells into aggregations with pointed processes characterizes this form. They are easily mistaken for fibro- and spindle-celled sarcoma.

*The Styloid Form.* — In eight cases (Cases III, V, IX, XVI, XVII, XXVIII, XXXIV, and one of the growths in Case XXII), the microscopical structure failed to answer to either of the forms described, and in two of these, in which the entire tumor was studied, nearly all the sections presented the following appearances (Fig. III, Case 3). In these cases a limiting capsule sharply demarking tumor cells from normal tissue, such as occurs in the bulbous and "cystic" varieties, is not found; in addition, the stroma is much more abundant and there are many evidences of an inflammatory process, such as infiltration of round cells, newly formed blood vessels and other appearances of cicatrizing granulation tissue. The tumor cells, instead of being aggregated into round masses, as in the first form, or enclosing cavities, as in the second, are grouped into irregular anastomosing and branching bands and styloid processes. The processes are very different from the sections of sheets of epithelial cells appearing as cords in single sections previously described, in that great variations in width occur in relatively short distances, and the cells are rarely perpendicular to the stroma. In these bands two epithelial cells may represent the width at one point, and on either side the band may suddenly widen to many cells or be reduced to a narrow thread of cells. Tumor cells with round and vesicular nuclei are found only in the centers of large aggregations. The peripheral epithelial cells and the cells of the network constituting the conspicuous feature of this form are spindle-shaped, and where they terminate in delicate processes are with difficulty differentiated from the nuclei of the stroma. It is very obvious that the inflammatory reaction on the part of the surrounding tissue, which in the first two varieties is represented by a fairly distinct wall encapsulating the tumor, has in this variety resulted in a growth throughout the tumor of branching and coalescing bands of connective tissue. The resulting compression of the epithelial cells and the consequent alteration in their shape explain why some growths of this form have been wrongly diagnosed as fibro- or spindle-celled sarcoma and as endothelioma.

It will be seen from the table that erosion occurred early in these eight cases when compared to the long duration of the growth. It is reasonable to suppose that the escape of the inflammatory exudate, the products of necrosis and degeneration as well as the serum and the formed elements of the blood accumulating in consequence of local disturbances of the circulation, interfered with the development of cysts. To what extent the penetration of the tumor by the surrounding granulation tissue was facilitated by the ulceration would be difficult to state. Absence of the protecting epithelium certainly afforded more exposure to irritants which promote the inflammatory process.

It was found by studying serial sections that preservation of one or the other of the types described did not prevail throughout the entire growth. Twelve of the tumors were almost

entirely of the bulbous form, seven of the cystic and six of the styloid. The remainder presented such admixtures that classification as distinct forms was not possible. The most frequent association obtained in growths showing both bulbous and "cystic" forms, the bulbous predominating. Cavities were never observed in the styloid form.

Excellent opportunity for examining the relationship between the tumor cells and the superficial epithelium was afforded by the study of entire growths in serial sections. In all but three cases the tumor cells were distinctly continuous with the Malpighian layer. In Case VIII the tumor arose from the neck of a sebaceous gland, and in Case XIII from a hair follicle; in the third case the relationship could not be determined because of the method of removal. In seven cases direct connection between tumor cells and sebaceous glands was also demonstrated, and in five with the outer layer of hair follicles. In twenty-three cases the epithelium appeared to give origin to tumor masses at more than one point.

However varied the origin, as shown by its connection with pre-existing and normal epithelium, the tumor cells invariably resemble the basal cells of the Malpighian layer with a single difference: they never contain pigment. The marked benignancy of these growths and the absence of pigment in the cells are in striking contrast to the great malignancy of the pigmented tumors which Abesser,[2] Larass,[3] Schalek [4] and others have recently insisted develop from the epithelium and are therefore carcinomas, instead of sarcomas as has been heretofore supposed.

The similarity of the tumor cells to the Malpighian layer is especially shown in the peripheral cells of the bulbous masses and in the thin partitions of "cysts." Slight modifications in shape and staining reaction are met with in the centers of the large aggregations of cells, but they are never sufficient to correspond to the alterations that occur in the successive layers of normal epithelium. Reference has been made to the marked alterations in the styloid form from compression.

The relatively few dividing nuclei always represent regular and typical phases. In Case V careful search failed to show any karyokinesis. The blood vessels are found in the stroma, which is scanty in the bulbous and "cystic" varieties and more abundant in the styloid form. Plasma cells and lymphocytes occur in the stroma in varying amounts. In the well-marked zone of granulation tissue around the cystic and bulbous forms they occur in numerous foci; mast cells are found scattered diffusely throughout most of the growths. In the styloid the stroma is more cellular than in the other forms. In the pars papillaris at the periphery of many of the growths the large amount of elastic tissue (Wiegert's stain) is too great to be accounted for from mechanical disturbances. This fibrous element is rarely found among the tumor cells.

There are good reasons for believing that diseases of the sebaceous glands are in some way related to the development of these tumors. The great size of these glands in the adjacent skin in many instances, the connections between tumor cells and sebaceous glands and their ducts, the origin in one case from a duct, and the occurrence of two separate growths on either side of the face in Case XXII, in which there was a well-marked acne vulgaris of several years' duration, are some of the reasons which support this view. Other investigators have observed this association. Great variations occur in the direction of the hair follicles and gland ducts at the margins of the growths; these structures are rarely found within the confines of the tumors and never in the styloid form. The superficial character of this last-named variety is shown by the invariable presence of sudoriparous glands below the tumor.

In a number of the tumors the so-called hyaline degeneration was present, chiefly as a terminal phase of the organization of granulation tissue. In a few instances mucoid degeneration was observed, and in Case XXX the growth on the left side of the face was extensively calcified. Hemosiderin was frequently found in all parts of the growths.

The tumors examined in eight cases were recurrent growths, and in one instance the primary tumor was also examined. Since recurrence may be considered as one step nearer malignancy, and these secondary growths are intermediate between those already described and the familiar carcinoma originating in stratified squamous epithelium, they were examined with special interest. The most important differences revealed by their study are the greater number of dividing nuclei, the disposition of the epithelium to form "pearls," a more marked inflammatory reaction and the lessened formation of a compact encapsulating zone of granulation tissue.

That tumors of this class are not as harmless as might be inferred from their small size and long duration and that great care should be exercised in their removal is evident from the history of Case XXXIV. The woman first noticed a papule where the bridge of her eyeglasses irritated the nose. This increased in size slowly, was diagnosed eczema and treated with x-rays. Under this treatment it almost disappeared. Growth began again four weeks after its discontinuance and various local applications were made. At the end of two years after it was first noticed, the ulcer involved most of the nose; the edges were irregular, indurated and slightly elevated, and it was removed with a cautery knife, the line of incision being close to the edge of the ulcer for fear of injury to the eyes. The tissue removed was studied in serial sections and the structure of the ulcer at the edge corresponded with that described for the bulbous form. There was then some treatment with the x-rays, another operation at the end of six months, recurrence in less than another month with involvement of the

[2] Virchow's Archiv., 1902, clxvi, 40–60.
[3] Arbeit. aus d. Path.-Anat. Abth. der Kon-Hyg. Inst. zu Posen, 1901, 66–96.
[4] Journ. of Cutan. and Gen.-Urin. Dis., 1900, xviii, 145–153.

upper lip, the eyelids, forehead and cheeks and destruction of the soft tissues of the nose. The structure of the growth at that time was ordinary carcinoma of the squamous cell type, and the case was considered inoperable. The above account illustrates the truth of the statement by Fordyce [5] that these tumors are better left alone than carelessly treated. The histories of the other recurrent cases show that the temporizing treatment with local applications, no doubt the result of fear by operators of leaving unsightly scars, has been followed by recurrence and more rapid growth.

Two facts acquired considerable emphasis from a careful review of the literature pertaining to tumors presumably of this variety. The first of these concerns the long list of names which they have received, so numerous that even Krompecher hesitated to add a new one; the second, the almost universal tendency to consider them as closely related to carcinoma. The so-called "Rodent Ulcer" I regard as belonging to the styloid form of this class of tumors, but the term, even as a purely clinical one, is open to many objections. The name suggested by Krompecher, "drüsenartige oberflächenepithelkrebs," certainly carries with it no suggestion of an origin in the glands of the skin, although the development of these tumors from the basal layer of the epithelium, from hair follicles, or from the necks of the sebaceous glands, is definitely established. It has also been shown that the resemblance to glands is only apparent and chiefly due to disturbances of circulation in the stroma. The similarity to tubules, when single sections are examined, may be quite marked, and with much œdema of the stroma pseudocysts develop. These tumors are not glandular, but gland-like; they are benign, superficial, and develop from the epithelium.

The usual conception of the development of a carcinoma of the skin includes proliferation of the epithelium and invasion of the deeper tissue. Both of these processes occur in the histogenesis of these tumors, and yet the majority of the clinical characteristics of carcinoma are certainly absent. Not even the loss of the protecting epithelium and ensuing irritation, ulceration, etc., are alone sufficient to effect their transformation into the familiar forms of cutaneous carcinoma. As before stated, in connection with recurrent cases, the evolution to carcinoma often takes place as a result of methods of treatment largely due, no doubt, to their location upon the face.

## THE RELATION OF THE BURN TO THE BULLET HOLE AS EVIDENCE OF HOMICIDE vs. SUICIDE: REPORT OF THE NAGLE CASE.[1]

BY JAY PERKINS, M.D., PROVIDENCE, R. I.

ON the morning of the 14th of November, 1901, the body of James Nagle was found lying on his bed at his home in East Providence, R. I., with a bullet wound in the right side of the head, 1¼ inches above and a little anterior to the junction of the ear with the head. Singeing of the hair extended 1½ inches above the bullet wound, a little back of the ear and a little below the angle of the mouth, the beard being about a week's growth. The body was lying in a natural position on the bed, the arms at the sides, with a 32-calibre revolver between the right hand and the thigh. The tenement occupied by James Nagle and his wife, Rose, both French Canadians, was in a basement and consisted of a kitchen and sleeping room. Back of the house was a wood shed. Mrs. Nagle claimed that James came home the preceding night a little after eleven o'clock, drunk (Mr. and Mrs. Nagle were both frequently drunk and quarrelsome), and drove her out of the house. She was afraid to re-enter the house and spent most of the night in the wood shed, going to a window of their bedroom at intervals and looking in at her husband. At about four o'clock in the morning, hearing no noise and thinking he was asleep, she entered the house, but he was by the stove and drove her out with the poker. After hearing the five o'clock whistle, she again started to enter the house, and looking through the window of the sleeping room saw "some fire or something" and heard "an awful noise." Thinking that he had probably killed their dog she rushed into their bedroom and saw "Jimmy" with his two feet on the floor and his body across the bed. She placed his feet on the bed, laid him straight and pulled the blanket over him. At that time he was alive, but breathing very hard and lived for half an hour. She then went to a neighbor's and asked that he go for a doctor for Jimmy, and upon being asked what had happened to Jimmy she replied, "He is shot, for I heard such a noise."

At a little after five in the morning the Police Sergeant asked Dr. Allison, the medical examiner, to accompany him to Mr. Nagle's house. When they arrived there they found the body in a natural position on the right-hand side of the bed with a bullet wound as described above. At that time Mrs. Nagle stated that her husband had shot himself, and that she had found him lying across the bed with his feet on the floor and holding a revolver in his hand, and that she had placed him in the position in which he was then lying. On the pillow under his head was a blood spot three to five inches in diameter. No blood was found anywhere else on the bed. The fingers were relaxed, and though Mrs. Nagle tried to make them hold the revolver as she said she had found it they would not accommodate her. When asked where Jimmy got the revolver she said that she did not know, but later in the day she stated that he had traded a watch for it.

At this time the case was considered one of suicide, but later in the day it was learned that a woman said to be Mrs. Nagle had, a few days before, purchased at a hardware store in East Providence a revolver corresponding to the one found beside Mr. Nagle. After purchasing the revolver she asked the clerk to load it for her. This he refused to do, but he gave her five cartridges, not noticing whether she had selected a five or six chambered revolver. The revolver found beside Mr. Nagle had six chambers, one chamber being empty, one containing an empty shell and four containing cartridges. At the trial the identification of the woman purchasing the revolver as being Mrs. Nagle was not absolute, in that the one who purchased the revolver wore a thick veil so that the face could not be seen. Otherwise, the two corresponded, a special feature in the identification being the broken English with the French Canadian accent.

Mrs. Nagle was now charged with the murder and arrested and an autopsy was held. The bullet wound

[5] Journ. of Cut. and Gen.-Urin. Dis., 1902, xx, 147.

[1] Read at the Massachusetts Medico-Legal Society Meeting, Feb. 3, 1904.

and burn were as above described. In the autopsy report no mention was made as to powder marks or the character of the wound, but at the trial the medical examiner stated that there were some powder marks. There was a large opening through the skull, and the brain substance and pieces of bone and powder were scattered along the track of the bullet in the brain. The bullet was found lodged " in the cerebellum, just above the medulla oblongata."

Mrs. Lawson, who lived on the floor above the Nagle tenement, testified that as a regular thing " Jimmy came home and made a noise at night and that in the morning Mrs. Nagle made a noise and jawed him." On the night of Mr. Nagle's death she was awakened a number of times and heard quarreling in the tenement below. Most of the time she could distinguish only Mrs. Nagle's voice, and at about three or half-past three in the morning Mrs. Nagle " hollered out " two or three times "I'll kill you." At about quarter past five she heard "a short noise about like a revolver."

I did not see Mr. Nagle's body, but was called into the case by the Attorney-General, who sent me a copy of the autopsy report with a request that I should advise him from a medical standpoint. The report of the wound was very meagre, being only as stated above. I had observed in my work that when burning of the hair or clothing is present the bullet wound is not in the center of the burn, and so, in studying this case, one of the first things I did was to experiment with the revolver found beside Mr. Nagle's body, using the cartridges from the box from which those in the revolver were supposed to have come. I found that there was a uniformity of results, that the major part of the burn always corresponded with the hammer or "sight" side of the revolver. A perusal of medico-legal works at my command failed to show any reference to this with the exception of a small work by Reese. I then wrote to Dr. Draper in reference to these findings, and was pleased to receive an answer from him confirming my investigations and also giving me the reference to a paper read by Dr. Fish before this society and published in the Boston Medical and Surgical Journal, Oct. 2, 1884, which treats the subject exhaustively, and shows that unless the revolver is held firmly, as in a vise, there is no exception to the rule as I found it.

At the first trial of this case, I therefore testified that with a bullet wound in the right temple, 1¼ inches above and a little in front of the upper part of the ear, with the hair singed 1½ inches above the wound, some back of the ear, and the beard singed down to the angle of the mouth, the bullet following a direct line to the lower part of the cerebellum just above the medulla oblongata, with fragments of bone and powder scattered along the passage of the bullet through the brain, the revolver was held at a distance of between four and six inches from the head, the barrel pointing in the direction taken by the bullet, with the sight side of the revolver in the direction of the more extensive part of the burn, that is, in front of the right ear, and the trigger side towards the top of the head. The revolver in question being a cheap, Fourth of July variety, and of very hard action, it was improbable that such a wound should have been self-inflicted by anyone, and for myself would have been impossible, while, with the body lying in a natural position on the right side of a low bed, this was precisely such a wound as would be produced by a person standing beside the head of the bed and shooting with the right hand at close range.

At the first trial the defence put in no medical testimony in contradiction of mine. A new trial was, however, obtained on technicalities, and at the second trial your President also appeared as an expert witness for the state and ably upheld the state's claim that the position of the revolver was as stated above, and that the wound was improbably, almost impossibly, suicidal. The defence, at this trial, had two medical witnesses, Dr. William H. Palmer, who had served for eighteen years as medical examiner in Providence and for some years preceding that as coroner, and Dr. Jerome B. Green. Both of these witnesses claimed that there was no such rule as stated above in reference to the relation of the burn and bullet wound, Dr. Palmer characterizing our statements as "fanciful." He stated that his experience and experiments, of which he said he had performed a good many, showed that there was no constant relation between the sight side of the revolver and the extension of the burn. He also stated that nothing could be told in reference to the position in which the revolver was held when the shot was fired, by the direction taken by the bullet through the brain, because of the possible deflection of the bullet. My testimony at the second trial was similar to that at the first, except that on further experimentation I changed the distance from the head at which the revolver was held to between three and six inches instead of four and six, because, with this revolver, it seemed as if I got more marked burning at four inches than at six. All of my work, however, makes me more firmly convinced than at first that in the relation of the burn to the bullet wound we have an accurate guide as to the position in which the revolver was held as regards the sight side of the revolver, this relation being more marked the farther the revolver is held from the object fired at until the point at which the burn fails to appear is reached.

At the second trial Rose Nagle was acquitted. It is the history of murder trials in Rhode Island that usually, when a second trial is obtained, the defendant is acquitted. In this case, the character of the man killed and the pitiful appearance of the defendant probably had as much to do with the acquittal as any lack of evidence on the part of the state.

Even the Attorney-General was moved by the defendant's appearance at the time he made his plea. She was partially blind, of small stature, and sat with her body somewhat doubled over and her feet on a box. In her hand she held a bunch of white pinks with a piece of newspaper wrapped about the stems, looking at them as if trying to derive some comfort from them. After the trial was over the Attorney-General remarked to the

counsel for the defence that he was moved to pity by the forlorn appearance of the defendant, and especially by the way she held the white pinks. An amused smile came over the face of the defendant's counsel, and, on being questioned as to the cause of it, he said that on his way to the court house in the morning he saw those pinks and, thinking that they would look well in the hands of the defendant, he bought a bunch, wrapped a piece of newspaper about the stems, put them in the hand of the defendant and instructed her as to the manner of holding them, which instructions she faithfully carried out.

## Clinical Department.

### A RÉSUMÉ OF THE RESULTS OF DR. F. B HARRINGTON'S SERVICE, MASSACHUSETTS GENERAL HOSPITAL, FROM JUNE 1 TO OCT. 1, 1902, AS SEEN IN THE FOLLOWING JUNE OR LATER.

BY E. A. CODMAN, M.D., BOSTON.

| Disease. | Total number. | Number traced. | Perfect result. | Good result. | No improvement. | Bad result. | Died in hospital. | Died after leaving hospital. |
|---|---|---|---|---|---|---|---|---|
| Appendicitis: | | | | | | | | |
| General peritonitis from | 3 | 3 | .. | .. | .. | .. | 3 | .. |
| Acute-wound drained | 25 | 14 | 5 | 7 | .. | .. | 2 | .. |
| Chronic-wound closed | 24 | 13 | 6 | 5 | 2 | .. | .. | .. |
| Hernia: | | | | | | | | |
| Strangulated | 2 | 2 | .. | .. | .. | .. | 1 | 1 |
| Inguinal | 21 | 12 | 4 | 6 | 1 | .. | 1 | .. |
| Ventral | 8 | 7 | 4 | 2 | 1 | .. | .. | .. |
| Femoral | 2 | 1 | .. | 1 | .. | .. | .. | .. |
| Miscellaneous Laparotomies: | | | | | | | | |
| Fibroid of uterus | 6 | 5 | 1 | 3 | .. | .. | 1 | .. |
| Salpingitis | 21 | 8 | .. | 8 | .. | .. | .. | .. |
| Ovarian or brd. lig. cysts | 9 | 7 | .. | 7 | .. | .. | .. | .. |
| Gallstones | 8 | 7 | 2 | 2 | .. | .. | 3 | .. |
| Carcinoma of cervix uteri | 4 | 4 | .. | 1 | 1 | .. | 2 | .. |
| *Chronic Intestinal Obstruction:* | | | | | | | | |
| Carcinoma of large intestine | 4 | 4 | .. | 3 | .. | .. | .. | 1 |
| Volvulus | 1 | 1 | .. | 1 | .. | .. | .. | .. |
| Adhesions | 2 | 2 | 1 | 1 | .. | .. | .. | .. |
| Meckel's diverticulum | 1 | .. | .. | .. | .. | .. | .. | .. |
| *Acute Intestinal Obstruction:* | | | | | | | | |
| Intussusception | 1 | 1 | 1 | .. | .. | .. | .. | .. |
| Mesenteric thrombosis | 1 | 1 | .. | .. | .. | .. | 1 | .. |
| Meckel's diverticulum | 1 | 1 | .. | .. | .. | .. | 1 | .. |
| Extra-uterine pregnancy | 5 | 1 | .. | 1 | .. | .. | .. | .. |
| Rupture of kidney | 1 | 1 | 1 | .. | .. | .. | .. | .. |
| Tabes mesenterica | 1 | 1 | .. | .. | .. | .. | 1 | .. |
| Obstruction of both ureters | 1 | 1 | 1 | .. | .. | .. | .. | .. |
| Other cases | 16 | 12 | .. | 5 | .. | .. | 7 | .. |
| Gynecological Cases: | | | | | | | | |
| Carcinoma of cervix (curetted) | 5 | 4 | .. | 3 | .. | .. | .. | 1 |
| Pelvic abscess (vaginal puncture) | 3 | 1 | .. | .. | .. | .. | 1 | .. |
| Dilating and Curetting | 7 | 6 | .. | 4 | 2 | .. | .. | .. |
| D. & C. ventral fixation or suspension | 4 | 2 | .. | 1 | 1 | .. | .. | .. |
| D. & C. cervix and perineum | 11 | 9 | 1 | 5 | 3 | .. | .. | .. |
| D. & C. cervix and perineum, V. F. | 10 | 7 | 1 | 6 | .. | .. | .. | .. |
| Unclassified | 5 | 2 | .. | 1 | 1 | .. | .. | .. |
| *Genito-Urinary Cases:* | | | | | | | | |
| Prostatic hypertrophy | 4 | 4 | .. | 2 | .. | 1 | .. | .. |
| Strictures | 10 | 5 | .. | 5 | .. | .. | .. | .. |
| Hydrocele | 7 | 5 | 2 | 3 | .. | .. | .. | .. |
| Miscellaneous | 12 | 5 | .. | 5 | .. | .. | .. | .. |
| Head Cases: | | | | | | | | |
| Depressed fracture | 3 | 2 | .. | 2 | .. | .. | .. | .. |
| Fracture of base | 3 | 1 | .. | .. | 1 | .. | .. | .. |
| Concussion | 4 | 1 | 1 | .. | .. | .. | 1 | .. |
| Miscellaneous | 5 | 3 | .. | .. | 1 | .. | 2 | .. |
| Bone and Joint disease | 30 | 18 | 11 | 5 | 2 | .. | .. | .. |
| Fistula in Ano | 12 | 9 | 4 | 4 | 1 | .. | .. | .. |
| Empyema | 2 | 2 | 1 | 1 | .. | .. | .. | .. |
| Cancer of breast | 8 | 7 | 2 | 3 | .. | .. | .. | 2 |
| Hemorrhoids | 12 | 3 | 1 | 2 | .. | .. | .. | .. |
| Tubercular glands of neck | 8 | 4 | 1 | 3 | .. | .. | .. | .. |
| Miscellaneous malignant cases | 20 | 15 | 2 | 6 | .. | .. | 2 | 5 |
| Accident cases | 31 | 12 | 1 | 5 | .. | .. | 6 | .. |
| Miscellaneous cases | 65 | 29 | 3 | 20 | 2 | 1 | 2 | 1 |
| Fractures | 25 | 11 | 2 | 7 | .. | .. | 1 | 1 |
| | 473 | 276 | 59 | 146 | 19 | 2 | 39 | 12 |

*Explanation.* — The results were seen personally by Dr. E. A. Codman, with the exception of a few who replied by letter. Those cases which replied by letter, even if they reported that they were well, are not classed as "perfect" because they were not examined, for it is found that patients frequently consider themselves well when they have hernia or other undesirable after-results. The results of cases as seen at the time of discharge and not heard from later are not given, because such figures can easily be obtained from the annual report of the hospital.

Perfect results are not discussed in the remarks at the end because they are perfect and speak for themselves.

Good results include those cases which, while they showed some benefit from the operation, were nevertheless not completely relieved. In what respects these lacked perfection is explained in the remarks. It must, therefore, be understood in reading the following that with a few exceptions, only the cases in which some undesirable symptoms remain after the operations are spoken of.

#### Remarks on the Cases in which the Results Were not Perfect.

##### APPENDICITIS.

*General Peritonitis.* — In the above table only the cases which died of undoubted peritonitis are included under this heading. As a matter of fact, some of the acute appendicitis (wound drained) might justly be considered general peritonitis, but it is felt that classing them as such might give a false impression.

*Wound drained.* — Of the seven good results three were not perfect because they had ventral hernia or weak scars; four reported themselves well by letter, but since they were not examined cannot be called perfect.

*Wound closed.* — The two cases which were not improved complained of the same pain which they had before the operation. Of the five good results, four complain of constipation and indefinite pain. One wrote that she was well, but was not examined.

##### HERNIA.

*Inguinal.* — One case, where a double operation had been done, died from pneumonia on the forty-fourth day; the wounds were healed. One of the "perfect" cases was the huge hernia which Dr. Harrington operated on, on "Mass. Med." day; another small hernia has, however, appeared on the other side. Of the six good results, four only reported by letter, and therefore cannot be called perfect (one of these speaks of "a thickening" about the testicle). The other two had good anatomical results, but indefinite pain in the region of the scar, and one has a small hydrocele; the bad result was a recurrence ten months later.

*Ventral.* — The case which was not improved broke her stitches just after the operation and had to be resutured in the ward. The two good results had small, weak areas in the scars.

The *femoral hernia* was not examined.

MISCELLANEOUS LAPAROTOMIES.

*Fibroids.* — Two of the three good results reported themselves well by letter; the other was a case of myomectomy (J. W. E.) who complained of slight pain in the right side and had a large separation of the recti.

*Salpingitis.* — Of the eight "good results" five reported by letter only. One of these, from whom huge hydro-salpinges had been removed, had "never been so well"; three of the other four have disagreeable symptoms from the artificial menopause. Of the three who were examined, one was symptomatically well, but had a pelvic tumor; one was anatomically well, but had irregular menstruation; the third had a ventral hernia requiring operation.

*Ovarian Cysts.* — Two report themselves by letter as perfectly well; the other five scarcely lack perfection, but have minor symptoms, *e. g.*, bulging of scar, irregular menstruation, or tenderness.

*Gallstones.* — The two cases of "good results" have still slight attacks of pain. One has a sinus. Both had cholecystostomy.

*Carcinoma of Cervix Uteri* (abdominal hysterectomy). — The one good result reports herself perfectly well and gaining weight. The one "no improvement" was well six months before the disease returned.

*Chronic Intestinal Obstruction* from *Carcinoma of the large Intestine.* — All four had temporary relief only; one is known to be dead.

*Volvulus.* — A small boy who has had many operations for idiopathic dilatation of colon is benefited but has two fecal fistulæ.

*Adhesions.* — One had to be operated on again the next year, since which he has been well.

GYNECOLOGICAL CASES.

*Carcinoma of Cervix* (curetted). — Three were made much more comfortable. One died six months later.

From *dilating and curetting* for endometritis, metrorrhagia, etc., two cases showed "no improvement." In one of these the symptoms were probably due to osteo-arthritis of the spine. The other by letter said, "The operation done me but very little good." Of the four "good results" a case of metrorrhagia was cured, but has other uterine symptoms of minor importance. The other three regard themselves as better, but still complain of various troubles.

From *D. and C. and ventral suspension or fixation*, one case was in much the same condition as before; the other somewhat improved.

Of the cases where *D. and C. cervix and perineum* alone were done, two reported good results by letter, one was symptomatically better, due probably to a careful diabetic diet which was first prescribed for her after the operation. The three others were improved in some respects, but still complained of one thing or another. Three were no better for the operation.

*Cervix and perineum with ventral fixation* was, as a rule, done for procidentia, or prolapse. One case had nothing to complain of; the other six, though greatly improved, still lacked perfection in some minor respect.

*Unclassified Gynecological Cases.* — The good result was from a curettement after miscarriage. The case not improved was a girl with venereal warts who returned the next year (the warts still present and ulcerated) with well developed secondary syphilitic eruption.

GENITO-URINARY CASES.

*Prostatic Hypertrophy.* — All four cases were very feeble subjects and had very large tumors. On one the Alexander operation was done; the tumor was an adeno-fibroma weighing 100 gms.; this patient died at once. From another case an adeno-fibroma weighing 105 gms. was removed through a suprapubic opening with an écraseur; this patient's health was greatly improved; he has no hemorrhages, but is still obliged to use a catheter. A third case on whom Dr. Mixter did a Bottini operation reports that he has been "as well as ever he was in his life" since the day of his operation. This case is not considered perfect because he was not examined. The fourth case, marked "no improvement," refused operation in Dr. Harrington's service and returned later in another service, when a suprapubic cystotomy (M. H. R.) was done, through which "nearly all the urine still comes."

The results of the *strictures, hydroceles and miscellaneous genito-urinary cases* are only of individual interest.

HEAD CASES.

*Depressed Fracture.* — One reported himself well by letter. A boy who had a depressed fracture with hemorrhage from the middle meningeal and lateral sinus is well, except for a spastic condition of the left leg and arm.

A case thought to have been *fracture of the base* is in an insane asylum.

A case operated on for *traumatic epilepsy* by introducing gutta-percha tissue between the scar and the brain was not improved.

BONE AND JOINT DISEASES.

*Perfect Results.* — One each of tuberculosis of patella (excision of sequestrated patella and drainage of joint; R. B. G.); "mice" in knee joint; displacement of semilunar cartilage; chronic synovitis of knee; septic punctured wound of knee; excision of shoulder for tuberculosis; excision of tubercular sequestra from humerus; partial excision of inflamed deltoid bursa; excision septic bursa of olecranon; excision of necrosed bone in amputation stump; excision (J. W. E.) muscle callous of quadriceps extensor.

*Good Results.* — One each of: excision of knee (the leg itself is said to be well but patient is too feeble to use it); excision of metatarsal and proximal phalanx of the great toe for tuberculosis — had a small sinus which has recently been excised and has healed; caries of ilium, — wound has healed, but patient still has pain; reduction of dislocated semilunar bone of wrist and excision of portion of fractured scaphoid — somewhat

sore and easily strained, some limitation of motion; abscess of hip — bedridden.

*No Improvement.*— Periostitis of femur; chronic synovitis of knee (probably tubercular).

*Fistula in Ano.* — Of the four good results, three reported themselves well by letter. The fourth has a granulating spot with probably a concealed sinus just inside sphincter. One has not improved — this was the same patient operated on for mice in the knee joint.

*Empyema.* — One patient complained "that her side troubled her," but she is well and able to do her work.

*Cancer of the Breast.* — Of the three "good results," two were in operations for recurrent nodules. Both of these show still further recurrence, and in one the growth has involved the brachial plexus causing complete paralysis of the arm. The third "good result" reports herself well by letter. Two cases died during the following winter, whether of the disease or not is not known.

*Hemorrhoids.* — The two "good results" reported themselves well by letter.

*Tubercular Glands of Neck.* — The three "good results" complain only that the scars are ugly or tender.

MISCELLANEOUS MALIGNANT DISEASES.

*Perfect Results.* — One was a sarcoma of the parotid; the other a case of supposed recurrent gland in the neck following operation on the lip five years before (the gland was not malignant). Of the six good results, four are known to have had recurrence. Two of those which died were not operated upon (both cancer of rectum).

*Accident Cases.* — The results are only of individual interest.

*The Miscellaneous Cases* are incapable of classification though the individual results are often of interest. Of the two cases "not improved" one, a morbus coxæ senilis, was not operated upon; the other, a girl with an obscure lesion of the elbow, was not helped by an exploratory operation. The bad result was in a case of tuberculosis of the oscalcis, who refused operation.

*Fractures.* — One perfect result was a fracture of the tibia in a boy of sixteen. The other was a case operated on for a fracture and dislocation of the head of the humerus in a fat woman. The head of the bone was excised and she now has an ideal result for excision of the shoulder.

The following cases died during or after the service:

*Cases which died unoperated:* Accident cases, 7; burns, 2; erysipelas, 1.

*Cases in which death was probably hastened by operation:* Acute appendicitis, 2; general peritonitis, 1; carcinoma of the intestinal tract, 3; carcinoma of the jaw, 1; carcinoma of the uterus, 3; duodenal ulcer, 1; fibroid of the uterus, 1; inguinal hernia (pneumonia), 1; cholelithiasis, 3; tabes mesenterica, 1; hypertrophy of the prostate, 1; pelvic abscess, 1.

*Cases in which death was not hastened or probably not more than a few days by operation:* One each of strangulated umbilical hernia, duodenal ulcer, obstruction from Meckel's diverticulum, cancer of the stomach, mesenteric thrombosis, rupture of the intestines, multiple tubercular sinuses, head injury. Two cases of general peritonitis.

*Died after leaving hospital:* One each of Hodgkins disease, cancer of the hepatic flexure, cancer of the cervix; two each of cancer of the breast and rectum.

Besides these, three cases died of other causes than those for which they were in the hospital.

## A CASE OF PREGNANCY IN A UTERUS BICORNIS UNICOLLIS.

BY CHARLES M. GREEN, M.D., BOSTON.

CAREFULLY observed cases of pregnancy in bicornate uteri are sufficiently rare to make the following case worthy of record:

M. F. entered the Boston Lying-in Hospital Jan. 27, 1896, with the following history: —

1893, miscarriage at two months.

1894, full-term child, easy labor.

1895, June 3, premature labor at seven months; no catamenia since.

1896, Jan. 26, 7 P.M., while sitting in the house of a friend, patient began to flow profusely (fully a quart of blood was said to have been collected), finally fainted, and was seen by the late Dr. George Haven, who advised removal to the Lying-in Hospital.

On entrance patient was in fair condition, pulse 105, color good. The cervix was not wholly taken up, the external os uteri was dilated to an inch in diameter. The presenting head was high, O. D. P. The abdomen was large and broad for that period of pregnancy (seven months). There was a large and well-marked median sulcus, suggesting twin pregnancy. During a uterine contraction this sulcus became more marked and could be distinctly felt: beginning just below the umbilicus it extended upward, becoming broader and deeper, and dividing the fundus uteri into two distinct and nearly equal parts. The part on the right was firm and resistant: in it the outline of the fetus could be distinctly palpated, and the fetal heart could be heard over it. The left cornu was less resistant; no part of the fetus could be felt in it; nor could the fetal heart be heard there, but a loud placental bruit was heard over this area. (Figure 1.) During a contraction both halves of the uterus seemed to harden equally; but the left half stood out with greater prominence.

Four hours after entrance dilatation was complete, the membranes ruptured, and a large amount of liquor amnii escaped. Five minutes later the baby was born, and was followed by some large, dark clots. The baby weighed only 3.75 lbs., and lived but six hours.

After the birth of the baby abdominal palpation showed on the left a mass which had the size and feeling of a normal uterus during the third stage. To the right of this, and closely connected with it, was a smaller mass, presumably that portion of the uterus which had contained the child. (Figure 2.)

At the end of forty minutes pressure was made on the left, or larger part of the uterus and the placenta was easily expressed. After the birth of the placenta, the left cornu of the uterus

became of an equal size with the right: the division between the two cornua was very distinct, and both were well contracted. (Figure 3.)

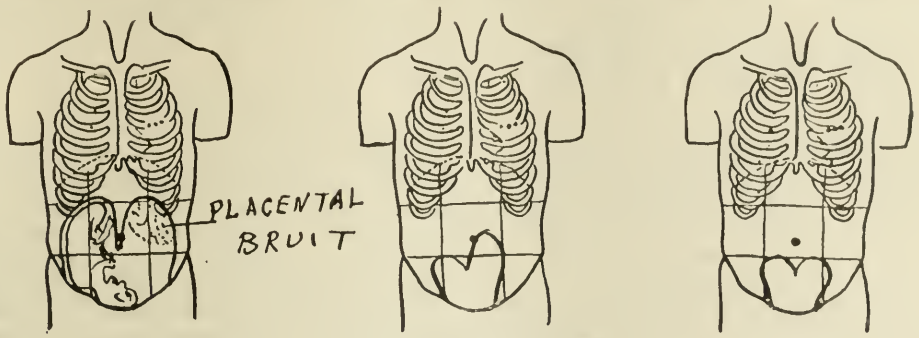



FIG. 1. — Before birth of child. FIG. 2. — After child (third stage). FIG. 3. — After placenta.

There was no post-partum bleeding. The amniotic sac was partially divided into two parts, obviously by the sulcus between the two cornua.

The labor was carefully observed and recorded by Dr. Francis P. Denny, of Brookline, then house physician, and to him I am indebted for the notes of the case. The puerperium was under my own observation; and the bicornate condition was easily appreciable to the touch. On the fourteenth day the uterus was explored with a sound: the sound would pass only a short distance in the median line, but deviated towards one side or the other. The depth of the right cornu was four inches; that of the left, four inches and a half.

## Medical Progress.

### REPORT ON PEDIATRICS.

BY THOMAS MORGAN ROTCH, M.D., AND JOHN LOVETT MORSE, M.D.

#### THE PATHOLOGICAL ANATOMY OF SHIGA BACILLUS INFECTION OF THE INTESTINES IN INFANTS.

HOWLAND [1] reports the results of autopsies in the New York Foundling Hospital, the Babies' Hospital and the Nursery and Child's Hospital. The Shiga bacillus was proved to be present in the great majority of cases by examination of the stools, but in 7 cases it was obtained post-mortem by scraping the mucous membrane of the colon, and in 3 cases was obtained both ante-mortem and post-mortem. All corresponded to the type known as the "acid," "Harris" or "Flexner-Manila" bacillus. The first 17 cases were winter cases and the last 15, summer cases. There seemed to be no difference in the histological findings between the two. Four cases are reported in full detail and discussed. The conclusion is that the Shiga bacillus infection has a most diverse pathological anatomy, and a large percentage of the fatal cases show no evidence of profound structural lesion. The question arises as to how much of the process is to be regarded as due to the Shiga bacillus. The evidence, the author thinks, is in favor of the belief that the primary necrotic lesion is the result of the action of the dysentery bacillus, the subsequent ulceration being brought about probably by the interaction of various micro-organisms and the ordinary processes of demarcating inflammation. The lesions in the intestines must be considered as of two kinds: (1) Those due to the dysentery bacillus, and (2) those from toxic products of this and perhaps other organisms. He says that in summing up the evidence we shall have to say that there are comprised under the lesions associated with the Shiga bacillus all grades and types of diarrheal disease as distinguished by clinical symptoms and pathologic findings, and that it can be affirmed that no particular type is distinguished from the others by a special etiology.

[1] Medical News, March 5, 1904. Abstract in The Journal of the American Medical Association, March 19, 1904. Vol. XLII, p. 794.

#### A CLINICAL STUDY OF SIXTY-TWO CASES OF INTESTINAL INFECTION BY THE BACILLUS DYSENTERIÆ (SHIGA) IN INFANTS.

The authors [2] studied 64 successive cases of diarrhea at the Vanderbilt Clinic during the summer of 1903. No selection of cases was attempted. Sixty-two showed infection with the Shiga bacillus. They were unable to determine whether the patients had previously suffered from diarrhea and were for this reason more susceptible to infection with the bacillus dysenteriæ. No other predisposing cause in the way of disease could be discovered. Fourteen were entirely and two partly breast-fed. The others were fed in a great variety of ways. Thirty-one were well nourished, two fairly nourished, 11 poorly nourished and 15 in miserable condition at the beginning of the attack. The most important factor in determining the character and severity of the disease seemed to be the previous condition of the child, — those who were in good condition being much more likely to have a mild or only moderately severe form of the disease. Sixteen cases were very mild, 31 were moderately severe and 14 severe. Thirty-four of the cases did not show a temperature of over 100.5° F. The temperature of the severe cases was usually considerably elevated, but many of them and some of the most severe ran an almost afebrile course. Vomiting occurred in 19 cases, usually at the beginning of the attack. The number of

[2] La Fétra and Howland Archives of Pediatrics, 1904, Vol. 21, p. 161.

movements in twenty-four hours was from 2 to 5 in 5 cases, 5 to 10 in 35 cases, over 10 in 20 cases. In two the movements did not contain mucus. Mucus was present in all the other cases, varying from a minute amount to practically the whole movement. Blood was present in 17 cases. The quantity of blood varied from a few streaks to enough to color all the mucus. No clots of blood were ever observed.

All types of diarrheal disease as characterized by their clinical symptoms were thus found among the cases. Some were examples of severe and some of mild ileocolitis; others could only be classed as the mildest forms of intestinal indigestion. The course of the disease, while usually short, was prolonged in 8 cases. All the fatal cases were under one year; all were artificially fed and were in very poor condition when first observed; they also had only the poorest care and attention. All the breast-fed cases ran a very mild course, the average being three to four days after coming under observation. Save for the bacteriological findings there was nothing to indicate that their sickness had any relation to true dysentery. Blood was observed in but one case. The acid type ("Harris") of organism was found in 42 cases, the true Shiga in 15, both in 5. The type of infection seemed to make no difference in the severity of the disease.

Serum was injected in 10 cases; 4 were infections with the acid type of organism and were given "Harris" serum; 6 were infections with the true Shiga bacillus and were given "Shiga" serum. This treatment was used only in the severe cases. The number of cases treated was too small to warrant any conclusions. While of apparent benefit in some, in others no effect whatever was noticed.

### STARCH DIGESTION IN INFANCY.

Shaw [3] studied 35 infants, giving them barley water in place of their regular food. One hundred such barley meals were removed in from fifteen minutes to two hours after feeding. Free starch was present in 2%, erythrodextrin in 41% and achroodextrin or maltose in 57% of the tests. In the two instances in which free starch was detected the babies were sick. Starch conversion was found in these same infants at other times.

A ½% starch solution was added to the stomach contents removed from 8 infants under two months old, one-half to two hours after a regular or a barley water feeding. The youngest infant was six days old and a breast-milk feeding was removed a half-hour after nursing. Three parts of the stomach contents and one part of the starch solution were mixed and placed in a thermostat for an hour. On the addition of Lugol's solution, the indigo-blue of starch did not appear in a single instance.

Saliva was obtained from 7 babies ranging in age from sixteen days to two months. Partial conversion of starch took place in two minutes in all cases.

He concludes that the saliva of very young infants contains a diastatic enzyme capable of converting small amounts of starch into maltose; that the diastatic action of the saliva may continue in the stomach as long as two hours after feeding; that, on physiological grounds, there is no reason why young infants cannot digest small amounts of starch.

[3] Albany Medical Annals, January, 1904.

### THE HEREDITY OF RACHITIS.

Siegert [4] investigated a considerable number of families, mostly of the poorer classes, with regard to the presence of rachitis both in the parents and in the children. His work seems to have been as carefully done as was possible under the circumstances. He regards late dentition and delay in walking as evidence of rachitis, but rarely gives any data as to the presence or absence of skeletal changes.

He concludes that heredity is one of the most important etiological factors of rachitis. It is transmitted principally by the mother. Hereditary rachitis is milder and occurs later in breast-fed than in artificially-fed infants, occurring in them very seldom before the third month. The severest forms of rachitis may, however, occur in the breast-fed infants of rachitic parents, while the natural nourishment is, in those in which there is no inherited predisposition, the best preventive for the disease. Prolonged nursing and the age of the mother are not in themselves direct causes of rachitis. Infection may be excluded as an etiological factor. Social position and diseases of the digestive and respiratory tracts are, next to heredity, the chief causes of rachitis. The time of dentition and standing is dependent on constitutional hereditary influences.

### LOCATION AND PHYSIOLOGICAL DISPLACEMENT OF THE CARDIAC APEX IN CHILDREN FROM FIVE TO FIFTEEN YEARS OF AGE.

Terrien and Lamy [5] first studied the position of the impulse when the child lay on its back, and noted the changes in position when the child lay on the right and left sides.

They found that in the dorsal decubitus at five years the impulse was usually in the fourth space. With the increase in age it descended little by little, following an almost vertical line which passed almost always outside the nipple. At ten years it was at the upper border of the fifth rib and was nearer the mammillary line. At fourteen years it was in the fifth space inside the mammillary line. The impulse at first descended almost vertically, then moved mostly transversely.

In the left lateral decubitus the apex always moves very markedly, even at five years. It moves in an oblique line backward, downward and outward, the amount of movement varying with the age of the child. At five years the deviation is to the left and very little downward, being from 18 mm. to 20 mm. transversely, and only 5 mm. downward. At seven years it moves

[4] Jahrb. f. Kinderheilkunde, 1903, vol. 58, p. 929.
[5] Revue Mensuelle des Maladies de l'Enfance, 1903, vol. 21, p. 548.

on the average 22 mm. transversely and 14 mm. downward. From twelve to fifteen years the deviation is almost the same in both directions, 30 mm. horizontally and from 20 mm. to 25 mm. vertically.

In the right lateral decubitus the displacement of the apex is more complex, being much less marked and also subject to numerous individual variations. From five to seven years it descends almost vertically, following a line which is inclined very slightly inward. The total displacement is about 15 mm. After seven years it descends very little, but moves almost horizontally inward, the displacement being very much less than in the left lateral decubitus.

On account of the relative infrequency of pericardial adhesions in childhood and the difficulty in their diagnosis, these facts should be of use, as a lack of mobility of the apex is one of the most important signs in the diagnosis of this condition.

CONTRIBUTION TO THE STUDY OF ACID INTOXICATION IN THE CHRONIC DISEASES OF NUTRITION IN THE INFANT.

Keller and Bergh, some years ago, developed the theory that athrepsia was due to an acid intoxication resulting from the absorption of abnormal acids formed in the intestine. The organism responded to this intoxication by manufacturing ammonia to neutralize the acids. They found large quantities of ammonia in the urine in these cases. More recently Keller has asked if the acidosis might not have another origin, namely, saponification of fats in the intestine. During saponification fats take up the available alkalis, calcium and magnesia. These not being absorbed can, therefore, no longer neutralize the acids which pass into the blood. Keller's experiments in this direction did not give definite results.

Steinitz [6] repeated his experiments on both well and dyspeptic infants to whom he gave skimmed milk or milk with cream added. If Keller's theory is correct the feces should contain but little alkali and the urine but little ammonia and much alkali when skimmed milk is given, and, on the other hand, the feces should contain a large quantity of alkali and the urine little alkali but much ammonia when rich milk is given. His experiments prove the truth of Keller's theory. He sums up his work as follows: Feeding milk rich in fat causes the appearance of large amounts of ammonia in the urine. This is due to the utilization of the alkalis in the intestine. The alkalis which, when skimmed milk is used, pass into the blood and there neutralize the acids, the intermediary products of metabolism, are fixed in the intestine and eliminated with the feces when milk rich in fat is given. In order to avoid too great a loss of alkalis in these conditions the organism is obliged to manufacture ammonia to neutralize the acids. The infant's organism, however, possesses to only a limited degree the power to manufacture ammonia. A rich milk, therefore, robs the infantile organism of alkalis. This impoverishment occurs in the sick infant as well as in the well infant. Since the alkalis play an important part in the normal development of the organism this impoverishment must be harmful. Milk rich in fat acts in still another way. Like all fats it causes an increase in the phosphoric acid eliminated in the urine, which acid, not finding available alkalis, can only be neutralized by ammonia which the organism is obliged to furnish in large quantities.

[6] Jahrb. f. Kinderheilkunde, 1903, vol. 57, p. 689. Abstract in Revue Mensuelle des Maladies de l'Enfance, 1904, vol. 22, p. 44.

## Reports of Societies.

### ASSOCIATION OF AMERICAN PHYSICIANS.

The nineteenth annual meeting was held at Washington, May 10, 1904.

The meeting was called to order by the President, Dr. Wm. T. Councilman, of Boston.

(Concluded from No. 22, p. 597.)

INFECTIOUS NEURITIS: WITH REPORT OF A CASE. DR. J. J. PUTNAM.

Dr. Putnam reported, in behalf of Dr. Waterman and himself, a series of cases illustrating different sorts of reaction of the nervous system to infectious processes. A possible bond between certain of these cases lay in the fact that they had occurred during the same period, namely, in the winter of 1902–03. The most important case was that of a man of thirty who suffered from an unusual, gradually progressive form of "myelitis" which spread slowly upward through the whole length of the spinal cord, the entire illness covering a period of about two months. All the functions of the cord were involved, and the paralysis was associated with constant fever, leucocytosis, gradually increasing pyelitis, and, eventually, with bloody dejecta. The post-mortem examination showed a disintegration of the nerve elements accompanied with but few signs of active vascular change or of exudation processes, and no evidence of antecedent anemia as due to arterio-sclerosis or thrombosis.

The other cases were of the following sort; meningo-encephalitis, possibly due in part to alcoholic excess, progressive paralysis, eventually involving certain cranial nerves, but ending in complete or incomplete recovery, infectious neuritis followed by encephalitis, cases of the type of poliomyelitis, but coming on slowly, and, myelitis during typhoid. He called attention to the complex results of infections of the nervous system and the impossibility at present of making sharp divisions.

THE CLINICAL FEATURES, PROGNOSIS AND TREATMENT OF CEREBRO-SPINAL MENINGITIS IN INFANTS AND CHILDREN. DR. HENRY KOPLIK.

The cases studied by Dr. Koplik numbered 89, of which 39 were absolutely confirmed by lumbar puncture; 35 were tuberculous, 1 staphylococcus, 1 streptococcus and 2 pseudo-influenza cases. Sixty per cent of the cases were below two years of age. The mode of onset was, as a rule, sudden, except in the tuberculous cases. Rigidity of the neck was present in all cases at some time. Babinski's reflex was present in 77%, while König's reflex was of little value in the cases under two years of age. In the tuberculous cases, Macewen's sign was present in the majority of instances.

Optic neuritis was more common in the tuberculous type than in any other class of cases.

Dr. Koplik considered the disease to be self-limited and scarcely influenced by any mode of treatment. He did not consider lumbar puncture as curative nor had it, in his cases, relieved the symptoms of pressure.

A CASE OF SPASMODIC STRICTURE OF THE ESOPHAGUS WITH SACCULATION, TREATED BY DILATATION, AND LATER, BY GASTROTOMY. DRS. JAMES TYSON, EDWARD MARTIN AND JOSEPH EVANS.

DR. TYSON read this paper, which opened with a review of the literature upon the subject of diverticula and dilatations of the esophagus, their etiology, treatment and diagnosis. Then followed the detailed clinical history of two extremely interesting cases of spasm of the cardiac orifice with resulting dilatation of the esophagus. The first patient was a man aged thirty-three years, who had been suffering from dysphagia from the time he was twelve years old, his first attack coming on suddenly while he was at his supper, and compelling the immediate regurgitation of all that he had eaten. As he described his symptoms, "while in the act of swallowing solid food he was suddenly seized with a sensation of the material sticking in the esophagus at a point posterior to the middle of the sternum." For a moment he felt as if his heart had stopped beating and then, without any nausea, he threw off the food and was relieved. He made several successive attempts to swallow more food but without success. After four or five days he discovered that by drinking very hurriedly a large amount of liquid immediately after the taking of solid food he was able to overcome the stoppage in the esophagus and could feel the material enter the stomach; in addition to the drinking of the liquid it was necessary for him, however, to exert considerable effort. For fifteen years he continued this method of feeding, but at times the dysphagia would increase and he could not force the food into the stomach. At such times, and whenever any remnants were left in the esophagus, the food was immediately regurgitated or would be a few hours later. If any food remained at the time he was asleep it would run out of his mouth and be discovered by him the next morning. If he assumed the horizontal position immediately after eating an irritating cough would start in and he could secure relief only by regurgitating the food. Dr. Tyson attempted dilatation with all sorts of tubes but without much success. Attempts to measure the capacity of the dilated esophagus showed that he could drink thirty-four ounces of fluid without any unpleasant sensation and, apparently without any of it reaching his stomach.

The second case was a woman, aged thirty-three, who had been suffering in much the same way for a period of eight months. A special instrument was devised by Dr. Martin for dilatation in this case, the principle of the instrument being the same as that of the Kollmann urethral dilator. It was felt that its continued use would have given satisfactory results through the production of a partial paralysis of the muscular ring at the cardiac opening, but in order to put the esophagus at rest, and to force the patient's nourishment it became necessary to do a gastrostomy.

IDIOPATHIC DILATATION OF THE ESOPHAGUS: CARDIOSPASM. DR. B. W. SIPPY.

DR. SIPPY reported a case in all essentials like that described above by Dr. Tyson. He exhibited the specimens from this case, the patient having died shortly after a gastro-enterostomy performed for the relief of what was at the time believed to be a pyloric obstruction. At autopsy it was found that there was no anatomical narrowing of the cardia, but an hypertrophy of the circular fibres of the esophagus wall so that it was fully one quarter of an inch in thickness.

DILATATION OF THE ESOPHAGUS AND STOMACH. DR. FRANCIS P. KINNICUTT.

Another case of the same general character was described by DR. KINNICUTT and the pathological specimens shown. The esophagus from this patient had a capacity of 1,800 cm. of fluid and was, so far as could be determined, the most enormously dilated stomach and esophagus recorded.

*Discussion.* — DR. JANEWAY reported a case like Dr. Tyson's, except that it was complicated by hemoptysis. This patient could take 800 cm. of fluid into the esophagus without difficulty, and a photograph was exhibited showing the condition with this amount of dilatation. Dr. Janeway spoke of two mistakes often made in these cases, *i. e.*, considering them as hysterical, and as tuberculosis.

DR. MELTZER, having been called upon to say something of this condition, described his discovery of and first description of it in 1888. At that time he saw a case that had been suffering from it for nineteen years and presenting the symptoms given above. Previous to that time they had all been described as idiopathic or hysterical dilatations. Dr. Meltzer was the first to determine the true condition and ascribe to it the proper cause and mode of action. His patient was operated upon by a gynecologist five years later for a supposed malignant growth, and when, later, an autopsy was done it was found that the anatomical condition was precisely what he had described from the theoretical standpoint.

SECOND DAY, WEDNESDAY, MAY 11, 1904.

At the opening of the morning session the following-named gentlemen were elected to membership: Drs. P. K. Brown, San Francisco; Joseph Collins, New York; David L. Edsall, Philadelphia; Frederick G. Finley, Montreal; H. C. Gordinier, Troy; Richard M. Pearce, Albany; Mark W. Richardson, Boston; and Richard P. Strong, Manila, P. I.

Honorary Members: Drs. Beverly Robinson, Starling Loving and Henry P. Walcott.

The following officers were elected for the ensuing year: President, Dr. Edward L. Trudeau; vice-president, Dr. Frank Billings; secretary, Dr. Henry Hun; treasurer, Dr. J. P. Crozer Griffith; recorder, Dr. S. Solis Cohen; councillor, Dr. F. Forchheimer; representative in the Executive Committee of the Congress of American Physicians and Surgeons, Dr. William Osler; alternate, Dr. F. H. Williams.

THE RELATION OF CELLS WITH EOSINOPHILE GRANULATION TO BACTERIAL INFECTION. DR. EUGENE L. OPIE.

DR. OPIE presents a most elaborate study of the action of eosinophile cells when micro-organisms are introduced into the body. He reviews the literature of the subject at length, quotes from his own published work, and then relates in detail the behavior of these leucocytes during the course of fatal and of non-fatal bacterial infection. He worked with a variety of organisms and offers the following conclusions:

Certain bacteria (*Bac. tuberculosis, Bac. choleræ suis*) producing somewhat chronic, fatal infection in guinea pigs cause the eosinophiles to disappear from the circulating blood. After death a few can be found in those tissues in which they are usually found in abundance. During more active and acute infections produced by inoculating bacteria into the peritoneal

cavity, eosinophile leucocytes disappear almost completely from the peripheral circulation within a few hours. After the inoculation of an organism producing an infection from which the animal is capable of recovering they disappear from the peripheral circulation, so that their proportion may fall from 5 or 10% to less than 1%. The number then gradually increases until in four or five days it exceeds the normal proportion, and then slowly falls back to normal. When the number of eosinophiles is at the lowest point in the peripheral circulation they are found in great numbers in the vessels of the inflamed mesentery and omentum near the site of inoculation. Unlike the polynuclear leucocytes they rarely if ever act as phagocytes. In the region of the bacterial poison they undergo degenerative changes of which nuclear fragmentation is the most characteristic. Under the influence of severe bacterial infection eosinophile myelocytes, together with other elements, usually regarded as characteristic of the bone marrow, accumulate in the spleen and may be found in the circulating blood. The occurrence of this phenomena within two to four hours demonstrates that the elements are derived from the bone marrow and are not formed in the spleen. Bacteria exert a chemotactic influence upon cells with eosinophile granulation, attracting them from the circulating blood to the site of inoculation and from the bone marrow into the blood, Eosinophile leucocytes, like the finely granular polynuclears, accumulate in the neighborhood of bacteria injected into the body, and through they rarely act as phagocytes, have a part in the series of changes which follow bacterial invasion.

A NEW CASE OF CHLOROMA WITH LEUKEMIA, WITH A STUDY OF THE CASES REPORTED SINCE 1893. DRS. GEORGE DOCK AND A. S. WARTHIN.

Dr. Dock presented these conclusions: (1) Chloroma is a tumor-like hyperplasia of the parent-cells of the leucocytes, primary in the red marrow, the periosteum being involved only secondarily. The possibility of a primary chloroma in any part of the body in which white cells are formed must be considered. (2) As a result of this leucoblastic hyperplasia atypical leucocytes may appear in the circulating blood in varying number. Chloroma is therefore to be classed with the leukemias. (3) The white cells resulting from the atypical proliferation may in different cases attain different stages of differentiation. In some cases they may be of the large lymphocyte type, in others of the type of neutrophile or eosinophile myelocytes. (4) It is evident, therefore, as in the case of other leukemias, that the blood picture in chloroma may be very varied, and if this be used for a basis of classification it is possible to designate different varieties of chloroma. (5) The essential difference between chloroma and other forms of leukemia is the more marked neoplastic character of the former and the formation of the green infiltrations and metastases. (6) Chloroma is probably to be regarded as a more malignant form of leukemia. This malignancy of chloroma depends chiefly upon the replacement of the red marrow and erythroblastic elements by the proliferating white cells and the consequent diminished red cell formation. (7) The cause of the green color remains unknown.

TYPES OF SPLENIC ANEMIA OR SPLENOMEGALY. DR. ALFRED STENGEL.

Dr. Stengel reported a series of cases that had been carefully studied clinically and microscopically. The first case was that of a child three years old, that had at the age of two shown an increase in the size of the abdomen and marked pallor. Physical examination showed an enlarged spleen, and blood examination gave 30% of hemoglobin, 2,900,000 red cells and 7,600 white cells. A general dropsical condition appeared, and at the same time a leucocytosis of about 20,000. Autopsy revealed a general splenic enlargement with infarcts in the spleen and kidneys, a bronchopneumonia, vegetative endocarditis of the mitral valve and miliary tuberculosis of the lungs, liver and spleen. The lymphatic glands showed a marked hyperplasia and necrosis of the end endothelial cells.

The second case was an adult showing splenic anemia with cirrhosis of the liver. There were a generally stunted growth, club fingers and pigment changes in the skin. Autopsy examination disclosed hyperplastic changes in the spleen, cirrhosis of the liver, and fibroid changes in the lungs and other organs. The third case was a young woman twenty-five years of age whose condition was diagnosed as primitive splenomegaly. The spleen was removed by operation and the patient recovered. Microscopic sections of the spleen showed very marked hyperplasia with extensive fibroid growth.

*Discussion.* — Dr. Osler thought that these cases illustrate the extreme complexity of the subject and said that while the third case belonged to a very definite group it was doubtful if they could often be recognized clinically. He had seen such a case operated upon by Miculicz some years ago and the patient was afterwards exhibited before the German Surgical Congress. Since Dr. Osler's last report on this subject he has seen nine cases of great enlargement of the spleen associated with anemia. One was a case of so-called primitive splenomegaly; 4 were cases of chronic splenic enlargement with pigmentation of the skin; 2 belonged to that group which resembles Hanneaux disease, and 2 were cases of splenic anemia subsequently becoming pernicious anemia.

Dr. Sippy related one case which he had seen since the report he published in 1899. The patient was a woman with a movable spleen that came down below the umbilicus and readily moved about in the abdominal cavity. She presented the picture of a gradually developing anemia. The spleen was removed by operation and she made a complete and satisfactory recovery. Dr. Sippy raised the question whether the splenic anemia in these cases might be due to poisonous substances secreted by the enlarged spleen or whether it be due to malnutrition.

Dr. Cabot replied to this point, that there is no evidence, clinical or experimental, that splenic anemia is ever due to malnutrition.

THE AGGLUTINATION AND FILTRATION OF TRYPANOSOMES. DR. F. G. NOVY.

The main features presented in this work by Dr. Novy and his associates Drs. McNeal and Hare may be briefly summed up as follows: (1) The trypanosome present in the Philippine surra can be cultivated artificially. (2) Attenuated cultures of this organism can be obtained as in the case of *Trypanosome brucei*. (3) This trypanosome is differentiated by its cultural characteristics from *Trypanosome brucei* and *Trypanosome lewisi*. (4) The Philippine surra is therefore a distinct disease, different from nagana, and this observation confirms the work of Laveran and Mesnil on the non-identity of nagana and the surra of Mauretius. (5) The morphological differences between the Mauretian and Philippine trypanosomes suggest the probability that these organisms are distinct species, and hence that the term "surra" covers a group of closely allied diseases.

ZONAL NECROSIS OF THE LIVER. DR. E. L. OPIE.

DR. OPIE reviewed the vascular and other anatomical features peculiar to the liver structure to show the varying facility with which necrosis occurs in different zones of that organ. He referred at length to the experimental work which has heretofore been done on this subject, and then considered in sections the conditions associated with zonal necrosis of the liver in various diseases, dividing the subject into central necrosis, peripheral necrosis and mid-zonal necrosis, and followed that with a special consideration of the relation of mid-zonal necrosis to acute yellow atrophy of the liver. He related the clinical and anatomical histories of cases in each class. The paper is an extremely interesting one, not susceptible of satisfactory abstraction, and can be profitably read in full by those who are interested in the subject.

EXPERIMENTAL ARTHRITIS AND ENDOCARDITIS PRODUCED BY A STREPTOCOCCUS ISOLATED FROM THE BLOOD OF A CASE OF RHEUMATISM, ENDOCARDITIS AND CHOREA. DRS. M. J. LEWIS AND W. P. LONGCOPE.

In a fatal case of rheumatism, endocarditis and chorea a streptococcus was isolated from the blood before death. This organism did not differ materially from the common varieties of Streptococcus pyogenes in cultural properties, but produced very characteristic lesions in rabbits when injected intravenously. Such inoculations were always followed after a few days' incubation period by a multiple arthritis which usually started in the ankles. In one rabbit extensive vegetations were found on the mitral valve while typical infarctions were seen in the spleen and kidneys. This organism was believed to be the same as that described by Wassermann, Meyer, Poynton and Paine and Ainley Walker, and considered by them to be the specific cause of rheumatic fever.

## Recent Literature.

*A Manual of General or Experimental Pathology for Students and Practitioners.* By WALTER SYDNEY LAZARUS-BARLOW, B.A., B.C., M.D., F.R.C.P., Director of the Cancer Research Laboratories of the Middlesex Hospital. Second edition. Philadelphia: P. Blakiston's Son & Co. 1904.

The first edition of this work appeared five years ago and was favorably reviewed in this journal at that time. The present edition has been greatly enriched by the addition of new matter, and the plan of the work has been slightly altered so that it forms a companion volume to the author's "Pathological Anatomy and Histology," recently issued.

In describing the advances made in pathological knowledge the names of the chief investigators are mentioned. This commendable feature adds to the value of the book and quickens the student's interest in the masters of medical science. The fact that the number of authors cited in the text has been increased by nearly two hundred shows that the work of revision has been thorough.

The general scope of the work is not quite the same as that of the well known textbooks of Thoma, Ziegler and Ribbert. It deals with pathological physiology and occupies an intermediate place between these works on general pathology and Krehl's classical "*Pathologische Physiologie.*"

There is a good detailed account of the pathology of the circulation, but unfortunately the results of the important studies made by the young "Leipsic School" are not incorporated.

The author agrees with other recent writers that the old division of anemias into primary and secondary should be abandoned. He does not, however, mention the classification of Ehrlich who divides anemias into the simple and the pernicious, according as to whether blood formation occurs in a normal or abnormal manner. Lazarus-Barlow groups the anemias into two great classes: anemias in which leucocytic changes are absent and those in which leucocytic changes are present. The first group is subdivided into (*a*) anemias in which the principal change is a diminution in the number of red blood corpuscles, and (*b*) anemias in which the principal change is a diminution in the hemoglobin content of the individual red blood corpuscles. This classification seems more artificial and less satisfactory than that of Ehrlich.

In the short discussion of the present views on coagulation of the blood the importance of tissue fluid is recognized and the experiments of Delezenne and other recent workers are described. The chapter on edema is shortened in this edition, but the author's own researches on this subject make his treatment of this topic of particular interest. The various theories of lymph and edema formation are clearly set forth.

Inflammations, the degenerations and new growths are considered in this volume as well as in the textbook of pathological anatomy. This arrangement is confusing and leads to some repetition. We think it is a better plan to consider together in one article the anatomical and physiological aspects of these topics.

In the excellent chapter on infection and immunity there is an admirable presentation of Ehrlich's side-chain theory.

The section on fever is worthy of special commendation. It contains a summary of recent literature which is one of the best in English.

The discussion of fatty metamorphosis needs further revision. The assertion that fatty degeneration of the liver and other parenchymatous organs occurs as the result of phosphorus poisoning can no longer be accepted as true. Rosenfeld has clearly shown that the fatty change is due to fatty infiltration. Furthermore, it has been recently shown that other supposed examples of fatty degeneration are in reality fatty infiltrations.

Pathological physiology is a subject of fundamental importance to the physician. This volume deserves a wide circulation as it covers the field better than any other English work and is interesting throughout. The practitioner who is striving against routinism and the student who wishes to found his knowledge of clinical medicine on the solid rock of natural science will be strengthened and stimulated by this book.

*King's Manual of Obstetrics.* By A. F. A. King, M.D., Professor of Obstetrics and Diseases of Women, in the Medical Department of the Columbian University, Washington, D. C., and in the Medical Department of the University of Vermont. Ninth edition, revised and enlarged. In one 12mo volume of 628 pages, with 275 illustrations. Philadelphia and New York: Lea Brothers & Co. 1903.

This book shows its continued popularity by the appearance of a new edition, the ninth. While more than the usual manual in its scope, yet the book has not been changed materially from the former edition. It still retains its elementary character, and no attempt has been made to develop it into a systematic treatise.

The book has been enlarged slightly, new illustrations have replaced old ones, and some of the text has been rewritten in order to make it correspond to modern practice. This it does to an unusual degree for a manual, and although necessarily too much abbreviated to use alone as a textbook, the work is one to be commended, and contains much of value.

*The Principles of "Open-Air" Treatment of Phthisis and of Sanatorium Construction.* By Arthur Ransome, M.D. Smith, Elder & Co.: London. 1903.

The name of the author of this book would in itself ensure respectful attention to the contents of the book. In this case a series of essays has been put together bearing chiefly upon the sanatorium treatment of phthisis, although one chapter is devoted to the "home treatment" of patients. Essay II seems to the reader somewhat desultory and, although containing much that is true, does not on the whole seem quite in place in the midst of matter devoted chiefly to the details of sanatorium treatment. The diagram of a sanatorium is cleverly conceived, and in one particular especially is worthy of consideration, namely, the arrangement of a two-story building by which the balcony of the upper room scarcely overshadows the chamber below, a detail of great importance in any institution of this nature.

The book is worthy of a conspicuous place upon the book-shelves of anyone who is devoting his attention to the study and treatment of tuberculosis according to modern methods.

*Enzyklopädisches Handbuch der Schulhygiene.* A. Pichler's Wittwe & Sohn: Leipzig and Wien. 1904. 1055 pages.

This valuable handbook embraces the whole range of school hygiene. Every topic connected with this important subject being treated, and nearly all civilized nations levied upon for contributions. The work is compiled by Dr. R. Wehmer of Berlin, assisted by thirty or more collaborators representing nearly as many different countries.

The volume is fully illustrated with more than 300 cuts, plans and heliotype illustrations. Physicians, school superintendents, teachers and others who are desirous of being well-informed upon this subject will find it a valuable work of reference.

THE BOSTON

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## ANNUAL MEETING OF THE MASSACHUSETTS MEDICAL SOCIETY.

The one hundred and twenty-third annual meeting of the Massachusetts Medical Society came to an end Wednesday of this week with the usual anniversary dinner. The literary portion of the meeting was arranged this year much as in the several preceding years by reducing the number of original papers to relatively few, and concentrating attention on certain special subjects of great general interest. Experience has shown that through this method the section meetings are better attended.

The Shattuck Lecture, which was this year delivered by Dr. George S. Huntington of New York on the subject, "The Relation of Comparative Anatomy to Medical Education and Practice," was particularly well attended. Dr. Huntington presented a cogent argument on the desirability of the study of comparative forms as a means of the better understanding both of pathological and normal conditions in the human subject. The lecture was admirably illustrated by lantern slides. It will later appear in these columns. The annual discourse by Dr. Harold C. Ernst concerned itself with certain educational problems of the present and future and brought up again the question of two degrees for students of medicine, depending upon the character of work done in their undergraduate course.

The retiring president of the society, Dr. George E. Francis, presided at the annual dinner, which as usual was largely attended. The custom of reducing the number of after-dinner speeches is also to be approved since the hall is a peculiarly difficult one in which to be heard.

Dr. Francis first introduced Bishop Vinton of the Episcopal Diocese of Western Massachusetts, who spoke in a happy vein of the physician, old and new, and of the responsibilities and privileges of the medical profession. He thought it possible that the physican considered somewhat too exclusively the physical side of his patient, and that it might be well if more stress were laid upon the psychical element in his ministrations. This is undoubtedly being realized to a very much greater degree than Bishop Vinton recognizes, although possibly not in precisely the way he indicated. Dr. Horace D. Arnold spoke in place of Dr. George W. Gay, who was unavoidably absent, on the general subject of the Boston Medical Library and the proposed enlargement of its scope into a so-called academy of medicine. He urged upon the physicians of the state their hearty co-operation in a plan through which the library may hold medical meetings which shall not supersede those of existing societies, but will tend to combine the activities of Boston and outlying districts. He expressed the hope that such an organization might be representative, not only of Boston and Massachusetts, but also of New England. The Hon. Carroll D. Wright spoke humorously, and yet with much seriousness, upon the subject of trade unionism, designating the medical profession as the oldest union in the country. He insisted upon both the necessity and desirability of combination and organization, if perfection in any calling is to be attained, and felt that the best in the union idea might be, and in fact was, demonstrated in the profession of medicine. He thanked God that " the baby that rocks in the cradle bears the union label of union made." Finally he spoke feelingly of the fact that the popular idea of trade unionism, as everywhere at the present time manifest, was in great measure erroneous; that the troubles and difficulties caused by unionism are exceptional, and that the vast number of differences and disputes amicably settled through their agency is wholly unknown. The exercises were concluded by the introduction of the new president, Dr. Arthur T. Cabot, who spoke briefly of the honor conferred upon him and begged the co-operation of the fellows of the society.

The meeting in general, like the long list of its predecessors, must be regarded as a decided success, not only in presenting certain medical matters of vital interest to practitioners, but also in encouraging that sense of fellowship for which such an association in great measure exists.

## THE DEVELOPMENT OF THE PRIVATE HOSPITAL.

THE recent opening of the Corey Hill Hospital in Brookline is no doubt a forerunner of the development in this community of this type of private institution. For many years it has been evident, both in this and other large cities, that the public hospitals, constituted as they are, do not meet the requirements of all the sick. This is naturally due to the fact, in the first place, that our public institutions are designed, and rightly so, for the care of the poor who must be the subjects of charity. Private wards appended to such hospitals have no doubt proved themselves of value, but the demand has long since surpassed the supply, and further accommodations are imperatively required. In the second place, the prejuduce against going to a hospital for the treatment of various types of disease has apparently entirely disappeared, so that now people not only are willing to go, but prefer to do so rather than remain in their home surroundings, whatever their circumstances in life may be. Reasons for this are sufficiently obvious.

The Corey Hill Hospital is a private enterprise undertaken by fifteen physicians, chiefly surgeons of Boston, for the purpose of providing further accommodations for their patients. The hospital is not designed for the treatment of any one class in the community, but is rather intended to provide an abundance of fresh air, which, if hitherto obtainable in private hospitals in this city, has only been so in less degree, and the possibility, if necessity requires, of a long stay at the hospital. In fact, the treatment of certain chronic forms of disease was especially considered in the design of the hospital, although this naturally will not be its exclusive province.

The financial management of the institution has been placed in the hands of trustees, and it is neither expected nor desired that the investment will return a large rate of interest. The nursing is to be done wholly by women who have already had experience in other hospitals, and who will serve at this hospital for a period of from three to six months for the purpose of acquiring detailed knowledge of the treatment of the individual patient as seen rather under the conditions of a private house than of an institution. Accommodations have up to the present time been provided for upwards of thirty patients. The situation of the hospital is most salubrious, on the summit of a considerable eminence in the neighborhood of Boston; the equipment is

altogether attractive, and the operating facilities complete in every detail.

It is, of course, generally known that private hospitals have existed in this as in other cities for many years. They have arisen and flourished in direct response to the demand of the public as well as of physicians who see the desirability of hospital treatment for many of their private cases. These hospitals have fulfilled a valuable function under certain disadvantages, often of construction, and we see in this elaborate addition to the private hospitals of Boston simply a further step in the direction which has already been taken by less pretentious enterprises of a similar sort. In general, the movement is one which deserves encouragement. There can be no question that patients with many forms of disease may be better taken care of, and in the end more economically, at such specially constituted hospitals than at their own homes. Not many years ago the only variety of private hospital was that for the mentally disordered. Now there is hardly a type of disease which has not its special place of treatment. We are glad to see in this latest hospital that one of the distinct objects is the treatment of chronic forms of disease which have rarely hitherto found an adequate resting place.

## EXTINCTION OF RABIES IN GREAT BRITAIN.

The practicability of stamping out an infectious disease in an insular community by preventive measures has been demonstrated by the Board of Agriculture of Great Britain, as shown in its recent report upon the diseases of animals.[1] Prior to 1897, power to make regulations imposing the muzzling of dogs was vested in the hands of the local authorities, and it was not until that year that the Board decided to take active measures for the suppression of rabies.

"Six years have now elapsed," says the report, "since a determined effort was made by the Board to extinguish this disease, and strange to say, some of the most ardent opponents to the measures adopted have been the owners of dogs. As the eradication of rabies was distinctly in the interest and for the benefit of all the dog owners in the country, one would have thought that any measure which would have had the effect of saving their animals from such a direful and fatal malady would have received the entire sympathy of that particular section of the community. But even at the risk of offending the minority of dog owners, it was worth while to make a bold attempt to exterminate a disease which, when communicated to the human being, produces what is generally admitted to be one of the most hideous and incurable diseases to which mankind is liable, — and happily the attempt has been attended with remarkable success."

An interesting table is presented, showing the number of deaths from hydrophobia in Great Britain since 1848. Deaths from this cause were registered every year until 1898. In 1874 there were 61; in 1877, 79; and in 1885, 60. But in the past five years there have been only two deaths reported from this cause, one of which was that of a military officer who was bitten by a dog when out of the country.

Among dogs, there were 672 cases of rabies reported in 1895, 438 in 1896, 151 in 1897; but in 1901 there was only one. "This diminution of hydrophobia," says the Board, "runs concurrently with the eradication of rabies in the dog, and has followed upon and is due to the measures adopted by the Board for stamping out rabies in the dog."

[1] Proceedings under the Diseases of Animals Acts, for the year 1903, London, 1904.

## NEW BUILDINGS AT THE BOSTON CITY HOSPITAL.

We have already commented briefly on the fact of the opening of the new out-patient building and surgical wards at the Boston City Hospital, but lack of space has hitherto prevented a fuller statement of the significance of this new addition to the hospital. For many years there has been a growing necessity at this institution for a more adequate out-patient department, and the work of the physicians has been done under distinct disadvantages owing to the crowding and general lack of space. The new out-patient building will do much to obviate this condition of affairs.

The building is three stories in height, with two wings at right angles to each other, with the general entrance at the internal angle. The whole lower floor is given up to the male surgical department, the second floor to the surgery of women and children, and the third floor to special departments for the eye, ear and throat. Although the various rooms are not of great size, they certainly should be altogether adequate for meeting the contingency of the constantly growing clientele of this hospital. The general furnishing, wood work and appearance of the

various rooms is in excellent taste from the fact that the equipment fits the use to which it is to be put. Ornateness and elaborateness are neither attractive nor desirable in such a department of a hospital. Both of these defects have been admirably avoided in this building. The new surgical wards at the extreme western end of the hospital grounds occupy a building of three stories with fourteen ward rooms on each floor each accommodating two patients. A room of particular interest to visitors is one on the first floor in which has been collected pictures of surgeons and trustees connected with the institution since its dedication forty years ago. It is proposed finally to so alter the medical out-patient department that it will more fully meet modern requirements. With this further addition to the hospital buildings the out-patient department should be adequate for many years to come, although the phenomenal growth of this institution makes prophecy dangerous.

## MEDICAL NOTES.

INTERNATIONAL TUBERCULOSIS CONGRESS. — The International Tuberculosis Congress began its session in Copenhagen May 27, under the presidency of Professor Brouardel of Paris. Delegates from many countries were present, the United States being represented by Dr. E. L. Trudeau of Saranac Lake.

BOVINE PLAGUE IN EGYPT. — In addition to bubonic plague it is reported, according to *American Medicine*, that bovine plague is very widespread in Egypt. Severe precautionary measures are being taken, but owing to the nomadic character of the population the results, it is said, are unsatisfactory as far as the cattle disease is concerned. According to reports Egypt is also menaced this year with an invasion of locusts. In certain districts the government has ordered the destruction of the eggs left by the clouds of these insects that have already made their visitation. Under the direction of experts sent out by the ministry of the interior almost the entire population of some sections of Egypt is engaged in destroying the eggs.

AMERICAN CLIMATOLOGICAL ASSOCIATION. — The American Climatological Association met at Philadelphia on June 2, 3, and 4, and Dr. J. C. Wilson of Philadelphia presided. The program included thirty papers. At the business session the following officers were elected for the ensuing year: President, Dr. W. F. R. Phillips, Washington, D. C.; 1st Vice-President, Dr. S. G. Bonney, Denver; 2d Vice-President, Dr. S. D. Risley, Philadelphia; Secretary and Treasurer, Dr. Guy Hinsdale, Hot Springs, Va. Member of the Council Dr. J. C. Wilson, Philadelphia; representative to the Executive Committee of the Congress of American Physicians and Surgeons, Dr. Frederick I. Knight, Boston. The place of meeting for 1905 was not decided.

WALTER REED MEMORIAL ASSOCIATION. — The Walter Reed Memorial Association has been incorporated under the laws of the District of Columbia to provide some special recognition for the scientific work of the late Maj. Walter Reed, U. S. A. The American Medical Association and the Association for the Advancement of Science have appointed committees to co-operate with this association, and it is desired that subscriptions to the fund in process of collection be handed to any member of these committees, or such contributions may be sent to Mr. Charles J. Bell, President of the American Security and Trust Company, Washington, D. C. It is thought that at least $25,000 should be raised, but the exact character of the memorial will not be determined until later. Chief dependence must be placed upon physicians in arousing interest in the general project by pointing out the far-reaching results of Major Reed's yellow fever investigations.

### BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, June 8, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 72, scarlatina 14, typhoid fever 7, measles 125, smallpox 0.

THE JOHN W. PRAY PRIZE. — This prize, offered by the trustees of the New Hampshire State Medical Society for the best essay on a medical subject, was awarded at the recent meeting of the society to Dr. Frederick L. Hills, first assistant physician at the New Hampshire State Hospital, the title of the paper being "The Sanatorium for Incipient Pulmonary Tuberculosis; Its Aims, Methods and Results."

ANTHRAX IN LYNN. — The reappearance of anthrax in Lynn has led to a special meeting of the Board of Health for the purpose of considering means for checking the spread of the disease. Certain specially qualified persons are to be called to the aid of the Board of Health in providing for means to this end. It is thought that some special regulations for em-

ployees in morocco factories may be required, and the matter of isolation of patients also demands consideration. It is said that there have been eighteen cases in Lynn during the past three years, with a number of deaths. The latest victim is expected to recover.

NEW YORK.

Reception for Prof. Hoffa. — During the past week Prof. Albert Hoffa of Berlin has been the recipient of much attention, and among the entertainments given for him was a large reception by Dr. Reginald H. Sayer.

Bequests to Hospitals. — Among other charitable bequests made in the will of the late Charles Emmons are $500 each to the House of Rest for Consumptives at Mount Hope, Borough of the Bronx, and the Eastern District Hospital and Dispensary of Brooklyn.

Tuberculosis in Street-Cleaning Department. — By order of Dr. Woodbury, commissioner of street cleaning, a systematic medical examination has been commenced of the 6,000 sweepers in the employ of his department, for the purpose of ascertaining what percentage of the men are affected with tuberculosis. Out of 87 employees from the Second District, embracing the territory between Broadway and the East River, Chambers and Broome Streets, who were examined on June 3, the physicians in charge reported that they had found 11 cases. In 9 the disease was quiescent, while in two it was in an active stage.

The City Death-Rate. — With the advance of milder weather there has been a gradual diminution in the death-rate of the city, although it still remains very considerably higher than at the same time last year. The mortality during the month of May represented an annual death-rate of 21.70, as against 24.82 in April and 18.51 in May, 1903. The corrected death-rate, excluding non-residents and infants under one week old, was 20.79. The most marked decrease in fatality has been in pneumonia, from which the weekly average of deaths was 173.25, as against 244.75 in April. During the last week in May there were 115 deaths from it, while in the last week of April the deaths numbered 258, or more than twice as many. In broncho-pneumonia the decline was not so great, the weekly average of deaths from this disease being 101.25, as against 132.25 in April. Other diseases showing a decreased mortality were the following: The weekly average of deaths from diphtheria and croup declined from 60.25 to 47.25; from scarlet fever, from 29 to 25; from measles, from 41.5 to 38.75; from influenza, from 22 to 7.5; from acute bronchitis, from 44.5 to 39; from pulmonary tuberculosis, from 202.75 to 178.5; from Bright's disease and nephritis, from 135.5 to 126; and from organic heart diseases, from 114 to 102. Among the few diseases which showed an increased mortality were typhoid fever and cancer. The weekly average of deaths from the first increased from 6.25 to 10, and from the the second, from 48.25 to 53.25.

## Obituary.

### PROFESSOR WILHELM HIS.

Dr. Wilhelm His, professor of anatomy at the University of Leipzig, died May 1, after an illness entailing much suffering. By his death the medical profession loses one of its most brilliant and productive members. He was born at Basle in 1831, and studied medicine successively in Basle, Berne, Berlin, and Würzburg. During his stay in Berlin he came under the instruction of Johannes Müller and Remak from whom he acquired the rudiments of anatomy and embryology which later he developed in such remarkable degree. At Würzburg he came under the observation of Virchow and worked in his laboratory. Later he went to Paris and studied under Claude Bernard and Brown-Séquard.

At the age of twenty-six, through the promotion of Meissner, he became professor of anatomy and physiology at Berne, his birthplace. He remained at the University of Basle until 1872 and then went to the University of Leipzig as professor of anatomy and director of the anatomical laboratory, succeeding Prof. E. H. Weber. During many years of his stay in Leipzig he was very intimate with Professor Braune who became professor of topographical anatomy at the university. As a writer and contributor to scientific literature he was active throughout his professional career, contributing papers to nearly every department of anatomical knowledge and creating for himself the highest possible position as an embryologist; in fact, he may with justice be said to have been the most influential man in the development of modern embryological theory. His researches on the nervous system, and what he regarded as the developmental evidence for the neurone theory are matters of common knowledge. His work on the anatomy of human embryos formed the basis of much of the subsequent study of this subject. The death of Professor His removes another of that most eminent group of German scientists of a former generation, and he may with justice be placed in the same category with Helmholz, Virchow and du Bois Reymond, who have all died within the past decade.

## RECORD OF MORTALITY
FOR THE WEEK ENDING SATURDAY, MAY 28, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Erysipelas. | Typhoid Fever. |
| New York . . | 3,908,644 | 1,517 | 472 | 28.34 | 15.68 | 3.23 | .59 | .92 |
| Chicago . . . | 2,021,086 | 437 | 116 | 22.80 | 12.54 | 1.60 | .45 | .91 |
| Philadelphia | 1,407,968 | 494 | 131 | 26.12 | 14.15 | 1.82 | — | 4.45 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 194 | 48 | 24.74 | 9.79 | — | — | 1.54 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 119 | — | 30.25 | 15.96 | 3.36 | — | 8.40 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 62 | 14 | 32.26 | 9.67 | 1.61 | — | 1.61 |
| Boston . . . | 617,950 | 174 | 41 | 16.09 | 16.09 | — | 1.14 | .57 |
| Worcester . . | 136,925 | 22 | 7 | — | 9.09 | — | — | — |
| Fall River . . | 119,349 | 27 | 11 | 29.62 | 18.51 | — | — | 3.70 |
| Lowell . . . | 104,402 | 31 | 7 | 16.13 | 16.13 | 3.22 | — | — |
| Cambridge . | 100,998 | 21 | 5 | 33.33 | 4.76 | — | — | — |
| Lynn . . . . | 73,875 | 16 | 3 | 12.50 | — | — | — | 6.25 |
| Lawrence . . | 72,348 | 10 | 6 | 10.00 | 30.00 | — | — | — |
| Springfield . | 72,020 | — | — | — | — | — | — | — |
| Somerville . | 70,413 | 13 | 3 | 7.70 | 7.70 | — | — | — |
| New Bedford | 68,863 | 22 | 7 | 13.63 | — | — | — | 4.54 |
| Holyoke . . . | 50,538 | 12 | 3 | 33.33 | 16.67 | — | — | — |
| Brockton . . | 46,601 | 7 | 1 | 42.90 | — | — | — | 14.30 |
| Newton . . . | 39,310 | 9 | 2 | 11.11 | — | — | — | 11.11 |
| Haverhill . . | 39,061 | 9 | 2 | 11.11 | 33.33 | — | — | — |
| Malden . . . | 37,205 | 5 | 1 | 20.00 | 20.00 | — | — | — |
| Salem . . . . | 37,188 | 7 | 2 | — | 28.60 | — | — | — |
| Chelsea . . . | 36,499 | 15 | 1 | 13.33 | — | — | — | — |
| Fitchburg . . | 36,335 | 6 | 1 | — | 16.67 | — | — | — |
| Taunton . . . | 34,577 | — | — | — | — | — | — | — |
| Everett . . . | 30,209 | 8 | 2 | 25.00 | — | — | — | — |
| North Adams | 29,201 | 4 | 1 | 25.00 | — | — | — | 12.50 |
| Quincy . . . | 26,798 | 5 | 3 | — | 40.00 | — | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 0 | — | — | — | — | — | — |
| Brookline . . | 23,576 | 4 | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | — | — | — | — | — | — | — |
| Medford . . | 21,956 | 4 | — | 25.00 | — | — | — | — |
| Chicopee . . | 21,692 | 5 | 1 | 20.00 | — | — | — | — |
| Northampton | 20,314 | 11 | 2 | 18.18 | — | — | — | — |
| Beverly . . . | 15,807 | 5 | — | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 3 | 0 | — | — | — | — | — |
| Adams . . . | 14,745 | 3 | — | 66.67 | — | 33.33 | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | — | — | — | — | — | — | — |
| Newburyport | 14,478 | 9 | 2 | 11.11 | 11.11 | — | — | — |
| Woburn . . . | 14,315 | 3 | — | — | 33.33 | — | — | — |
| Melrose . . . | 13,819 | 3 | — | — | — | — | — | — |
| Westfield . . | 13,809 | 2 | — | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 4 | 0 | 25.00 | 25.00 | — | — | — |
| Revere . . . | 13,609 | 3 | — | — | — | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 5 | 4 | 60.00 | — | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 1 | 0 | — | — | — | — | — |
| Weymouth . | 11,350 | 3 | 1 | 33.33 | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,314; under five years of age, 900; principal infectious diseases (smallpox, measles, cerebro-spinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 850; acute lung diseases 468, consumption 375, scarlet fever 46, whooping cough 7, cerebro-spinal meningitis 85, smallpox 4, erysipelas 13, puerperal fever 20, measles 44, typhoid fever 60, diarrheal diseases 120, diphtheria and croup 77.

From whooping cough, New York 2, Chicago 2, Baltimore 1, Pittsburg 1. From smallpox, Philadelphia 2, Baltimore 1, Pittsburg 1. From cerebro-spinal meningitis, New York 80, Pittsburg 1, Providence 1, Boston 1, Gardner 2. From erysipelas, New York 9, Chicago 2, Boston 2. From typhoid fever, New York 14, Chicago 4, Philadelphia 22, Baltimore 3, Pittsburg 10, Providence 1, Boston 1, Fall River 1, Lynn 1, Brockton 1, Newton 1, North Adams 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending May 14, the death-rate was 16.1. Deaths reported 4,705; acute diseases of the respiratory organs (London) 116, whooping cough 193, diphtheria 58, measles 181, smallpox 6, scarlet fever 30.

The death-rate ranged from 6.0 in Smethwick, to 24.0 in Warrington; London 16.3, West Ham 14.5, Brighton 14.9, Southampton 14.4, Plymouth 13.7, Bristol 14.0, Birmingham 22.0, Leicester 12.1, Nottingham 14.7, Liverpool 17.2, Bolton 17.8, Manchester 21.3, Salford 17.8, Bradford 17.9, Leeds 16.6, Hull 17.5, Cardiff 17.4, Rhondda 17.1, Wigan 17.4, Merthyr Tydfil 10.8, St. Helens 13.0.

## METEOROLOGICAL RECORD.

For the week ending May 28, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. . 22 | 29.96 | 68 | 81 | 56 | 62 | 57 | 60 | S W | S W | 10 | 14 | C. | C. | 0 |
| M . 23 | 29.98 | 67 | 78 | 56 | 61 | 59 | 60 | S W | S W | 13 | 15 | C. | C. | 0 |
| T. . 24 | 29.98 | 72 | 85 | 60 | 73 | 48 | 60 | S W | W | 14 | 8 | C. | F. | .01 |
| W . 25 | 30.12 | 66 | 72 | 60 | 49 | 100 | 74 | E | N W | 7 | 9 | C. | R. | .19 |
| T. . 26 | 29.87 | 77 | 87 | 67 | 71 | 65 | 68 | S W | S W | 6 | 12 | C. | O. | .03 |
| F. . 27 | 29.74 | 70 | 72 | 57 | 77 | 58 | 68 | S W | W | 14 | 12 | O. | C. | .31 |
| S. . 28 | 30.02 | 64 | 75 | 52 | 54 | 43 | 48 | N W | W | 12 | 9 | C. | C. | 0 |
| ☞ | 29.95 | | 79 | 58 | | | 63 | | | | | | | .54 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JUNE 4, 1904.

I. W. KITE, surgeon. Detached from the "Maine" and ordered to the naval hospital, Pensacola, Fla., for treatment.

A. M. FAUNTLEROY, assistant surgeon. Detached from the "Scorpion" and ordered home and to await orders.

R. R. RICHARDSON, assistant surgeon. Detached from the naval hospital, Pensacola, Fla., and ordered home and to await orders.

J. L. TAYLOR, acting assistant surgeon. Detached from duty with naval recruiting party No. 6, May 28, and ordered to duty at the naval hospital, Pensacola, Fla.

F. A. RICHARDSON, acting assistant surgeon. Detached from the naval hospital, Newport, R. I., and ordered to the "Scorpion," June 2.

J. F. MURPHY, assistant surgeon. Detached from the "Isla de Cuba" and ordered home and to wait orders.

W. D. OWENS, assistant surgeon. Ordered to the naval hospital, Newport, R. I.

## BOOKS AND PAMPHLETS RECEIVED.

The Elements of Kellgren's Manual Treatment. By Edgar F. Cyriax, M.D., Edinburgh. Illustrated. New York: William Wood & Co. 1904.

Railway and Other Accidents with Relation to Injury and Disease of the Nervous System. A Book for Court Use. By Allan McLane Hamilton, M.D., F.R.S.E. Illustrated. New York: William Wood & Co. 1904.

Lectures on Clinical Psychiatry. By Dr. Emil Kraepelin. Authorized translation from the German. Revised and edited by Thomas Johnstone, M.D., Edin., M.R.C.P. (Lond.). New York: William Wood & Co. 1904.

Torticollis and Spinal Curvature due to Eyestrain. By George M. Gould, M.D. Reprint.

The History and Etiology of "Migraine." By George M. Gould, M.D. Reprint.

Medical Discoveries by the Non-Medical. By George M. Gould, M.D. Reprint.

The Nonoperative Relief of Eyestrain for the Possible Cure of Epilepsy as tested in sixty-eight cases at the Craig Colony. By William P. Spratling, M.D. Reprint.

Pervigilium, or Long Periods of Physiologic Wakefulness. By George M. Gould, M.D. Reprint.

Studies from the Rockefeller Institute for Medical Research. Reprints. Vol. I. 1904.

Clinical Treatises on the Pathology and Therapy of Disorders of Metabolism and Nutrition. By Prof. Dr. Carl von Noordin. Authorized American Edition translated under the direction of Boardman Reed, M.D. Part V. New York: E. B. Treat & Co. 1904.

The Life-Study of Patients, or the Biographic and Multiple Biographic Method of Discovering Medical Truth. By George M. Gould, M.D. Reprint.

# Addresses.

## SOME ASPECT OF MEDICAL EDUCATION.[1]

BY JOHN H. MUSSER, M.D., PHILADELPHIA, PA.

It is no trifling occasion that draws together from the uttermost parts of the country one fifth of an organization of a profession that is taxed to its utmost in the prosecution of its duties. It is not with sounding trumpets and tinkling cymbals that from the sorrowing bedside,— whether in the hovel of the poor or the palace of the rich,— from the excitement of the operating room, from the stimulus of the hospital ward, or the quiet, but inspiring haunts of the laboratory, this assembly gathers. That it is possible is a handsome tribute to the noble animus in which are embodied a spirit of inquiry, a thirst for knowledge, a longing for inspiration, a desire to uplift and to be uplifted that pervades the profession. The event is one that should be fraught with the dignity, the inspiration, one might almost say solemnity, befitting a symphonal march. For such animus, fellow members, we have just cause for self-congratulation.

It scarcely need be reiterated here that the spirit which pervades such a meeting is the outcome of that evolution which began with the introduction of precision in medicine. Just as soon as the art of medicine had for its foundation the science of medicine, the possibility of harmonious medical organization arose. When "rule of thumb" or intuition gave way to precision; idealism to realism; when speculation was displaced by fact; when, in short, inductive methods were employed and honest inquiry became the guiding star of action, then harmony could sit in council.

With medical, as with all organizations made up of human elements, it would be only human if not pervaded by the essence of science — truth. Hence with the latter wanting, jealousies and ambitions, self and selfishness, would prevail to the end that the true object of organization — a fraternal spirit and conscientious seeking for truth — would be as a flickering flame. A little observation will show that that society, whether county, state or national, that does not have this true reason for its existence, for its guide of action, will be a failure. The reverse is also true that that organization which may be called unsuccessful and unhappy, of snarling men and backbiting colleagues, can be labeled at once as without its true vocation, to the discredit of its members.

The great heights to which our organization is rising rapidly precludes the activities of such as have self for their basis of action, so that each day we see more and more a noble rivalry of its members to do the utmost and the best for the organization; a healthful vying of one another for its welfare. Self and selfishness are looked at askance; partisanship and faction, save for a common end — the welfare of the association — are memories.

But, fellow members of the Association, at this the fifty-fifth session of our Association we have other causes for congratulation and felicitation. We are on the eve of a union of all the members of the profession in one harmonious organization, each individual of which is willing and proud to consider his fellow a gentleman until he is proved not to be, and not, as of yore, a knave until he is proved to be a saint. We are reaping the rewards of that untiring committee which gave to us this organization with which we now labor. We are prospering beyond measure, and gathering a force scarcely to be estimated, in great part as a result of the untiring efforts of the apostle of organization — our McCormack. To say that thirty-four states have adopted the uniform plan of organization, and "that membership in the reorganized states has increased 400%, and enthusiasm," writes our coadjutor, "tenfold more," is enough. We are standing out in our own manliness with the majesty that belongs thereto because of the sentiments expressed when our broadly inspired committee voiced the unanimity of feeling which belonged to the Association, in our principles of ethics. We are letting our light shine through the instrumentality of that genius of medical editors — our Simmons. From five thousand to twenty thousand in less than a decade is a statement of circulation which appals and at the same time arouses a feeling of pride and stimulates to further effort, increased all the more when we reflect that the scientific value of the articles in *The Journal* are surpassed by none of its contemporaries; its tone is emulated by all.

Such causes for congratulation bring to this association greater responsibilities and weightier problems for solution. It is held to be the bounds of this address to indicate responsibilities, some trite and apparently trifling, others most weighty; to point out duties, many so grave and vast, beyond the powers of your official to justly define.

### NECROLOGY.

Before passing to the task, let us pause a moment and with due reverence take cognizance of our colleagues who have, since our last meeting, gone to the great majority. The Silent Reaper has been as rapacious as in the past, and more than fifteen hundred fell in his swath. He has spared neither the humble nor the great. The less conspicuous but just as potent laborers in the vineyard can say with the others: "I have fought a good fight, I have finished my course, I have kept the faith."

Of those who have been honored by this association in the past, we lost two ex-presidents, the hearty, rugged, yet withal gentle and kindly Donald MacLean, surgeon and teacher, and the urbane James Farquhar Hibbard, a revered general practitioner and teacher; two ex-vice-presidents in John Bates Johnson, one of the

[1] President's address at the fifty-fifth annual session of the American Medical Association at Atlantic City, June 7-10, 1904. By courtesy of the Journal of the American Medical Association.

founders of the Association, a great practitioner, an honored teacher, and Isaac Newton Love, genial and magnetic. From the ranks we lost Edmund Andrews, scientist, pioneer in surgery and medical education in the West; George Julius Englemann, obstetrician, scientist, litterateur, teacher, honored at home and abroad by membership in great organizations; James McFadden Gaston, pioneer in the surgical treatment of affections of the gall bladder and gall ducts, an esteemed practitioner; Franklin Staples, Hamilton Atchison West, Orpheus Everts, each obtained prominence and respect by force of character and natural attainments; Emile A. de Schweinitz, scientist and brilliant investigator, laboring not for his own renown but for that of his profession, passing away at the threshold of a most promising career; Frank Savary Pearce, untiring and enthusiastic, who had been expected to counsel with us this week.

### HOUSE OF DELEGATES.

The conduct of business under the new constitution bodes success. The two years of trial have indicated that to the House of Delegates the greatest responsibilities fall. When its members consider the great power the American Medical Association will have for weal or woe in the future and that the great body gives that power almost unstintingly to the delegates, they should justly realize the honor and confidence bestowed on them. With such realization will come honest purpose and deliberate action. All the county and state organizations must appreciate the vast duties to be undertaken, and the breadth of view, deliberation and wisdom essential to their correct performance, and consequently select from their number the best of their possessions. Let us as an organization see to it that honor and homage come to those who labor unceasingly in the House of Delegates.

### NATIONAL LIFE.

It can be readily seen that an organization of the magnitude and with the object and the spirit of our Association must, in justice to itself and duty to its country, take part in its social and political life. In order that we can be in touch with such life it would be well for the Association to devote some time to the discussion of broad general topics. We have provided for discussions at this meeting, the advisability of which may be termed tentative. We feel they can be productive of great good, and if the experience on this occasion is the least encouraging, we would urge their continuance. We had hoped to have government officials take up matters pertaining to the relation of the medical profession to the executive, legislative and administrative departments of the government. The exigencies of politics forbade our obtaining the services of those worthy to address this body. All men of political affairs are too busy at this junction. At other times we may learn with profit from our rulers and law makers. As arranged for this week, so in various parts of the country in which the meetings are held, broad topics of general interest, perhaps with local flavor, could be discussed. From those in the far West we might learn much of climate or how to conquer the plague or the medical aspect of "the yellow peril." The good judgment of the committee or the president can be relied on to select topics suitable to the occasion.

It is needless to refer to the demands that will be made on us by the nation in the future. You will learn through the representatives of the army, the navy and the marine-hospital service what is expected of us. My distinguished predecessors, Reed, Keen and others, have pointed out our possibilities for good in the legislative halls of county, state and nation. We must have care never to be partisan or factional toward the weighty matters we will have to decide. We must realize that the power we have may be our undoing. We must realize that we are entering on dangerous ground and that it would better become us to be bidden rather than to intrude ourselves into such territory. Indeed, one may tremble not a little at the possibilities of our development in the wrong direction. So long, however, as we hold true to the spirit which comes out of devotion to science we need not fear.

### THE SECTIONS.

The work in most of the sections the past few years bears favorable comparison with that of co-ordinated organizations throughout the country. To inflict discussion concerning them on this general meeting is, we realize, somewhat of a hardship. Your indulgence is craved, however, for through your medium alone can the sections be reached, while peradventure the work of these sections is fully as important as that of any branch of our Association work. If you will look into it you will find the rise of the Association came with the development of section work. To enhance the value of such work is, therefore, to uplift the organization. The present methods are worthy of trial for a few years, just as we should not make haste in changing the new constitution. Regarding it, may we suggest thought along these lines?

(1) The continuance of the secretary for a term of years.

(2) The collaboration of sections so that one topic can be exhaustively considered at the meeting of the Association without repetition in other sections. For this purpose the officers of the section should meet for consultation six or eight months before the annual meeting. We feel we did good work by having our distinguished chairman and secretaries come together last October.

(3) The division of the Association into two main sections for work in the mornings, that of (*a*) *medicine*, including pathology, diseases of children, nervous and mental diseases, materia medica, stomatology, cutaneous medicine and sanitary science; (*b*) *surgery*, including obstetrics, gynecology and the more closely related surgical

specialties. The members interested in diseases of the eye or nose or throat could contribute to either section the result of any studies related to the respective section. The afternoons could be occupied by the specialized labor of the twelve sections now in existence.

Perhaps it might be thought better to have one morning, at the direction of the Section on Practice of Medicine, devoted to the discussion of general topics related to medicine, in which the entire Association could take part; another morning, at the direction of its secretary, to surgery; a third to the specialties; a fourth to sanitary science. The object is to secure the views of physician, surgeon and specialist on general topics. To instance as a subject, endarteritis, is to call up at once the possibilities for the internist, the surgeon and the specialist.

(4) The sections should take up and organize special international congresses when the time is ripe for such meetings. Thus an International Congress of Dermatology could be managed by the correlated section of this Association. With the patronage of the American Medical Association any congress that could command such special energies and broad general support could not fail.

(5) The section should name to the president a list of its members from which he could select, when asked, delegates to important national meetings or international congresses.

### SANITARY SCIENCE.

The Section on Hygiene and Sanitary Science should receive greater support from the organization. It is the section which must bring us in closer touch with our national life. Through it and those devoted to it we ought to secure greater respect from the body politic, and hence more wholesome power for the welfare of the community. Through it the profession should learn to take greater interest in the work of sanitary officers throughout the country. The valuable address of Billings on "The Relation of Medical Science to Commerce" and that of Thompson on "The Economic Value of Medical Science" indicate the opportunities and responsibilities of the profession. The time has gone by when sanitary positions should be used for temporary sources of income and obtained by political means. Such offices are growing more and more vital to the public welfare. They have not been attractive because the rewards have not been commensurate with the responsibility and the labor demanded. They should, we will admit, if looked at from the proper view-point, grant large compensation, and the occupant should be guaranteed tenure of office, not subject to party exigencies, but dependent on value received. The fault is partly ours that such is not the case. In but few medical schools is there a serious attempt to educate sanitarians, consequently the physicians who engage in sanitary science in an amateurish way do not give a *quid pro quo*. It does not pay a community to hire them. In one of the large cities of this country it has been impossible for the health authorities to get men who are competent to take up health matters, even though the city was prepared to pay fair salaries. Speculation need not run riot in estimating what would occur in a few years if our universities would give sound practical courses of a broad character, including some engineering, some economics and other features which would round out the man. In preliminary and subsequently in the elective studies the student should not be tempted to go into the special lines of practice. He should have opportunity to go in for sanitary science, and perhaps for government service in the army, the navy, or other departments. The communities would soon find the worth of men thus educated, and the demand, we would venture to predict, would outrun the supply. In proof of the former, we may cite the fine tribute given to Wende of Buffalo, by the citizens, *en masse* and of one accord, for the work of self-sacrifice, of unselfishness and of worth as official of the health department. Our association could as a body and in its constituent parts encourage the medical schools to make such training possible; they could educate the community to demand such services and insist that good compensation is to be allotted for it. The Section on Sanitary Science could take up this as one feature of their work.

But for a more grievous reason, the profession's attitude, there is public disrespect. Survival of the old dictum that a patient's woes are confidential, supports too often the attending physician in failing to realize his responsibility to the community while attending to the welfare of his client. For this, as well as too often for personal reasons, he readily connives with the patient to thwart civic authority, thereby endangering a community. Instead of aiding in securing respect for and obedience to the rules of his sanitary colleague he joins in opposing him. Candor must compel us to admit that too often he fears the advent of the health official may mean some disclosure of his own incapacity. It is fair to say the official on his part is often too ready to give advice, to sneer at diagnosis or rail at treatment. To inspire, therefore, wholesome respect toward these coworkers and establish an *esprit de corps* should be one of the educational prerogatives of this section. Were we to be called to account for duties undone, the sin of not fulfilling our obligation to the community in sanitary matters would doubtless be found the most conspicuous, the one most detrimental to its interests.

Again, if not too insistent, could not this section further educational exhibits in sanitary matters not unlike the superb exhibit last winter in Baltimore, conceived and conducted in the main by our present official of the Sanitary Section? The Association could not do better than issue a grant for the furtherance of this object.

### THE SCIENTIFIC EXHIBIT.

It is gratifying to see the interest and success attendant on this new feature of section work. It is another tribute to the belief in the permanent

tenure of office of an official when we have the good fortune to get a good one. Attention is particularly called to this exhibit to ask the Association and the other sections to look to the conduct of somewhat similar exhibits. The Section on Ophthalmology showed the possibilities at the time of the Helmholtz anniversaries. When a section takes up a subject let us not have the clinical, pathologic and therapeutic aspects alone discussed, but bibliographic and historic features brought out. Let such features be as national as possible. What a fine exhibition it would be to have in connection with, say typhoid fever, a loan collection of the pictures of authors and investigators, of the various editions of their works and of the material things with which they worked, illustrating the evolution of their knowledge of the subject. Who would not be thrilled by a picture of the wards of the old Pennsylvania Hospital where Gerhard worked, of the instruments or materials he worked with, how he lived and what he did, of the first editions of his works, indeed of the manuscript of them? We must confess to a quiver of delight, mingled with reverence, when permitted to handle the manuscript on which Stillé inscribed his communication to the Paris Society. This is not the time or place to indulge in a homily on the value of such exhibits, agreeable though it might be. Through them, as of biography and sculpture and painting, we keep in touch with our history. Foster efforts in these directions, gentlemen of the Association, grant liberally to sections their small demands on you, to the end that you will be stimulating the best instincts in our profession.

### THE ASSOCIATION OF LIBRARIANS.

We are not far amiss when we call attention to an organization which in a quiet, unobtrusive way is bringing together the members of the profession on a common ground, where tares do not spring up and thistles do not blossom, but, instead, in an atmosphere clear, refreshing, invigorating. Jealousies do not thrive in libraries; books soften ambitions. No stronger, more liberal friendships can develop than those that come to book lovers. We owe a debt of gratitude to the Library Association and to its distinguished president, under whose fostering care the influence and power of the Association is unfolding as the hardy rose, exhaling like it a fragrance which cheers and stimulates. Of the many abundant works we owe him, none, we venture, will be more satisfying to him and more lasting for good than the work of the Association of Librarians. This Association should hold not its hand nor stint its heart in upholding its educational efforts.

### THE RUSH MONUMENT.

Before this session adjourns, by proper ceremony, graced by the presence of the President of the United States, with an oration befitting the occasion by our distinguished colleague, Dr. Wilson, the monument erected by the Association to the memory of Benjamin Rush will be dedicated. The Association is to be congratulated on the completion of this tribute in perpetual bronze to one of the most distinguished of our countrymen. Not alone should we rejoice on the fruition of this agreeable task, but also because it augurs for the erection in the future of tributes to the memory of others full worthy of our reverence. The invigorating, stimulating influence that comes from having about us our heroes of the past in stone or bronze behooves this Association and its constituent bodies to strain every effort to encourage in this manner hero worship. It is due ourselves to perpetuate the inspirations, the thoughts, the feelings, in the counterfeit presentment of our fellows. We are not of those who decry the world because it has not recognized our Jenner, our Pasteur, our innumerable heroes either by reward in their life time or by permanent tribute. We do not begrudge the mead of praise and the plenteous bounty which flows to our warriors and statesmen. It is true their glory has been attained often by carnage, lives sacrificed to avenge some insult. It was not life that was at stake. It was principle or thought or feeling or, our misanthrope suggests, greed. What countless lives are sacrificed for aspirations; what thousands of innocents for national gain! So, to the actors who stand for such, unstinted regard is given. The public neither appreciates the loss nor the saving of life. Hence, so long as it does not come close to them, civic murders from bad hygienic conditions do not move them. Even when home is devastated they submit to that which they consider mystifying or providential, and merely go their way. They are callous beyond measure to the presence of epidemics. They do not consider for one moment the power they have to assuage the virulence or even wipe out the existence of pestilence. Every effort for amelioration, as we see in tuberculosis, comes from our profession. With such lack of appreciation of their own welfare we need not expect much appreciation from them of our efforts.

In all honesty we must admit, among ourselves, we may not deserve public appreciation. If we realize the truth we may make amends. Could the public be expected to revere and respect when, as usual in the past, perhaps too common now, the profession was divided against itself, not from principle but generally because of pocket, of sordid ambition, of devouring jealousy? Look ye to your county societies! Do the brethren dwell together in harmony? Go to the warfaring court rooms! Do we emerge from them respected and respectful of one another? Until such sores are healed, as they happily will be, when science — and hence liberality of mind and largeness of heart — is furthered by associations like ours, it must remain to us a cherished heritage and privilege to worship our heroes alone. When we learn to respect ourselves, then will we be respected.

MEDICAL EDUCATION.

"An object of this Association shall be the elevation of the standard of Medical Education."

This Association has been, should be, and we trust will be, the storm center of legislation for reform in medical education. Since the memorable editorials of Wood in the old Philadelphia *Times*, and the masterly papers and addresses of Pepper and the practical action of the University of Pennsylvania there has been virile progress. In most respects it seems definitely settled as to the course of education a candidate for the degree of medicine should take. Questions of pedagogy are still debatable, but we take it that that student who wishes the quickest returns, the most lasting remuneration, perennial stimulation of the intellect and continuous enjoyment in the pursuit of his labors, should take a college education of three or four years, a four years' course in medicine and, if possible, a hospital internship.

Reference need only be made to the reports to this Association, to the famous report of the majority committee of the Association of American Medical Colleges, to the numbers of *The Journal* comprehensively devoted to education, and to many recent admirable addresses in support of the statements.

There is talk about maximum and minimum requirements, about laboratory and hospital courses, the merits of didactic and clinical teaching — a mass of material brought forth from the view-point of the educator, or looking to the welfare of the medical profession. We do not minimize the value of such lines of discussion. It has brought us to the position we have attained. But what of the medical student? Should we not look at education from his point of view? Is he quite able to decide whether he should take up the profession of medicine? We hold that a great duty is due the aspirant for medical honors from teacher and practitioner. It is a kindness due him to point out the best methods of securing such education as will yield him results commensurate with the time and expense required. It would be a greater kindness to be enabled to show him that by reason of intellectual temperament or of physical or moral qualities he is not likely to reap the rewards he is anticipating.

The large majority of medical students do not have a good reason for studying medicine. They are ignorant of the mental and physical demands made on them. They are attracted by an uncertain glamor and a specious glory, and heedlessly they go in. The failure of a large percentage of graduates in medicine to acquire more than a bare existence, and too often not even that, proves that they were not educated properly, not fitted temperamentally or physically, to pursue its duties. Should they not have opportunity for learning of the responsibilities and difficulties, rather than to have the brighter phases glorified? Would it not be well to have, in our college curriculum, a course of lectures for the student who contemplates entering a profession, pointing out the rocks and shoals in his prospective career? An eminent practitioner, not connected with medical schools, would light up and darken the pathway in due proportions. Then, too, should not, as in the army and navy, some physical tests be required? The trophy is to the robust, and sad will be the career of the man who is physically handicapped.

If there is any doubt about the value of a college degree to a man entering the medical profession it could be set at naught since the report of the Mosely Education Commission. Quotations like the following, while not pertaining to medicine alone, the result of extensive inquiry and mature deliberation, supported by the statistics they give, uphold the contention of a large employer, that "for 99 per cent of the non-university men, it is hopeless to expect to get to the top." One opinion they express is that "there is still room for the boy of marked ability 'to come through,' but that his difficulties are greatly increasing, and that, useful as he is, his usefulness would have been greatly enhanced had he had the benefit of a college training." Still another commissioner reports that while only "1 per cent of the entire population of America has received a higher education in her colleges and universities, this 1 per cent holds more than 40 per cent of all positions of confidence, of trust and of profit." It is well known that the "geist" of the individual brings success, for which, they say, "it is recognized that the educated man takes in a wide horizon and puts more 'soul' into his work."

The essential of success in any department is diagnosis, which requires powers of intellectual penetration and discrimination. President Thwing has again forcefully urged that "the reasoning of the mathematics — and mathematics is only reasoning — tends to promote *clearness* and *accuracy in perception*, *inevitableness in inference*, a sense of logical *orderliness*. The study of the languages represents the element of *interpretation*. The study of history means the interpretation of life." Are these not the main studies of a college education? While they may promote scholarship, they surely cultivate thought. It need scarcely be pointed out to this audience that to be a thinker is the salvation of the physician.

To the plea that the acquirement of a college degree takes up too much time and requires too much money, the material answer can be given from other sources to the effect that "the men whom you are surprised to find holding such important positions in factories, though not much over thirty years, are the very men who did not leave the technical college till they were twenty-three or twenty-four; the graduate may have been twenty-five before he donned a jumper, but in five years he learned more with the college training he had as a foundation than the regular journeyman of fifteen years of actual work in the shop." The experience of teachers who have watched the alumni agrees in that the

college graduates get quick returns and soon acquire a position of independence.

The poor boy, therefore, need not be deterred, for if he has the spirit and energy to work his way through four years, two years or three years more will be but very little in the final summing up. If the student only knew that the purchase of the best education, whether reckoned in time or money, was the most economical investment, in that as to the former, a thorough education at first is time-saving in later years, and as to the latter, the money outlay is returned more quickly, in more immediate work and larger pay.

There should be one educational requirement — the equivalent of that for which a first-class college degree stands, whether received at a high school or university.

After entering the medical school with, it is presumed, the proper educational attainments, his career the first year should be closely watched. That school has too many students if it does not have enough instructors in the first year to be able to judge with a reasonable degree of accuracy of the character and moral stability of the men. This is not to be taken in a prudish sense or with too critical a scrutiny of habits which are the overflow of the animal spirits or the expiring exuberance of the boy approaching manhood. This can be said, that a student who does not play fair in his exercises, who cheats in one demonstration or evades another, who does not show manliness, frankness and truthfulness in his first-year duties, will not be a good diagnostician. He will cheat himself; he will cheat his patient. The teachers of the first year, or at least the second, should know this and block the student there and then. It would be a kindness. Let us then agitate whether we should not have a certificate of manliness, a certificate of health, as well as a certificate of mental proficiency, before we admit students to our medical schools or permit them to go beyond the first year. Let us not be decoys, alluring them on to later destruction, but rather be guardians, wrapping the strong arm of experience about them to lead them to the fitting pathway.

Having permitted the student to pass further in his pursuits, we still owe him much. We must see to it that such course is given him the first two years of his student career that he will acquire such fondness for the science of medicine, such reverence for the exploration of its truths, that until his dying day devotion to it will be his stimulus and solace. As a corollary, we must insist that medical schools secure the best men in the market for these places and pay them salaries commensurate with their ability — good, living salaries.

It is in the first and second years of his career that the foundations are laid whereby the student becomes the medical thinker. To quote again: "The power of thinking should not be of a base and barren character. The thinking should represent and be concerned with a fine and rich content of knowledge. It should have the exactness of intellectual discrimination; it should have the fullness of noble scholarship; it should embody a culture which is at once emotional and esthetic and ethical, as well as intellectual."

That a desire to relieve suffering, to extend sympathy, to save life, is the impulse of the physician, we all admit, but where is the man among us who will not also admit that a scientific habit more quickly brings it about and more surely sustains and fortifies the humane instinct through the trials and tribulations of exacting practice? That prosecution of professional duties soon becomes commercial that does not have for its basis a true spirit of scientific inquiry. How miserable must that life be which conducts an exacting, drudging, daily routine with only material reward in view. Few are the practitioners who have this sordid view; we can be as sure medicine would soon be forsaken if this view-point alone were considered. Hence, in the laboratory of the first two years must be aroused and fostered the stimulus for life work.

The final years should be clinical years, and the last should be in a hospital. The medical school that allows its students to think such opportunity is not due them is most unfair to them. As our schools are now constituted, most of them cannot give such requirements. The students should know, however, such requirement is necessary. What has been said regarding the preliminary college education applies equally forcefully to the hospital training. He is thrice armed who enters the arena thus equipped. Medical schools that cannot give such education are cruelly unkind and unjust to the students by having them think it is not essential. Medical colleges that pass off a hospital training for one that is not truly such fake their students. The student who pays well for his training has the right to demand such as to fit him for immediate action.

It is not the fault of the medical school alone that he cannot get it. The public that cries out when there is mistake in diagnosis, fault in treatment, and that shakes its head at the deficient education of our students, must share the blame with the medical school. The public admits that its individual members may at any moment be almost at the mercy of a half-educated physician. It is not necessary to recount, for it is well known, how on land or sea, by day or night, some event may arise in an individual life, the care of which may mean life or death. Even with this knowledge they withhold means to relieve themselves. They admit the necessity of a hospital training. But they, and particularly the public in control of hospitals not used for teaching, say each medical college should have its teaching hospital. They do not appreciate that to give an education which involves a hospital course would require an expenditure to $500 a year for four years by each student. It has been estimated that the cost of maintaining a plant and paying salaries sufficiently large to accommodate 600 students would require the above outlay by each student. Unfortunately,

it is impossible to expect students to pay such figures, as it would render entrance into the profession almost prohibitive. It is manifestly impossible, as medical schools are constituted now, to educate all the students of the land properly. Hospital training cannot be given except by a few favored institutions, because the doors of hospitals are closed either by the governing body of the hospital or by the teachers in the medical schools.

We believe, personally, if a decree should be issued that no medical school, including its hospital, should exist except on the fees derived from students, but little hardship would follow. The lessened supply of students would increase the demands on the practitioner, so that larger returns would follow. The poor student would sacrifice and strive to get a degree, knowing then he had a good asset. A diminution in number and an increase in quality is demanded alike by the public and the profession. Such diminution in number would mean that the student would get back his investment quicker and in larger amount than at present; hence good men would be attracted. If we could abolish sentiment for sense and educate accordingly, there might be betterment all around. At it is now, medical students receive part of their education through the bounty of the state or the charity of the public, as such education can only be given in endowed institutions. The public is taxed so that the prospective physician can make a living. Is it right that it should be? Perhaps a mechanic should demand such right to make his son a good workman. We must all admit it is the duty of the state to educate the youth, so that good citizenship is maintained; we can question whether the state should educate the members to obtain a livelihood.

With the same indifference that the public views an epidemic's march they allow hospitals that are engaged in teaching to suffer for the want of funds. Moreover, they close their doors to the advent of teaching in the hospitals under their control. We must admit, those who do not appreciate the true function of a hospital have some ground for their contention. Ruled by sentiment chiefly, unfortunately an impracticable master, they sympathize with the patient who still harbors the belief of old that the medical student is one of a class that prowl about not unlike harpies. The public does not realize the difference in the student of to-day and the student of tradition. We cannot hold to account the governing body of the hospital who has the point of view that it is harmful to a sick person to have him under the surveillance of an alleged student rabble. We must admit, some patients become alarmed, particularly in institutions where they know they will have the sympathy of the government body. An analysis of motive will show that the usual patient who will not allow a judicious amount of clinical demonstration when the sense of delicacy is not offended, is truly selfish, in that there is prevented that increase of knowledge and development of skill whereby suffering of others may be alleviated. A little encouragement from the officials would allay alarm on the part of the patient. The desire to help others is infectious, and when one yields in a word, others vie in the work.

The truth of the matter is that in hospitals in which teaching is carried on, rarely, if ever, do the patients complain. Indeed, it is the experience of those teaching institutions that judiciously conducted instruction is appreciated by the patient. In one hospital we might name, most of the inmates are pay patients, giving $7 a week willingly, because they know they are buying the services of the best practitioners in the land — the teachers of medicine — which service they could not get at tenfold the figure. The fact that teaching hospitals are overcrowded not by the poor alone, but by people independent of charity, shows that clinical instruction is not a bugbear. If the governing boards would know that while a few patients might be alarmed, on the whole most of them would be gratified by the attention paid them, and their sense of rectitude and manliness appealed to by the satisfaction that they are doing some good in enlightening students, so that others could be relieved; that their administration would be stimulated to do work beyond criticism; that the nurses would be aroused to better activity while under the observation of those not connected with the hospital; that the internes would do their very best to have most complete studies of the case, and, finally, that the chief in attendance, compelled to do his best at the risk of his reputation, they would gladly open their doors, even at the discomfort of the few, but to the advantage of the many. In short, the hospital should have teaching not to oblige the medical school, but for its own survival and regeneration. The benefits the student derives by the object lesson of an orderly hospital cannot be estimated. Will not every member of a hospital board admit that his own character, his own sympathies, have been benefited by his connection with the hospital, even though, perhaps, he has not the advantage of an impressionable age? Can he not see, therefore, how the youthful student can be influenced in thought and character and feeling? He cannot lightly toss aside this responsibility, nor even hide it by putting the onus of medical education on the teaching hospital. Every dollar endowing a non-teaching hospital robs the teaching hospital which is engaged in this larger duty.

It is true, a class which is compelled to have hospital attention may not sympathize with this feeling. How can we obtain the confidence of this class? Let us organize such association of prominent people in our teaching centers who will agree to have any operation, any feature of disease, witnessed by medical students at the judgment of their attending physician. It would be well if the individuals of such an organization would agree, first, to undergo hospital treatment; second, to be the object of observation by students; third, to have an autopsy performed

in case of untimely end. We feel sure that it would be wholesome, individually and publicly, if each would agree to ward treatment. Such association would rob hospitals of their terror and teaching of its dread. No one can deny that on the whole the public would be benefited from whatsoever point of view we look at it. Indeed, the public ought to learn that disease is an enemy to themselves and their country. Just as we make sacrifices in time of national warfare, so we should be willing to make sacrifices in the daily battle for life. Just as aristocrat and plebeian, landlord and tenant, fight side by side in the former, so they should array in solid phalanx in the latter.

But there are hospitals willing to admit students, and yet the privilege is not availed of. This arises because the teaching force of the medical college is not willing to sink its personality and allow the student to go wheresoever he will for his instruction. Courage and some sacrifice are required, perhaps. But, when one thinks of the mighty opportunity and the frightful waste, it is saddening. Every hospital should be a school. The fourth year should be so arranged that the student could avail himself of the advantages of hospitals in the immediate vicinity. Let each teaching body have the students understand what he must see and do, and trust you, the true student will see it at the best place and with the best men. He must be accountable, of course, with a rigidity that means the exact acquirement of knowledge. To this end the first two years could be well spent in the properly equipped laboratory university, whether in town or country, the third in the authorized hospital of the school, the fourth in extramural hospital work.

Is it not anomalous that the hospital boards give to the nurses who are to act as aids to the physician the highest opportunities, and yet deny it to those who are to give orders to the nurses? This, of course, arises because training schools are the product of modern thought and have not been trammeled by tradition.

But all this talk of the primary education avails but little if we do not see to it ourselves that education is continuous; that from the day of our graduation, forwards, we do naught but toil, toil, toil. It should go without saying, as a mere business proposition, that unless we unceasingly labor but little of the fruits do we pluck. It is demonstrated in a practical manner, for when we look about us and find the methods of those of our brethren whose labors are not in vain each one bears the scent of midnight oil.

The development of post-graduate schools, the growth of libraries, the groans of the printing press, the enthusiasm of medical societies, all testify to the spirit of persistent self-education that is abroad. It is not for me to urge further the importance of each of us taking from time to time months for study and reflection. Every active doctor should have his sabbatical year. We dare say, extended observations would uphold that in income a gain is one hundredfold for each dollar invested in educational outings, and for every hour thus employed, ten are added to life. To finance a medical man from first to last successfully, we dare say, spend all net earnings of the first five years on self-education; after ten years, 10% of the annual net earnings for an assistant, continuing the 25% investment for five years. Health, happiness, increased usefulness to the community, a success, which never comes from eccentricity, equal to doubling capital every five years, would follow.

In the course of our work it is necessary for us to halt from time to time and review. Not alone must our mental storehouse be swept out, refurnished, but we must constantly "jack up," if the term is permissible, our mental and moral machinery. Few of us are they who will not find, as our days grow fuller, an unconscious tendency to slight our work, to become slip-shod, to hurry over matters. It is partly an evidence of overwork. The post-graduate school is the salvation. No obstacle can withstand the continuity of drill, which the earnest of us keep in action. If, to continue the imposition, asked what element of character is perhaps lacking to the greatest detriment to the profession and public, we possibly, one and all, would say, courage. This is seen in the hesitancy which members of the profession show in giving an opinion, in advising an operation and in asking for an autopsy. How much confidence is destroyed by the want of free, frank avowal of the physician that he does not know on the one hand, or of clear, precise statement of his judgment concerning a case on the other! The greatest success in life is confidence. How many lives are lost by the worker in internal medicine not advising early and unequivocally an operation for fear he might be wrong in his diagnosis! And how many more are lost because the surgeon lacks courage to do, either because he fears the patient may die and his record be marred, or because he may operate when it is not necessary! We must admit we have had some operations done when they were not required, but let it be said to the credit of modern surgery, we have never seen an operation of such character performed by the right man that did any harm to the patient. On the other hand, the resort to operative procedures early, and in cases that even yet are not considered of surgical relief, has saved lives and lessened suffering to a degree that far overbalances the now and then futile measure. It may be assumed, without contradiction, that every case of bad appendicitis that happens to get well without surgical relief has in its wake three to five that die for the want of an operation. In other words, the pernicious influence of a surgical case that recovers without operation is evident in creating the hope that other cases demanding operation might get well without it.

And the man who does not want an autopsy — not only the centers of courage need stimulation, but too often the entire medical storehouse needs refitting. Something, best known to the phy-

sician himself, we trust, is lacking in the one who treats an obscure case for a day, six days, six weeks, and then does not want an autopsy. If true to himself, true to the demands of his profession, courage will not fail him. In our mental and physical round-up, we must see to it that courage is given a new backbone from time to time.

But, fellow members of the Association, not alone as members of this organization may we indulge in self-congratulation, but as members of a profession whose limitation knows no bounds we may join in felicitation. Neither language nor creed nor country fetters our profession's munificent sway. The thoughts of Ehrlich in Frankfurt, of our own Welch or Councilman, of Kitasato in Japan, are correlated. The knife of Mayo in America, of Robson in London, of Kocher in Berne, contributes to the relief of suffering in far Cathay. The founts of Lister's genius and Pasteur's divine inspiration bring countless blessings to England, to India, to France, and to Africa. What a stimulus it is to realize that, howsoever small the contribution of the humblest of us may be, its impulse will be felt in climes near and far and ages present and remote! What awe cannot but overtake us when we consider each heart throb we study entwines us to Harvey of two centuries ago; with every percussion tone reverberates the sound of Laennec's voice of a century; with each vaccine inoculation, the simple observation and reasoning of Jenner to stimulate our question and deductions!

We rejoice together and cherish our history, by the warp and woof of which we are woven to the past. What heritage for us and our children! Dead must be the soul that wearies of communion with the spirits of the past; deep must be its slumber on which falls the thought of centuries; lethargic its activities that are aroused not by the deeds of heroic men! "Honor and fortune exist to him who always recognizes the neighborhood of the great, always feels himself in the presence of high causes." We worship together our science, devotion to which brings forth character, smothers egotism, levels pretension, drives out solitude, develops such loftiness of thought which can see that "against all appearances the nature of things works for truth and right forever." Of our art, let us see to it that when the final summons comes it can be said of us, "Greater love hath no man than this, that a man lay down his life for his friends."

## THE ASSOCIATION OF SURGICAL LESIONS IN THE UPPER ABDOMEN.[1]

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The history of medical advance from the empirical treatment of symptoms to scientific expectancy has been based on the study of death and modern research work. The spirit has been fine, although somewhat pessimistic. The great advances have been along the line of preventive medicine and in the elucidation of problems connected with the etiology of disease.

Surgical progress has been, to a certain extent, through similar channels; the spirit, however, has been one of magnificent optimism. The great advances in surgery have come from the clinical side, modern technic having enabled examination of primary conditions during life.

As a groundwork for the study of medicine the pathologic laboratory and autopsy room offer unrivaled advantage, but they teach end results only. Who of us has not admired the precision with which a trained observer makes a diagnosis? A few days later one visits the autopsy room and here observes that this almost clairvoyant analysis was correct. At the same time, we must also acknowledge that the patient has not profited; it means a hundred pages of pathology and two meager lines of treatment. How many times do we notice in the autopsy revelations that the original lesion has been but slight, and at one stage easily curable, the pathology present largely the result of secondary complications and terminal infections?

The post mortem has been an institution for years, yet what did we know about appendicitis until surgery led the way, or about gallstone disease, supposed to be an "innocent postmortem finding," until operation opened up the field? Did knowledge of extrauterine gestation come from the autopsy? By no means. It was through the surgeon's knife, and why? Because secondary conditions so often mask the original lesion at the postmortem. On the contrary, our understanding of acute conditions causing sudden death has been brought about by dead-house investigations; for instance, fatal hemorrhage and perforation placed acute gastric ulcer on a sound foundation. Not so chronic gastric and duodenal ulcers, with late death from complications, cholangeitis from gallstone disease, and chronic pancreatitis from the same cause. These conditions could not be correctly studied, excepting after death from accidental cause, and real progress lay dormant until surgery invaded the field.

From research work we have profited much; we are gaining rapidly by this means day by day, but we cannot compare the animal to the man, nor can we always artificially create similar conditions. Like the postmortem, it has its limitations, yet these two fundamental methods have enabled us to advance. Without them we would still be in the Middle Ages. Now the time has arrived, in the light of these investigations, to view conditions from a new standpoint at a time when the lesion is in its infancy, long before the postmortem, while the patient may be benefited and the research work applied to the elucidation of living problems.

The medical man must haunt the operating theater as he has haunted the autopsy room and the laboratory. The times have changed; we

[1] Oration on surgery at the fifty-fifth annual session of the American Medical Association, at Atlantic City, June 7 to 10, 1904. By the courtesy of the Journal of the American Medical Association.

must have more treatment and less pathology. It is here that surgery wins its triumphs. We must not forget, however, that to physicians of pathologic training we owe the knowledge which enables us to approach the subject. Courvoisier was the real father of gallstone surgery. It was Balzer, Fitz, Opie and others who cleared up the pathology of pancreatitis, and surgery followed their lead. It is in the union of the internist and surgeon that progress is most rapidly made, and in the readjustment of science the former will be the architect and the latter the master builder.

Once more the physician and surgeon will come together, and the mistakes of endeavor in new fields will receive timely correction at the hands of the pathologist and experimental worker.

The surgical borderland of to-day lies in the upper region of the abdomen, a locality until recently considered almost purely medical. What are the reasons for this invasion, and have the results justified the attempt?

Surgery must be judged on three grounds: First, the mortality of the operation itself and the question whether this is greater than under the expectant plan; second, the permanence of cure contrasted with medical treatment; third, the question of disability, either introduced by the operation itself or the natural length of time which the healing process involves. On each one of these considerations we must answer Yes, and we can go still farther and say that earlier operation would reduce the mortality and increase the permanence of cure and lessen the disability.

Certain parts of the body are so closely related in their anatomy, function and pathology as to be almost necessarily considered as part of the same system. The generative organs of women form so distinct a field of work as to have built up a specialty. Can we separate diseases of the kidney from the ureter, bladder and urethra? By no means. Each may stand in an etiologic relationship to the others which cannot be ignored.

In the upper abdomen we have attempted to study the stomach independent of the associated organs, the liver and bile passages, the duodenum and pancreas. The result has been a confusion in diagnosis and treatment. The palm of a hand may cover a serious lesion of any one of these organs, and that, too, at the point of greatest liabilty; not only so, but any one of this group may start a pathologic process which may extend to any one of the others, and with fully as great frequency as occurs under similar conditions in either the generative or urinary systems.

Note the disturbance of the stomach which occurs with gallstone disease; the adhesions to the duodenum and the pancreatitis, an association direct as it is vital. Again, let me call attention to chronic ulcer of the stomach with adhesions to the pancreas, secondary ulcer of the duodenum adherent to the bile passages or gall bladder. These are not fanciful pictures, but drawn from everyday work. I have no hesitation in saying that with an operative experience of over 1,400 cases of this description, mistakes in exact diagnosis are still common, and in many instances unavoidable. The history may be the only valuable diagnostic resource when the patient comes to us, and we all know how unreliable that may be. Given a history of painful attacks which have been very severe, but which have completely ceased, with tenderness on deep palpation in the epigastrium, and we may have disease of any one of these four organs, and not infrequently an association either direct or indirect of the pathologic process. If we clearly understand the possibilities of error, we are better prepared to meet complications or execute a change of front and operate on one organ when another procedure was planned. In the majority of cases a pathologic diagnosis is possible, and one can say with certainty, "This is gallstone disease," or "This is ulcer of the stomach"; but in a considerable minority a surgical diagnosis is the best that can be made. That is, we can say: "In this locality is a diseased process which requires operative treatment, the exact nature of which must be determined by incision." The patient does not come to us for the purpose of having a certain operation performed, but seeks relief from suffering and disability.

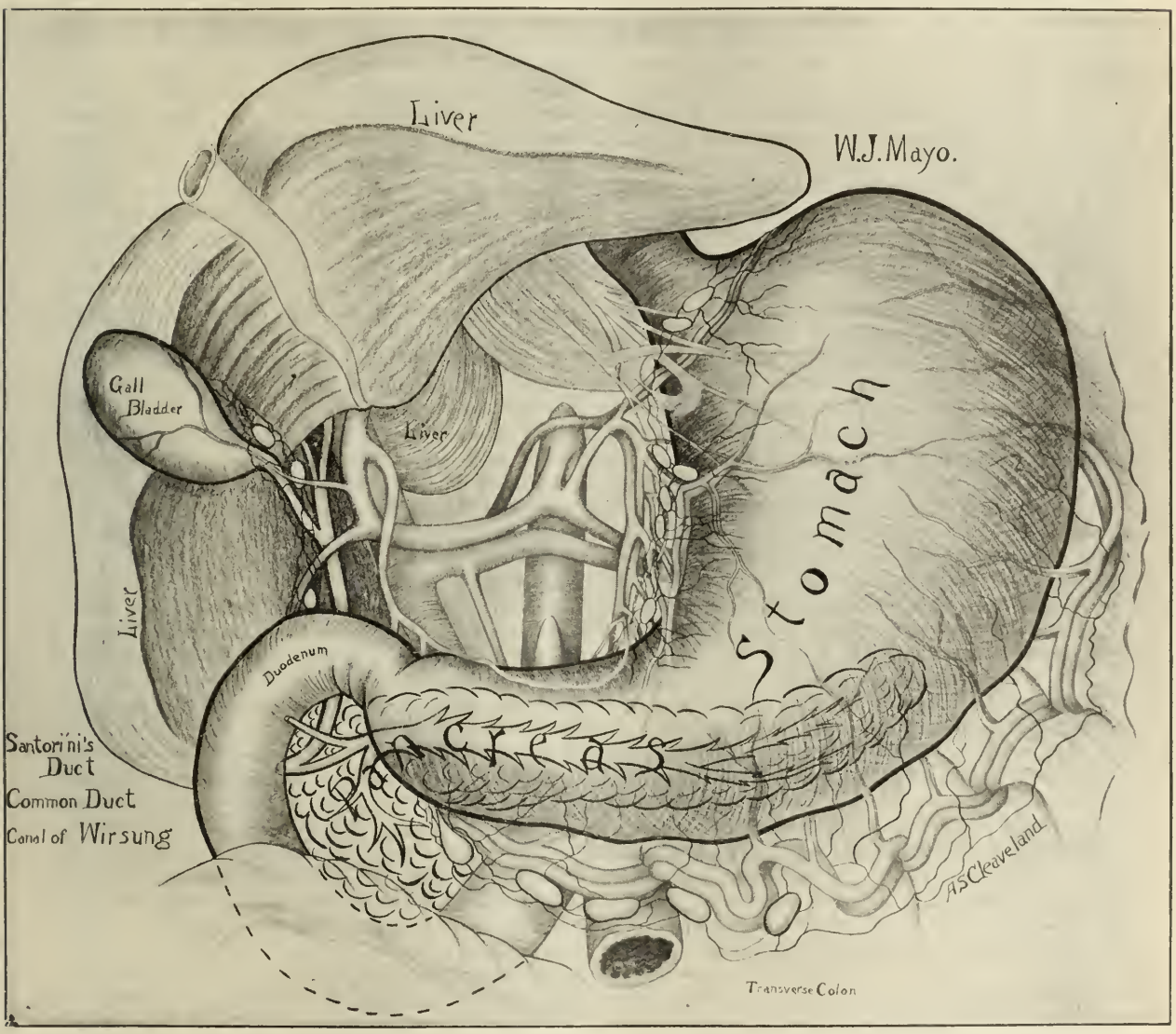
Let me call your attention for a few minutes to the anatomic diagram, showing the nearly vertical position of the stomach with the pylorus in the middle line of the body, and but little elevated above the lowest point of the gastric cavity. It is turned upward and to the right just enough to prevent the weight of the gastric contents bearing directly on the sphincter apparatus. The only portion of the duodenum in which we are interested is the four inches lying between the pylorus and the papilla of the common duct of the liver and pancreas. This may be called the vestibule of the small intestines. Its position subjects it internally to the perils of ulcer from the acid gastric juices which its thin tunics but inadequately resist. Externally its function is often interfered with by adhesions to the gall bladder and bile tract, secondary to gallstone disease. This unoffending bit of intestine is so often offended against as to cause it to become the most frequently diseased portion of bowel of the same length. The remaining eight inches of the duodenum is protected by the alkaline secretions of the pancreas and liver. Its fixed position and peculiar horseshoe shape, with its delivery point nearly as high as its origin, enable it to mechanically slow the ingested material during the mixing process, for which its large caliber affords accommodation.

The anatomy of the bile tract is equally interesting, and especially the relations of the common liver duct to the pancreatic duct and the duodenum. There is continuity of mucous surface, each protecting itself from the secretions of the others by the mechanical washing effects of its own secretion, the joint discharge and a feeble sphincter apparatus preventing entrance of the duodenal contents.

The gall bladder, as it furnished the initial lesion in more than one half of the diseases of this group, is of great interest. Like the appendix, an obsolete organ of storage function and limited outlet, it gives rise to a variety of troubles, which we are only of late beginning to appreciate. It is an old aphorism that "nature finds mischief for idle hands to do." The gall bladder has a capacity of about an ounce, and, as we find almost universally in organs of storage function, the neck is raised slightly about the lowest point to prevent the weight of contents resting directly against the outlet. The little pouch thus formed may be called the pelvis of the gall bladder (Brewer). It is here that the obstructing stone is so frequently lodged in cystic impactions. Murphy observes that the fundus of all organs has but few lymphatics, while the region of the neck has an abundant supply; hence, even with septic contents, there is but a mild reaction when the pelvis is obstructed, as compared with the startling temperature curves of duct stones.

The pancreas, composed of two originally separated parts, has in nearly half of the specimens which have been examined two patent ducts, that of Wirsung, which is the important one, uniting with the common liver duct. The minor duct of Santorini, however, has a possibility of useful function in certain diseased processes, as pointed out by Opie. The pancreas was originally an intraperitoneal organ, becoming retroperitoneal by a later evolution (Huntington), and in this anatomic peculiarity, Brewer believes, lies one of the reasons for the diffusion of fat necrosis resulting from acute pancreatitis. Mikulicz has called attention to the fact that adhesions to the pancreas in gastric cancer gave a mortality of 73% in his resection cases. Robson also notes the pancreatic mischief occasioned by perforating gastric ulcer on the posterior wall.

The blood supply of this group of organs is almost entirely from a single source in the celiac axis. It has been experimentally developed that the severance of all connections of the pancreas



excepting its blood supply does not check secretion if food is placed in the gastrointestinal tract. In the nerve supply from the pneumogastrics and sympathetic ganglion, we find the same direct relationship involved. If we study the function we see the same association. The stomach can be compared to a mill, the fundus the hopper, in which the food is macerated in a weak solution of pepsin and hydrochloric acid, and the muscular pyloric portion the grindstones in which the masses are broken up into a homogeneous whole. The entrance of food into the duodenum causes the outflow of biliary and pancreatic secretions, the absorption returning to the liver by way of the portal vein. This is so elementary that you wonder that I should refer to it, yet the causation of the common surgical lesions lies in perversion of these fundamental functions, and is just as simple. Mechanical injury of the pyloric portion and excessive acidity of the gastric secretions under anemic conditions give rise to ulcer, and lie behind the precancerous lesions, which, Ochsner notes, is found in the history of cancer of the stomach in the majority of cases. The acidity of the gastric secretions renders the contents of the stomach, when turned into the intestine, relatively sterile, but increases the liability of ulcer of the duodenum. The sterility of the upper intestinal tract is still further increased by intestinal absorption, as shown by Adami, the bacteria being picked up and destroyed in part by the glands. Many germs are, however, carried to the liver, and here either annihilated or screened out of the blood in the portal vein and discharged with the bile. We must look on the bile as always containing a few bacteria, and it is probably this attenuated infection of bile retained in the gall bladder which gives rise to gallstone disease, which in turn is the chief factor in the production of duct inflammation of both the liver and pancreas.

These considerations, so briefly outlined, taken in conjunction with the embryologic origin, justify the grouping of *the surgical lesions of the upper digestive tract*, and at once enable the diagnostician to associate the symptoms and the surgeon to direct his attention, not to one, but to the entire group of organs. The burden of proof lies with the practitioner, not only to demonstrate that the disease rests in one organ, but to differentiate and show that no other is involved.

The art of the diagnostician lies in the proper valuation of the signs and symptoms of disease in organs of associated function and pathology. The instinct which seems to lead some men to a correct conclusion, and by a mental process they could not themselves analyze, usually depends on few things, the immaterial or inconclusive evidence being unconsciously discarded. For instance, note the value of the colic in the diagnosis of gallstones. The typical attack comes on and stops abruptly, is relieved by vomiting or a feeling of movement of gas, is irregular in time, in regard to food, and not accompanied by temperature or pulse elevation, and leaves the patient able to attend her duties almost immediately after cessation of pain. While the pain lasts, it is excruciating, felt in its greatest intensity in the epigastrium, radiating upward behind the sternum and into the back. The distress penetrates to the right side, but occasionally to the left, and lasts from a few minutes to six or eight hours. When the patient comes to the physician it may have been years since the typical attacks; he may have forgotten them, the present trouble complained of being pain, digestive disturbance and tenderness on deep pressure over the gall-bladder region. The history of the early attack is worth more than the physical examination in many cases. Compare it with the pain in gastric or duodenal ulcer, which may be just as severe, but lasts a day or two longer, especially when due to regional peritonitis, and is accompanied by gastric symptoms and local tenderness. The patient diets, which means he reduces his food supply. The symptoms last more or less for some days or weeks, and the interval of apparent cure gives some weeks or months of comparative health.

Acute perforations of the organs of this group are relatively common, and give rise to symptoms which would be at once recognized if they occurred in the region of the appendix, but occurring in the upper abdomen too often go to a fatal issue unoperated. The initial symptoms are remarkably alike, whether of the gall bladder, the duodenum, stomach or acute perforation of the pancreas with fat necrosis. The onset is essentially the same in each. Sudden extreme epigastric pain, with collapse, ushers in the attack, and muscular rigidity, as a rule, comes on early. The diagnosis of perforation, if we are on our guard, is easy, although it may be difficult to say which organ is affected; but this does not make any difference. The vital consideration is that it has happened, and immediate operation must be performed.

In 811 operations on the gall bladder and bile tract we had 4 acute perforations of the gall bladder, with but one recovery, although the average mortality in the benign series was but 4.47%. In 45 operations for duodenal ulcer, 4 acute perforations occurred, with 2 recoveries, while in the 41 operations for subacute and chronic ulcer there was only one death. In 469 operations on the stomach, 5 perforations occurred, with 2 deaths. In 32 operations for diseases of the pancreas, there was only one operation for acute pancreatitis and fat necrosis, with recovery. This gives 14 cases of acute perforation, with a mortality of 50%, and why? Because the operation was usually too late. The death-rate in over 1,150 operations for subacute and chronic benign conditions of this group of organs averaged a little less than 5%, counting as a death from operation any patient dying in the hospital without regard to cause or time elapsed between the operation and the fatal issue. If we add to this mortality of 50% in operations for acute perforation, the cases seen in a moribund condition beyond even attempt

at relief, and the still larger number in which death occurs without an ante-mortem diagnosis, we get some idea of the appalling nature of the disaster. To be successful, operation must be immediate; the condition is as imperative as hemorrhage from an artery of the third class. Few recover operated on later than ten hours after perforation. The conditions simulating perforation in the upper abdomen, such as thrombosis of the mesenteric or splenic vessels, diaphragmatic and duodenal hernia with strangulation, and so forth, are rare, and likewise call for early operation.

As a rule, the history and location of the early acute pain will furnish evidence as to the origin of the trouble. Preceding perforation of the gall bladder there are often symptoms of several days' duration with a history of gallstones. The acute pain occurs in the gall-bladder region. Early drainage with removal of the gall bladder should give a mortality of not to exceed 10%.

Duodenal perforation usually occurs in cases of chronic ulcer with years of symptoms preceding; but the immediate onset is exceedingly acute, and not ushered in by a few days or hours of prodromata, as is often the case with the gall bladder. The location of the early pain is just to the right of the median line. The liquids gravitate at once to the appendiceal region and simulate perforated appendix. The rapid diffusion of escaping contents is fatal to delay. Operation for acute perforation of the duodenum is rarely successful after eight hours. Suture of the perforation with suprapubic pelvic drainage and after-treatment in the sitting posture (exaggerated Fowler's) in early cases should give 80% or more of recoveries.

Gastric perforations occur on the anterior wall, according to Brunner, 7 times to 1 posterior, and near the cardiac end 5 times to 3 times in the pyloric portion, and near the lesser curvature 122 times to 16 times near the greater curvature. The initial pain is usually to the left of the median line, and early diffusion of fluids is to be expected. Only 10% occur without previous symptoms of chronic ulcer. The results of operation being in direct ratio to the amount of gastric contents, and the length of time which has elapsed, the treatment is similar to the duodenal ulcer.

The term perforation of the pancreas from inflammation with resulting fat necrosis is a purely pictorial expression, and not a pathologic entity in the sense the word is used in the preceding remarks, yet it conveys the idea and calls attention to the value of peritoneal drainage in its treatment, as shown by Woolsey. The symptoms are sudden pain in the epigastrium, collapse and early extreme distention of the abdomen. On opening the peritoneal cavity, free fluid often of a hemorrhagic character is evacuated. The little fatty masses in every direction and the enlarged pancreas call attention to the source of the trouble. This particular phase of acute pancreatitis cannot be separated from the hemorrhagic type in which treatment is as yet in an unsettled state. Those interested in this question will find a mine of information in the Hunterian lectures for 1904 by Mayo Robson.

The group of acute perforations gives an unsatisfactory mortality, with a prolonged period of disability from drainage, and without a certainty of permanent cure of previous underlying conditions. This will not long continue. Like acute gangrenous appendicitis, the condition will be recognized early with corresponding improvement in results.

The diagnosis of the chronic infective lesions of the organs of this group is in a far more satisfactory condition. The general mortality of gallstone operations is not above 5%, taking the cases as they come, but even this is too high. Grouping the cases in which the entire process is limited to the gall bladder, the mortality is from 1 to 2%, and depends to a large extent on the general condition of the patient. Secondary complications, chiefly those which involve the hepatic and common ducts with resultant cholangeitis, pancreatitis and so forth, are responsible for the death-rate. As practically all of the patients have symptoms on which a diagnosis could be based previous to the complications, it will not be long before early operation in patients otherwise in good health will be the rule as it is now in chronic and relapsing appendicitis. Not only is the mortality thereby reduced, but the disability is likewise lessened. The average stay in the hospital for uncomplicated gallstone patients is slightly less than seventeen days; the convalescence of the complicated duct cases is prolonged one or two weeks.

Chronic infections of the pancreas are usually secondary to gallstone disease, and, as a rule, do not occur excepting where the common duct has been directly irritated by the presence of calculi, although the consequences may continue for some time after the passage of the offending body. The results of drainage of the gall bladder and bile ducts are extremely satisfactory. In our series of 32 cases there were but 2 deaths; these patients had coincident suppurative cholangeitis.

Chronic infective lesions of the stomach with ulcer as a type are becoming better understood every day, as surgical operation discloses the actual conditions present. The primary mortality of operations for their relief are in a fairly satisfactory condition, but as to ultimate results we cannot say definitely. For the obstructive complications the result of ulcer, there can be no question as to the relief afforded and at a nominal risk. The dilated stomach with retention or stagnation of food suggests at once drainage operations with gastrojejunostomy as the type. We have patients of this description alive and well more than twelve years after operation.

Chronic ulcer without mechanical obstruction gives a less promising outlook. The very fact that there is normal gastric motility indicates that gastroenterostomy or other drainage operation is less necessary. Our results in operations for this description of lesion have not been wholly satisfactory, and furnish a considerable percent-

age of secondary operations and failures to relieve.

Cannon's experiments have shown the same results. A gastroenterostomy on a normal stomach of an animal does not drain the gastric cavity, even if placed at the lowest point. The gravity advantage of the gastroenterostomy is overcome by intra-abdominal tension, and the food, by muscular action, is carried out the pylorus rather than the artificial opening. The magnificent showing of gastroenterostomy in obstruction has led to the indiscriminate performance of the operation in those cases of ulcer in which gastric drainage is normal. This particular phase of the subject must be further investigated.

Chronic ulcer of the duodenum is relatively more common in the upper two inches than in any corresponding portion of the stomach. It is especially liable to perforate, although its sheltered situation usually leads to adhesive protection. Many pyloric ulcers will be found to have their origin on the duodenal side. Gastroenterostomy is the operation of choice, as it diverts the irritating gastric juices and food products from the sensitive surface, thus promoting rapid healing. We have performed gastrojejunostomy 286 times for all purposes, with a mortality of 5½% in the benign series. The recent improvements in the technic of gastroenterostomy has greatly reduced the mortality and largely eliminated the causes of failure to mechanically relieve the conditions. Moynihan well says that "the surgeon may not unreasonably expect that from being a last resource gastroenterostomy may be considered as a method of treatment worthy of consideration in a much earlier stage of chronic ulcer of the stomach." Excision of gastric and duodenal ulcers would seem to be a wise procedure, but is open to certain strong objections. In 20% of cases more than one ulcer is present, and one or more may be undetected or lie in an inaccessible situation. It leaves the ulcer tendency unrelieved, and more ulcers may form. Rodman has suggested the removal of the pyloric or ulcer-bearing portion of the stomach with complete closure of both duodenal and stomach ends and independent gastrojejunostomy. We have followed this plan in 5 cases of inveterate ulcer relapsing after gastroenterostomy, with good results. The gastroduodenostomy of Finney is a most excellent operation, and we would predict a wider field of usefulness than it has enjoyed. We have performed this operation 46 times, with one death and no relapse. The theoretical objection is that in open ulcer the food must pass the ulcerated area before reaching the widened pylorus, and obstruction has no part in the production of ulcer, as is shown by the development of duodenal ulcers. Pyloroplasty must be discarded. While we had no deaths in 20 operations, we had 7 relapses.

In briefly calling attention to the malignant diseases of this group of organs, the writer would emphasize the possibilities of cure by means of operation. In the gall bladder we found 4% of cases at the operating table had malignant disease, and all of these cases had gallstones present or evidence that they had been present at one time.

Since it has become the practice to remove all thick-walled gall bladders as useless and a possible source of future trouble, many cases of malignant disease in an early stage have been in this way, as one might say, accidentally cured. We have met with several such instances.

Cancer of the stomach is the most common type of malignant disease in the human body, constituting one fourth to one third of the total number. The radical treatment of gastric carcinoma is now on assured ground, with a mortality of 10%, or less in favorable cases, to 20% in late but still operable disease. The only necessary thing for success is an early diagnosis, and this must be on clinical grounds, supplemented by early exploratory incision. In 46 gastric resections for pyloric cancer we had 7 deaths.

The profession may well look on the surgical achievements in this new field of work with pardonable pride. That there are many shortcomings must be admitted, but in the history of surgery there has never been a territory opened up with equal rapidity, nor one in which the physician and surgeon have worked together in such harmony for the common good. The statistics on which this paper is based represent the operative experience of Dr. Charles H. Mayo and myself.

## Original Articles.

### THE CASPER–HIRSCHMANN DEMONSTRATION AND PHOTOGRAPHIC CYSTOSCOPE.[1]

BY G. S. WHITESIDE, M.D., BOSTON.

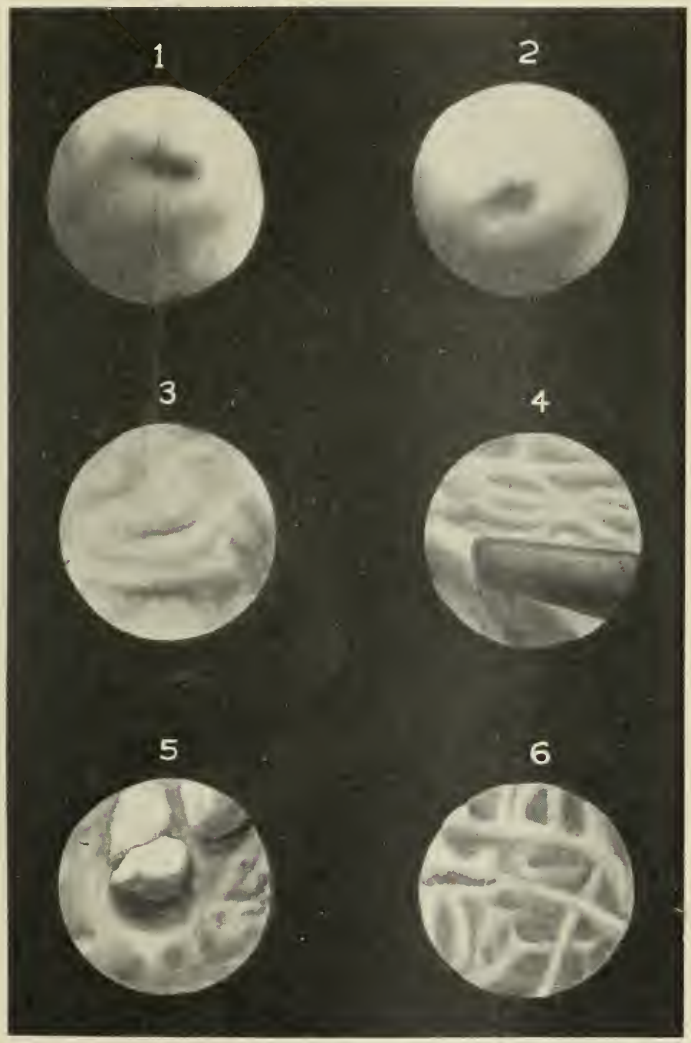
I WANT to demonstrate to you this evening, a new cystoscope that combines several features of much interest, and I shall preface my remarks with a few words on cystoscopy in general and in the female in particular. On account of the anatomical arrangement of the female urethra and bladder, digital and instrumental exploration have been practiced since prehistoric times. Visual examination of the bladder is a diagnostic method of more recent date, but, nevertheless, was practiced so long ago that no one living now can claim to have been the first to attempt it. The first instruments, of course, were crude; later, various improvements were introduced along different lines, resulting at the present time in two classes of instruments for the examination of the bladder in the female. The simplest and most generally employed of these two classes is that which has been perfected and brought to notice in modern times, and in this country especially, by Kelly of Baltimore.

This, as you all who are doubtless familiar with

[1] Presented at the meeting of the Suffolk District Medical Society; Section for Obstetrics and Diseases of Women, March 23, 1904.

it, through having used it as well as heard of it, are aware, consists essentially of an open endoscopic tube, the cavity of the bladder being illuminated by a light reflected from the outside.

CYSTOSCOPE — WHITESIDE.




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should see when his turn came to look through the instrument. With this cystoscope it is possible for the student and the instructor to look through it simultaneously and observe every feature of the interior of the bladder while the instructor explains the significance of each object demonstrated. With regard to its use as a photographic instrument it is also extremely satisfactory, because the difficulty which existed

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DELPHIA, PA.

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* Read before the Philadelphia meeting of the American Climatological Association, June 4, 1904.

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This, as you all who are doubtless familiar with

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it, through having used it as well as heard of it, are aware, consists essentially of an open endoscopic tube, the cavity of the bladder being illuminated by a light reflected from the outside. In this class of cases the bladder is dilated with air induced to distend it by the assumption of a favorable posture on the part of the patient, namely, the knee-chest position. The disadvantages of this method of examination are several; the most important of them being that the knee-chest position is an extremely tiresome and objectionable one for the unetherized patient to assume, and a very inconvenient one in which to place a completely etherized patient. The next most important objection is that the light, being reflected from the outside, often does not give as clear and satisfactory an illumination of the bladder cavity as one might wish. The advantages of this instrument are also several. The size of the endoscopic tube which it is possible to use is satisfactorily large. The fact that it is an open tube allows the possibility of various instruments, such as probes, curettes, forceps, scissors or catheter, being introduced through it for purposes of diagnosis or treatment. The cost of the apparatus is very small, and its simplicity prevents it from ever getting out of order. The technique of this method of examination is comparatively easy and requires but little practice to be remembered.

The other class of cystoscopes, of which I especially wish to speak to-night, has one great general advantage in that they may be used with precisely the same technique in either the male or the female. This class of instruments was originally made practically useful by Nitze, twenty-five years ago. They carry the light at the inner end of the instrument itself. The view is obtained through the modified telescope in the shaft of the instrument, and the medium used for distending the bladder is clear boric acid solution. Many modifications, all dependent on the same essential principle, have been devised by surgeons in almost every civilized country.

The one of which I especially wish to speak, the Casper-Hirschmann, is an instrument combining three valuable features. It may be used as a simple inspection cystoscope, or it may be used as a means of demonstrating and teaching cystoscopy and vesical pathology, in the living, to students, or it may be used for taking permanent photographic records of interesting features in normal or diseased bladders. First, with regard to its use as a demonstration cystoscope, I wish to say that the greatest difficulty experienced by those who wished to teach cystoscopy has hitherto been owing to the fact that after some object of interest had been seen and focused by the instructor, the student almost invariably moved the instrument sufficiently so that he did not see what it was intended that he should see when his turn came to look through the instrument. With this cystoscope it is possible for the student and the instructor to look through it simultaneously and observe every feature of the interior of the bladder while the instructor explains the significance of each object demonstrated. With regard to its use as a photographic instrument it is also extremely satisfactory, because the difficulty which existed in previous photograph cystoscopes has been eliminated. This difficulty was that after the surgeon had focused the object he wished to photograph, he was obliged to unscrew the eyepiece of the cystoscope and screw on the camera, thereby taking his picture entirely uncontrolled by sight. In this instrument, it is possible to observe the object not only before but during the time it is being photographed, because the surgeon may look through one eyepiece of the instrument while the camera is placed at the other.

I have used this instrument for diagnosis, demonstration and for photography in several female and in a larger number of male cases. I will pass around a few photographs which I have taken with it recently. I think all of you will agree, on giving the matter thought, that the technique is simple and the view of the object far more satisfactory than is usually the case with the open endoscopic tube.

I have here some bladders which have been taken at autopsy and hardened in formalin. It is possible in these specimen dummies to demonstrate the cystoscope almost as well as in the living.

With regard to cystoscopy in the female I wish to say that it is a field as yet comparatively little explored. There are many pathological conditions associated with the uterus and its appendages which press upon, distort or even invade the cavity of the bladder, producing characteristic appearances in the interior of that viscus, and if the gynecologist will perfect himself in the use of the cystoscope, he will be rewarded by observing appearances in the bladder which will lead him to a more accurate diagnosis in inflammatory or malignant disease, or even in cases of simple malposition of the uterus.

EXPLANATION OF PLATE.

Figs. 1 and 2 show normal ureter openings. Notice the shadow cast by the ureteral papilla on the bladder wall and the door, pit-like orifice of the ureter opening in the apex of the papilla.

Figs. 3 and 5 are from a case in which an incomplete litholapaxy had been done. Fig. 3 shows a long slit-like opening of a ureter. At the base of the papilla is a fissure or fold in the mucous membrane. Notice the solid, leathery appearance of the mucosa due to chronic cystitis. Fig. 5 shows three broken fragments of stone lying on the bladder floor.

Figs. 4 and 6 are views taken in a case where chronic obstruction to the outflow of urine has caused hypertrophy of certain bundles of muscle fibers in the bladder wall — a so-called, trabeculated bladder. The arrangement of the muscle bundles is well shown in Fig. 6 and also in Fig. 4 above the catheter which has been inserted in the ureter. The shadow of this catheter shows below it on the bladder wall.

## HUMAN SLAVERY AS A PREVENTION OF PULMONARY CONSUMPTION.*

BY THOMAS J. MAYS, A.M., M.D., PHILADELPHIA, PA.

In the arduous research for new measures to stamp out pulmonary consumption it is astonishing to find that one of the most interesting episodes in the history of our country, which

* Read before the Philadelphia meeting of the American Climatological Association, June 4, 1904.

clearly points out the true and only rational path for the extermination of this disease, is entirely overlooked, *viz.:* that pulmonary consumption was comparatively unknown among the plantation slaves of the South before the war, while in the large cities of the South during that period it was no more prevalent among them than it was among the whites. This rarity was so obvious, and is verified by so many lay and medical authorities, that it does not call for any extended statistical support. Thus, according to the health statistics of Charleston, S. C., of which I was not able to obtain an uninterrupted report up to the present time, the negro death-rate by consumption in that city in 1860 was the same as among the whites, *viz.:* 1.75 per thousand living. In 1867, whites, 2.00, negroes, 3.40; in 1876, whites, 2.00, negroes, 6.95; in 1881, whites, 2.60, negroes, 7.03; in 1890, whites, 3.55, negroes, 6.86; in 1900, whites, 1.23, negroes, 6.15; in 1901, whites, 1.89, negroes, 5.04; in 1902, whites, 1.43, negroes, 5.74. This shows that the disease was 228% more prevalent among the negroes in 1902 than it was in 1860, and that its death-rate was 300% greater among the negroes than among the whites in 1902. A similar vulnerability of the negro race to consumption is shown in other sections of the South. Thus in New Orleans its annual average death from 1897 to 1891 — a period of five years — is 123% greater among the negroes than among the whites; in Atlanta, Ga., from 1899 to 1901 — a period of three years — it is 141% greater; and in Augusta, Ga., from 1898 to 1902 — a period of four years — it is 424% greater among the negroes than among the whites.

Now on what score can we account for the enormous increase of consumption among the former slaves of the South since 1860? Why should the death-rate from consumption be from two hundred to four hundred per cent larger among the negroes than among the whites of the South at the present time, and this in spite of the fact that they were on an even basis, in this respect, in 1860? What destructive change has occurred in the environment of the southern negroes since 1860 that has left the white race practically untouched? Why should the negroes in the course of thirty-five years be transformed from the least to the most consumptive race in this country? This came to them neither through a change of climate nor through the influence of migration, but in the land of their unwilling adoption in which they had continually lived for more than two hundred years, and without a single visible sign of warning. It is this: Since they obtained their freedom their entire social, economic and political being has been revolutionized. In place of being dependent on their owners for their food, clothing, shelter, medical care and nursing as they did in the days of slavery, they are thrown on their own resources and are forced into a struggle for existence that is as unequal as it is tragical. They are thus brought into the most intense competition for existence with a people whose civilization is thousands of years ahead of their own development. Their condition may be fitly compared to that of an animal which is confronted by a new geological epoch to which it must adjust itself or perish. It is not surprising, therefore, that in this task of re-adjustment many of them fall a prey to diseases of the brain and nervous system, the very organs which bear the brunt of the battle in adapting this race to its changed environment; and for this and no other reason do they become consumptive.

That the brain and nervous system endure the strain of this great contest is amply attested by the fact that before the Civil War insanity, like consumption, was comparatively rare among the negro slaves, yet, according to Dr. T. O. Powell,[1] this disease has increased 705% among these people from 1870 to 1890 in the state of Georgia. This high authority also states: "I am forced to believe that insanity and tuberculosis are first cousins, or at least closely allied. The sudden outburst of insanity with the colored race of the South came associated with tuberculosis, hand in hand, keeping pace one with the other."

The same is true of North Carolina, for Dr. J. F. Miller, Superintendent of the Eastern Insane Hospital of that state, declares[2] that from 1885 to 1896 insanity increased 256% among the colored people in that state, and that in 1884 consumption caused 14%, and in 1895 27%, of the total number of deaths in his hospital, and this in spite of a reduction of the general mortality rate.

Dr. James D. Moncure, Superintendent of the Eastern Hospital for the Insane, in Virginia,[3] states that before emancipation there were about 60 insane negroes in that hospital, that now (1896) there are over 1,000 — an increase of over 1,600% — and that they readily contract consumption.

It is obvious, therefore, that the tremendous increase of consumption and insanity among the southern negroes is, in the first place, due to the heavy economic and industrial burdens which were suddenly placed on their shoulders, and which they had neither the wisdom nor the organized constitutional or mental strength to discharge; and in the second place to improvidence of living, to poor and improperly prepared food, to ignorance of the laws of physiology, to bad hygienic surroundings, to overcrowding, laziness and the lack of persistent employment, to improper care and nursing when ill, to dissipation of all sorts, to lack of self restraint, to alcoholism, and other vices. On this point the testimony of Dr. Miller, who has been quoted, is very emphatic and applicable. He says: "The negro in slavery had no thought for the morrow, . . . but he spent his quiet, humble life in his little cabin, with his master to care for every want of self and family. He lived under

[1] Dr. T. O. Powell, Superintendent of the Georgia Asylum for the Insane. Report on the increase of insanity and its supposed causes.
[2] The effects of emancipation upon the mental and physical health of the negro of the South. North Carolina Medical Journal, Nov. 20, 1896.
[3] Private communication.

the best hygienic restraint. His habits of life were regular, food and clothing substantial and sufficient, and the edict of his master kept him in-doors at night and restrained him from promiscuous indulgence and the baneful influence of the liquor saloon. In sickness he was promptly and properly cared for by physician and nurse. Freedom came to him, and a change came over his entire life. Under his former manner of living he enjoyed wonderful immunity from brain and lung trouble; and I confidently assert that the germs of these troubles came to the same man and race in consequence of his changed environment and the manner of life which followed."

That the same influence which gave immunity to the southern slaves from consumption will produce the same effects elsewhere is shown on a somewhat less extensive scale by the event of the importation of Chinese labor into Cuba.[4] Thus, from 1860 to 1870 Spain brought 250,000 coolies under contract to the island of Cuba. Their ages ranged from eighteen to thirty years, and they consisted of the scum and off-scourings, principally of the cities of Canton and Macao, and in spite of the most careful selection they brought with them consumption and other diseases and vices for which China is noted. The vast majority of them were placed on plantations, and being under contract, and under the supervision of overseers, who ministered to all their physical necessities, their conditions were identical to those which surrounded the negro slaves in the South before the war. The result was that within the first few years consumption was eliminated, either through death or cure, and never reappeared in them or their offspring.

From all that has been said, the prevention of pulmonary consumption resolves itself into such efforts of education as will impress the masses with the importance of leading a life similar to that (excepting slavery), which made the slave population of the South practically immune from this disease before the Civil War. What was done once may be done again, for the laws of health which held true then are equally applicable now. Such efforts of prevention mean the inculcation of sound principles of hygiene; the eating of wholesome and properly prepared food; the wearing of suitable and seasonable clothing; the avoidance of damp, unsanitary and overcrowded dwellings; the abstinence from nerve-strain and over-work; the shunning of strong drink and other vices; the teaching of the value of useful labor; the encouragement of agricultural and mechanical pursuits; the training in physical development; the supervision of proper convalescence from what to them seems a trivial cold or cough, or from acute illness or injury; the procurement of effective medical attendance and nursing in sickness or accident, etc.

Now a large hospital and dispensary practice among consumptives extending over a period of eighteen years has convinced me that the practical solution of the prevention of this disease is one of reaching the masses. People who are predisposed to, or are suffering from, this disease do not come to such institutions until the malady has gained a strong foothold, and the stage of prevention has been passed; not because they would not eagerly do so, for they possess as strong a share of the instinct of self-preservation as the common run of mankind, but they fail to realize the true significance of their condition until it is too late. Hence the only effective measure is to bring yourself in contact with the people by inaugurating a campaign of education. To bring this about is for a charitable organization to divide a city, or some of its wards, into convenient sized sections, allot each section to a competent physician, whose duty it will be to make a general canvass of his section once a month, or as often as is necessary, among all willing residents who show or possess a family taint, or who for any reasons are believed to be in danger of consumption, to take condensed histories of all such individuals and families, to impart advice in regard to food, clothing, shelter, habits, etc., etc., to give medical counsel and treatment whenever needed, and to send all cases which need active supervision to an institution which is well supplied with all the paraphernalia necessary for the treatment of every defect in such individuals.

[4] Dr. H. McHatton. Georgia Journal of Medicine and Surgery, June, 1902.

## Clinical Department.

### A CASE OF CARBOLIC ACID POISONING.

BY WILLIAM W. HARVEY, M.D., BOSTON.

The following case so well illustrates the action of carbolic acid in toxic doses, and the value of prompt and persistent treatment in such cases, that it seems especially worthy of report.

The patient, a child of two years of age, swallowed a certain quantity of strong carbolic acid which had been left carelessly in a cup on the floor by the mother who was engaged in the process of exterminating bedbugs.

According to family reports, the child barely had time to take a few steps, when it fell, limp and unconscious. I arrived ten minutes later. At this time the pulse could not be obtained at the wrist. The entire body was cold and mottled. Respirations were infrequent, irregular and stertorous.

While considering the child moribund and the case hopeless, I gave in rapid succession a large number of subcutaneous injections of brandy and $\frac{1}{60}$ grain of strychnia. In a few minutes the pulse was perceptible at the wrist and respirations improved.

By combining a glass syringe and a large, soft rubber catheter, I improvised an excellent stomach pump and washed out the stomach, after which the whites of two eggs and a half ounce of brandy were introduced through the tube. I do not think the stomach contained much of the carbolic acid, the symptoms having been produced, rather, by the immediate absorption of a small quantity of the substance.

Pulse and respirations continued fair for about a

half hour, when respirations again failed. In spite of the Sylvester method of artificial respiration being employed faithfully, cyanosis increased; pupils dilated, lips became black, muscles rigid. Patient refused to inspire. At this crisis the lungs were filled several times by mouth to mouth insufflation before the least tendency to automatic function became apparent. By these methods, extending over perhaps ten minutes, respiration was again restored.

Close watching and occasional stimulation were required during the next three or four hours, when patient was left in practically a normal condition, conscious and desirous of sitting up. The few slight burns were superficial and insignificant.

## Reports of Societies.

### AMERICAN MEDICAL ASSOCIATION. SECTION ON PRACTICE OF MEDICINE.

DR. ALEXANDER LAMBERT of New York City, Chairman.

FIRST DAY. JUNE 7.

Chairman's address:

THE ADAPTATION OF PURE SCIENCE TO MEDICINE.

DR. ALEXANDER LAMBERT, of New York, read this paper. He said the most complete adaptation of scientific work to clinical medicine was the work of Behring and others in the antitoxic sera for diphtheria and tetanus, conceived and worked out completely in the laboratory before it was applied to medicine. The preventive inoculation against typhoid fever, plague and cholera was the practical application of our ideas of immunity, and the success so far obtained seemed to be that about 50% of those inoculated were protected against these diseases, and of those who acquired these diseases after being inoculated the mortality was about 50% less than in the uninoculated. The practical value of the study in the variations of blood pressure was just beginning to be recognized. The knowledge obtained by the use of blood pressure instruments would increase our therapeutic capabilities, for they gave valuable indications of the variations in the vaso-motor control, and they seemed to promise a distinct gain in a more intelligent treatment of cardiac and renal diseases, and would give valuable indications in infectious diseases of when to give and when to withhold stimulants. The closest co-operation between clinicians and laboratory workers, unfortunately not always present, was a thing to be desired. One often saw the worker in the laboratory failing to appreciate the clinical situation and the difficulties of the clinician. On the other hand, clinicians were often prone to throw the responsibility of a difficult diagnosis on the worker in the laboratory, and when he failed, to criticize the result and in turn throw discredit on all laboratory results.

PERNICIOUS ANEMIA AND ITS RELATION TO GASTRIC DIGESTION BASED ON TWENTY-FIVE CASES.

DR. CHARLES G. STOCKTON, of Buffalo, read this paper and gave the following summary: Of the 24 cases here reported, the youngest was thirty-two, the oldest seventy; average forty-five plus years; there were 20 males and 4 females; 13 had outdoor occupation and 11 indoor; the longest duration of illness was in one five years, the shortest six months and fatal; 12 were known to be dead, 5 living, the others unknown. All had dyspnea on exercise; all suffered from faintness and weakness; 16 had the gaseous pulse; 16 had a heart slightly enlarged; 16 had systolic apical bruit; 6 had *bruit de diable;* 8 had other bruit; 22 had a distinct lemon-colored tint of the skin; 15 had a tongue strikingly denuded of epithelium; 10 had good appetites, 7 capricious, and 7 anorexia; 18 complained of symptoms of stomach trouble; 10 had constipation, 8 diarrhea, and 6 irregularity of the bowels; in 11 the liver was enlarged; 1 had four periods of improvement, 3 two periods, 8 one period and 8 no period of improvement. After his attention was called to the subject by Billing's paper, he found signs of spinal cord involvement in 6 out of 9 cases. Nine cases showed slight dilatation of the stomach; in 13 the gastric digestion was absent, in 8 it was very low, and in 3 it was fairly good. Five showed evidences of gastric catarrh. Six showed no acidity of the gastric contents, one (the highest) showed a total acidity of 46, one 26, and the average about 10. Four showed the presence of combined chlorides. One showed free hydrochloric acid .05%, one .06% and one .022%, in all the others it was absent. Six showed lactic acid present; 4 showed other organic acids. The acid salts were very low, 18 being the highest, 5 having none whatever; 7 showed the biuret reaction; 6 showed rennet present. The digestion of starch was poor in all save two cases.

DR. R. C. CABOT, of Boston, said that of 150 cases of pernicious anemia, five sixths showed the absence of hydrochloric acid, and yet digestion went on perfectly well. Hydrochloric acid appeared to be a luxury, not a necessity.

DR. MAX EINHORN, of New York, said he had met with many cases of pernicious anemia in which the gastric digestion was not impaired, and that cases of achylia gastrica might develop into acute pernicious anemia.

DR. ALLEN JONES, of Buffalo, wished to emphasize the fact that achylia gastrica was more often encountered without pernicious anemia than with it.

DR. WILLIAM OSLER, of Baltimore, said that we were still much at a loss in our attempts at finding an exact pathology of pernicious anemia.

DR. J. N. HALL, of Denver, Colo., has seen striking improvement when hydrochloric acid was given in large doses.

DR. GEORGE DOCK, of Ann Arbor, Mich., had met with success in the treatment of pernicious anemia with large doses of dilute hydrochloric acid, fresh air and diet.

DR. CHARLES G. STOCKTON, of Buffalo, thought that we should draw a distinct line between achylia gastrica with atrophy of the mucosa and cases of pernicious anemia.

THE DIAGNOSIS AND TREATMENT OF PERFORATION IN TYPHOID FEVER; WITH A REPORT OF NINETEEN CASES, OF WHICH SIXTEEN WERE OPERATED UPON, WITH FIVE RECOVERIES.

DR. MORRIS MANGES, of New York, read this paper. He said that in drawing practical conclusions from this analysis of the varied clinical features of perforation as it occurred in the series presented, it would at once be seen that there was no symptom or group of symptoms which were pathognomonic. In suspected perforation the condition of the abdomen as regards tenderness, rigidity, distention, respiratory excursions, and liver dullness should be routinely observed. The leucocyte count was of little value. He said that most physicians expected too many and too pronounced symptoms for an early diagnosis of perforation. Granting the possibility of spontaneous cure, the best results ever claimed for nature's method had been 5%; contrast this with the latest statistics published by Hare and Ashhurst of 362 cases which they had collected with a recovery of 26% with operation.

The only exception to the rule of early operation was that moribund patients could not be operated upon.

### A CASE OF TYPHOID FEVER WITH AN UNUSUAL COMPLICATION.

Dr. William Edgar Darnall, of Atlantic City, reported this case. The case was a very mild one and was known as "walking typhoid" up to the time the patient came to Atlantic City. The case seemed peculiar in that there was a uterine flow which assumed the proportion of a hemorrhage, and only packing the vagina with gauze succeeded in checking it. He said that hemorrhage as a complication of typhoid fever presented some interesting phases. No mention was made of uterine hemorrhage as a complication of typhoid fever by most authorities. Osler, however, mentioned "a rare and fatal form of typhoid fever characterized by cutaneous and mucous hemorrhages." In the case reported the hemorrhage did not usher in the attack, but occurred in what must have been the third week of the trouble. The normal monthly period did not figure in any way in the case because the menstrual epoch occurred two weeks previous.

Dr. William Osler, of Baltimore, said that the essential and most important thing was intelligent watchfulness on the part of the physician. In hospital rules can explicitly be laid down, and specific directions be given the house physician who should be on the alert for certain changes in the typhoid cases pointing to the possibility of intestinal perforation.

Dr. J. C. Wilson, of Philadelphia, said that in the German and Pennsylvania hospitals at every visit of the house physician, as a matter of routine, rigidity of the abdominal muscles was looked for. If they suspected rigidity of the right side or the right lower quadrant of the abdomen the attending physician was immediately called. If pain, especially when associated with rigidity, the patient was immediately removed to the operating room. His experience had led him to believe that perforation of the bowels was preceded by, in a considerable number of cases, hemorrhage, but seldom did they occur coincidentally.

### THE MORTALITY AND MANAGEMENT OF PNEUMONIA.

Dr. Edward F. Wells, of Chicago, said that pneumonia was responsible for an annual morbidity of about 0.7%; a mortality rate of about 0.13% and it caused about 8.1% of all deaths. In New York there was an annual mortality of about 1.3 for 1,000 of the population in the decade 1804–1813, and rose to about 2.5% per 1,000 during the terminal decade of the century. He said that: (1) pneumonia was a very prevalent disease and its prevalence was increasing; (2) this increasing prevalence was probably due to the wider diffusion of the more vigorous strains of the pneumococcus, made possible by the increasing commingling of people; (3) the pneumococcus was to be found in the upper respiratory passages of a very large proportion of healthy persons, and it was the migration of these ever present germs into the pulmonary alveoli which caused pneumonia; (4) pneumonia was a very fatal disease and its mortality was increasing; (5) the increasing mortality was probably due to the greater average virulency of the pneumococcus. The following prophylactic measures were offered for consideration: (1) pneumonic sputum should be destroyed before it has become dry. (2) The nostrils, mouth and throat should be kept as clean as possible. Taking a drink of water after eating is a habit which should be formed and cultivated. (3) The room occupied by a pneumonic patient should be afterwards disinfected. Remaining unnecessarily in a room occupied by a pneumonic patient should be avoided. (4) Respiratory catarrhs should be avoided, and if contracted should be relieved. (5) Physical and mental exhaustion, privation, undue exposure to cold and inclement weather should be avoided. In the ordinary cases he supplemented the efforts of nature by giving during the first few hours only three to five drops of tincture of *Veratrum viride* every two or three hours until nausea had been produced or the initiatory violence of the attack had passed. To combat temperature he used the ice cap and the external application of fifteen to twenty drops of guiacol. Pulmonary edema was treated by energetic stimulation of the nervous system by strychnia, of the capillaries by adrenalin, and of the heart by small doses of morphia. Oxygen inhalations met his approval.

### THE STUDY OF A SERIES OF CASES OF PNEUMONIA, WITH SPECIAL REFERENCE TO DIAGNOSIS AND COMPLICATIONS.

Dr. Joseph Sailer, of Philadelphia, read this paper. He based his study on 65 cases in the Philadelphia Hospital during the past winter. Nearly 40% were over sixty years of age and the mortality was correspondingly high. Thirty-five cases dying and 30 surviving. The distribution as determined by physical signs and confirmed where possible by autopsy was: left lower lobe alone 16, left upper lobe alone 2; right lower lobe 12, right upper lobe 13. In 5 cases a diagnosis was made of involvement of the right upper and middle lobes. The entire left lung was involved in 4 cases and the entire right lung in 3 cases. It had been asserted that leucocytosis rendered prognosis more favorable. In the cases that recovered there were less than 10,000 leucocytes in 3 cases and between 10,000 and 20,000 in 10 cases; between 20,000 and 30,000 in 5 cases; between 30,000 and 40,000 in 5 cases; between 40,000 and 50,000 in 1 case, and between 50,000 and 60,000 in 2 cases. Of the cases that died the leucocytes were: between 10,000 and 20,000 in 11 cases; between 20,000 and 30,000 in 4 cases; between 30,000 and 40,000 in 1 case and between 40,000 and 50,000 in 1 case. It does not appear that any definite conclusions could be drawn from the leucocyte count. The quantity of chlorides in the urine was not an indication of the subsequent course of the disease, but the comparison of the excretion of chlorides in pneumonia and in other febrile diseases had shown that in the latter states the reduction was comparatively insignificant and in pneumonia always considerable, so we could place the highest value upon it in the diagnosis of pneumonia. Of late years we had practically forgotten the importance placed upon Skoda's sign, the indeterminate or indefinite respiratory murmur characteristic of consolidation of the lung. Two forms of bronchial breathing could be distinguished to which the names of loud and faint could be given. The difference was one of degree. The faint bronchial breathing, although occurring more often in the early stages of the disease, was not by any means limited to the stage of congestion. Wooden tympany was only observed in 2 cases, herpes was observed 4 times, icterus 3 times. Feeble heart action and albuminuria were comparatively common. Profound cyanosis was present in 2 cases, and in 1 was temporarily relieved by venesection. If severe abdominal pain was present it was associated with tenderness in the hypochondrium on the same side as the pneumonia. This happened in 4 cases. The complications were numerous. Chronic nephritis usually of advanced type was found in 17 of 25 autopsies.

Pleurisy, either chronic or acute, was present in all cases. In 2 there was empyema, in 1 gangrene of the lung and in 2 acute fibrinous pericarditis, in 1 acute obliterative pericarditis and in 1 acute ulcerative endocarditis, and in 1 pneumococcus meningitis. In 4 cases tubercular lesions were present. The treatment consisted of expectant stimulation with occasional resort to hypodermoclysis. Ten cases were treated with anti-pneumococcic serum. These cases were selected, part being favorable subjects and part unfavorable. There were 3 deaths and 7 recoveries. Of the fatal cases one was distinctly unfavorable, and one practically moribund when the serum was used. Of the cases that recovered three were regarded as severe. On the whole, the results of the serum were regarded as distinctly encouraging.

DR. DELANCY ROCHESTER, of Buffalo, said that the disease should be treated and not the symptoms, and believed that if we get rid of the toxemia a great many of the symptoms would be got rid of. He approved early bleeding in asthenic cases, but he disapproved of the administration of opium in the beginning. He believed we could get rid of the poison by the proper use of laxatives, particularly calomel, and the proper use of cold. Getting rid of the poison of pneumonia by sweating was of great benefit. He approved of venesection in certain cases.

DR. BABCOCK, of Chicago, referred to the work of an Italian experimenter who attempted to demonstrate that pulmonary edema was not due to heart failure, but to the action of the pneumococcus infection upon the pulmonary alveoli. If blood pressure was low at the start he believed that *Veratrum viride* was contraindicated, and he protested against the use of cardiac depressants when the blood pressure was already low. Digitalis he believed to be of the greatest possible utility in the form of fresh infusion injected hypodermatically.

DR. S. SOLIS-COHEN, of Philadelphia, was firmly convinced that there were two times in the history of the cases of pneumonia when venesection might be employed, *viz.*, in the beginning of attacks; here he believed it reduced the toxemia; and secondly toward the end of the attack when the right heart was overloaded. The keynote of the successful treatment in this disease was individualization. He believed that patients with temperatures of 103, 104 or 105 gave a better prognosis than those with temperature of 100 to 101; the vital reaction seemed to be better in the latter.

### APPENDICITIS FROM THE STANDPOINT OF A PHYSICIAN.

DR. S. G. BONNEY, of Denver, said that the responsibility of the physician in appendicitis was far greater than that of the surgeon, because early diagnosis was a factor of supreme importance and afforded solution of the problem as to time of operation. A report of selected illustrative cases from the author's personal experience was appended.

### SUICIDE, WITH SOME ILLUSTRATIVE CASES.

DR. JOHN L. DAVIS, of Cincinnati, read this paper. He said that in twelve years there had been over 77,000 suicides recorded in the United States, the number increasing annually from about 3,500 in 1891 to 8,600 in 1903. The greatest number of suicides are credited to middle life. Our American strenuous life he believed to be having a disastrous result on the physical conditions of our people; they were becoming physically unbalanced, and this feverish intensity and eagerness to excel began almost at the cradle and ended only at the grave.

## SECOND DAY, JUNE 8.

### PATHOLOGY OF ARTERIOSCLEROSIS.

DR. WILLIAM H. WELCH, of Baltimore, opened the symposium on arteriosclerosis. He wished to emphasize the combining of the clinical, the pathological and the anatomical phases of the subject, and he thought that our knowledge would be much advanced by a combination of the work. The disease, arteriosclerosis, was recognized from the time that autopsies began to be made, and was recorded as early as the sixteenth century. A historical review of the subject here followed. He then considered the nature of the trouble as described by Keller and his students. In the cicatricial form of arteriosclerosis there seemed to be a peculiar localization, and it affected chiefly the thoracic arch, especially its ascending portion. It had but little tendency to extend into the large branches of the aorta or to extend down into the abdominal aorta. It was characterized markedly by changes in the adventitia and media, and also by furrows or scar-like depressions seen more particularly in the inner coat of the aorta. Associated with this were elevated plaques, many of which were not to be distinguished from true arteriosclerosis. Sometimes fibrous scar-like patches could be seen. Another type related to syphilis or syphilitic aortitis, so-called by Keller and students. There were at present three anatomical distinct affections that might occur separately, but which were more often combined with each other. Dr. Welch said there were the following forms to be considered: (1) That form with inflammatory thickening of the inner coat of the vessel resembling scar tissue. (2) That form called by some "true arteriosclerosis" and which naturally applied to a thickening of the intima and a splitting of the internal elastic membrane, or the elastic muscular coat, associated with marked degenerative changes, necrotic, fatty and hyaline degenerations. (3) That form of syphilis of the aorta already referred to. He asked if this hypertrophy was not a compensatory act, and a thing to be desired in the muscular coat of the arteries, as in the heart muscle. Experimentation did not shed much light upon the questions raised. The most important underlying cause was the functional strain upon the arteries. There was no question but that extensive arteriosclerosis was a disease without clinical symptoms or any effect upon organs. It was a matter of great importance to determine what were the conditions associated with arteriosclerosis which were responsible for the rise of arterial pressure and for the cardiac hypertrophy. This he considered to be the most important aspect of the subject. The rise of blood pressure was due to causes which led to arteriosclerosis, but not caused directly by it.

### ARTERIOSCLEROSIS FROM ACUTE INFECTIOUS DISEASES.

DR. WILLIAM S. THAYER, of Baltimore, said that he was led to the consideration of this part of the symposium by observations on typhoid fever patients. Out of 62 autopsies in cases of typhoid fever, in 19 there were definite sclerotic changes made out, in 4 there were yellow opacities in the intima noted, and in 13 sclerotic changes which were early and fresh. The figures, together with a higher blood pressure than was noted in the control tables, lead him to feel that typhoid fever played some causal part in the thickening of the radial arteries. If that was true, typhoid fever, to a greater or less degree, caused this condition. Light might be thrown upon this by an analysis of the histories of a large number of cases in Dr. Osler's wards. A careful inquiry was made into the question of alcoholism, work, etc. The histories

gone over consecutively numbered 3,894, and they were examined (1) as regards the general presence of palpable radials; (2) in regard to the presence of palpable radials in cases with histories of diphtheria, scarlet fever, malaria, pneumonia, typhoid fever, acute rheumatism, syphilis, gonorrhea, alcoholism, and heavy work. The results obtained were shown by tables. Subdividing these cases into groups in which only one etiological factor was made out, the results were also shown by charts. Where no causal factor existed a general percentage of 18.9 was shown, and cases of diphtheria a slightly lower percentage, then pneumonia with 19.6, malaria 22.6, syphilis 23, scarlet fever with 24, diphtheria with 28.7, rheumatism 41, alcoholism 53.3 and heavy work 62.2. So far he was not justified in drawing any conclusions that acute infectious diseases played a part in the development of arteriosclerosis. The part played by physical labor in the production of arteriosclerosis seemed to be far greater than that played by alcoholism.

### ARTERIOSCLEROSIS OF SYPHILITIC ORIGIN.

Dr. C. Travis Drennen, of Hot Springs, said that though there was a connection between arteriosclerosis and syphilis, the connection was obscure. The routine method adopted by the profession at large in the treatment of syphilis he believed was responsible for the production of arteriosclerosis, and the tendency of the disease itself was to produce sclerosis in various organs. He entered a plea for a more rational treatment of syphilis that would lessen the danger of mercury and the iodides and at the same time possibly eliminate the treatment of syphilis as a causative factor in the production of arteriosclerosis.

### ARTERIOSCLEROSIS OF NEPHRITIC ORIGIN.

Dr. George Dock, of Ann Arbor, Mich., presented this paper. He said that doubtless in many cases arteriosclerosis was caused by nephritis, and it was of great clinical importance that the kidney lesion might be severe yet latent, often developing symptoms severe enough to cause death. He called attention to the value of clinical study and the recognition of the importance of hyperdistention in causing vascular disease; as the presence of this condition in acute nephritis might lead to disease of the intima, followed by compensatory, and later by degenerative, changes. He cited the case of a boy of fifteen suffering from acute nephritis which terminated in death, during one of several attacks of uremia. The object of his paper was to assert the possibility of renal diseases of all kinds assisting in the production of arterial disease, and to plead for a more extensive clinical investigation in order to show the extent and, if possible, the explanation.

### ARTERIOSCLEROSIS DUE TO LEAD.

Dr. Frank Billings, of Chicago, said that the mode of entrance of lead into the body was very easy, and he instanced a case of poisoning from washing the clothes of a man whose occupation was a painter. Regarding the effect of lead upon the blood and other tissues, he said it probably was direct. As the blood circulated, the poison might act directly upon the cells of the vessel wall and produce a proliferative endarteritis. This was associated with degenerative processes of the media and thickening of it, and especially a degeneration of the muscular coat with proliferation and thickening. The effect upon the elastic coat he did not know. There was also an interstitial thickening of the outer covering which was widespread. There was also caused a chronic degeneration of the kidney substance and resulting cirrhosis of the kidney with well-known fibroid changes and hypertrophy of the muscular coat of the arteries. The effect was upon the cells, tubules and glomeruli and blood vessels. In a large number of cases brought to autopsy with nephritis a very large proportion of them was associated with lead. Lead predisposed to gout, and it was well known that arteriosclerosis was common in gout. A diagnosis could not be made, except in cases where the nature of the cause was found.

### THE SIGNIFICANCE OF ALCOHOL IN RELATION TO ARTERIOSCLEROSIS.

Dr. Richard C. Cabot, of Boston, in his review of literature on this subject, has found that most standard textbooks assert unconditionally the importance of the excessive use of alcoholic liquors as a causative factor in the production of this disease. His clinical research showed that of 283 cases investigated at the Massachusetts General Hospital, only 18 or 6% showed arterial sclerosis so far as examination of the heart and peripheral vessels gave evidence. This was to the exclusion of those over fifty years of age and those who had syphilis. Excluding those of forty years, the percentage would fall to 1.4%. Similar investigations at the Massachusetts Hospital for Inebriates and at the Long Island Hospital showed that alcoholism had a very slight influence in the causation of the condition. Post-mortem evidence gathered at the Massachusetts General Hospital gave similar results, *i. e.*, that the alcoholic origin of arteriosclerosis was a myth.

### ARTERIOSCLEROSIS AND ANGINA PECTORIS.

Dr. William Osler, of Baltimore, said that there were many things doubtful about angina pectoris, and that it was associated with arteriosclerosis was shown by Edward Jenner in post-mortems he made. It had been demonstrated in a large number of post-mortems since then, and there was no question about its association in a very considerable number of cases. With regard to the attacks of pain there were a great many interesting points in this connection. Arteriosclerosis of the blood vessels of the head produced attacks of severe pain associated with migraine. Severe recurring headaches might be seen in connection with embolism and thrombosis. In sclerosis of the abdominal vessels severe pain was rarely met with, yet there were cases of angina pectoris in which the pain was almost entirely abdominal, and might even be mistaken for hyperacidity; such cases might be termed "angina abdominis." Interesting conditions were shown in the lower extremities; cases of numbness and tingling of the extremities were met with in old people, in diabetes and Bright's disease, and this was due to senile arteriosclerosis. Pain caused by plugging of the femoral artery was marked, and there was also pain in thrombosis of the veins in typhoid fever. In old persons attacked with very great pain, with cramps in the muscles, it seemed to deserve the name "angina cruris." Dr. Osler said that there seemed to be four groups of cases as follows: (1) Those in which the angina attacks were definite, distinct and severe in young persons, a neurotic process recurring over long periods of years, terminating fatally, and in which the arteries show no sclerosis whatever. (2) Those cases in which the angina pectoris was associated with syphilitic arteriosclerosis. These were amenable to treatment, occurred in young men, with signs of cardiac lesions, frequently aortic insufficiency, but with evidences of syphilis, definite and distinct. He wished to emphasize the importance of syphilis in producing a distinct type of aortitis. (3) A large group of cases occurring in the pre-senile,

between the ages of forty and sixty. (4) A group of cases occurring between the ages of sixty and eighty and a very important group.

TREATMENT OF ARTERIOSCLEROSIS.

DR. JAMES N. ANDERS, of Philadelphia, said that he had subdivided the cases into etiological categories as follows: (1) Those due to toxic agencies in the blood, *e. g.*, in chronic alcoholism, lead poisoning, diabetes mellitus, syphilis, gout, rheumatism, and other infectious diseases; (2) arteriosclerosis caused by the constant ingestion of an excess of either the carbohydrates or nitrogenous food; (3) cases dependent upon constant hypertension, due to muscular over-exercise, as in certain laborious occupations and violent competitive sports.

*Prophylaxis.* — He emphasized the importance in early life with reference to competitive efforts in athletics. The maintenance of a complete nutritive equilibrium was a potent means of preventing pathological processes which led to arterial changes. In gouty subjects nothing was so vitally important as a suitable diet and régime. There was, however, no special diet suitable for all cases of gout, no dietetic rules universally applicable. A suitable and considerable restriction in the amount of food was the prime requisite. Such subjects should adopt an open air life coupled with regular systematic muscular exercise. By remembering the principal causes of arteriosclerosis it was clear that by a proper regulation of the séances, massage became a most useful means of prophylaxis, and exercise of beneficial influence upon the glandular secretions and the nervous system as well as upon the vascular system. Warm baths were serviceable in lowering the tension of both the arteries and veins.

It might be seriously doubted whether the disease was ever arrested by medicine; however, we might retard its progress to some extent and restore the normal rapidity of the blood current and lower the blood pressure by dilating the arterioles. The remedies employed for this purpose were nitroglycerin, the nitrites and potassium iodide. Except in cases due to syphilis the results obtained by the use of iodides were in no wise comparable in brilliancy to those obtained by following the careful application of hygienic measures and the use of nitrites. The iodides were called for and had been shown to be of decided value in cases showing a luetic taint. Sphygmographic tracings indicated the results of nitrites and nitroglycerin. The result of these studies made clear the difference in conditions described under the title of arteriosclerosis. The blood pressure was not materially increased in many cases dependent upon senile degeneration, chronic diabetes and certain toxemias. The nitrites were strongly indicated and most effective in that category of cases in which there was an early and marked increase in arterial pressure, and the heart was hypertrophied.

DR. ALFRED STENGEL, of Philadelphia, said that if we wished to accomplish anything in the treatment of arteriosclerosis, especially its consequences, it should be done in the early stages of the disease and, therefore, greater efforts should be made in the direction of diagnosis and its etiology. He felt convinced that alcohol was a very important cause. He was much surprised at a recent meeting of the British Medical Association, in hearing the statement made that the convalescence of typhoid fever should take from one year to eighteen months, and the more he saw of the end results of typhoid fever the more he believed in the truth of this statement. After having had the disease, it was necessary to direct avoidance of strains of any kind until long after.

MULTIPLICITY OF CAUSES.

DR. FRED'K C. SHATTUCK, of Boston, referred to the multiplicity of causes of arteriosclerosis. It seemed to him that the carrying of responsibilities, such as by the captains of industry — men who carry great strain, etc., the men from whom we could not get statistics — that this weight carrying he could not but believe was one of the causes of arteriosclerosis through defective metabolism. There is a high arterial tension in these people, and if you add to that alcoholism, what is the result? The biggest alcohol drinkers in the country who still maintain good health were not the men who lead strenuous lives. In Canada the life was a hard one; the Scotch and the Scandinavians were enormous consumers of alcohol; the Scotch lead intelligent lives, yet not the high tension life as in this country. It was a notorious fact that a man cannot use alcohol here as in Europe. All this seemed to show that there was an extreme complexity of problems with which we were dealing.

DR. WM. KRAUS, of Memphis, Tenn., said that the anatomical classification of the disease was fraught with difficulty. The etiological feature of this disease seemed to be associated with the circulation of toxins in the system and with degeneration in solid organs. Primary degeneration was not so much the result of increased pressure or pathological change as the circulating toxins in the outer coats. With regard to malarial fever, it must be very severe and characterized by long duration before it produced arteriosclerosis. In all cases he found changes in the kidney, and in the severe malarial fever there was usually associated albuminuria. He referred to the instance of a man who twenty-four or twenty-five years ago had suppression of the urine, and to-day this man could not drink alcohol without raising the blood pressure so much as to cause throbbing of the temples.

DR. CHAS. G. STOCKTON, of Buffalo, spoke of the appearance of pain in the abdomen depending upon arteriosclerosis and which was often not even suspected. Instead of using the ordinary warm baths he thought better results were obtained from short hot or vapor baths which had as good effect in opening the capillary vessels. When the nitrites or nitroglycerin was given and it was desired to have a constant and uniform effect, it should be given more frequently. Without the use of the iodides he did not think we would have favorable results in the treatment.

DR. S. J. MELTZER, of New York, assumed that he was not wrong in stating that local causes could cause local arteriosclerosis. In referring to Dr. Cabot's remarks, he said the peripheral arteries only were examined, but the splanchnic area was not examined, and he did not think that Dr. Cabot should draw the conclusions he did without examination of this area. Alcohol in health is sometimes a curse, but alcohol in disease was often a blessing.

DR. BABCOCK, of Chicago, did not think that we should attribute special etiological influence to any one factor in the production of arteriosclerosis. He thought we should consider the form in which alcohol was consumed. The Germans were in the habit of consuming many quarts, 25 to 30 liters of beer a day, and he believed that in dealing with these individuals we must consider not merely the fact that alcohol had been taken, but other factors such as the excessive amounts of fluids consumed and the nutritive material, such as contained in beer.

*(To be continued.)*

THE BOSTON

# Medical and Surgical Journal.

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## DR. OSLER ON IMMORTALITY.

We have come to look upon Dr. Osler as the representative of medicine in many and diverse fields; it therefore occasioned no great surprise that he was chosen as this year's Ingersoll Lecturer at Harvard University, the terms of the foundation requiring a discussion of the general subject of immortality. Difficult as such a task must be under any circumstances, it was rendered the more exacting from the fact that the matter had already been treated from many points of view and with much skill and close reasoning by his predecessors in the lectureship, — Rev. George A. Gordon, Prof. William James, Pres. Benjamin Ide Wheeler, Prof. Josiah Royce and Mr. John Fiske. These gentlemen had discussed the subject from the religious, psychological, historical, metaphysical and evolutionary points of view, and it remained for Dr. Osler to interpret the present-day attitude towards the problem, as observed by a representative of applied science. Such an opportunity has seldom been offered to a physician primarily engaged, according to the popular conception, in matters pertaining to the flesh, but that he should have a point of view bred of experience and contact with the gravest problems of life is certainly not extraordinary. It was, therefore, not a source of surprise that Dr. Osler acquitted himself of his task in a most entertaining, suggestive and weighty fashion.

The immediate subject of the lecture was "Science and Immortality," and at no time did he transgress the limitations which he had set himself in the title. Religious conceptions, as such, did not enter into the discussion, nor did the temptation of metaphysical speculation distract him from his object, of stating, with the accuracy of a man of science, the facts of observation which bore upon the question of life after death. Admitting as he did that the methods of science, as hitherto developed, had small significance when applied to supra-sensual phenomena of whatever sort, he still found opportunity to make a critical analysis of prevailing tendencies, and finally, no doubt to the gratification of the audience, to formulate in a measure his own confession of faith.

At the outset of his discourse, after modestly disclaiming his fitness for the task he had undertaken, he drew attention to the fact that science has changed the aspect of the world, through its control of physical energies, through the biological revolution it has wrought, and, finally, by making a good start in the warfare against disease. These were the three great achievements of the nineteenth century. Admitting this, the following query is presented: Has man's conquest of nature made man more or less hopeful of a future life? This the lecturer attempted to answer in a purely objective fashion, and certainly with a large measure of success. The great majority of men, Dr. Osler finds, are uninfluenced by a belief in immortality, though uncritically accepting the popular attitude in the matter. Even in many religions, as well as in our own daily lives, the belief in immortality as a controlling influence is vague. It is ominous that the press is absolutely silent on the subject, and the doctrine of a future life has been uninfluential in the great movements of the world. Usually a man dies as he has lived, and the thought of a future life plays no part in his last hours. On this point Dr. Osler said: "I have careful records of about five hundred death beds, studied particularly with reference to the modes of death and the sensations of the dying. What concerns us here relates only to the latter. Ninety suffered bodily pain or distress of one sort or another, eleven showed mental apprehension, two positive terror, one expressed spiritual exaltation, one, bitter remorse. The great majority gave no sign one way or the other; "like their birth, their death was a sleep and a forgetting."

A second group of more thoughtful men puts the problem aside, as in doubt or unsolvable, and leaves the question open. Such was Darwin's frame of mind, and, in fact, such is the usual attitude of investigators in the physical and natural sciences. Evolution and the modern psychology find the "soul" superfluous. The insistence on the mind as a function of the brain

has naturally led to the doubt of the possibility of the existence of consciousness apart from a material basis. Hitherto, the search for the spirits has been futile, but the methods of the Society for Psychical Research should be endorsed, since, after all, there is no inherent reason why there may not be a supra-sensual world of spirits just as there is a vast range of activities going on wholly beneath the level of our conscious life. The general tendency of science has, however, distinctly been to lay stress upon the immortality of the flesh, through the continuity of the germ-plasm, and to minimize to the last degree the importance of man, as an individual.

Up to this point, those of his listeners who came in the expectation that Dr. Osler had some message of hope must have been grievously disappointed. A more gloomy picture of the destinies of human life drawn in more forceful and picturesque language could hardly be imagined. No doubt, many in the audience experienced a certain sense of relief, when he alluded to the third group of believers, a small group, but one which cannot be ignored, which sways the minds of men through an appeal to the heart rather than to the head. To-day as always the heart controls, and reason is not king, however eager the effort may be to raise it to that position. Women, who largely constitute this group, are pre-eminent, because they are the incarnation of the emotional — an element which must be considered in the daily conduct of our lives. The ardent belief in a future life rests now, as it has in the past, in the safe-keeping of this relatively small but always influential band of the faithful. Science is organized knowledge, and of the unseen it has absolutely no knowledge.

Finally, Dr. Osler, in giving a word of advice to young men, assented as his own confession of faith to the dictum of Cicero, "who had rather be mistaken with Plato than be right with those who deny altogether the life after death."

Such an address does not lend itself to extended comment within the limited space of these columns, but we are convinced the ultimate verdict will be that the lecture embodies a point of view of deep significance. Certain unimaginative critics have complained that it proved nothing and that it lacked originality. Both are no doubt true, and we heartily return thanks to Dr. Osler that the temptation to forestall such a critisicm did not present itself as a possibility. The address was merely a restatement in peculiarly lucid language of the standpoint of a liberally-minded man toward a problem of great import to the human race at large. Its aim was modest and its result correspondingly satisfactory. The suggestion to the men of science as a class is stated in no uncertain language, and herein to our mind lies the kernel of the entire discourse. The peculiarly aggravating tendency to deny what cannot be proved by the methods of so-called exact science is certainly a stumbling-block in the way of progress. The belief in immortality stands as one among many such skepticisms. Of this, Dr. Osler says: "The scientific student should be ready to acknowledge the value of a belief in the hereafter as an asset in human life."

## THE INTERNATIONAL CONGRESS OF ARTS AND SCIENCES.

THE International Congress of Arts and Sciences to be held at St. Louis in connection with the International Exposition has issued its programme and list of speakers. The time assigned to the congress is from Sept. 19 to 25. The announcement of the purpose and plan of the congress states that:

The idea of holding such a congress grew out of the thought that the subdivision and multiplication of specialties in science has reached a stage at which investigators and scholars may derive both inspiration and profit from a general survey of the various fields of learning, planned with a view of bringing the scattered sciences into closer mutual relations. The central purpose is the unification of knowledge, an effort toward which seems appropriate on an occasion when the nations bring together an exhibit of their arts and industries. An assemblage is therefore to be convened at which leading representatives of theoretical and applied science shall set forth those general principles and fundamental conceptions which connect groups of sciences, review the historical development of special sciences, show their mutual relations and discuss their present problems.

The speakers to treat the various themes are selected in advance from the European and American continents. The discussions will be arranged on the following general plan:

After the opening of the congress on Monday afternoon, Sept. 19, will follow, on Tuesday forenoon, addresses on main divisions of science and its applications, the general theme being the unification of each of the fields treated. These will be followed by two addresses on each of the twenty-four great departments of knowledge. The theme of one address in each case will be the "Fundamental Conceptions and Methods," while the other will set forth the progress during the last century. The preceding addresses will be delivered by Americans, making the work of

the first two days the contribution of American scholars.

On the third day, with the opening of the sections, the international work will begin. About one hundred and twenty-eight sectional meetings will be held on the four remaining days of the Congress, at each of which two papers will be read, the theme of one being suggested by the relations of the special branch treated to other branches; the other by its present problems. Three hours will be devoted to each sectional meeting, thus enabling each hearer to attend eight such meetings, if he so desires. The program is so arranged that related subjects will be treated, as far as possible, at different times. The length of the principal addresses being limited to forty-five minutes each, there will remain at least one hour for five or six brief communications to each section. The addresses in each department will be collected and published in a special volume.

The officers of the congress are: President, Simon Newcomb of Washington; Vice-Presidents, Hugo Muensterberg, Professor of Psychology in Harvard University, and Albion W. Small, Professor of Sociology in Chicago University.

The subjects to be considered are classified under divisions from A to G inclusive; these divisions are subdivided into 24 departments, and each of these departments is again subdivided into sections, of which it is planned to have about 128.

Department 17 devoted to medicine is the first subdivision under division E, that of Utilitarian Sciences. This department of medicine is divided into 12 sections: (*a*) Public Health, (*b*) Preventive Medicine, (*c*) Pathology, (*d*) Therapeutics and Pharmacology, (*e*) Internal Medicine, (*f*) Neurology, (*g*) Psychiatry, (*h*) Surgery, (*i*) Gynecology, (*j*) Ophthalmology, (*k*) Otology and Laryngology, (*l*) Pediatrics.

The officers of the department of medicine are as follows: Chairman, Dr. William Osler; speakers, Drs. William T. Councilman and Frank Billings; section (*a*) Chairman, Surg.-Gen. Walter Wyman, U. S. Marine Hospital, speakers, Prof. William T. Sedgwick and Dr. Ernst J. Lederle; (*b*) Chairman, Dr. Joseph M. Mathews, speakers, Profs. Ronald Ross, F.R.S., Liverpool, and Angelo Celli, Rome; (*c*) Chairman, Prof. Simon Flexner, speakers, Prof. Felix Marchand, Leipzig, and Johannes Orth, Berlin; (*d*) Chairman, Dr. Hobart A. Hare, speakers, Sir Lauder Brunton, F.R.S., London, and Prof. Mathias E. O. Liebreich, Berlin; (*e*) Chairman, Prof. Frederick C. Shattuck, speakers, Prof. Clifford Allbutt, F.R.S., Cambridge, and William S. Thayer; (*i*) Chairman, Prof. Lewellys F. Barker, speakers, Profs. Shibasaburo Kitasato, Tokio, and James J. Putnam; (*g*) Chairman, Dr. Edward Cowles, speakers, Prof. Th. Ziehen, Berlin, and Dr. Charles L. Dana; (*h*) Chairman, Prof. Carl Beck, speaker, Prof. Nicholas Senn; (*i*) Chairman, Prof. Howard A. Kelly, speakers, Dr. L. Gustave Richelot, Paris, and Prof. John C. Webster; (*j*) Chairman, Dr. George C. Harlan, speaker, Dr. Edward Jackson; (*k*) Chairman, Prof. William C. Glasgow, speakers, Sir Felix Semon, C.V.O., London, and Dr. J. Solis-Cohen; (*l*) Chairman, Prof. Thomas M. Rotch, speakers, Profs. Theodore Escherich, Vienna, and Abraham Jacobi.

The hope is expressed that the names of the speakers and chairmen to be found in this announcement will form a nucleus for bringing together thousands of other interested scholars who sympathize with the efforts to bring unity into the world of knowledge.

## THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH.

The first volume of the "Studies from the Rockefeller Institute for Medical Research" has recently appeared in the form of reprints bound in a common volume. It will be remembered that the Rockefeller Institute for Medical Research was founded in 1901 for the purpose of stimulating original research. During the earlier period of its existence, while the organization was being perfected, it was determined to employ such funds as were available in aiding research already begun and encouraging new investigations. The actual result of the plan is shown by these papers now gathered together into a pamphlet of considerable size. In all, twenty-seven researches are published on a variety of subjects of scientific interest. Among others the names of Herter, A. C. Abbott, Preston Kyes, Meltzer and Theobald Smith appear as contributors. We have no desire to question the wisdom of publication in this form. It would, however, appear on the surface desirable to produce such communications in uniform type and paper, which naturally is not possible under the present mode of publication. The papers themselves are certainly worthy of a somewhat more dignified form than they have been given in this volume.

## MEDICAL NOTES.

Meeting of the American Medical Association. — The meeting of the American Medical Association, recently held at Atlantic City, has been one of the most successful in its history. The new plan of organization has had the expected effect of bringing order out of what

threatened at times to be chaos, and thereby has led to better accomplishment than ever before. Registration was unusually large and attendance at meetings excellent. For obvious reasons Atlantic City has again proved itself a highly suitable place of meeting.

HYDROPHOBIA IN CHICAGO. — A recent bulletin of the Chicago health department states that a considerable number of cases of hydrophobia have recently occurred in the city. It is urged that attention should be given to the matter and that all dogs should be muzzled, for the safety of the public as well as of the dogs themselves.

LEPROSY. — In the report on leprosy in New South Wales for the year 1902, just published, it is stated that distribution of leprosy under nationalities is as follows: Natives of New South Wales, 21, of whom 15 have died and 2 were released; of Queensland, 1, deceased; of England, 4, of whom 3 have died; of Ireland, 2, deceased; of New Zealand, 1, deceased; of Fiji, 1, deceased; of Germany, 2, of whom 1 has died; of Belgium, 1, deceased; of the United States of America, 1; and all of these were whites, of European descent. There were also 37 natives of China, of whom 13 have died, and 21 have been returned to their own country; of India, 2, deceased; of the West Indies, 1, discharged in 1885; of Java, 1; of Tanna (New Hebrides), 1, deceased; of New Caledonia, 1, deceased; of Aoba (New Hebrides), 1, returned to his island; and all of these were colored people.

FOURTH PAN-AMERICAN MEDICAL CONGRESS.— The next meeting of the Pan-American Congress will be held in Panama the latter part of December.

The Pan-American Congress meets every three years. It was started by Dr. William Pepper of Philadelphia, Dr. C. A. L. Reed of Cincinnati, Dr. Albert Van der Veer of Albany, and Dr. H. L. E. Johnson of Washington. The first meeting was held in Washington in September, 1893, the second in Mexico in 1896. The third was to have been held in Venezuela in 1899, but was given up on account of the war in that country. The place of meeting was changed to Cuba, but had to be postponed until 1901 on account of the fever there.

These meetings have always been well attended and it is thought that Panama will be an interesting place for the convention.

Further particulars will be given from time to time, together with notifications of the different officers appointed to represent this and other countries.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, June 15, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 52, scarlatina 9, typhoid fever 4, measles 72, smallpox 0.

## Correspondence.

### DIE BEDEUTUNG DER LUMBALPUNKTION FUR DIE PSYCHIATRIE, VON PROF. NISSL (HEIDELBERG).

PROVIDENCE, R. I., JUNE 5, 1904.

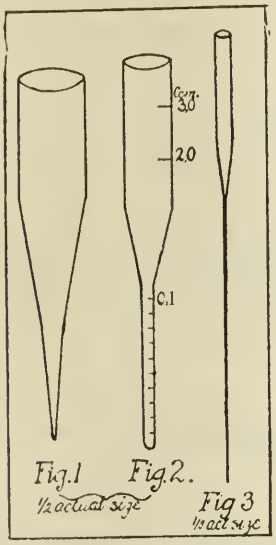
MR. EDITOR: Under the above title there appears in the April number of the *Centralblatt fur Nervenheilkunde und Psychiatrie* an unusually timely and important article which deserves a full review.

The *technique* of the puncture as performed by Nissl varies in no radical way from that already described in many recent publications and commonly used wherever this procedure is adopted. The *examination of the fluid* includes cytological, bacterial, physical and chemical analysis, and the pressure under which the flow appears is also of significance. Nissl has not as yet carried on bacteriological investigation. Independently of the cellular constituents the *physical appearance* of the fluid is of interest. In one case of tubercular meningitis, although the red cells were not abnormally increased in number, the fluid had a decidedly yellowish tinge. In one case of purulent meningitis abundant fibrin appeared. As to the *pressure*, the author does not doubt that there is a significance, but he is not sure of our ability correctly to interpret it. Slight changes in manipulation alter the character of the flow, and he has not in his own cases used instruments of precision for determining the exact pressure.

The *chemical experiments* dealt entirely with the albumin group, sugar and other substances being disregarded. *Guillain's and Parant's* test with concentrated magnesium sulphate solution was used in the first fifty-eight punctures. In these, without exception, the fluid remained, after the addition of the sulphate, as clear as water. But when the mixture was boiled the filtrate from the fluid of seventeen cases of paresis, included in the above number, assumed, without exception, a more or less positive opalescence, or even turbidity. With the exception of the cases of meningitis and two cases of syphilis the reaction in the remaining cases was negative. Attention is called, however, to the fact that the reaction after boiling the filtrate with magnesium sulphate is often a light one, and it is difficult to say whether the fluid is clear or somewhat opalescent. After conferring with Professor Cohnheim, concentrated ammonium sulphate was substituted for the magnesium sulphate in all following punctures. The fluid was mixed with ammonium sulphate solution in equal parts. Globulin was separated while the solution was cold, and the filtrate acidulated with acetic acid was boiled. This method proved to be much more convenient. With this test coagulable albumin is found in normal cerebrospinal fluid. But in one hundred and fifty-eight tests only four times was there an unquestionable opalescence after the ammonium sulphate was added in the cold, and these four cases all belonged to general paresis. But in other cases of paresis the solution remained clear before boiling. In most cases of paresis the clouding is so considerable after boiling that there is no doubt as to the pathological increase of the albumin group.

To estimate the total quantity of albumin the following simple method was followed: A glass vessel of something over 3 cm. capacity was used which narrows down gradually to a tube closed at the end and divided into 0.01 ccm. There are ten divisions on the scale. The divisions are sufficiently separate so that fractions can be easily estimated. Fig. 2 represents such a vessel. Two cubic centimeters of centrifuged fluid is placed in this vessel

with the pipette; then 1 ccm. of Esbach's reagent is added and the air is driven out of the tube by means of a fine glass thread. The fluid is then centrifuged for an hour.




The amount of albumin is then easily read off. The method is not claimed to be exact, but, according to Cohnheim, is sufficiently so for practical purposes. The method was used in 90 punctures. An amount of albumin of less than two divisions was considered as within the normal limits. In normal cases it was generally found to be below the second division, but in no normal case below the first. The results were as follows:

The clinically clear cases of general paresis, 4.2, 4.2, 3.8, 4.2, 4.5, 3.5, 8.0, 3.9, 4.0, 4.0, 3.6, 5.0, 3.5, 4.0, 3.8, 3.8, 6.0, 3.2, 4.0; arterial-sclerotic dementia, 4.0; senile dementia, 1.5, 1.2, 1.2; epilepsy, 1.5, 1.0; manic-depressive insanity, 1.5, 1.5, 2.2, 1.2; traumatic hysteria, 1.5; melancholia, 1.8; aphasia (apoplexy), 3.0; choreic insanity, 1.5; imbecility, 3.1, 2.0, 1.0; dementia precox group, 1.4, 1.9, 3.2, 2.0, 1.6, 1.5, 1.3, 1.5, 1.5, 1.2, 1.2, 1.6, 1.9, 1.2, 1.8, 2.2, 1.5, 2.5, 1.2, 1.8, 3.5, 1.6, 1.5, 1.8, 2.0, 2.8, 3.0, 2.0, 2.5, 2.2, 1.8, 3.0, 2.0, 2.0; cases clinically not clear, 2.6, 2.8, 5.2, 2.2 and 1.9, 3.0 and 3.0, 7.0 and 9.0, 2.1. Groups of so-called functional psychoses with negative cytological findings, 1.5, 1.6, 2.8, 1.6. With positive cytological findings, 1.8, 1.3. Normal individuals, 1.8.

While the amount of albumin is undoubtedly of diagnostic value, it is to be noted that the cytological analysis and that of the albumin did not always run parallel. Frequently, strong increase of albumin occurred with negative cytological findings, while a normal percentage of albumin was only once found with positive cytological findings with numerous cellular elements. From a diagnostic standpoint the *cytological examination* is considered by Nissl to be the most important. In this matter it is of greatest importance that a definite technique should be followed so that the results of various investigators may be correlated.

The technique followed by other authorities is described, and certain apparently just criticism is made to which the author adds that, while it is easy to criticise it is difficult to formulate a better technique. Ravaut distinguishes: (1) The large reaction when 20–150 and more cellular elements lie in a single oil immersion visual field. (2) Medium reaction with 7–20 lymphocytes. (3) Appreciable reaction ("*Réaction discrète*") with 4–6 leucocytes, and (4) negative reaction when only 2 or 3, or 0 lymphocytes, are seen in each field. Nissl is dissatisfied with this division, inasmuch as the sources of error in technique may invalidate the "*Réaction discrète.*" Practical distinctions are: One positive finding with very numerous cellular elements (as in most cases of paresis), another such with a few, but certainly increased, number of cells, a negative finding with perhaps more than the normal number of elements and, finally, the completely negative finding.

The glasses for the reception of the fluid are made by the author himself. (See Fig. 1.) Each glass is used but once, likewise the pipette is made by him and used but once. The water power centrifuge is used for three quarters of an hour. The centrifuged fluid is then carefully poured into a clean reagent glass and is used for chemical analysis. The glass from which the fluid is poured should not again be placed in the upright position. The welded end of the capillary tube is now broken off squarely and smoothly. When all of the fluid is drained from the glass the capillary tube is thrust down to the very bottom of the tubular portion of the glass without touching the wall. It sucks up for itself the minute particles at the bottom, and the contents of the pipette are then again carefully blown back into the glass so as to bring about as good as possible a mixture of the elements. This is to be so manipulated that the instant the blowing out ceases the sediment will be of itself again sucked up. If all has been correctly performed the sucked-up column of fluid should measure but 2½–3 cm. Now the contents of the pipette are gradually expelled upon three object slides in such a way that on each one is a regular, sharply outlined drop of about 2 mm. in diameter. Squirting of the fluid from the pipette should be carefully avoided. The drop is dried in the air. The slide submerged in alcohol and ether in equal parts for one half hour. Specimen can be stained as desired. If Unna's polychromatic methyl blue is used, a drop of the color is allowed to stand for ten minutes over the specimen which is then rinsed with water, subjected to alcohol, carbol-xylol, xylol, balsam, and finally covered with a cover slide. The specimen is first examined with a low power lens (Zeiss A) and the field controlled with oil immersion.

Nissl made 218 punctures on 166 individuals. The reader must be referred to the original article for a detailed description of the findings, which are there fully discussed and clearly tabulated. At the top of the tabulated results, however, appear the figures for paresis, and these may be given. Out of sixty punctures on twenty-eight clinically pure cases of paresis very numerous mononuclear cells were found fifty-six times, a few mononuclear cells found in two cases, numerous polynuclear leucocytes in one case, and an absolutely negative result in one case. In this negative case twenty days after the puncture a second puncture gave a definite positive result though with fewer lymphocytes than in most cases of paresis.

The number of recognizable cellular elements varies from time to time even in the fluid from paretics, and therefore in any case in which paresis is thought of and the first puncture is negative, it should be repeated a second and third time after long intervals. For the differential diagnosis between paresis and other diseases, (*e. g.*, in the doubt which frequently arises between paresis and certain forms of chronic alcoholism), the reader must be referred to the text where this question is fully discussed.

Histories of twenty-three cases are given in the text in which the punctures presented unusual interest because of peculiar clinical symptoms, or combinations of symptoms, or of difficulties in the way of a sure clinical diagnosis.

The author considers at some length the conclusions which we are warranted in drawing from the results of our punctures in our present state of knowledge of the pathological conditions underlying the various diseases in which the operation finds application. He summarizes with fair minded caution the whole present status of puncture and its relations to psychiatry and makes many valuable suggestions as to procedures by which we may enlarge the diagnostic value of lumbar puncture especially by histopathological analysis of meninges, choroid plexus, etc., in connection with experiments on living animals and subsequent histological examination. He brings up also several questions as to the medico-legal relations of lumbar puncture and the ethical rules involved.

The importance to the whole world of such an article by such an author as Nissl warrants this lengthy though not exhaustive review, and if space were afforded the reviewer would gladly have translated literally the whole of this unusually interesting and complete contribution.

Wm. McDonald, Jr.

## RECORD OF MORTALITY
FOR THE WEEK ENDING SATURDAY, JUNE 4, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Cerebro-Spinal Meningitis. | Typhoid Fever. |
| New York . . | 3,908,644 | 1,265 | 398 | 31.14 | 14.62 | 4.03 | 4.98 | .47 |
| Chicago . . . | 2,021,086 | 452 | 93 | 24.55 | 14.82 | 1.10 | — | 1.76 |
| Philadelphia | 1,407,968 | 465 | 120 | 31.39 | 10.75 | 1.93 | — | 4.08 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 177 | 41 | 25.42 | 10.17 | .56 | .56 | 3.39 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 122 | — | 31.14 | 7.38 | 1.64 | 2.46 | 11.47 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 48 | 18 | 20.83 | 8.33 | — | — | — |
| Boston . . . | 617,950 | 206 | 50 | 21.35 | 10.19 | 1.94 | .97 | — |
| Worcester . . | 136,925 | 28 | 6 | 3.57 | 7.14 | — | — | — |
| Fall River . . | 119,349 | 23 | 8 | 17.39 | 4.35 | — | — | — |
| Lowell . . . | 104,402 | 30 | 9 | 16.67 | 20.00 | — | — | 3.33 |
| Cambridge . | 100,998 | 17 | 4 | 17.54 | — | — | 5.88 | — |
| Lynn . . . . | 73,875 | 15 | 5 | 6.67 | — | 6.67 | — | — |
| Lawrence . . | 72,348 | 23 | 8 | 21.74 | 8.70 | — | — | — |
| Springfield . | 72,020 | 12 | 2 | — | 8.33 | — | — | — |
| Somerville . | 70,413 | 12 | 2 | 33.33 | 8.33 | — | — | — |
| New Bedford | 68,863 | 24 | 7 | 33.33 | 8.33 | 4.16 | — | 8.33 |
| Holyoke . . . | 50,538 | 10 | 1 | 30.00 | 10.00 | — | — | — |
| Brockton . . | 46,601 | 9 | 2 | 22.22 | 11.11 | — | 11.11 | — |
| Newton . . . | 39,310 | 7 | 1 | — | — | — | — | — |
| Haverhill . . | 39,061 | 9 | 1 | 11.11 | 11.11 | — | 11.11 | — |
| Malden . . . | 37,205 | 4 | — | — | — | — | — | — |
| Salem . . . . | 37,188 | 11 | 3 | 9.09 | — | — | — | — |
| Chelsea . . . | 36,499 | 6 | 2 | 16.67 | 33.33 | — | — | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | — | — | — | — | — | — | — |
| Everett . . . | 30,209 | 4 | 1 | — | — | — | — | — |
| North Adams | 29,201 | 4 | 2 | — | 50.00 | — | — | — |
| Quincy . . . | 26,798 | 5 | 1 | 20.00 | — | — | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 8 | 1 | 25.00 | 25.00 | — | — | — |
| Brookline . . | 23,576 | 4 | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | 6 | 2 | 16.67 | — | — | — | — |
| Medford . . | 21,956 | 2 | 1 | — | — | — | — | — |
| Chicopee . . | 21,692 | 5 | 1 | 20.00 | — | — | — | — |
| Northampton | 20,314 | 8 | 5 | — | — | — | — | — |
| Beverly . . . | 15,807 | 3 | — | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 6 | 3 | 16.67 | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 2 | 0 | — | — | — | — | — |
| Newburyport | 14,478 | 3 | 1 | — | — | — | — | — |
| Woburn . . . | 14,315 | 4 | 1 | 50.00 | 25.00 | — | — | — |
| Melrose . . . | 13,819 | 2 | — | — | 50.00 | — | — | — |
| Westfield . . | 13,809 | 1 | — | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 2 | 0 | — | — | — | — | — |
| Revere . . . | 13,609 | 2 | 2 | — | — | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 2 | 1 | — | — | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 2 | 0 | 100.00 | — | 50.00 | — | — |
| Weymouth . | 11,350 | 2 | 0 | — | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,052; under five years of age, 803; principal infectious diseases (smallpox, measles, cerebro-spinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 838; acute lung diseases 380, consumption 413, scarlet fever 39, whooping cough 9, cerebrospinal meningitis 73, smallpox 6, erysipelas 10, puerperal fever 9, measles 31, typhoid fever 56, diarrheal diseases 116, diphtheria and croup 75.

From whooping cough, New York 7, Philadelphia 1, Pittsburg 1. From smallpox, Philadelphia 5, Baltimore 1. From cerebrospinal meningitis, New York 63, Baltimore 1, Pittsburg 3, Boston 2, Cambridge, Brockton, Haverhill and Chelsea 1 each. From typhoid fever, New York 6, Chicago 8, Philadelphia 19, Baltimore 6, Pittsburg 14, Lowell 1, New Bedford 2.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending May 21, the death-rate was 15.5. Deaths reported 4,532; acute diseases of the respiratory organs (London) 105, whooping cough 182, diphtheria 45, measles 182, smallpox 4, scarlet fever 30.

The death-rate ranged from 6.9 in Northampton to 21.7 in Norwich, also in Birmingham; London 15.1, West Ham 13.2, Brighton 17.8, Southampton 14.4, Plymouth 10.1, Bristol 13.1, Leicester 11.9, Nottingham 14.5, Birkenhead 16.3, Liverpool 18.4, Bolton 17.5, Manchester 19.6, Salford 16.2, Bradford 17.2, Leeds 20.0, Hull 15.2, Sheffield 15.4, Cardiff 14.2, Rhondda 12.4, Wigan 12.5, Merthyr Tydfil 14.3, Smethwick 11.2, Warrington 17.8.

## METEOROLOGICAL RECORD.

For the week ending June 4, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | Rainfall in inches. |
| S. . 29 | 30.08 | 64 | 75 | 52 | 54 | 43 | 48 | N W | W | 6 | 9 | C. | C. | 0 |
| M. 30 | 29.96 | 67 | 80 | 54 | 67 | 54 | 60 | S W | S W | 20 | 12 | F. | C. | .24 |
| T. . 31 | 29.99 | 67 | 72 | 62 | 80 | 100 | 90 | N | W | 8 | 5 | O. | R. | .03 |
| W. 1 | 30.26 | 52 | 55 | 49 | 76 | 100 | 88 | N E | N E | 15 | 20 | C. | R. | .25 |
| T. . 2 | 30.20 | 50 | 53 | 48 | 96 | 96 | 96 | N | N E | 15 | 7 | R. | O. | .10 |
| F. . 3 | 30.04 | 54 | 59 | 48 | 100 | 88 | 94 | E | E | 4 | 2 | O. | O. | .16 |
| S. . 4 | 30.19 | 62 | 67 | 56 | 87 | 86 | 86 | N E | S E | 4 | 6 | C. | O. | 0 |
| ☞ | 30.10 | | 66 | 53 | | | 80 | | | | | | | .78 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## RECENT DEATHS.

F. SAVARY PEARCE, M.D., of Philadelphia, died in Steubenville, Ohio, May 27, at the age of thirty-seven. He was graduated from the University of Pennsylvania in 1891, and had in late years become identified with neurology in Philadelphia. At the time of his death he was professor in this subject at the Medico-Chirurgical College. He was an ardent student of his chosen subject and had published many papers. This year he was to have been chairman of the section of nervous and mental diseases of the American Medical Association. He was a member of many medical societies and was in general regarded as one of the promising men in the department of neurology.

GEORGE WASHINGTON BROOKS, M.D., of New York died from cerebral apoplexy on June 4, at the age of eighty-seven years. He was graduated from the medical department of the University of the City of New York in 1850, and at one time had among his patients some of the most noted residents of New York. He retired from practice some years ago, and had several attacks of apoplexy before the one which proved fatal. Dr. Brooks' brothers, James and Erastus Brooks, were for many years the editors of the old New York *Express*, and prominent in literary and political circles. He is survived by a widow and one son, Dr. George Frederick Brooks of New York.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JUNE 11, 1904.

GUTHRIE, J. A., past assistant surgeon. Detached from the "Franklin" and granted leave for three months.

HART, G. G., acting assistant surgeon. Detached from duty with recruiting party No. 5, and ordered home and to wait orders, from June 4.

SELLERS, F. E., acting assistant surgeon. Ordered to the "Franklin."

FAUNTLEROY, A. M., assistant surgeon. Ordered to the "Lancaster," June 22.

ANGWIN, W. A., assistant surgeon. Appointed assistant surgeon with rank of lieutenant, junior grade, from June 2, 1904.

ROSS, J. W., medical director. Detached from the Naval Museum of Hygiene and Medical School, Wash., D.C., and ordered to duty with the Isthmian Canal Commission.

MUNSON, F. M., assistant surgeon. Detached from the naval station, Polloc, P. I., and ordered to the naval station, Olongopo, P. I.

KITE, I. W., surgeon. Orders detaching from the "Maine" revoked; ordered to continue duty on the "Maine."

SMITH, C. G., assistant surgeon. Ordered to the naval hospital, Mare Island, Cal., June 28.

ABEKIN, F. G., assistant surgeon. Detached from the naval station, San Francisco, Cal., and ordered to the "Adams."

NELSON, H. T., jr., acting assistant surgeon. Detached from the naval hospital, Sitka, Alaska, and ordered home and to wait orders.

MILLER, J. T., acting assistant surgeon. Detached from the naval hospital, Mare Island, Cal., and ordered to the naval hospital, Sitka, Alaska.

# Addresses.

## SOME FERMENTATIONS IN MEDICAL EDUCATION.*

BY HAROLD C. ERNST, A.M., M.D.,

*Professor of Bacteriology in the Harvard Medical School.*

In looking up the history of the office I am honored in attempting to fill to-day, certain points of interest have been brought to my attention.

In 1804, Dr. Isaac Rand delivered the first annual address — on Phthisis Pulmonalis, and the use of the warm bath — and with six exceptions (1814, 1815, 1819, 1825, 1831, 1832) the practice has been continued annually, until to-day it enters upon the second century of its existence.

The subjects considered in this long line of addresses cover, as might be supposed, a wide range, and it is interesting to note a gradual change that has occurred. About 20% (19 out of 95) have been upon what may be called "specific" lines of thought — such as the first one (mentioned above) or those of Abraham Haskell (1812) on Cynanche Trachealis, Walter Channing (1833) on Irritable Uterus, or Horatio Adams (1858), Investigations upon the Subject of Vaccination. Such specific subjects were, however, very largely treated more than fifty years ago (17 out of 19), and in the last half century the speakers upon this occasion have usually considered matters of general interest to the profession in a long series of entertaining essays.

Evidently, the matter of education has been much in the minds of medical men, for nearly half of the addresses during this latter period have had this for the major or a prominent minor theme. Indeed, it was first treated specifically in 1822 by Dr. John G. Coffin, on Medical Education and on the Medical Profession, but the somewhat marked increase of attention given to it of late years shows how actively the specific fermentations of advanced thought have been producing changes and by-products with which we shall have to deal. The men who have brought these matters before the society command attention by the honorable position they have held in the ranks of the profession, and the list includes many of the names most familiar to us of to-day as being among the leaders of medical thought in the past.

It has been, therefore, with many misgivings that I have endeavored to prepare myself to say something that has not been said and better said before. Without thought that this is possible, it may be well to consider some of the changes — fermentations — going on in medicine, now, as in all previous stages of its history; to see what elements of good have come, and perhaps to forecast some of what may be hoped for when the end results are reached.

One of the most impressive incidents in a recent trip abroad occurred in Paris upon the occasion of a visit to the Institute Pasteur. The spirit of the place is present everywhere — the spirit of earnest search for some addition to human knowledge, for some alleviation of human suffering inculcated in all his pupils by the master mind of the founder. This is not the place for a eulogy of Pasteur, but no man has a nobler monument than this busy hive of industry surrounding his quiet resting-place. Here are workshops where efforts are made to solve some of the problems of disease, by men whose lives are given to the work, and whose hopes do not go beyond that of some success to crown their efforts. These workshops are perfect of their kind, and the tools they hold are handled by a force of men unsurpassed in training, ability and enthusiasm. Besides these investigators, endeavoring to open out new lines of knowledge that shall benefit humanity, others are constantly employed in making use of those already known and in applying the results of past labors to present suffering. One may see there, any day and all day, men of world-wide reputation, each imbued with that spirit of which there is an all too small allowance in existence — the true spirit of scientific research, the desire for the enlightenment of the human race. There can be no other motive that compels this constant devotion to their life work. The pecuniary reward is such that a statement of it is always met with wonder and incredulity. And yet these men are content with what their life offers them — work on day after day and will continue until the time that work is no longer possible. To one knowing these facts and how slight the reward may be, the sight of this busy place is a stimulation not easily forgotten or set aside.

I do not mean that here only is such self-sacrificing devotion to be found; far from it. The impressiveness of the place is due to the thought of how much good to humanity has come and may be expected to come from the workers that have been or are now there. Similar instances of individual devotion to duty in this direction may be found the world over, but, as I believe, no instance of so much accomplished and so much attempted in the same place. The spirit of commercialism is absolutely absent; the fraternity of research for advancing human welfare is the goal to which their efforts tend; money rewards that sometimes come — as the Nobel prize to one of them — are devoted to the common aim, as by Pasteur himself, and no thought of personal aggrandizement comes to any who gain admittance to this brotherhood.

Such a condition of things leads a thoughtful mind to the consideration of how it could have come about — what underlying force could have produced such a band of devotees to a cult that has no attraction for the practical man, and indeed is beyond his comprehension. Still further thought comes, How can such a spirit be bred and cherished among us here; what is our duty and responsibility in the matter? The

*The Annual Address before the Massachusetts Medical Society, June 8, 1904.

impelling force in this instance is undoubtedly that of Pasteur himself — a man distinguished always for his simplicity of life, devotion to duty, and elevation of ideals. As may be read in the story of his life, his career was precisely that of the fermentations he studied; marked by ceaseless activity, the constant production of fresh adjustment of ideas, much uncertainty and doubt, some useless by-products, and an end result of good of lasting and widespread influence over all with whom it came in contact. Courteous in controversy, patient and persistent under failure, generous in praise to others, modest when success was reached, the influence of such a man could not help but be profound upon those it reached at all. It was profound, and to-day it governs the work carried on in his institute and by his pupils.

The racial influence is of course behind it all. The French spirit of scientific investigation in general, in its highest form, is of the same character; this is but an instance made conspicuous by a man of great ability.

That spirit, then, is the basis of the work here spoken of — simplicity, altruism, devotion to the truth. What can we do to develop and cherish it with us?

There is rising, not far from the place we now occupy, a group of buildings that, when completed, will form a noble addition to the beauties of the city. They are the result of many forces, notably of the far-sightedness and enthusiasm of two men, this aided and supported by many others, whose generous contributions have made the result possible. The conception of such a plant was so daring that the first attempts to convince others were discouraged and even now are not infrequently heard with skepticism. The time for such a move had come, however, and the men were at hand to carry it out. Now that their labors are approaching completion it is full time to consider what shall be done in those buildings when completed, and how the great trust shall be administered.

In his last address to the students of the Harvard Medical School, Oliver Wendell Holmes said this: "Leyden, Edinburgh, Paris, were each in turn the Mecca of medical students, just as to-day Vienna and Berlin are the centers where our young men crowd for instruction. These, also, must sooner or later yield their precedence and pass the torch they hold to other hands. Where shall it next flame at the head of the long procession? Shall it find its old place on the shores of the Gulf of Salerno, or shall it mingle its rays with the northern aurora up among the fjords of Norway — or shall it be borne across the Atlantic and reach the banks of the Charles, where Agassiz and Wyman have taught, where Hagan still teaches, glowing like his own *lampyris splendidula* with enthusiasm, where the first of American botanists and the ablest of American surgeons are still counted in the roll of honor of our great university?" [1]

[1] O. W. Holmes, Some of my Early Teachers. Medical Essays. Ed. 1888. p. 438. Houghton, Mifflin & Co.

So far as buildings and facilities are concerned the query and suggestion made twenty odd years ago may be answered in the affirmative, the doubt that remains is the capacity of the successors of the great names mentioned to fully utilize and develop the trust placed in their hands.

The changes that have occurred in the Harvard Medical School within the last generation have been very great; I pointed this out as follows in another place: In the early seventies the Faculty of the school took the step of grading the course of study and requiring students to pass from one subject to another in logical sequence and after examination; a step that was taken with many forebodings, and that resulted in a tremendous pecuniary loss to the school (by cutting off the number of students), but that was so necessary that the struggle to carry it through cannot be realized to-day. In the early eighties the school moved into its present building, and it was then thought that many years would pass before its needs could even occupy the space then had. On the contrary — even with the help of the Sears addition — the most effective work for the students has been hampered for some time past, and some of the departments are and have been crowded to the extent of often being obliged to refuse special students. In 1896 the Faculty decided to raise the standard of admission to the school by the requirement of a degree in arts, letters or science — with some special exceptions — and this regulation went into effect in 1901. It had been looked forward to with much trepidation by many of the teaching force, and with lively fears that the school would lose so many scholars that it would be pecuniarily crippled (as has since occurred). It cannot be doubted, however, that if this unfortunate result should temporarily continue, the friends of the school will support it through any such trying period, as generously as has always been the case. That this is practically certain, is shown by the encouragement to the efforts making to bring about the greatest advance that the school has ever thought of — a scheme for securing its future for generations to come, together with the establishment of what will be, if it can be carried through, the most perfect university of medical science that the world has yet seen. A place where students of medicine in all its branches may come to find an equipment perfectly adapted to their needs, and teachers prepared to foster and encourage research in all its directions for the demonstration of new truths, as well as to give instruction in all branches of present medical knowledge.[2] How this may best be done in any case is matter for much careful thought, and the solution of the problem is to be sought in two different directions.

If a student is to take the best advantage of what is offered to him, he must have an opportunity for the proper care of his body, and the

[2] Adapted from Progress of Medicine, 1850–1900. H. C. Ernst, May 8, 1900.

better the facilities for study that can be given the more likely is the best that is in him to be developed.

Now the right of community life, claimed by all companies of scholars, has been denied to students of medicine in recent generations and in this country. It is but recently that we have begun to look upon the medical school as anything but a trade enterprise — on the part of the teachers as a means for filling their pockets; on the part of the students as a place where they may be taught how to earn a living. The conception of a medical school as in any sense a part of a university, or a place where university study should be carried on and encouraged, is a product of those recent fermentations of which I have already spoken, and has but recently begun to develop in such form as makes it possible to realize it. Directly connected with this thought, and growing from it, is the need for offering such opportunities for a scholar's life as will make the hall-bedroom in a cheap lodging-house a thing of the past, and add to the dignity of student life in medicine what it now lacks — the charm of collective living with a common purpose. The first need, therefore, for the student life of the future university medical department is dormitories, in which the students, attracted by the courses offered or the reputation of the teachers to be heard, may learn to know each other and have easy opportunity for fostering the high ideals and learning early the noble purposes of their life's work.

Nothing can possibly take the place of this community of living in effective development of these ends, and the mantle of the alma mater should be spread over all her sons in embryo — even if not in esse. The refusal of the right to vote for overseers except to graduates of the academic departments is an instance in point.

Even if a student be comfortably housed, he must be fed as well, and as great an obligation rests upon the governing body in this as in the preceding direction. There is no more impressive feeling that a visitor experiences in Oxford or Cambridge than during a visit to the dining-halls of the colleges, each with its customs, its traditions, its portraits and its furniture, bearing a message of loving service to all who care to hear. Why, then, should the students of any university department be left to the mercies of the common eating-house, with never a reminder that life has a more cheering face than faded walls and spattered linen at each renewal of its strength?

How much this question of feeding means, apart from its esthetic side, is indicated in these words of the head of Harvard University — speaking recently at Springfield: "There was another question presented to the corporation that affects another very useful thing in Harvard College, that affects the dining-hall — the dining-hall association. I suppose you realize the fact that it would have been impossible to build up the present university at Cambridge if the corporation had not paid careful attention thirty years ago to the mode of feeding the students at Cambridge in a wholesome and cheap way. I believe that to be the absolute and literal fact." [3]

Here, then, is the practical side of this need emphasized and clearly stated as the result of thirty years' experience. The words mean the simple fact that good fuel must be provided to secure the best results from man's vital engines as for any other mechanism. But in addition to this there should be the influence exerted by comfortable surroundings, made as beautiful and dignified as may be by architectural effect and mural decoration.[4]

A university medical school is as compact a unit as a college of Oxford or Cambridge; its students may be welded into as close a body, very largely by such an influence as this. If thus brought together in study and in play, the influence of the strong will be more strongly felt and the weaknesses that might grow will at least be much less active in that growth.

Further, distinct provision for the mental nourishment of the medical student of to-day should be made. Time has been, when a scalpel or two, a bone and book or two, were all sufficient for his needs. This is no longer true, and the best of textbooks, all of them, the best of journals, all of them, should be in easy reach at convenient hours and in a comfortable home. The Harvard Union, the latest monument of a great citizen's generous love and interest in the young, an enduring influence for good in the community in which it stands, might well be the model which, with proper adaptation to the special needs, would serve the purpose well. Provision for these needs is a duty that cannot be ignored, even if present conditions prevent its immediate fulfillment.

Further than this, too, there should be some care for the student when sick, and help of this sort is to be much more easily given if the student body be closely brought together, than if, as is too often now the case, it be widely scattered and neglected. Recent experience has demonstrated the need of such care as is here meant — that there should be some man or body of men, whose aid might be sought in any difficulty concerning health, and by whom applications would be received with sympathy and attended to with promptness. After such an agency has been once established, its success would depend upon the degree of efficiency with which its duties might be fulfilled. It cannot be doubted that if well done it would prove an ever increasing source of aid and comfort to students standing in need of its services.

This then is the amount and kind of attention that should be paid to the care of the students of the medical department of a university. They should be made to feel that they are a part of a company of scholars — not individuals merely seeking for a means of livelihood. In the particular case used for an example, necessity has compelled the teaching force in medicine to be

[3] Pres. Charles W. Eliot. Speech to Connecticut Valley Harvard Club, March 16, 1904. The Harvard Bulletin, March 30, 1904.

[4] See also Report of Committee of the Board of Overseers of Harvard College to visit the Medical School, 1904, emphasizing the importance of this matter.

widely separated from the rest of the university. This, from many points of view, is most unfortunate, especially because it requires the establishment of complete institutions of the kind spoken of — dormitories, dining-hall, reading and assembly-rooms — separate and distinct from those already in existence for the service of the larger body of students. The complete isolation of this part of the university body makes it all the more imperative that its installation should be complete.

A far more complex problem — even for paper consideration — than that just discussed, in the development of university education in medicine, is as to what shall be taught and how? Minute details it is not intended to enter upon here, but there are general considerations that are of vital importance.

As wise and perfect a course as can be devised should be placed in operation leading to the best training for the practice of medicine. Inasmuch as present usage in this country requires that the practitioner of medicine should hold a doctor's degree it would be impossible to confer a lower with satisfaction to the main body of students, even though it be true that such doctor's degree does not confer the right to practice. It may be hoped that eventually the value of the discarded Bachelor of Medicine may revive, and that a more perfect scheme of university education in medical science may be worked out than is now possible. It should be practicable to lay out a course qualifying the student for the practice of medicine, that would not require, as is now the case in many institutions, the preliminary education represented by the bachelor's degree in arts. As conditions are, this is impossible, and the best schools of to-day are graduate schools in the sense of requiring a preliminary degree — with some exceptions — in arts, letters, philosophy, or science, of those who desire to enter upon the study of medicine.

The degree of Doctor of Medicine should, however, be looked upon, when conferred by this better class of institution — certainly when they are parts or departments of universities — as indicating that the holder has been trained upon broader lines than those qualifying simply for the practice of medicine. One method by which this end has been sought, is by the offering of electives — at present only in the later years of the course — by a selection from which a student may prepare himself for a career in the more purely biological branches. This is not a perfect solution of the problem, for just as long as all practitioners of medicine in this country feel the need for holding the degree of Doctor of Medicine, just so long will it be impossible to give that degree the same standing as a representative of general culture as is now held by the degrees of Doctor of Philosophy or Doctor of Science, which it should do from the university point of view.

The advance of knowledge in branches of biological science connected with a medical school, and the development of laboratories and research work connected with them, brings out a new point of view. It makes it possible to look at them as channels through which a way may be constructed leading to other university degrees. The paths leading to these degrees to run side by side with that to the doctorate of medicine on the one hand, and with those laid out by other departments of the university on the other.

So that the future complete medical department of a university must look forward to a variety of functions and must provide for a variety of degrees, suited to the various sorts of students that will, or should be, attracted by its teaching. It *must* be something more than a simple medical school, offering instruction only to those intending to practice medicine. It must do this, of course, and in the best possible way, making arrangements for instruction in the laboratory branches sufficient for the needs of the well-educated practitioner and supplementing this laboratory instruction with such a profusion of clinical work that the student pursuing the course will be well fitted, upon its completion, for the responsibilities that may soon be placed upon him.

Inasmuch as the best university schools now require the lower degree for admission, it has been argued that their function should cease here, so far as degree giving is concerned, since in one sense they are, as has been said, graduate schools already, and that they should confine their energies solely to courses leading to the degree of Doctor of Medicine and to research. It is, however, but a narrow conception of the importance of many of the fundamental branches of medical science, or of those closely allied to them, that would limit their functions in this way. It is not so very long ago that anatomy, physiology and pathology were all taught by the same person; as well return to this practice, as to claim that the departments now controlling these subjects do not expand further than what is needed by the medical practitioner.

Since their subdivision, other subjects have assumed essential importance; histology, embryology, physiological chemistry, bacteriology, comparative pathology, are some of those that have thus grown to importance and to special names. Others are evidently rapidly coming forward, and students may be found in the laboratories devoted to any one of these subjects, who have no intention of becoming practitioners of medicine, and to whom the clinical work prescribed is unnecessary and possibly distasteful. At the same time their desire may be to study these subjects in direct connection with the human race — it is surely of importance that they should do so; and where could such instruction be as well obtained, or where could it be more easily provided, than if built up side by side with the instruction leading directly to medical practice?

The conception is therefore of something to be planted beside and to grow up with the medical

school as commonly understood. And since the complexities of the education of the medical practitioner are so great, the new sort of education should be administered by a separate executive body with a separate head, to which might be given the name of the Graduate School in Medicine; not *of* medicine, for the plan here suggested involves laying out courses leading to other degrees than the Doctorate, open to non-graduates as well as to graduates in medicine. This new administrative board should, of course, be allied with other existing boards in the Faculty of medicine, and thus the university department of medicine would assume the full functions and dignity that belong to it. Included in such a university department then, if the idea were carried out to its full development, there should be courses leading to degrees other than and in addition to that of Doctor of Medicine, and of varying value.

Provision should undoubtedly be made in this country, as is so generally done elsewhere, for persons desiring to enter upon public health work. There are many positions to be filled in the direction thus indicated — positions that do not require the usual training of a practitioner of medicine, but do need a portion of that training, that could well be furnished by a selection from the courses leading to the medical degree, with some additions or amplifications as the need might be demonstrated.

The university department of medicine must be a place of liberal education, as well as a training school for special lines of work. The fact should be recognized that a liberal training in biological science is as possible in connection with man as with the lower animals, and therefore courses should be provided in this department that would be sufficient for the degrees of Master of Arts and of Science, Doctor of Philosophy and of Science.

If the broad conception of the medical department of a university I am endeavoring to emphasize be made clear, it is difficult to believe that objections raised to it will not disappear. The courses suggested for these degrees should be open to all who would be qualified to enter upon them in any other department of the university, not limited to those possessing a degree in medicine. The fact that they should be made up largely of laboratory courses, and must also probably be supplemented by and allied with courses in other departments of the university, would prevent this limitation. They must also, at present, be limited to the laboratory courses, for the reason that clinical teaching is not now available for such purposes; that it may become so in the not distant future is a hope of its best friends. Some of the lines of development by which this hope may perhaps be realized will be indicated later.

The discussion of such a project as is here outlined brings out a confusion of thought that it has been difficult to clear away — the distinction between "graduate instruction" from the university point of view, and "graduate instruction" as usually understood in medical education and illustrated by the many post-graduate schools and polyclinics that have come into existence of recent years.

The first takes as a basis for the word "graduate" the possession of the lowest — the bachelor's degree in Arts, Letters or Science; it means the student who has taken the first step in the company of scholars. It undertakes to provide for him the means for reaching any higher grade that the special facilities of medical science may offer, and to enable him to reach any academic degree that his inclinations and abilities may lead him to desire.

The second takes the meaning of the word "graduate" to be limited to a graduate in medicine, and undertakes to provide for such a graduate longer or shorter courses suited to his needs, in the clinics or in the laboratories as the case may be; by the very fact of such limitation the opportunities offered are limited in their usefulness.

From the university point of view the first is the most important meaning; from the medical, the second. But unquestionably the university standpoint is the broader; it therefore should be granted its prior claim upon the use of the term "graduate course," and courses in the suggested "Graduate School in Medicine" should include both those leading to degrees other than that in medicine, and those offered for the special benefit of medical practitioners. These latter should be made as full and as varied as the means at hand will permit; they should be extended and repeated so that the medical practitioner should be able at any time to satisfy his need for instruction in any direction. And side by side with them should be offered the more complete, the longer courses, that may from time to time be found worthy to lead to academic distinction other than that represented by a medical degree.

This medical degree, the doctorate, may itself be enhanced in dignity and value if the plain facts of the case should become recognized and the custom of the country be overcome. The revival of the bachelor's degree in medicine would secure this end. This bachelor's degree is the only one that is really necessary to insure a training fitting the student for the ordinary practice of medicine; the licensing boards and their examinations must act favorably to enable him actually to exercise the healing art. The doctor's degree in medicine should represent a higher training than this; but, as has been already pointed out, the century's practice to the contrary seems to make it impossible to reach this end at present.

This condition of public opinion, and indeed of the medical profession itself, is the main reason for an effort being made to satisfy the other demand that makes itself felt — the demand for training in the biological sciences best developed in a medical school but that shall free the student pursuing such training from the, to him, unnecessary and burdensome exercise in clinical medicine.

A further argument in support of a separate

executive board in charge of both kinds of graduate instruction spoken of, is that it would serve to enhance the dignity of what I have called the less important from the university point of view. All the better class of medical schools are busily engaged in developing this form of instruction, and in devising means for attracting this class of students, by offering advantages to the medical practitioner. This medical practitioner is a graduate, and there can be no doubt that it would prove a source of attraction to him that an institution offers him the opportunity to deal with a body concerned with his needs, separate and distinct from the undergraduate medical students. That this is so has been shown by the success of such independent institutions as have devoted themselves to this line of teaching, but whose work would undoubtedly have been strengthened if it had been affiliated with that of medical schools already established. The influence for good and the stimulation exerted would have been reciprocal.

A most important factor in advancing medical teaching of all kinds will be an expansion of the development of specializing in teaching that has already been referred to. It is the universal experience that the best results are to be obtained if an instructor devotes his entire time to his teaching and does not engage in practice. This has come to be recognized as a necessity in many branches — those in particular, that are concerned with laboratory work and laboratory research. The heads of such departments devote their entire time to the development of that department; it would be impossible for its work to be carried on satisfactorily under any other arrangement. The entire staff of all such departments should be under the same obligation, and sufficient living salaries should be offered to satisfy this end. Precisely the same principle should be extended to the clinical branches of instruction, and clinical teachers in the future should be required to give their entire time to the departments in which they may be engaged. They should use their hospital wards and clinics as the laboratory man uses his laboratory, as places of study, teaching, and research, in which the constant presence of the directing head shall serve as an inspiration to the students attracted thither. Most occupants of university chairs do this very thing; there is a constantly growing feeling against the holder of a professorship, and of lesser places as well, doing anything for pecuniary return that may curtail his time for teaching and research. The same principle should apply to clinical teachers in a medical department of a university.

Two objections have been urged against this suggestion. One, that a non-practitioner is not well fitted to teach how to practice; the other, that competent men cannot be found to accept such positions at any salary that the existing universities could afford to pay. The first objection is one due to long established custom and belief, and would disappear as soon as the experiment should be tried. So far as the practice of the healing art is concerned, its methods are now learned and taught in the hospitals, and have been so, ever since the old association of each student with some practitioner was abandoned. No student of the present day learns anything about how his instructor handles patients in private practice, except from what he sees in the wards, unless, as exceptionally occurs, he makes some private visits as a special favor. As a matter of fact, the treatment of patients, the practice of the art of healing, is more perfect to-day in any good hospital than in a home, and the instructor competent to fill the clinical positions here suggested would be a man also entirely competent to teach the necessary details of practice out of the wards, so far as they ever can be taught. The second objection is one that is even less serious than the first. If such positions were created, the dignity of a university chair, with control of hospital wards and of the teaching in the medical subjects covered by the chair, together with leisure and opportunity for study — all this would attract a number of men from whom a selection could be made. There is now no difficulty in finding candidates for the laboratory positions; the difficulty lies not in getting a man, but in making a selection of the best from among those available. The genius is no more common to-day than at any other time, but competent persons for such positions can be found, and that easily, at such salaries as are afforded for other university chairs. If this should prove not to be so, it would prove erroneous the belief that academic freedom, certainty, and dignity offer any advantages as against a possible overflowing purse.

Of course, for such a purpose, the university must have a hospital of its own, or at the least be so affiliated with a hospital managed in sympathy with its aims, that it shall have control of the appointments to the staff.

There are many kinds of hospitals and various functions to be filled by them. As this address is dealing with so many of the fermentations now inducing change in methods and means, it may not be out of place to remind its hearers what some of these functions are. The first and common duty of any hospital, the one that laymen and medical men understand everywhere, is to care for the sick poor. To help this function is at the bottom of the foundation of them all; the desire to help the sick poor is the reason for most of the donations and bequests given to them. This function has existed from the beginning, and that it was understood to be the primary duty of such an institution is indicated by the name itself, that the inmates were "hospes" — guests — and no fixed remuneration was exacted of those who received the benefits. This function will, of course, always remain a prominent one; but a second has been added that is almost as generally recognized to-day; this is the obligation resting upon a hospital to teach, and thus to spread more widely its beneficent influences by giving to others than the attending staff the benefits of the study and experience to be gained

within its walls. It is not many generations ago that no hospital was used for this purpose, and medicine was taught wholly by lectures. It was because the beginning in this use of hospital wards was made at Leyden that the great fame it attained as a center of medical learning was so early reached. And unquestionably it is largely because this function has come to be generally recognized that medical art and teaching have reached the position of dignity they now hold. There is, however, a broader application of this function of teaching that has not yet become widely known, and that must be applied specifically and broadly, as it is in occasional instances, in order that the best advantage of modern methods may be taken in developing and advancing our knowledge of disease. This consists in a union of the forces of the laboratory and of the hospital staff in a more definite and complete way than has yet been accomplished, and would require a unity of purpose and a sinking of individual position and privilege that might be difficult to secure.

There are problems in medicine — and the number increases — that cannot be solved by one man, or even by one department; they must be treated by a collection of the best men of the community having knowledge of the subject, brought together for purposes of consultation and sympathetic investigation. The hospital wards should furnish the material, the laboratories the means for study in this line, the clinicians using their knowledge for the binding together of the observations made. A way in which such collective investigations could be carried on is this, and it may be put in practice by existing hospitals or by new ones: Let the board in control turn its attention to some single problem pressing for solution, the question of typhoid fever, for example; why is it that, after so many advances in knowledge, the apparent mortality from typhoid fever is no less to-day than it was fifty years ago? (R. H. Fitz, Typhoid Fever. Boston M. & S. Journ., 1899.)

Certain wards might be set aside for the collection of cases of typhoid fever, or, in the case of a small hospital, its entire capacity might be devoted to the care of cases of this disease. Let it be understood that for a term of years nothing else would be received. Co-operation with other hospitals would secure sufficient material. The control of the wards should be placed not with a permanent staff, but with a set of specialists selected for their fitness to handle various parts of the problem. All needed laboratory facilities should be added, and then for a period of three, five, or more years, the whole of this complete force should be engaged in the study of the problem set before it. The advantages of such a method of collective study cannot be overestimated. From the point of view of the hospital — especially if small — the reputation and efficiency to be gained by such concentration of effort could not be reached in any other way; the patients would benefit by the attendance of men and the use of methods specialized and perfected to the highest degree; humanity in general would be likely to benefit by improvement in methods, the result of such combined effort and study concentrated upon one problem.

The partial benefits of this are seen in certain diseases in the results of treatment in the South Department of the Boston City Hospital, where known methods are applied by skilled experts to a limited series of diseases. The plan here suggested, however, involves the effort to penetrate unknown paths, and this upon a large scale with a clearly marked map of campaign.

Other problems could be taken up as their importance became apparent, and the attending staff could be changed to suit the requirements. If I have succeeded in making this suggestion at at all clear, I hope it may appeal to my hearers, as it does to me, as giving promise of most fruitful results if carried out.

The final fermentative suggestion I have to make is this: A most important development for freedom of learning will be an extension of agreement among university departments in medicine by which the migration of students may be fostered and encouraged. It will be impossible for any one institution to gather within its walls all the leaders in all branches of medical knowledge. But the best interests of the student — and of medicine — require that the learner should have the opportunity to profit by as much of the best as can be provided for him. This may be accomplished by creating such parallelism in medical teaching in a number of leading institutions that similar years of the course shall be practically equivalent; so that, if a student has completed a year's study in one institution, he shall be competent to continue his work in any one of a number of others. He should be allowed to do this without examination and upon simple certificate. If this could be carried out, it might happen that such a student would attend several different institutions in his course for a medical degree. He would be certain to go to more than one, unless the excellence of instruction in all departments of each should be more nearly equal than it is easy to suppose possible. The stimulation to teachers would not be the least of the benefits that would arise from the adoption of this plan.

I have thus endeavored to present some of the fermentative changes through which the future growth of medicine is to be influenced. I know that the accomplishment of some of the suggestions made is likely to be long delayed. Some of them, on the other hand, are nearing completion, and the prospects for progress, for liberal training, and for thoroughness are nowhere brighter than in medicine to-day.

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According to *American Medicine*, M. Guien, agent for culture of the Colonial Society of the Upper Congo, has drawn attention to a native remedy for "sleeping sickness." It is an infusion of the wood called "iboga," which is common in the Gaboon. It is claimed that this infusion acts as a stimulant which counteracts the sleeping sickness.

# PREVENTIVE MEDICINE: ITS ACHIEVEMENTS, SCOPE AND POSSIBILITIES.[1]

BY HERMANN M. BIGGS, M.D.,
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THE terms sanitary science, public or state medicine, and preventive medicine have frequently been used as almost synonymous. The latter term, "preventive medicine," however, has sometimes been restricted in its application to the prevention of the infectious diseases. In the broad sense, preventive medicine comprises both general prophylaxis and individual prophylaxis, and applies to all forms of disease, not simply to the infectious diseases. Preventive medicine is an applied science, which deals with the preservation of the health, both of the individual and of the community.

No subject more vitally concerns the welfare of a community than that pertaining to its healthfulness. How the inhabitants live, and how and at what age they die, what is the extent and character of the morbidity occurring among them and what are its causes, are questions of momentous importance. They are essential features in the problem, whose solution will teach men how they may live longer, healthier, and therefore happier lives.

In rural districts the average healthfulness of the inhabitants depends largely on natural conditions, such as elevation, climate, soil, and, to a much less extent, on the artificial conditions produced by the handiwork of man. In densely populated cities, on the contrary, the natural conditions become relatively unimportant features in determining the degree of healthfulness, so much do they become subordinated in many cases to the artificial conditions which have resulted from the lives, labor and occupations of the inhabitants. It may be said with certain limitations that the inhabitants of any city in the temperate zone now have it largely within their power to determine what degree of healthfulness their city shall have. A high morbidity and a high mortality in any urban population depend largely on some remediable features of an unsanitary character, such as the sewerage of the city, the occupations, habitations, food and water supplies, and the habits of the inhabitants — all factors which lie to a great extent within their control. Hence, when any city in modern times has a high annual death-rate, for example, 30–35 per 1,000, as was formerly the case in New York, Liverpool and other cities, instead of a death-rate of 17–18 or 19 per 1,000, as now exists in London, Berlin and New York, it is because conditions are permitted to exist, partly from the neglect, indifference and ignorance of the people, and partly from the lack of proper facilities and necessary efficiency on the part of the authorities.

The achievements of scientific medicine have now placed at the disposal of the sanitary authorities such full knowledge as to the causation of so large a proportion of the diseases producing death, and of the means by which they may be restricted or prevented, that the determination of the average death-rate is in their hands. This statement is not, of course, intended to mean that it is now possible to prevent or stamp out local epidemics of influenza, pneumonia, cerebrospinal meningitis and some other infectious diseases, but it is intended to cover the average general death-rate of a city for a series of years.

The expectation of life at birth in certain manufacturing cities of England has been but little more than one half that of the healthiest districts of England. Until recent years it was twenty-five or twenty-six years in Liverpool and Manchester, thirty-seven years in London and forty-six years in Surrey, a healthy country district. Even at the age of thirty, the expectation of life was seven years more for England as a whole than it was for the inhabitants of Manchester. I have estimated that the expectation of life at birth in New York City in 1866 was only a little more than twenty-five years, while in 1903, calculated on the death-rate for that year, it had almost doubled, and equaled about forty-two years. For the seven-year period ending in 1873, the death-rate under five years in New York City was 123 per 1,000 of the population at these ages. For the year 1903 the death-rate under five years was fifty-six. On the present estimated population at these ages, this reduction equals a saving of more than 28,000 lives annually.

These considerations suggest the vast importance of the healthfulness of the community to the individual at every age, and to the community as a whole, for on this depends not only the relative freedom from illness, but also the probable lifetime of each member.

In the casual consideration of the healthfulness of communities as compared with the conditions existing in earlier times, we are inclined to think without investigation that there has been but little advance in modern times, and that while some diseases have been greatly restricted or entirely stamped out, these have been replaced by others equally as fatal to the human race. A little study, however, shows how erroneous are these views. In the seventeenth and eighteenth centuries the average annual death-rate throughout the civilized world was at least 50 per 1,000 of the population, and probably it was much more than this. From 1628 to 1635 in London, these years being free from pestilence, the average death-rate was 50 per 1,000, and the absolute annual mortality for twenty-four years, from 1620 to 1643, was over 70 per 1,000.

The death-rate during 1902 in London was only 17 and a fraction per 1,000. The mean expectation of life in London for the decennial period, 1771–1780, as calculated by Price's table, was nineteen and six-tenths years, the annual mortality being 51 or 52 per 1,000; while from 1831 to 1835, although an epidemic year

[1] Address on State Medicine at the fifty-fifth annual session of the American Medical Association at Atlantic City, June 7–10, 1904. By courtesy of *The Journal of the American Medical Association.*

is included, the death-rate had decreased to about 32 per 1,000. In 1894 the mean expectation of life at birth for all England had more than doubled that of 1780 in London, so that it was nearly forty-one years, and for London alone it was thirty-seven years. From 1771 to 1780 in London not less than five in each thousand of the population died annually of smallpox; in 1810 this mortality had sunk to 2 per 1,000, and in 1835 to 0.8, and in recent years it has been an absolutely insignificant decimal. Fever as a cause of death declined in almost the same ratio, from 6.21 in the decennial period ending in 1780 to 2.64 in 1810, and 1.14 in 1835. In the sixteenth century fever, plague, cholera and dysentery destroyed annually 31 out of every thousand of the population of London, or nearly twice the total deaths occurring now from all causes. These diseases at the present time, as causes of death, do not equal in London 2 per 1,000 annually of the population.

According to the English life tables up to 1875, 518 out of every thousand children in Liverpool died during the first five years of life; 351 died in London and 205 in the healthy rural districts of England, while in the whole of England 297 out of every thousand died during this period of life. In old New York City (comprising the boroughs of Manhattan and the Bronx), for the seven-year period ending in 1873, 616 out of every thousand children born died during the first five years of life. As computed by the death-rate under five in 1903, 280 would have died during these same five years. This mortality while still far too high, equals a reduction of nearly 60%, and as calculated for the estimated population at these ages, means a saving of about 20,000 lives a year in these boroughs. The death-rate in the period over five years of age has naturally shown a much smaller decrease, although it has fallen from 19 or 20, as it was in 1865 and 1866, at the time of the organization of the Department of Health of New York City as at present constituted, to about 14 for the year 1903, being a reduction of nearly one third. This has been accomplished, notwithstanding the fact that the old city has increased during this time from a population of about 750,000 to more than 2,200,000.

It does not seem necessary or desirable for our present purpose to consider in detail the causes of this decrease or the special diseases in which it has taken place, but the facts suffice to indicate the great achievements of preventive medicine during the past four decades. Expressed in human lives, it means in the boroughs of Manhattan and the Bronx a saving of over 30,000 lives a year, and, computed at the same rate for the whole city, a saving annually of more than 50,000 lives. I would not be taken as intimating that all of this has been accomplished through the agencies which we usually include under the head of preventive medicine, or that it has been the result solely of the action of the sanitary authorities. Such an interpretation would be very far from the truth, for many agencies have been at work in the production of these results. But preventive medicine, as I conceive its purposes and scope, should include all of those agencies which are essential and direct factors in the prevention of disease and the preservation of life. These agencies are not necessarily all under the direct control of the sanitary authorities.

In these introductory remarks, and in much that follows, I have taken many illustrations from conditions which exist in New York, because I have been familiar with the sanitary affairs there for many years, and the illustrations which it furnishes serve our purpose as well as if selected from many different states or communities.

It has long seemed to me that the work of the sanitary authorities in this country was too much restricted, and the general conception of the scope of their functions was narrow and out of harmony with the spirit and development of modern scientific medicine.

Sanitary work has been pretty well limited along certain old and well-defined lines, much to the detriment of the public health. The medical profession has unconsciously contributed no small part to this condition, because of the existence too often of a certain antagonistic attitude toward the action of the sanitary authorities and the feeling that the occupation of a larger field by them would be detrimental to the best interests of the medical profession. The latter has too often resented and opposed any movement to enlarge the field of preventive work, and has often insisted that its operations should be kept within the traditional narrow lines. Until in very recent years the operations of the health officers have been chiefly confined to the measures adopted for the prevention of the more readily communicable diseases, commonly called contagious. These usually included smallpox, diphtheria and scarlet fever, and, at intervals, yellow fever, cholera, epidemic dysentery and typhus fever. More recently typhoid fever and measles, and indirectly the diarrheal diseases of infants, have been generally added to this list. But even in regard to the diseases referred to, the measures adopted have been of an elementary and most unsatisfactory character. It must be admitted, however, that until our knowledge of the causation of many of the infectious diseases was rendered more exact by the discoveries in modern bacteriology, sanitary procedures were of necessity largely empirical, and disinfection was either entirely wanting or the methods employed were quite inefficient.

The scope of the sanitary measures in force with reference to the ordinary infectious diseases has in recent years been greatly broadened. More than ten years ago the Board of Health in New York assumed the position that all facilities and procedures looking to the prevention and cure of the infectious diseases should be afforded by the Department of Health. The establishment of the methods for bacteriologic diagnosis and the facilities for the serum treatment had

their origin there, and have since been widely followed.

General prophylaxis, or that portion of preventive medicine which should come directly under the supervision of the health authorities, has or should have a broader scope than that indicated, and should include the supervision, not only of those diseases which have generally come within sanitary surveillance, but also all the infectious diseases which from their nature are to a greater or less extent preventable, in addition to all other forms of disease which are the result of unsanitary living, occupations, habitations or surroundings, including those diseases arising from manufacturing, mining, or other industries, which, on account of their nature, are peculiarly or especially injurious to health. It should also include with greatly increased powers and breadth of jurisdiction, the surveillance of the water and food supplies and the sewage disposal.

To return for a moment to the consideration of the infectious diseases to be included in this list, there is a large class of different types of the infectious diseases which are well recognized as being more or less preventable which are not included in the registration returns. These are not dealt with at all by the sanitary authorities, or only to a very limited extent. Mention may be made in this connection not only of tuberculosis in all its forms, whooping cough, mumps, chickenpox and cerebrospinal meningitis, which have been included in the registration returns by some authorities, but have not, as a rule, been dealt with by them, but also of puerperal fever, erysipelas, pneumonia, the diarrheal diseases of infants, dysentery, malarial fever, influenza, the contagious diseases of the eye, and certain parasitic diseases of the skin, as well as some of the rarer diseases occurring in both animals and man, such as rabies, tetanus, anthrax and glanders.

The inclusion in the registration returns of such a long list of infectious diseases as has been here indicated requires considerable modifications and expansion of the ordinary sanitary procedures, and such action at first thought is likely to arouse opposition and unfavorable criticism from the medical profession. Such opposition and criticism, however, I believe is without proper justification, and arises from an erroneous conception of the proper scope and functions of the authorities and their relations to the medical profession and the people.

There has long existed a belief in the medical profession, and to a considerable extent it has also been a part of the conception of the sanitary authorities of their functions, that the registration of a case of any kind of infectious disease involved some surveillance of such case by the authorities. The slightest consideration would at once show that with relation to many of the diseases mentioned no such surveillance could be of any real service, and it might be a source of annoyance to the sick person, the family and the attending physician. Much good, however, would result, in my opinion, by such a broadening of the scope of sanitary work, without causing annoyance or being detrimental to any one. I should like, however, to point out that more than a year ago the Board of Health of New York City in the revision of its sanitary code included a number of new sections in relation to the infectious diseases, covering to a large extent the diseases above mentioned. These sections, with the accompanying notes, read as follows:

INFECTIOUS DISEASES.

SECT. 133. It shall be the duty of every physician to report to the Department of Health, in writing, the full name, age and address of every person suffering from any one of the infectious diseases included in the list appended, with the name of the disease, within twenty-four hours of the time when the case is first seen:

A. *Contagious* (very readily communicable). — Measles, rubella (rötheln), scarlet fever, variola (smallpox), varicella (chickenpox), typhus fever, relapsing fever.

B. *Communicable.* — Diphtheria (croup), typhoid fever, Asiatic cholera, tuberculosis (of any organ), plague, tetanus, anthrax, glanders, epidemic cerebrospinal meningitis, leprosy, infectious diseases of the eye (trachoma, suppurative conjunctivitis), puerperal septicemia, erysipelas, whooping cough.

C. *Indirectly Communicable* (through an intermediary host). — Yellow fever, malarial fever.

NOTE. In this provisional classification of the infectious diseases, arranged for practical purposes, the most readily communicable of these diseases, embracing the exanthemata and typhus fever, have been placed in a group by themselves and called contagious. This has been done with a view to emphasizing a distinction, which is not only of scientific significance, but of practical importance, in dealing with the sanitary features of administration. This distinction is furthermore of importance because it avoids the misunderstanding and alarm frequently caused by including in the same class the very readily communicable diseases (such as smallpox) and the much less communicable diseases (such as tuberculosis), which require very different sanitary measures for their control.

SECT. 134. It shall be the duty of the commissioners or managers, or the principal, superintendent or physician, of each and every public institution or dispensary in this city, to report to the Department of Health, in writing, the full name, age and address of any person suffering from any one of the infectious diseases included in the list appended, with the name of the disease, within twenty-four hours of the time when the case is first seen:

A. *Communicable.* — Influenza, lobar pneumonia, broncho-pneumonia, infectious diseases of the gastro-intestinal canal (dysentery, cholera morbus, cholera infantum, summer diarrheas of infants).

B. *Parasitic Diseases of the Skin.* — Scabies, tinea tonsurans, impetigo (contagious), favus.

NOTE. In this list of diseases reporting is required by the Department of Health in order that data may be obtained for general and special investigation of the modes and sources of infection and as to the prevalence and distribution of these diseases. The Department of Health does not propose to exercise a sanitary surveillance in these cases, but desires information with a view to the ultimate removal or improvement in the conditions which foster them. Notification is

required in certain of these diseases because of the liability to their extension among children in the schools.

It will be noted, first, that two main groups of diseases are specified. In the first group, including the more readily communicable diseases, and some others which are not so regarded, registration is compulsory in all cases coming under the observation either of a private attending physician or an institution. These are separated for convenience under three heads: (*a*) The contagious or very readily communicable; (*b*) the communicable, including diphtheria, typhoid fever, Asiatic cholera, tuberculosis and a number of others; and (*c*) the indirectly communicable, including only two diseases — yellow fever and malarial fever — which are transmitted solely through an intermediary host. In these three classes compulsory registration is required, because in all of the diseases in these classes preventive measures, properly executed, are certainly efficient to a very large extent. As to the propriety of the compulsory registration of all of the diseases included under the first heading, " The contagious or very readily communicable diseases," I assume that there can be no reasonable difference of opinion. Measles, rötheln, scarlet fever, varicella, variola, typhus fever and relapsing fever, certainly without question, should be reported to the sanitary authorities. The necessity for reporting rötheln and varicella rests more in the danger of confusion of these diseases with measles and varioloid, respectively, than because of the importance of the diseases themselves. Our experience in New York has shown again and again that outbreaks of smallpox have resulted from the failure of inexperienced physicians to recognize mild cases, these having been mistaken for varicella and treated as such. Every case of varicella occurring in the city must, therefore, be reported, and all cases occurring in adults are immediately seen by a trained diagnostician. I say all cases of varicella in adults, because experience has shown that very frequently varicella in an adult is a mild case of variola.

In the second class, called simply " the communicable diseases," there might be some question as to the propriety of the reports in some instances. There would be none, however, with regard to diphtheria, typhoid fever, Asiatic cholera, plague, tetanus, anthrax, glanders and leprosy. All of these diseases are under some conditions communicable and of the greatest importance, yet they are much less communicable than the first class, the contagious.

There cannot now be, nor can I conceive that there ever will be again, any serious question as to the necessity or propriety for the registration and sanitary surveillance of tuberculosis, although this has been a subject of very bitter dispute and although this disease has come actually under the close supervision of the sanitary authorities in only three or four cities in the United States, and of practically none in Great Britian or on the Continent. Pulmonary tuberculosis was included in the list of communicable and reportable diseases by the New York City Board of Health ten years ago, and the measures adopted for its surveillance have been gradually extended and the lines for its restriction have been drawn closer and closer as each year has passed. Some doubt, however, might properly arise as to the necessity of the inclusion of other forms of tuberculosis than pulmonary tuberculosis in the registration returns, because for the most part these other tubercular diseases are not communicable, or very slightly so. Bone, joint, intestinal and gland tuberculosis are practically never sources of infection in other persons, but cases of tuberculosis of the types mentioned indicate the previous exposure to infection of the individual, and they thus point out a probably infected site or family, concerning which the sanitary authorities should have information. Such cases may also disclose unrecognized instances of pulmonary disease. Furthermore, knowledge of all cases is absolutely essential to a comprehensive recognition of the extent and prevalence of the infectious disease, *tuberculosis*. During the past year measures to ensure the registration of tuberculosis in all its forms have been adopted in New York.

The importance of the registration of epidemic cerebrospinal meningitis arises not so much because of the evidence of its communicability as because of the importance of fuller information as to the conditions under which it arises and becomes disseminated. We have in New York City just been passing through an epidemic of this disease, the first serious one for thirty years. During the month ending May 15 more than 300 deaths occurred in New York City from this cause.

The infectious diseases of the eye — trachoma and suppurative conjunctivitis — should be included because of the importance of the adoption of preventive measures in the public schools. Few persons had any conception of the great prevalence of these diseases of the eye in the public schools of New York until after the Department of Health adopted some comprehensive measures for their surveillance. Such a vast number of cases was found that the Board of Health was forced to establish special dispensaries and provide special hospital facilities for their care. Only within a few weeks a second hospital and dispensary has been opened, and in the original one in connection with Gouverneur Hospital an average of about 500 patients a day were treated during the year 1903, and nearly 5,000 cases were operated on for trachoma.

Puerperal septicemia should be included in the registration returns because modern aseptic midwifery has shown that in most instances this is a strictly preventable disease, and, excepting rare cases of difficult or prolonged labor, its occurrence may be regarded as the result of uncleanliness, negligence or incompetence. The registration and the investigation of these cases by the sanitary authorities should soon result in the exclusion from practice of incompetent midwives,

restrict the work of the criminal abortionist, and foster the practice of aseptic midwifery.

No one, I fancy, would seriously question the propriety of including erysipelas and whooping cough in the registration returns. So far as this country is concerned I assume that typhus fever, Asiatic cholera, plague, leprosy and yellow fever are diseases which will never again call for anything more than occasional or emergency measures for the disposal of isolated cases or small groups of cases. But with reference to one disease in the third class, *i. e.*, malarial fever, some remarks may be in point to show the advantages which are likely to result from the interference of the sanitary authorities. We now all believe that malarial fever is not only an infectious disease and indirectly communicable through an intermediary host, but that it is also distinctly preventable.

The registration of cases of malarial fever should be required, not because close surveillance of individual cases is necessary, but because the sanitary authorities should know where the sites of infection are, where the breeding places of the anopheles mosquitoes are to be found, in order that they may adopt proper means for determining the cause of such areas of infection and the proper measures for their removal. In certain sections of New York City investigation has shown that in some instances almost every person living within certain small areas has suffered from malarial fever during the spring and summer months of a single season. Such outbreaks are without any question the result of local remediable unsanitary conditions, which furnish the breeding places for the mosquitoes. But without special information as to the existence of the cases, only to be obtained through the registration of malarial fever, knowledge of the presence of much unsanitary conditions and their removal may become difficult or impossible. The surveillance in their homes of the individual cases reported is, of course, not contemplated. That conditions similar to those found in New York exist in other communities, I have no doubt.

Section 134 of the Sanitary Code of New York, covering the second group, deals with infectious diseases of a somewhat different type, and in these the Sanitary Code requires the reporting to the department by public institutions of all cases coming under their observation; but it only requests physicians to report them and does not require such reporting.

Class (*A*), in this group, includes some of the more important acute infectious diseases of the upper respiratory tract, namely, influenza, lobar pneumonia and bronchopneumonia, and certain of the more common acute infectious diseases of the gastro-intestinal canal, namely, dysentery, cholera morbus, cholera infantum and the summer diarrheas of infants.

The acute diseases of the respiratory tract referred to should, in my opinion, be registered, because they are infectious, because they are of prime importance as causes of death, and in order that general and special investigation may be instituted for the collection of data bearing on the modes of infection and the sources and causes of their prevalence and their distribution. New York City has during the last winter experienced the greatest prevalence of these diseases which it has had for many years. In the first four months of the year more than 6,000 deaths occurred from influenza, lobar pneumonia, bronchopneumonia and acute bronchitis.

I firmly believe that these diseases can be to a very considerable extent prevented, but the means and the methods are yet to be determined, and it is hoped that registration will assist in the acquisition of knowledge for the attainment of this end.

A large new field has just been opened by recent observations with regard to the specifically infectious character of many of the cases of summer diarrhea and dysentery, both of infants and of adults. The results of the investigation of the sanitary authorities in recent years in many large cities have shown in the most conclusive way that these diseases are to a very large extent preventable, and it seems probable, or at least possible, from recent investigations, that some forms at least are preventable and curable by the use of a specific curative serum.

Investigations in New York and other localities have shown that serious outbreaks of diarrhea and dysentery have occurred in various institutions and in local areas which were probably, if not certainly, preventable, but concerning which the sanitary authorities have had no information. It seems evident, therefore, that these diseases should be made notifiable. A practical difficulty in this connection exists in the lack of definiteness as to what cases should be included and how the differentiation is to be made between the diarrheas due to simple digestive disturbances and those of a more serious nature caused by infection. This, however, is a matter for further investigation.

Notification of the parasitic diseases of the skin should be required, chiefly because of the liability to the extension of these diseases among children in the public schools.

There are certain very large and important questions of prophylaxis connected with the prevalence of typhoid fever and the milk and water supply of our large communities. The occurrence of great outbreaks of typhoid fever, such as the epidemics at Ithaca, N. Y., and Butler, Pa., during the last year, the prevalence in Philadelphia, Pittsburg and some other cities of the United States and the extensive distribution in the rural districts, constitute a disgrace to American preventive medicine and should arouse the sanitary authorities, the medical profession and the people to the provision of efficient measures and the enactment of suitable legislation for its prevention.

The annual cost of typhoid fever in sickness and death throughout the United States would be computed in terms of tens of millions of

dollars. All of this loss we know is certainly preventable. If only a small portion of the annual outlay made by the country for sickness and death from this cause were expended in the education of the people as to the cause and the methods of prevention of this disease and the provision of proper water and sewerage systems, typhoid fever might soon become a rare affection. Unfortunately the city sanitary authorities are often almost powerless in this matter, as their jurisdiction does not extend over the watersheds which supply with water the people under their care, and a supervision by them of the sources of the milk supply is also frequently absolutely impossible.

In New York City detailed investigations of all the cases of typhoid fever occurring within the city limits were instituted several years ago and have been continuously carried on. These show that at least 25% of the cases occurring in the city have *certainly* received their infection outside of New York City, and a considerable percentage more have *probably* received it outside. Five or 6% are the result of contact with other cases, and the remainder are, in all probability, almost wholly the result of infection through milk or oysters. Some more comprehensive measures are urgently demanded to extend the jurisdiction of the authorities in the supervision of the supplies of milk and oysters and other foods.

A serious objection which may be urged against the adoption of the measures here recommended in regard to the registration of many infectious diseases is the increased labor thrown on physicians which their enforcement would involve. The question may properly be asked: Whether the sanitary authorities in the interest of the general public may call on the medical profession for the expenditure of so much time and labor without making any compensation in return. There are 35 diseases included in the New York list. The English authorities pay a fee for the notification of each case of infectious disease, and I believe that this course might properly be pursued in this country; but this has not been the custom here, and the authorities generally are not now provided with the funds necessary for this purpose.

When the Department of Health of New York City established its bacteriologic laboratories in 1892, measures were adopted to make some return to physicians for their interest and labor in connection with the sanitary surveillance of the infectious diseases. A systematic plan was then inaugurated, and has since been consistently followed, to secure their co-operation, by offering free bacteriologic examination in the diagnosis and surveillance of various forms of infectious disease. This was first applied to Asiatic cholera in 1892, during the outbreak in New York Harbor, and has since been extended to all of the diseases in which existing scientific knowledge made it possible, cerebrospinal meningitis being the latest disease added to this list. The establishment of this system of free bacteriologic examinations in the diagnosis and surveillance of the infectious diseases, and the provision of facilities throughout the city for the collection of specimens and the sending of reports to physicians, constituted an entirely new departure in sanitary work and has been of the greatest value. The example of New York has been followed by the sanitary authorities in most of the large cities of this country, by many state authorities, and by authorities generally in Great Britain and to a certain extent on the Continent. These examinations constitute the return which the authorities here have made to physicians for the reporting of cases and for their assistance and co-operation in their care. This return has a very considerable money value, when we remember that for such examinations the usual fee is five dollars, and as physicians cannot, as a rule, make such examinations themselves, they must work without the assistance thus afforded, unless they appeal to the regularly constituted laboratories.

What now are the possibilities of preventive medicine as concerns the larger centers of population? In answering this question we may first take as the basis of our reply the conditions found in some of the large cities with the lowest death-rates, or still better, the conditions found in some healthy rural districts. In considering the crude death-rates, as ordinarily reported, however, one must not ignore the influence of the sex and age distribution of the population on the death-rate. As is well known, the death-rates in the periods of life between five and forty-five years of age are very low, and the death-rate among women is lower than among men. If, then, in a city there is a relative excess of the population in the middle periods of life, or an unusual preponderance of women, we may have a crude death-rate which seems very low, but which when corrected may be relatively high. For example, the death-rate of New York City, as corrected by the English life tables, would probably be at least three points higher than it is. For 1894 the gross rate was 22.76, and the rate corrected by the English tables was 26.46. The corrected death-rate of some of the large, rapidly growing Western cities would probably be five or six points higher than the crude death-rate reported. The death-rate of London at present averages about 17 per 1,000, and when corrected about 18.5 per 1,000, while the Berlin death-rate is somewhat lower than this. The crude death-rate of Surrey, a healthy rural district in England, is 14 and a fraction, and when corrected would probably be 15.

We can hardly use for a basis of comparison the conditions in any of the cities of this country with very low rates, because the rates have not been corrected, and the basis on which they are calculated cannot always be accepted as correct. Taking all the facts together, and judging of the duration of human life as we know it, we may accept a corrected death-rate of 14 or 15 in a large city as a goal toward which preventive medicine should strive and hope to achieve. If

we consider the question from another point of view, as to what is possible in the reduction of the death-rate from distinctly preventable diseases, we would reach a conclusion not unlike the previous one.

In New York City it may be assumed that the present tubercular death-rate of 2.7 may, under proper surveillance, with certainty be reduced to 1.2, and 1.5 points would thus be subtracted from the crude rate. The diphtheria death-rate, already reduced 65% by the use of antitoxic serum, should certainly be reduced to one third of what it is at present; it is now about .6 per 1,000 population. Similar reductions should be possible in the death-rate from typhoid fever, measles and scarlet fever. The diarrheal diseases of infants have already been reduced in the last twelve years to one half of their former prevalence, and should still be reduced more than 50%. Thus more than three points may be subtracted from the crude rate in New York, which in 1903 was 18.18. The rate would then be 15—. The rate for 1903 was the lowest in the history of the city.

The most fatal affections with which we have now to deal in New York are the acute respiratory diseases, including influenza, lobar pneumonia, bronchopneumonia and acute bronchitis. The average death from this group of diseases now exceeds 3 per 1,000 of the population, and in years when there is an epidemic prevalence of these diseases the death-rate may be 4 or more, as seems likely to be the case this year.

The advances in preventive medicine have as yet not only had no influence in reducing the death-rate from this group of diseases, but, on the contrary, there has been a slow and continuous increase. I cannot at this moment point out the method or the means by which a reduction is to be brought about, but still I firmly believe that with fuller knowledge such a reduction will become possible in the great cities where these diseases are so prevalent.

Something can be accomplished through the closer sanitary surveillance of the occupations and conditions under which the lower classes work, especially the noxious trades. Something, too, may be done through a closer supervision of foods to ensure their purity and freedom from adulteration.

A very difficult problem arises in connection with the diseases of the circulatory apparatus and the kidneys. My investigations have shown that in New York City a large increase has taken place, due to these causes, during the last twenty years. The acute respiratory diseases, cancer and diseases of the circulatory apparatus and the kidneys are the only important causes of death which have shown an increase during this period. The increase in cancer amounts to about 15%, and the increase in the acute respiratory diseases amounts to about 15%, while the increase in the diseases of the circulatory apparatus and kidneys combined equals about 40%. In making this statement I have taken fully into consideration the possible influence of greater accuracy in the death returns, *i. e.*, the inclusion formerly of these under other causes of death; but after making all allowances, it seems to me without question that an increase equaling 40% has taken place.

A very important sanitary problem is here presented to the health authorities. What are the factors in the lives of the inhabitants of our large cities (for I have found that similar increases less extensive, however, have taken place in London, Paris and Berlin) which have caused such a remarkable increase in the prevalence of these affections, and how are these factors to be removed?

The time at our disposal does not permit of more than this elementary and cursory review of the work in preventive medicine. Sufficient facts have, however, been adduced to show how great have been its achievements, and some of the directions have been indicated in which its scope should be extended. With such extensions, and many others not mentioned, the future possibilities of preventive medicine seem to be even greater than the past achievements, for almost every development in bacteriology opens up a new field of work for the sanitary authorities.

## Original Articles.

### A CONTRIBUTION TO THE PATHOLOGY OF HYSTERIA BASED UPON AN EXPERIMENTAL STUDY OF A CASE OF HEMIANESTHESIA WITH CLONIC CONVULSIVE ATTACKS SIMULATING JACKSONIAN EPILEPSY.[1]

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THE following observations are offered as a contribution to the pathology of hysteria. The experimental results obtained confirm the modern theory of the disease and corroborate the various and numerous observations which have been made of recent years in France, Germany, and this country. These researches have compelled us to recast our views of the pathology of hysterical phenomena, though a knowledge of this work has not yet found its way into textbooks. This is our reason for presenting this study before this Society.

The pathology as laid down in textbooks may be exemplified by the following references:

Walton (Wood's Handbook) states: " Post-mortem investigation gives no clue to the morbid process, and theoretic study of its nature has led, as yet, to little more than conjecture. . . . Most of the paralytic symptoms, for example, are best explained on the supposition of decreased irritability of the cortical centres, while the spasmodic symptoms allow of explanation in part on the ground of their exalted irritability, and in part on that of diminished inhibition."

Gowers in discussing the pathology states that " hemianesthesia must be ascribed to an inhibition of a sensory center relatively low," and that

[1] Read at the meeting of American Association of Physicians, May 10, 1904.

"this disturbance of lower centers has disclosed facts (!) hitherto scarcely suspected and of much physiological interest regarding this capacity for limited functional derangement." He then goes on to explain hemianesthesia by inhibition, and infers a fanciful arrangement for its arrest, etc.

Sachs, although referring in a footnote to Breuer and Freud's classic work, which has helped to change our conception of the disease, contents himself with the opinion that "there is much room for theorizing, but there are very few facts to guide us," and that "the transfer of sensory disturbances from one half of the body to the other would go to show that the two halves of the brain are evidently in sympathy with one another (to put it broadly) in this disease, and that they can be alternately affected."

Dana attempts no theory.

Oppenheim makes a feeble reference to the psychic factors, but no attempt at explanation.

Lloyd (Nervous Diseases by American Authors) considers that "the pathology of hysteria is among the unsolved problems of the infant science of psychology."

Among the latest textbooks, Church and Peterson quote a few recent definitions, but practically do not consider the pathology.

Binswanger in his extensive treatise on hysteria (Nothnagel's Special Pathology and Therapeutics) quotes the work of the modern French school, but apparently without comprehending it. He lays down the following metaphysical postulate which seems to be absolutely devoid of meaning: "The hysteric alteration consists in a disturbance of the normal exchange between the psychic and the material processes. This occurs in two ways: on the one hand, the psychic process fails to be awakened parallel with a definite series of material cortical excitations, or are only incompletely aroused; on the other hand correlated with a material excitement of the cortex an excessive amount of psychic activity takes place which excites every variety of reaction to the whole innervation process which arises in or is controlled by the cortex."

Strümpel thus reasons: "If the normal exertion and inhibition of the will-power be broken down, so that *unreasonable* will-stimuli are created and reach the muscles, we have hysteric convulsions, contractures or cramps. If there are present in the consciousness images of awaited or feared objects, and if these images be intensified by the conditions of the disease into *true subjective irritations* of consciousness, we shall have hysteric pains and neuralgias."

The following comment on this is fairly deserved:

"This piece of scientific speculation, as to its lucidity, reminds one of the definition of love given by a Platonist: 'Love is the ideality of reality of a part of the totality of the Infinite Being.'"

All these earlier speculations are not only trivial, but are now known to be erroneous, for recent researches have thrown a great deal of light upon the pathology of the disease, although much remains to be done to give a complete understanding of it.

The study of the case here reported is of clinical interest in that —

1. It confirms the work of previous observers in regard to the nature of hysteric anesthesia. That is to say, the anesthesia is not due to inhibition of sensory centers or any kind of suppression of their activity; in fact is not true anesthesia at all, but is due to a dissociation of consciousness, probably corresponding to a functional dissociation of systems of cortical neurons.

2. It shows the purely functional character of the epileptiform attacks and their origin in dissociated psychic states.

3. It emphasizes the importance of understanding the pathology of the attacks in order to effect a cure.

*History.* — Mr. M., aged twenty-one years, was born in Russia, and came to this country four years ago. His family history, as far as can be ascertained, is good. There is no nervous trouble of any sort in the immediate or remote members of his family.

The patient himself has always enjoyed good health. He is a very intelligent young man of good habits. He does not use alcohol or tobacco and gives no venereal history.

He was kindly referred to us by Dr. K. M. Davidson of Boston for epileptiform attacks and anesthesia of the right half of his body. The attack is preceded by an *aura*, consisting of headache and a general feeling of malaise. The aura lasts a few days and terminates in the attack which always sets in about midnight, but *when the patient is fully awake*. The attack consists of a series of spasms, rhythmic in character and lasting about one or two minutes. After an interval of not more than thirty seconds, the spasms set in again. This condition continues uninterruptedly for a period of five or six days (a sort of status epilepticus), persisting during the time the patient is awake, and ceasing only during the short intervals or rather moments of sleep. Throughout the whole period of the attacks the patient is troubled with insomnia. He sleeps restlessly for only ten or fifteen minutes at a time. On one occasion he was observed to be in a state of delirium as found in post-epileptic insanity and the so-called "Dammerzustande" of epilepsy. This delirium was observed but once in the course of five years. The regular attack is not accompanied by any delirious states or "Dammerzustande." On the contrary, during the whole course of the attack the patient's *mind remains perfectly clear*. He does not lose consciousness even for a moment, and not the least trace of emotional disturbance, such as fear, for instance, can be found. During the period of the attack the whole right side becomes anesthetic to all forms of sensations, kinesthesia included, so that he is not even aware of the spasms unless he actually observes the affected limbs. Otherwise he remains unconcerned, perfectly *placid* and unruffled, as if nothing special is happening to him.

The affected limbs, previously normal, also become paretic. After the attack has subsided, the paresis and anesthesia persist (as sometimes happens in true idiopathic epilepsy) for a few days, after which the patient's condition remains normal until the next attack. After his last attack, however, the anesthesia and paresis continued for about three weeks.

The first attack occurred five years ago, since which time, up to his last year, he has had every year one

attack which, very curiously, sets in about the same time, namely, about the month of January or February. During the last year, however, the attacks have increased in frequency, so that the patient has had four at intervals of about three or four months. On two different occasions he was in the Boston City Hospital for the attacks.

*Examination.*— Examination of the patient, made three weeks after the last attack, showed the following: Pupils are equal and react promptly to light and accommodation. Knee jerks slightly exaggerated. No ankle clonus. No Babinsky. There was a profound right hemianesthesia including the right half of the tongue, with a marked hypo-esthesia of the right side of the pharynx. All the senses of the right side were involved. The field of vision of the right eye was very much limited. The ticking of a watch could not be heard more than three inches away from the right ear. (Hearing in left normal.) Taste and smell were likewise involved on the right side. The muscular and kinesthetic sensations on the right side were very much impaired.

The patient's mental condition was good. He was well balanced, and did not give evidence of any emotional disturbances. He states that he has few dreams and those are insignificant, concerned as they are with the ordinary matters of his daily life. Occasionally he dreams that he is falling, but there is no definite content to the dream.

These findings were indicative of functional rather than organic disease. The *previous history* of the case was significant. The first attack came on after peculiar circumstances, five years ago, when the patient was sixteen years of age and living in Russia. After returning from a ball one night, he was sent back to look for a ring which the lady, whom he escorted, had lost on the way. It was after midnight, and his way lay on a lonely road which led by a cemetery. When near the cemetery he was suddenly overcome by a great fright, thinking that somebody was running after him. He fell and lost consciousness. By the time he was brought home he had regained consciousness, but there existed a spasmodic shaking of the right side, involving the arm, leg, and head. The spasm persisted for one week, during which time he could not voluntarily move his right arm or leg, and the right half of his body felt numb. There was also apparently a loss of muscular sense, for he states that he was unaware of the shaking of his arm or leg unless he looked and saw the movements. In other words, there was right hemiplegia, anesthesia, and spasms. For one week after the cessation of the spasms his right arm and leg remained weak, but he was soon able to resume his work, and he felt as well as ever. Since then every year, as already stated, about *the same month* the patient has an attack similar in every respect to the original attack, with the only exception that there is no loss of consciousness. Otherwise the subsequent yearly attacks are photographic pictures, close repetitions of the originai attack.

This history, obtained from the patient himself and his family, was still further suggestive, though not a proof of the functional character of the attacks. Furthermore, even though functional, nothing was evident to show the deeper pathology of the affection; that is to say, the exciting and underlying cause of the attacks and the anesthesia.

A series of experiments accordingly was undertaken for this purpose. First, as to the *anesthesia*. If the anesthesia was hysteric, as is now well known, sensory impressions ought to be felt, even though the patient was unconscious of them, and we ought to be able to get sensory reactions of a wellknown sort.

*Tests showing the functional nature of the anesthesia. Visual hallucinations.*— The experiments which were made to determine the nature of the anesthesia produced interesting results. These experiments are of a wellknown class which have been frequently made use of to show that the anesthesia is not a true anesthesia, but that impressions from the anesthetic parts which seem not to be felt are really perceived subconsciously.

They may be made in several different ways. The method we made use of consisted in producing a visual hallucination whenever the anesthetic hand was touched. That is to say, if the anesthesia is functional, although the subject does not consciously perceive the tactile impressions, he sees the image of a number which corresponds with the number of times the hand is pricked or touched. This was found to be the result in this case. Whenever the hand was pricked a certain number of times successively, he always saw that number as an hallucination. The number was always correct, and showed that subconsciously the pricks must have been felt.

The details of the experiment were as follows: The anesthetic hand was placed behind a screen and the patient was told to look in a glass of water and tell what he saw there. Impressions made on the anesthetic hand gave rise to visual hallucinations symbolically representing the sensory stimuli. Thus, for example, when his hand was touched, very lightly, five times, he saw the figure five very vividly and described it in detail. He saw the number written; it looked very large; and he saw it written on the back of a hand.

The intensity of the hallucination was well brought out when, projecting the hallucinatory hand on a screen instead of in the water, the patient outlined it with a pencil. When one of us placed his hand on the screen by the side of the hallucinatory hand and the patient was asked to tell which hand looked more real, he insisted that both hands looked equally real, except that the hallucinatory hand looked a little farther away.

Other tests also showed that the *subconscious* reactions to impressions from the anesthetic hand were more acute than the conscious reactions to impressions from the normal hand. So we have the so-called "psychopathic paradox" that *the functional anesthesia is hyperesthesia*. (Sidis.)

It is perfectly evident then that there could be no inhibition of the sensory centers, or suppression of their activity, or whatever else it may be called. In spite of the apparent profound anesthesia the pin pricks were felt and perceived. The perception of them gave rise to hallucinations of a character that showed the pin pricks were counted and localized in the hand. The result of these tests is in accord with previous observations which have demonstrated that in hysterics all sensory impressions received from anesthetic parts, while they do not reach the

*personal* consciousness are, as it is called, subconsciously perceived. The accepted interpretation of such phenomena is this: Inasmuch as the sensations are perceived, the failure of the subject to be conscious of them must be due to a *failure in association*. The perception of the sensation is *dissociated* from the personal consciousness. More than this, these dissociated sensations are capable of a certain amount of independent functioning; hence the hallucinations, and hence the wellknown failure of hysterics to be incommoded by their anesthesia. This condition of dissociation is now recognized as that underlying hysteric anesthesia.

*Study of the attacks.*— For the purpose of studying the attacks themselves, the patient was hypnotized. He went into a deep somnambulic condition, in which, however, the *anesthesia still persisted*. This showed that the dissociation of the sensory impressions was unchanged. In hypnosis he related again the history of the onset of the trouble. But now his memory became broader and he was able to give the additional information, which he could not do in his waking state, that at the time he was frightened he fell on his right side. Moreover, he recalls what he does not remember when awake, that throughout the period of his attacks when he falls asleep, he has very vivid dreams of an intense hallucinatory character, all relating to the fright and fall of five years ago. In these dreams he lives over and over again the experience which was the beginning of his trouble. He again finds himself in his little native town, on a lonely road; he thinks some one is running after him; he becomes frightened, calls for help, falls, and then wakes up with a start, and the whole dream is forgotten. After he wakes he knows nothing of all this; there is no more fear or any emotional disturbance; he is then simply distressed by the spasms.

*Subconscious reproduction of the attacks.*— While testing the anesthesia during hypnosis, an attack developed; his right arm and leg began to shake, first mildly, and then with increasing intensity and frequency. His head also spasmodically turned to the right side. The movements soon became rhythmic. Arm and leg were adducted and adducted in a slow rhythmic way at the rate of about thirty-six times per minute. With the same rate and rhythm, the head turned to the right side, with chin pointing upward. The right face was distorted by spasm, as in great pain. The left face was unaffected. Pressure over his right side ( presumably where he struck when he fell) elicited evidences of great pain. Respiration became deep and labored, and was synchronous with each spasm. The whole simulated Jacksonian epilepsy. It is noteworthy that the knee-jerk on the right side was exaggerated by comparison with the left during the attack. Consciousness persisted unimpaired, but showed a curious and unexpected alteration. When asked what was the matter, he replied to our surprise, in his native dialect (a German dialect), " I do not understand what you say." It was found that he had lost all understanding of English, so that it was necessary to speak to him in German. His answers to our questions made it apparent that during the attack, as in his dreams, he was living through the experience of five years ago which had originally excited his trouble. The attack was plainly an hallucinatory one. He said that it was now 1898, that he was sixteen years old, that he was in Rovno (Russia), that he had just fallen because he was frightened, that he was lying on the roadside near the cemetery, and that he wanted somebody to pick him up. The hallucinatory state developed further, the patient living through, as in a dream, the whole experiences that had taken place at that period. Now he was in a carriage, though he did not know who put him there. Then in a few moments was again home, in his house, with his parents attending on him as in the onset of his first epileptiform seizures. The attack terminated at this point, and thereupon he became perfectly passive, and when spoken to answered again in English. Now he was again twenty-one years old, was conscious of where he was, and was in absolute ignorance of what had just taken place.

*Disappearance of the anesthesia and automatic reproduction of the attacks.* — It was found that an attack could regularly and artificially be induced if the patient in hypnosis was taken back by suggestion to the period when the accident happened.

The experiment was now tried of taking him back to a period antedating the first attack. He was told that he was fifteen years old, that is, a year before the accident occurred. Now again he could no longer speak or understand English, he was again in Rovno, engaged as a salesman in a little store, had never been in America, and did not know who we were. Testing sensation, it was found that it had spontaneously returned to the hand. *There was not a trace of the anesthesia left.* The hand which did not feel deep pin pricks before now reacted to the slightest stimulation. *Spontaneous synthesis of the dissociated sensory impressions had occurred.* Just as formerly before the accident, sensation was in normal association with the rest of his mental processes, so now this association was re-established with the memories of that period to which the patient was artificially reduced.

The patient was now (while still believing himself to be fifteen years old) taken a year forward to the day on which the accident happened. He says he is going to the ball to-night. He is now at the ball; he returns home; he is sent back to look for a ring. Like a magic formula it calls forth an attack in which again he lives through the accident, — the fright, and the spasms. With the onset of the spasm, dissociation again occurs, the *hand becomes anesthetic* and remains anesthetic after the subject is awakened.

It was thus possible to reproduce an attack at any time with clock-like precision by taking him back to the period of the accident, and reproducing by an hallucination all its details. Each time the fright and the physical manifestations of the attack (spasms, paresis, and anesthesia)

developed. These induced attacks were identical with the spontaneous attacks, one of which we had occasion to observe later.

RELATION TO VARIOUS FORMS OF NEUROSES. — This case is similar to cases of this sort which had been studied by Janet in France, Breuer and Freud in Germany, and a number of cases studied in this country by Sidis and Prince.

The question is further raised by such cases as this, whether some of those cases of fear neuroses studied by one of us (Prince) in which there are manifested all the physical manifestations of fear, without the presence of the emotion itself — thus presenting a psychic paradox — whether some of these cases have not as a foundation a subconscious and unrecognized fear.

PATHOLOGY. — This analysis enables us to understand to a large extent the pathology of the attacks. At the time of the accident the intense emotional disturbance, the fright, acted as a dissociating agent, and dissociated the sensory and motor images of one half of the body in such a way that they were no longer in *rapport* with the personal consciousness. These dissociated elements were not, however, inhibited, or incapable of functioning, as is shown by the hallucinations and other phenomena brought out in the test experiments. In cases of this kind, dissociated sensory and motor images become what is called "subconscious" and capable of automatic activity. Sensory impressions are subconsciously perceived, and motor images subconsciously excited. The dissociation (through the influence of the emotion) of these sensory and motor images and their automatic subconscious excitation *is* the attack. The original emotion, fear, remains (unknown to the subject) dissociated in the subconsciousness as a fixed state. Here from time to time it acquires a separate and independent activity. At periodic intervals, as under the stress of some emotion, or by association of ideas, its dormant activity is awakened and, though still unknown to the patient, gives rise to the same sensory-motor disturbances which characterized the original experience. These subconscious dissociated states are so much more intense in their manifestations because of being cut off, by the very fact of their dissociation, from the inhibitory influences of the normal mental life.

The pathology of such cases as this and of hysteria in general, then, consists on the one hand in the dissociation of the mental (and cerebral) processes, and on the other hand in the independent and automatic activity of the disaggregated psychic (and cerebral) states. Dissociation and automatism are the two fundamental processes.

The case furthermore gives an insight into the nature of many of the cases of "traumatic neuroses," of "psychic" epilepsy, of hystero-epileptic seizures, and of some forms of insistent ideas and impulses.

TREATMENT (*reassociation*). — Once a case of this kind has been analyzed and its pathology determined, it is possible to bring about a cure by synthesizing the dissociated mental states with the waking consciousness; or, in popular language, by making the mind whole once more. For this purpose the dissociated lost memories are brought into the full light of the waking consciousness, which is thus made to have a complete knowledge of them. So long as normal associations are maintained between the *lost memories* (or mental states) and the normal mental life, the system which before was dissociated can no longer be thrown into independent activity, and the train of symptoms to which that activity gave rise can no longer appear.

That is what we did in this case: In hypnosis he was made to realize that he was twenty-one years old; he was given a knowledge of his present life, of the subconscious states with their attacks, and was made to realize the absurdity of his really being sixteen years old. In his waking life he was made to remember all the events of the incident. The subconscious and the waking memories were thus united. During the whole course of treatment by association, a course which covered a period of several weeks, the dissociated system was coming to the surface of consciousness more frequently, and in a fuller and more developed form. The attacks were more frequent, but of shorter and shorter duration, lasting but a few hours instead of several days. Finally the system became stable and permanently associated.

After the stability of association was effected, it was found that he could no longer be made to pass into that particular hypnotic state. The subconscious fear could no longer be excited. The attacks could no longer be artificially induced; indeed the anesthesia and the spasms could no longer be developed.

Although there is no reason to suppose that he is not cured, for a complete proof of a cure (a year or more must pass), still, as the attacks cannot be artificially induced, it is not probable that they can be excited by the associations which usually call them forth.

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## Clinical Department.

### A CASE OF STONE IN THE BLADDER IN A BOY OF FIFTEEN.

BY RICHARD FROTHINGHAM O'NEIL, M.D., BOSTON,
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THE following case is reported as being somewhat out of the usual run, because of the age of the patient, the size of the calculus, the peculiarity of the nucleus, and of some of the symptoms.

A. B., fifteen years old, school boy, was referred to me by Dr. E. P. Joslin for treatment. The history ofwas as follows: Family history, mother died of phthisis when he was an infant; only child. Previous history, negative.

*Present illness.* — Eighteen months ago he began to have trouble with his urine. It began as a "burning and scalding," with pain at the base of the penis and in the suprapubic region. He said that at one time he had had a slight discharge from the urethra and had, on one occasion, passed blood from urethra. There was no other history of venereal disease or exposure. Six months after the onset of the attack, the right testicle became swollen, and he was obliged to stay in bed for a few days. He has been getting up from two to six times every night to micturate, and during the day he suffers more from imperative than from frequent micturition. He has pain before, during, and after micturition. Urine dribbles at times, and is passed sometimes with a good deal of straining and tenesmus. He is not made worse, to any extent, by exercise. He is able to play with the boys. His urine, according to his statement, "never stopped short in the middle of a full stream, but he was unable to pass it at times unless after taking nitre."

One day in my office he was only able to pass a little urine until he had made pressure on the base of his bladder through the rectum with his finger, after which he passed several ounces; this method he had only found out in the last few days. He said the urine at times was very thick, much more so than when I first saw him. He complained of a mucous diarrhea, and had passed some blood by rectum. He had not lost weight. Appetite good. He is greatly bothered by frequent and painful micturition at night, and shows the effects of loss of rest.

He has taken at various times solutions of potassium acetate and citrate, with tincture of hyocyamus.

*Examination.* — Well developed and nourished boy. Heart and lungs negative. External genitals large, nothing abnormal. Right epididymis slightly more palpable than left. Prostate a little enlarged and somewhat tender, more on the right. Urine very turbid, containing large shreds, much mucus and pus.

*Chemical examination.* — Pale, specific gravity 1012, acid, urea .69, albumen, trace.

*Sediment.* — Much pus, some bladder epithelium; no renal elements could be found.

Neither tubercle bacilli nor gonococci found after very careful search. Enormous number of mixed organisms present; the colon bacillus seemed to predominate.

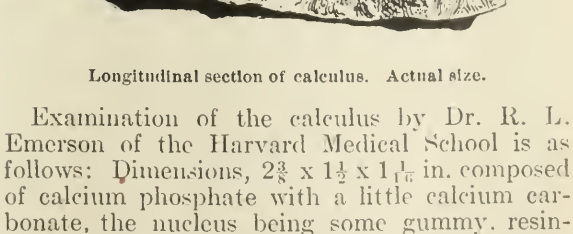
There were two ounces of residual urine drawn with soft catheter. The tolerance of the bladder was between four and five ounces of irrigation fluid. There was a good deal of tenderness and resistance in the deep urethra. Examination under ether advised, the provisional diagnosis being either stone or tubercular disease.

On Feb. 22 patient entered the Deaconess Hospital, having been treated for a few days with bladder irrigation and urotropin, grs. viiss, twice a day, without benefit. Two days later, under ether, a stone was readily detected with the searcher; it was on the right side of the internal meatus, and seemed to be adherent. With the cystoscope (Nitze, size 22 being used), the rough white surface of the stone could readily be seen filling the entire field of the instrument, but the working space was so small that it was impossible to say whether or not in different fields we were looking at the same stone or multiple ones. The stone could not be felt bimanually.

Suprapubic cystotomy was decided upon and performed at once. The bladder was more distensible under ether. The peritoneum was found low down; it was pushed back out of the way, the bladder opened, and the stone delivered with some difficulty. It was found standing on end, so to speak, and had to be enucleated from a pocket it had made in the base of the bladder to which it was adherent for about two thirds of its length. This partial fixation accounts for his not having more trouble when taking exercise, the fact of the stone being a light phosphatic one probably had something to do with it also. The bladder was closed up tight around a half-inch rubber tube with plain catgut, the rest of the wound sutured with silkworm gut, and a small gauze drain put in the prevesical space. Syphon drainage was established and the bladder washed twice a day through and through by the urethra. After five days the tube was changed for a smaller one, and in four days more this was taken out, the wound drawn together, and urethral drainage established. The suprapubic wound leaked for forty-eight hours only after the tube was removed. The catheter was removed in six days and micturition was normal. The patient was up in three weeks, and out in four weeks after the operation, entirely relieved of all subjective symptoms.

Convalescence was uneventful, except on the second night after the operation, when there was a sharp reaction, due probably to infection of the raw surface of the bladder, the temperature going to 104° and the pulse to 116. There was spasm and tenderness over the left kidney and ureter. The urine was dark, and filled with blood and shreds of tissue, having the appearance of a severe hemorrhagic cystitis. There was a little albumen, but no renal elements could be found. The patient was given salt solution by rectum. The next day the temperature was 100° and normal from then on. On the fourth day the blood in the urine had disappeared. The twenty-four-hour quantity had always been sufficient, in fact a slight polyuria.

Two months after the operation the patient is perfectly well, except at times the urine is slightly turbid and contains a few shreds and slight amount of pus. This is probably due to a slight urethro-cystitis, which is gradually disappearing under urotropin and occasional irrigation. Can find no evidence of any trouble with the kidneys.



Longitudinal section of calculus. Actual size.

Examination of the calculus by Dr. R. L. Emerson of the Harvard Medical School is as follows: Dimensions, $2\frac{3}{8} \times 1\frac{1}{2} \times 1\frac{1}{16}$ in. composed of calcium phosphate with a little calcium carbonate, the nucleus being some gummy, resinous substance like a medicated bougie (see cut). I have been able to get no history from the pa-

tient as to how it came to be there. There has been no instrumentation of the urethra except on one occasion, a year after the onset of his symptoms, when a physician washed out his anterior urethra. The boy may have had an attack of urethritis and introduced the bougie himself as a curative measure.

I am very much indebted to Dr. F. J. Cotton for assistance during the operation. The early and excellent result obtained in this case was due in no small measure to the care with which the drainage apparatus was watched at the hospital.

## A CASE OF LABOR IN AN EPILEPTIC.[1]

BY ANNIE LEE HAMILTON, M.D., BOSTON.

THE case I am to report this evening entered the New England Hospital Dec. 11, 1903, during the service of Dr. Marion Nute. The patient's physician had accompanied her because, he said, he wanted us to know that the case was one of epilepsy rather than uremia.

The family history was negative. The patient was a primipara, married; twenty-six years of age; whose general health was said to have been good excepting the epileptic attacks to which she had been subject for twelve years. The first convulsion occurred when she was fourteen years old, at her first menstrual period. The first two attacks were thought to be purely hysterical, as the patient did not lose consciousness, but twitched, struggled and threw herself about. With the third attack, she lost consciousness and foamed at the mouth. This time, it was considered true epilepsy, and since then the attacks have been more or less frequent, usually associated with the menstrual period. She sometimes had as many as two or three attacks in a week. During her pregnancy they were less frequent up to the sixth or seventh month, then rather more frequent between the seventh and eighth months.

Up to Dec. 8 (four days previous to her entrance), she had not had a convulsion for four weeks. On Dec. 8 she had three, and two or three on each ensuing day until the eleventh when she had five before coming to the hospital. The patient had not been rational all day, but this was the first time she had ever been "out of her head" to her husband's knowledge. She had seemed to be in pain all day and was thought to be in labor. She was about eight and a half months pregnant.

Examination showed the patient to be a medium-sized, dark-complexioned, young woman, face somewhat cyanosed; unconscious; rather restless; pulse strong, full, regular. Heart normal. The fetus occupied the right sacro anterior position, breech presenting. The heart was loud and strong. The patient's pelvic measurements were fairly good; external conjugate 19 cm., ant. sup. sp. 22 cm., crests 24.5 cm., between trochanters 29 cm. Internal examination showed the os dilated to the size of a quarter, with a small part presenting, and the diagnosis of footing presentation was made.

The patient resisted examination, throwing herself about on the table and appearing to have severe pain. Just as she was taken from the table she had another attack, lasting three minutes. A hasty examination of the urine showed specific gravity 1,030, reaction acid, merest trace albumin, urea 2.14%. At seven o'clock the patient had another attack lasting about three minutes. This appeared as follows: The eyes became fixed and staring, jaws tightly closed and whole body rigid; the face cyanosed, and the head turned to the left side. The breath held and finally caught with a great gasp. Then the twitching of face, hands and whole body began, at first fine, later of greater amplitude, then ceasing altogether. The face regained its normal color and the patient sank into a stupor, snoring loudly, foam escaping between the lips. There was no cry with this attack. She remained in this stupor for about an hour gradually recovering consciousness sufficient to answer questions in a stupid way. It was decided to dilate manually and deliver. As the patient now resisted manipulation very little and as it was felt that the smallest amount possible of ether should be given, the dilatation was started without an anesthetic and continued until nearly complete. As the pains now started in with renewed energy (they had been occurring at intervals of ten minutes all the evening) it was decided to see what work the presenting part would do in dilatation, and manipulations were stopped for the time. We did not wish to rupture the membranes, as the cord was coiled in the presenting pouch. At 11 P.M. she had another convulsion resembling the one described, but beginning with the true epileptic cry and lasting somewhat longer. The fetal heart remained strong, but we decided that it would be better to delay delivery no longer and, as soon as the patient's breathing and color improved sufficiently, started the ether, completed dilatation, ruptured the membranes and delivered a living male child somewhat asphyxiated but soon resuscitated by immersing alternately in hot and cold water and which cried quite vigorously. Child's weight 2,170 gm., about 4½ lbs. The placenta and membranes intact were expelled five minutes later. There was no laceration. The patient's pulse was 132, strong and full. She soon apparently recovered from ether, but did not recover consciousness. Rested quietly until 3 A.M., when she had another convulsion lasting about three minutes, resembling those described. After this she slept five hours. At 8 A.M., Dec. 12, she seemed rational and gave clearly some of the details for the birth certificate, but could not remember her street or number. She took nourishment readily. In the afternoon she became more stupid and answered no questions except when asked if she had seen her baby, when she answered "No."

Dec. 13, third day, T. 98.6°, P. 68, R. 20.

Patient seemed more stupid to-day; her appearance has changed. In the morning she had a fixed stare and seemed to hold her face and jaw perfectly rigid. Her body was stiff and she clutched the bedclothes with arms rigidly extended. She drooled from the mouth. Respiration stertorous, could be plainly heard outside the room. Pupils even, rather dilated. Tongue slightly coated. When asked to show it, and chin tapped with the finger, the mouth was slightly opened and the tongue very slightly protruded. In the afternoon another change came. She became much more restless, the limbs moved constantly, and her whole body twitched, her face worked and her eyes rolled, with staring expression. Several times it was thought that she was about to have another convulsion, but she did not. She attempted to sit up in bed once or twice. Her breathing could still be heard outside the room. She did not show any intelligence whatever except when the baby was mentioned. When asked what she would name it she brightened up and said, "Charlotte." It will be remembered that the child was a boy. Evening, T. 99.4°, P. 92,

[1] Reported at the meeting of The Suffolk District Medical Society, Section for Obstetrics and Diseases of Women, March 23, 1904.

R. 22. Catheterization necessary. There was no more albumin and the urine was reported normal. Feces were passed in the bed.

Dec. 14, fourth day, T. 99.2°, P. 56, R. 20. The patient did not sleep all night; was very restless but quieted by sodium bromide. Constantly moving all day, but did not speak until evening when she asked to see her baby. It was brought and she said she would name it Charlotte, she kissed it and showed considerable interest in what was going on around her. She passed urine and feces involuntarily. When the urine was not passed for eight hours she was catheterized. She took nourishment readily and would take a piece of bread in her own hand and eat it. P.M., T. 99.8, P. 68, R. 22.

Dec. 15, fifth day, A.M., T. 99.2°, P. 56, R. 20. Patient rested better during the night. In the morning the twitching had ceased and she lay perfectly rigid in bed. Did not appear as bright as last evening. Asked for her baby and showed interest in it. After dinner she began repeating short sentences over constantly to herself. She said, "I'm going to keep it, anyhow — papa won't let him come home, but I'm going to keep it, anyhow." Visited by her husband and sister, she recognized the sister, but did not admit that she recognized the husband; it was thought that she did, however. T. 99°, P. 60, R. 18, P.M.

Dec. 16, sixth day, A.M., T. 98.6°, P. 60, R. 22; P.M., T. 99.6°, P. 60, R. 20. Answered some questions in a rational manner, at other times stared vacantly at the questioner. Went to sleep at 10 A.M. and slept, except when wakened for nourishment, etc., the entire day and until early next morning.

Dec. 17, seventh day, T. 98.6°, P. 72, R. 20. Talked incessantly all day in an irrational way, was very restless, insisting upon sitting up, and once jumped out of bed. Dr. James J. Putnam was asked to see the patient in consultation. He thought no definite opinion of the case could be given as yet. It might be simply a post-epileptic condition which would clear up or possibly would develop into a puerperal mania. Advised very close watching. No special change in the treatment. With the next day came a marked change.

Dec. 18. Patient slept from 11.30 to 5.30, waked up quite rational, told of various affairs in her early life, and although she wandered a little at times kept to the line of thought remarkably well. After this she improved steadily and by Dec. 25 was "looking brighter than for some months," the family said. The pelvic condition was good from the first, and Dec. 22 the patient sat up in a chair and felt very well.

Dec. 29. In the morning while sitting in a chair reading, she had a convulsion and fell on the floor. This attack lasted about three minutes but was not severe; patient slept only fifteen minutes afterwards and then sat up apparently all right. When asked if she had had any warning of the attack, she said she had felt very well and had had no queer sensations such as she used to have before attacks. There was no cry.

Dec. 31. Patient sent home; general condition very good. Pelvic condition good.

With regard to the treatment while in the hospital it was chiefly symptomatic. Elimination was carefully looked after, the bowels moving several times daily. The nervous symptoms were treated with sodium bromide and hydrotherapy.

In response to a note sent to the husband I learn that since the return home her convulsions have been decidedly less frequent. This is no doubt due to the fact that she is kept under the care of her physician who is treating her with bromide.

The baby did very well for the first week, but after that looked badly and did not gain although he took his food well and apparently digested it. During the second and third week he failed perceptibly. When the patient was sent home, the child did not accompany her, but was cared for outside by a nurse, and lived only one week after leaving the hospital, dying in convulsions.

In looking in rather a hasty way over the literature of the past twenty-five years, I find very little reported with regard to this condition. It is apparently an unusual one as, although puerperal convulsions are unfortunately very common, they are, as a rule, due to uremia.

Edgar, in his "Practice of Obstetrics," says: "Epilepsy is a rare complication, because epileptics are usually sterile, and if gestation does occur are often free from an attack during pregnancy, the disease returning during the lying-in state. It may be confounded with an eclamptic attack. Children born of epileptics usually die of congenital epilepsy when quite young." Various other authors whose books I consulted do not speak of the condition, or only mention it in passing on to eclampsia.

Eben Duncan, Glasgow, who has made a study of the subject, says: "The discovery of albumin in the urine of a woman who has had several epileptiform convulsions is not necessarily evidence of uremia. It has been proved that albumin is the effect and not the cause of the fits."

In conclusion, I wish to thank Dr. Nute for permission to report the case, and Dr. Blanche Boyle, who was interne during the service, for her excellent notes from which I have drawn freely in writing this paper.

## Reports of Societies.

### AMERICAN MEDICAL ASSOCIATION. SECTION ON PRACTICE OF MEDICINE.

(Continued from No. 24, p. 654.)

SECOND DAY. JUNE 8. — (Continued.)

#### A STUDY OF ONE HUNDRED AND EIGHTY-SIX CASES OF MITRAL AND TRISCUSPID STENOSIS.

DRS. JUDSON DALAND and E. L. MCDANIEL, of Philadelphia, made a report on a heart showing mitral and tricuspid stenosis, and gave an analytical and statistical study of 186 cases of this affection that had appeared in literature from 1809 to 1904. In 157 cases the age of the cases, 14%, occurred between the ages of ten and twenty, 40% between twenty and thirty, 26% between thirty and forty, 12% between forty and fifty, 4% between fifty and sixty, and 1% between the ages of sixty and seventy. Males were afflicted in 21%. All cases occurred in the white race. In 21% of the cases it was distinctly stated that rheumatism was not the cause. From the observations made, the only important known cause of this affliction

was rheumatism. Difficulty in breathing occurred in 35% of the cases; dropsy occurred in 34%, cough in 9%. Pericardial pain and distress 12 cases, epigastric 3 cases, angina pectoris one case. Asthenia 10 cases. Hemoptosis 6 cases, vertigo 5 cases, embolism 3 cases, jaundice 3 cases, vomiting 3 cases. In 31 cases the apex beat was in the fifth or sixth interspace. Presystolic murmur was heard in the mitral area in 41 cases; in the tricuspid area in 11 cases. The systolic murmur was best heard at or near the apex in 30% of the cases, and over the base of the heart in 15%. In 31 cases a presystolic thrill was observed at the apex, and in 9 cases a systolic thrill. Aortic stenosis was discovered in 30% and aortic insufficiency in 16 cases. The average weight of the heart was 15.8 oz. Albuminuria was present in 37 cases.

### PLEURAL EFFUSIONS IN HEART DISEASE.

DR. J. DUTTON STEELE, of Philadelphia, presented this paper. He said that he had already called attention to the fact that passive pleural effusion might occur in the course of failing compensation of the heart, before there was any tendency to external dropsy, and that this pleural effusion was very often unilateral, with a preference for the right side. This conclusion had been arrived at from a study of 75 autopsies and a series of 17 cases which Dr. Stengel's had investigated. It was the general opinion that hydrothorax was apt to occur before general edema, though many observers had reported isolated cases of right-sided cardiac hydrothorax. In deciding between cases of cardiac effusion and effusion from other causes, it was required that there should be decided evidence of myocardial disease and enlargement of the heart, and also that the cardiac condition should be predominant. A very interesting point shown by a study of these cases was that while right-sided effusions occurred with enlargement of the right heart, left-sided effusions were usually associated with the left side of the heart. The theory that appeared to explain most satisfactorily the preference of these pleural effusions for the right side, supposed that enlargement of the heart and especially of the right auricle could press upon the root of the right lung and obstruct the vena azygos major. However, the pressure of a dilated auricle upon the root of the left lung would not obstruct any large venous trunk analogous to the vena azygos major. He could not explain this, but could only call attention to the fact that left-sided cardiac dilatation seemed to bear some relation to left-sided pleural effusions. The effusion in certain cases was very obstinate, lasted a long time and returned quickly after aspiration. It was important that we should recognize that such effusions occurred in heart disease in the diagnosis of both cardiac and pleural affections.

### PROLONGED DELIRIUM IN PERICARDITIS AND ENDOCARDITIS, WITH THE REPORT OF A CASE.

DR. E. M. GREENE, of Easton, Pa., said that all the authorities that he had consulted, while recognizing delirium as a frequent symptom in severe cases of pericarditis, especially where there was effusion, spoke of the delirium as being of short duration with marked cerebral symptoms, and usually associated with hyperpyrexia. He reported a case of acute rheumatism followed by endocarditis and with slight pleurisy with effusion. At the onset respiration ran up to 37 or 38 per minute, pulse to 100 to 108, temperature 100° to 101° F. Auscultation revealed symptoms of acute pleurisy and a systolic murmur over the pericardium, but more intense at the apex. His delirium lasted for five weeks; dyspnea was always present as was also cyanosis. The degree of fever was not sufficient to account for continuance of delirium through so long a period. Recovery took place slowly, but within a few months after the patient had returned to work, he was able to exercise at an elevation of 10,000 feet without discomfort, and subsequent physical examination revealed no marked lesion.

### THE LIMITATION OF DIGITALIS IN MITRAL AND AORTIC REGURGITATION.

DR. FRANK JONES, of Memphis, Tenn., reviewed the anatomy and physiology of the heart. He said that the mitral valve located at the gateway between the great arterial reservoir, the left auricle and the arterial pumping station; the left auricle when it failed to close in systole threw its burden on various organs, the right heart, lungs, liver and kidneys. When compensation had failed or was failing the pathological picture was venous stasis. Edema and bronchitis would result in proportion to the degree of obstruction and stasis and the condition of the cardiac muscle. Nutrition was profoundly disturbed as a result of this stasis and engorgement. With this clinical picture there was no necessity of dwelling upon the marked effects of digitalis in mitral insufficiency with failing compensation. On the other hand digitalis was contra-indicated in aortic regurgitation. By anatomic location and physiologic action of the valves, when the aortic valve became incompetent and could not close with diastole, we had a backward column of blood thrown upon the left ventricle. In its effort to relieve the valve it becomes hypertrophied and there is a high blood tension. There frequently exists a well defined arteriosclerosis. He thought that to give digitials in such a condition was useless. Hyperemia venous stasis and dropsy are late symptoms, and in the majority of cases, when they do appear, the fault is at the mitral valve. The right and left ventricles are both so worn out that the administration of digitalis is useless or even harmful. Digitalis only increases the work of the ventricle while the ventricle calls for blood. When compensation fails the left ventricle goes to pieces. There was no justification for the use of digitalis in aortic regurgitation, no matter what might be the condition of the heart muscle. After a careful study of bountiful clinical material he was convinced that there was but one valvular lesion where digitalis was indicated, and that was mitral insufficiency, and then not until compensation had failed.

### SOME POINTS IN THE ACOUSTICS OF RESPIRATION.

DR. CHAS. E. QUIMBY, of New York, presented this paper to demonstrate the following propositions: (1) The tracheal note represented the interference of pitch limit of respiratory sounds, and that limit might be defined by a letter of the musical scale, as might every other respiratory pitch. (2) In vesicular respiration, the inspiratory sound represented the superior pitch limit of respiratory sound. (3) The passage from vesicular respiration to bronchial breathing was attended, at first, by a lowering in pitch of the inspiratory note, and later by lowering of both inspiration and expiration. (4) In vesicular breathing the inspiration was of a higher pitch than expiration; in rude, bronchial and tracheal breathing, the inspiration was of a higher pitch than, or the same pitch as, expiration. There was no respiration resulting from consolidation in which expiration was of higher pitch than inspiration.

*(To be continued.)*

THE BOSTON

# Medical and Surgical Journal.

THURSDAY, JUNE 23, 1904.

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## REPORT OF ROYAL COMMISSION UPON HUMAN AND ANIMAL TUBERCULOSIS.

The Royal Commission appointed by King Edward has, on May 16, 1904, published an Interim Report upon the following points:

(1) Whether the disease (tuberculosis) in animals and man is one and the same.

(2) Whether animals and men can be reciprocally infected with it.

(3) Under what conditions, if at all, the transmission of the disease from animals to man takes place, and what are the circumstances favorable or unfavorable to such transmission.

The greater part of this inquiry is directed to the view which had been expressed, that the bacillus which gives rise to tuberculosis in the bovine animal is specifically distinct from the bacillus which gives rise to tuberculosis in the human being, and that therefore the presence of the bovine bacillus in the milk or flesh of the cow, consumed as food by man, is not to be regarded as a cause of tuberculosis in the latter. To this point the Commission first gave its attention, and began the investigation, not by taking evidence, but by conducting experiments of its own.

The first line of inquiry may be stated as follows: What are the effects produced by introducing into the body of the bovine animal (calf, heifer, cow), either through the alimentary canal as food, or directly into the tissues by subcutaneous or other injection, tuberculous material of human origin, *i. e.*, material containing living tubercle bacilli obtained from various cases of tuberculous diseases in human beings, and how far do these effects resemble or differ from the effects produced by introducing into the bovine animal, under conditions as similar as possible, tuberculous material of bovine origin, *i. e.*, material containing living tubercle bacilli obtained from cases of tuberculous disease in the cow, calf or ox?

Material from more than twenty cases of tuberculous disease in human beings, was used in the experiments, including sputum from phthisical patients, diseased parts of lungs in pulmonary tuberculosis, tuberculous mesenteric, bronchial and cervical glands and tuberculous joints. The effects produced by these were compared with those produced by different strains of tuberculous material of bovine origin. In the case of seven of these strains of human origin, the introduction of the human tuberculous material into cattle gave rise at once to acute tuberculosis with the development of widespread disease in various organs of the body, such as the lungs, spleen, liver, lymphatic glands, etc. In some instances the disease was remarkably severe. In the remainder, the bovine animals were affected to a less extent, the disease being limited to the spot where the material was first introduced, or spread to a variable extent from the seat of inoculation along the lymphatic glands; but further transmission from these animals to other bovine animals ultimately gave rise in the bovine animal to general tuberculosis of an intense character. "We have very carefully compared the disease thus set up in the bovine animal by material of human origin, with that set up in the bovine animal by material of bovine origin, and so far we have found the one, both in its broad general features and in its finer histological details, to be identical with the other. We have so far failed to discover any character by which we could distinguish the one from the other; and our records contain accounts of the post-mortem examinations of bovine animals infected with tuberculous material of human origin, which might be used as typical descriptions of ordinary bovine tuberculosis." "The results which we have thus obtained are so striking that we have felt it our duty to make them known, without further delay, in the present Interim Report."

A further detailed report containing the results of experiments on more than two hundred animals, together with the discussions dealing with the influence of dose, of individual and of racial susceptibility etc., is in preparation. "Meanwhile we have thought it our duty to make this short report, for the reason that the result at which we have arrived, namely, that tubercle of human origin can give rise in the bovine animal to tuberculosis identical with ordinary bovine

tuberculosis, seems to us to show quite clearly that it would be most unwise to frame or modify legislative measures in accordance with the view that human and bovine tubercle bacilli are specifically different from each other, and that the disease caused by the one is a wholly different thing from the disease caused by the other."

The report is signed by all the members of the commission, namely, Professors Foster, Woodhead, Martin, McFadyean and Boyce.

## DEDICATION OF THE NEW LABORATORIES AT THE UNIVERSITY OF PENNSYLVANIA.

WE commented some weeks ago on the prospective dedication of the new medical laboratories for the University of Pennsylvania. This dedication took place as arranged on the tenth of this month, and is to be regarded as one of the most significant events in the entire history of the university. Nearly twenty-two thousand invitations were sent to physicians in various parts of the world, among whom were included about six thousand graduates of the medical department of the university. The ceremonies were also so arranged that the members of the American Medical Association, which held its annual meeting at Atlantic City from the seventh to the tenth of June, could attend in a body.

In the absence of Dr. Weir Mitchell, it devolved upon Mr. J. Vaughn Merrick, a trustee of the university, to make the address of presentation. He drew attention to the extraordinary development of the institution during the time he had been connected with it as trustee, and expressed the hope and expectation that the new and extensive buildings would be the center of many useful discoveries in the future. The laboratories were formally accepted by Dr. Charles C. Harrison, provost of the university, who, in his felicitous remarks, forebore to urge the need of endowment which, nevertheless, he mentioned in a way to suggest to prospective benefactors a means of wise expenditure. Prof. H. P. Bowditch of Harvard University, in his address, spoke of the proper relation of the sciences, laying special stress upon physiology, the subject with which his name has been identified. In developing his subject, he alluded to the desirability of preceding the study of physiology by anatomy, and drew attention to the plan practiced in the Harvard Medical School since 1899, of devoting three half years successively to anatomy, physiology and pathology, thereby bringing about concentration of work and sequence of subjects. He maintains that this plan, now given four years' trial, has been successful. Dr. Bowditch proceeded to discuss the laboratory method of training and its limitations, and spoke a word in favor of the generally ostracized didactic lecture. He considered that both the laboratory and the lecture room were valuable as educational agencies, and that we should find a way of combining the two forms of instruction which should by no means completely do away with the lecture, and yet should give the practical laboratory instruction a large place.

Prof. R. H. Chittenden of the Sheffield Scientific School of Yale University spoke of the laboratory as a foundation stone upon which is to be reared our temple of knowledge, and urged the absolute necessity for the student, of personal work in laboratory methods. The history of physiological chemistry, a comparatively new science as applied to medicine, he sketched from its inception in about 1872 to its present wide development, both in this country and abroad. The importance of the subject, he ventured to prophesy, would continually increase in the near future, and come to occupy a more and more conspicuous position among the diversified branches of applied science. Dr. George Dock of the University of Michigan discussed the history of medicine from an early period down to the present time in succinct fashion. His special plea, coming down to the immediate needs of the present, was for a completer cultivation of pathological anatomy by the medical student and the physician, although he warned against the elevation of the laboratory in certain institutions as possibly leading to a top-heavy way of teaching by encouraging students to do advanced original work before their foundation was sure. He bewailed also the neglect, or at times objection to, autopsies, particularly in this country, in which he saw an inferiority to European methods. On this he said: "The difficulty in respect to autopsies does not depend on public sentiment alone, but on a certain neglect on our own part. I think we may hope that as pathology gets everywhere out of cellars and back rooms, and has localized habitation such as we see here, its cultivation will assume a broader and more independent character."

The formal exercises were brought to a conclusion by the address of Dr. Horatio C. Wood of the University of Pennsylvania. He, again, was somewhat retrospective, as no doubt the necessities of the occasion demanded, and also naturally spoke of the development of and necessity

for laboratories such as those now being dedicated. He spoke feelingly also of the burden of excessive teaching imposed upon men whose best efforts should be put into original investigation, a matter which should receive far more attention in our medical institutions than has hitherto been given it. Finally, he urged that we do not in the future forget laboratories in our eagerness to endow hospitals. It will not do to "prune the upper branches of that tree of knowledge which is for the healing of the people and to forget to keep alive the root which is the source of all continuing growth and fruitage."

In general, the occasion was memorable in more ways than one. It brought together a distinguished body of professional men; it emphasized, as has rarely been emphasized before in this country, the need and place of the laboratory in the general scheme of medicine, and enforced the lesson that, after all, the best medical education must come from the proper insistence upon the various methods of instruction rather than upon an undue devotion to any one. The addresses, the gist of which we have indicated merely, were peculiarly temperate in tone and represented the judicial frame of mind which has resulted from the ferment of the past few years.

## MEDICAL NOTES.

A Centenarian. — Andrew Bradley, reputed to be one hundred and four years of age, died at the Soldiers' Home in Noroton, Conn., June 17.

Graduating Class of Johns Hopkins Medical School. — Forty-five degrees of doctor of medicine were conferred upon forty-two men and three women at the twenty-eighth commencement of the Johns Hopkins University recently held. The small proportion of women is worthy of note.

Smallpox in Chicago. — According to the bulletin of the Chicago Health Department for the week ending June 18, five cases of smallpox were discovered and removed to the isolation hospital during that week, none of whom had ever been vaccinated. The victims were all persons so employed as to be liable to spread the disease.

Boiler Explosions. — It is stated that statistical inquiry into boiler explosions during the year 1903, shows that the total number of explosions was 383, the total number of persons killed being 293, and the total number injured 522. This is a somewhat favorable showing as compared with previous years, but nevertheless is an extraordinary list of fatalities from a cause which might be regarded as preventable.

Railway Accidents. — According to *American Medicine*, during the last three months of 1903 the casualties on the railways of the United States amounted to more than 2,000 among passengers alone, 175 being killed. The casualties to employees were more than 12,000, about 1,000 being killed outright. The disproportion between the accidents to passengers and employees at least speaks well for the general care taken by the railway companies.

Philippine Government Exposition. — The largest single exhibit at the St. Louis World's Fair is the Philippine Government exposition. It is designed to combine a scientific interest for students of politics, civilization, economics and ethnology. It will also aim to demonstrate the grades of civilization of the various races found on the Island. The design of this exposition is to show what has been done and what is being done in the Philippines.

Honorary Degrees to Medical Men. — At the recent commencement exercises at the University of Pennsylvania the following honorary degrees were given to physicians: Doctor of Laws, Sir Frederick Treves, who has been on a tour through the western part of the country; Dr. H. P. Bowditch of the Harvard Medical School; Dr. H. C. Wood of the University of Pennsylvania. The degree of Doctor of Science was given to Prof. Russell Henry Chittenden of Yale University, and Dr. George Dock of the University of Michigan. It is of interest to note that of the seven honorary degrees conferred five went to medical men, due probably to the fact of their presence and participation in the recent opening of the new medical laboratories. It is, however, in general, observable that physicians have been honored by degrees in the past few years more widely than heretofore.

The Question of Doctors' Fees. — It is reported that a judge in St. Louis has recently given expression to the opinion that the financial condition of the patient should not be considered by the physician in his charge for professional services. The statement was that the character of the service, the seriousness of the complaint, the skill and time required, and the result reached, are elements to be considered, but not the wealth or poverty of the patient. This decision was handed down in a case against a physician for

an alleged exorbitant fee. However just such a decision may be theoretically, it is clear that its practical consequences would not conduce to complete justice. It would, for example, be an exceeding hardship to the poor, if only such considerations as those suggested by the presiding judge were taken into account. Doctors' fees, like lawyers' fees, must no doubt in general be determined by all the circumstances of the given case, among which the poverty or wealth of the patient must be given due weight.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, June 22, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 59, scarlatina 13, typhoid fever 15, measles 45, smallpox 0.

DONATION TO DARTMOUTH COLLEGE MEDICAL SCHOOL. — It is announced that the New Hampshire Medical Society, at its annual meeting, voted to donate $1,000 to Dartmouth College toward the erection of the new building for the medical school.

THE ADAMS NERVINE HOSPITAL. — According to the annual report of the resident physician of the Adams Nervine Asylum, the number of admissions during the year was 108, being eleven less than last year, and the total number under treatment was 149, or ten less than last year. It is stated that 86% of the present work of the year has been for patients who were wholly or in part beneficiaries of the asylum. The total number of free admissions was forty-five, the largest number in any one year since the asylum opened. The large amount of charitable work which this excellent institution does is not generally known in the community.

NEW YORK.

A NEW MEDICAL SCHOOL. — It is announced that in the autumn St. John's College at Fordham, Borough of the Bronx, which has hitherto not aimed to be classed as a university, will open a medical department. Later a law school is also to be established.

HOSPITAL FOR MALTA. — Mr. Henry L. Clapp, a New York merchant now residing on the Island of Malta, has announced his intention of erecting a hospital on American lines there, and has commissioned a firm of New York architects to prepare plans for the building.

THE LATE DR. J. M. POLK. — At the last meeting of the Medical Association of the Greater City of New York, Dr. Henry P. Loomis read an interesting obituary of Dr. John Metcalfe Polk, the son of Prof. William M. Polk of Cornell University, a young man of unusual promise, who died recently of pneumonia. He was graduated from Yale in 1896, and from Cornell University Medical College, with honor, in 1899, being a member of the first class graduated from that school. After serving for two years as interne in Bellevue Hospital he went to Vienna to perfect himself in pathology and medical diagnosis, and on his return from abroad was appointed Instructor in Medicine and Physical Diagnosis in the Cornell Medical College and Assistant Visiting Physician to Bellevue Hospital. Although not yet twenty-nine years of age, at the time of his death he had completed an exhaustive original study of pneumonia, and was about to publish a paper on the blood changes in that disease, which promised to bring to the attention of the profession some very important and original ideas.

WORK OF FRESH AIR DEPARTMENT. — The fresh air department of the New York Society for Improving the Condition of the Poor has recently opened a seaside tent-camp for young children suffering from tuberculosis of the bones and glands. It is situated in the vicinity of "Sea Breeze," Coney Island, the summer settlement of the Society, and at present affords accommodations for fifty patients. It is estimated that there are in the tenement houses of New York from three thousand to four thousand children under fifteen affected with non-pulmonary forms of tuberculosis. Dr. E. Franklin Smith is one of the committee in charge of the camp, and among the physicians and surgeons on the advisory board are Drs. E. G. Janeway, H. M. Biggs, N. M. Shaffer and V. P. Gibney.

## Miscellany.

### INCIDENTS OF THE BURNING OF THE "GENERAL SLOCUM."

THE bright features connected with the appalling catastrophe on the steamboat "General Slocum" were the heroic efforts of the watermen, the police, the physicians and the nurses, who saved hundreds at the risk of their own lives, the prompt and efficient aid rendered by all the city departments in an unusual emergency, and the generous response of the public to the Mayor's call for financial assistance. North

Brother's Island, where the burning boat was run ashore, it will be remembered, is the location of the Health Department's Riverside Hospital for contagious diseases. On it there is also now a tuberculosis hospital. Dr. Darlington, the President of the Department, was very early on the spot, and afterwards gave a graphic description of the events on the island. "I shall never be able to forget the scene — the utter horror of it," he said. "The patients in the contagious wards, especially in the scarlet fever wards, went wild at the things they saw from their windows, and went about screaming and beating at the doors, until it took fifty nurses and physicians to quiet them. Along the beach the boats were carrying in the living and dying and towing in the dead. We wrapped the living in blankets and gave them milk and whiskey. We used a barrel and a half of spirits to good purpose in reviving the sufferers and keeping the rescuers from getting so chilled that they could not go on with their work. One hundred and fifty doctors and nurses worked over the injured and remained at their posts all night — women and men alike. They did the work of heroes, and did it well." Efficient aid was also given by a number of the convalescents and tuberculosis patients. At the morgue and the neighboring dock of the Charities Department at the foot of East 26th Street, where hundreds of dead bodies were laid out for identification, many grief stricken persons attempted to throw themselves into the river, and it required the constant vigilance of the police to prevent such suicides. Of the injured some two hundred and sixty were taken to various hospitals after the disaster.

## Correspondence.

### ANNUAL MEETING, AMERICAN MEDICAL ASSOCIATION, JUNE 13, 1904.

Boston, June 17, 1904.

Mr. Editor: The Fifty-fifth Annual Meeting of the American Medical Association, held last week at Atlantic City, presented a striking contrast to the Fourteenth International Medical Congress held a year ago at Madrid. In handling a large number of strangers, the Americans have the advantage of knowing how. For the abundance of hotel and railroad accommodation the Association is not responsible except that it chose such a favorable place. In Madrid practically all of the visitors had taken a long railway journey and very few of them could understand the language of the country. The lodging was inadequately handled, while at Altantic City even those who decided at the last moment to come found plenty of room, and no increased charge. The reduction of railway rate was substantially the same in each case. The foreign method of issuing tickets is a time-consuming process. Here in this country the delegates have not all become familiar with the details of the "certificate plan." Some who did not leave their certificates with the railroad office when they first arrived found some delay in getting them signed by the secretary of the transportation committee. The registration office was adequate and efficient even during the rush hours of Tuesday morning. The directions as to the meeting places of the sections were clear and explicit. Unfortunately, one of these had to be changed during the session, but the delay and confusion were inconsiderable. In Madrid the National Government was interested in the Congress and did its part well. The opening session in the royal opera house was a brilliant spectacle. The reception to delegates in the royal palace and the garden party for delegates and ladies were faultless in management and thoroughly enjoyable. The closing session at the hall of the University was somewhat marred by the feeling that there had been mismanagement in regard to the details of the Congress. At Atlantic City the arrangements for the comfort and convenience of members was excellent, the meeting places of the sections were good and not too far apart. The hall selected for the general meetings and the Section on Practice of Medicine proved to have very poor acoustic qualities. The Presbyterian church was substituted and proved adequate though not ideal.

The members in the different sections felt that the business of the session was being well taken care of by the house of delegates which met in the High School building. The efficient organization of each section and the hard work of the secretaries resulted in a program which could be carried out on time, thus leaving room for animated, entertaining and instructive discussion. At Madrid the very slender organization of the Congress — it meets but once in three years — made it very difficult for members to know when certain papers would be read. This was especially true of the general sessions. At Atlantic City the general sessions were the best features on the program.

The success of the convention was chiefly due to the committees of arrangement, the officers of the sections, and the members who read papers. Each and all put in *hard work*. The Association is to meet in Portland, Ore., next year and possibly the year after in Boston. The message of encouragement and inspiration which it sends to all who read the transactions is *work hard*.

One of the most earnest and practical gatherings was the symposium on Venereal Diseases held by the Section on Hygiene and Sanitary Science. It is destined to have far-reaching importance. The committee propose to regard syphilis and gonorrhea from the point of view of the innocent and not from the standpoint of prostitution. Indifference is the only method yet applied to these diseases, and that has been found wanting. By concerted action the State and Provincial Boards of Health propose to ask all physicians to report annually the number of cases of these diseases treated; whether male, female, married, or single. They also propose to furnish every physician with circulars issued under the sanction of the American Medical Association, which he may give to his patients if he thinks best. It is also proposed to conduct a campaign of education in every way that seems advisable. The amount of legislation required is not very great or very radical. The discussion showed encouraging signs of an awakening of interest among the profession and the public in the means at hand to prevent the spread of these two diseases.

Very truly yours,
Calvin G. Page, M.D.

### SANITARIUM vs. SANATORIUM.

Washington, D. C., June 18, 1904.

Mr. Editor: The recent note in your Journal on "Sanatorium and Sanitarium" led me to some dictionaries. The many sanitariums probably took the name without special thought, and one in Massachusetts lately changed from sanitarium to sanatorium.

The Standard Dictionary, published by Funk & Wagnalls, New York, gives as the first definition of sanitarium, "a sanatorium: sometimes restricted to a place where the hygienic conditions are prophylactic or preservative of health, as distinguished from one where therapeutic agencies are employed." From the Latin "*sanatorius*," health-giving.

The Century Dictionary, which is one of the best, says, "Sanatorium, a place to which people go for the sake of health; also, a house, hotel, or medical institution in such a locality, designed to accommodate invalids." It gives only one comment under sanitarium, "an improper form for sanatorium."

Yours truly,
A. Erskine Miller, M.D.

## RECORD OF MORTALITY
FOR THE WEEK ENDING SATURDAY, JUNE 11, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Cerebro-Spinal Meningitis. | Typhoid Fever. |
| New York . . | 3,908,644 | 1,222 | 384 | 27.25 | — | 2.85 | 4.40 | .41 |
| Chicago . . . | 2,021,086 | 420 | 98 | 25.00 | 12.38 | 1.42 | .24 | .24 |
| Philadelphia | 1,407,968 | 426 | 112 | 26.05 | 10.79 | 1.87 | — | — |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 159 | 45 | 26.41 | 6.29 | .63 | — | 1.88 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 117 | — | 28.20 | 5.12 | 3.42 | — | 8.55 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 57 | 20 | 19.36 | 12.32 | 1.76 | 1.76 | — |
| Boston . . . | 617,950 | 164 | 55 | 18.90 | 12.80 | 2.44 | 1.83 | — |
| Worcester . . | 136,925 | 31 | 9 | 3.22 | 9.66 | — | — | — |
| Fall River . . | 119,349 | 22 | 8 | 22.72 | 18.18 | — | — | — |
| Lowell . . . | 104,402 | 24 | 12 | 4.16 | 20.83 | 4.16 | — | — |
| Cambridge . | 100,998 | 12 | 4 | 8.33 | — | — | — | — |
| Lynn . . . . | 73,875 | 19 | 3 | — | 5.26 | — | — | — |
| Lawrence . . | 72,348 | 18 | 7 | 44.44 | 11.11 | — | — | — |
| Springfield . | 72,020 | 15 | — | 40.00 | — | — | — | 13.33 |
| Somerville . | 70,413 | 16 | 2 | 31.25 | — | — | — | 6.25 |
| New Bedford | 68,863 | 14 | 5 | 21.42 | 14.28 | — | — | 7.14 |
| Holyoke . . . | 50,538 | 13 | 3 | 15.40 | 23.10 | — | — | — |
| Brockton . . | 46,601 | 12 | 2 | — | — | — | — | — |
| Newton . . . | 39,310 | 6 | 1 | 16.67 | — | — | — | — |
| Haverhill . . | 39,061 | 8 | 2 | 25.00 | — | — | — | — |
| Malden . . . | 37,205 | 6 | 1 | 50.00 | — | 16.67 | — | — |
| Salem . . . . | 37,188 | 12 | 2 | 8.33 | 16.67 | — | — | — |
| Chelsea . . . | 36,499 | 5 | 1 | — | 20.00 | — | — | — |
| Fitchburg . . | 36,335 | 9 | 2 | 11.11 | 11.11 | — | — | — |
| Taunton . . . | 34,577 | 7 | 1 | 28.60 | — | — | — | — |
| Everett . . . | 30,209 | 6 | 2 | — | — | — | — | — |
| North Adams | 29,201 | 5 | 1 | — | 20.00 | — | — | — |
| Quincy . . . | 26,798 | 4 | — | 25.00 | — | — | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 5 | 1 | 40.00 | — | — | — | 20.00 |
| Brookline . . | 23,576 | 3 | — | — | 33.33 | — | — | — |
| Pittsfield . . | 22,870 | 4 | 1 | 50.00 | — | — | — | — |
| Medford . . | 21,956 | 2 | — | — | 50.00 | — | — | — |
| Chicopee . . | 21,692 | 9 | 3 | — | — | — | — | — |
| Northampton | 20,314 | 5 | — | — | — | — | — | — |
| Beverly . . . | 15,807 | 2 | 1 | 50.00 | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 2 | 0 | — | — | — | — | — |
| Adams . . . | 14,745 | 6 | 2 | 16.67 | 16.67 | — | — | — |
| Attleboro . . | 14,561 | 3 | — | 33.33 | — | — | — | — |
| Hyde Park . | 14,500 | 3 | 1 | — | — | — | — | — |
| Newburyport | 14,478 | 9 | 0 | 22.22 | — | — | — | 11.11 |
| Woburn . . . | 14,315 | 5 | 2 | 20.00 | 20.00 | — | — | — |
| Melrose . . . | 13,819 | — | — | — | — | — | — | — |
| Westfield . . | 13,809 | 1 | — | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 3 | 1 | 33.33 | — | — | — | — |
| Revere . . . | 13,609 | 3 | 1 | — | — | — | — | — |
| Framingham | 12,974 | 14 | 1 | 7.14 | 7.14 | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 4 | 3 | 50.00 | — | 25.00 | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 1 | 0 | — | — | — | — | — |
| Weymouth . | 11,350 | 4 | 0 | — | — | — | — | — |
| Plymouth . . | 11,139 | 2 | 1 | — | 50.00 | — | — | — |

Deaths reported, 2,919; under five years of age, 800; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 723; acute lung diseases 173, consumption 363, scarlet fever 25, whooping cough 12, cerebrospinal meningitis 60, smallpox 3, erysipelas 6, puerperal fever 9, measles 28, typhoid fever 41, diarrheal diseases 114, diphtheria and croup 62.

From whooping cough, New York 6, Chicago 3, Pittsburg 2, Beverly 1. From smallpox, Baltimore 2, New York 1. From cerebrospinal meningitis, New York 54, Chicago 1, Providence 1, Boston 3, Gardner 1. From typhoid fever, New York 5, Chicago 1, Baltimore 3, Philadelphia 16, Pittsburg 10, Springfield 2, New Bedford, Somerville, Waltham and Newburyport 1 each. From Erysipelas, New York 4, Philadelphia 1, Pittsburg 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending May 28, the death-rate was 15.4. Deaths reported 4,507; acute diseases of the respiratory organs (London) 80, whooping cough 163, diphtheria 41, measles 205, smallpox 4, scarlet fever 27.

The death-rate ranged from 3.9 in Kings Norton to 22.8 in Hanley; London 14.3, West Ham 13.7, Brighton 18.2, Southampton 10.7, Plymouth 20.1, Bristol 12.6, Leicester 14.2, Nottingham 18.9, Birkenhead 15.4, Liverpool 17.9, Bolton 19.0, Manchester 18.6, Salford 18.2, Bradford 19.9, Leeds 19.0, Hull 17.7, Sheffield 16.7, Cardiff 13.6, Rhondda 19.2, Wigan 18.3, Merthyr Tydfil 15.8, Northampton 11.4, Norwich 14.4.

## METEOROLOGICAL RECORD.

For the week ending June 11, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S.. 5 | 29.93 | 74 | 88 | 59 | 85 | 86 | 86 | S | S W | 12 | 12 | O. | F. | T |
| M. 6 | 29.98 | 62 | 72 | 52 | 88 | 94 | 91 | N E | E | 12 | 10 | O. | O. | O |
| T.. 7 | 29.90 | 58 | 66 | 51 | 97 | 92 | 94 | N | S E | 7 | 2 | R. | O. | .39 |
| W. 8 | 29.96 | 60 | 66 | 53 | 100 | 97 | 98 | N E | E | 5 | 8 | G. | O. | .02 |
| T. 9 | 30.30 | 53 | 56 | 50 | 90 | 94 | 92 | E | N E | 15 | 12 | O. | F. | 0 |
| F.. 10 | 30.26 | 54 | 60 | 48 | 74 | 72 | 73 | E | S W | 8 | 4 | F. | F. | 0 |
| S.. 11 | 30.02 | 58 | 66 | 49 | 63 | 67 | 65 | N E | E | 12 | 2 | C. | C. | 0 |
| ☞ | 30.05 | | 68 | 52 | | | 86 | | | | | | | .41 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## ERRATUM.

The statement in the JOURNAL June 9, p. 630, that Dr. E. L. Trudeau was present as a delegate from the United States at the International Tuberculosis Congress in Copenhagen, May 27, was incorrect. Dr. Trudeau did not go to Copenhagen.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JUNE 18, 1904.

HART, G. G., acting assistant surgeon. Ordered to the "Reliance" for temporary duty, and on arrival of that vessel at Culebra, W. I., detached and ordered home to wait orders.

MINK, O. J., and F. E. PORTER, assistant surgeons. Appointed assistant surgeons with rank of lieutenant, junior grade, from June 7, 1904.

CHAPMAN, R. B., assistant surgeon. Detached from the naval hospital, Mare Island, Cal., June 27, and ordered to the Navy Yard, Washington, D.C.

## BOOKS AND PAMPHLETS RECEIVED.

University of California Publications. Physiology. The Action of Cascara Sagrada. By John Bruce MacCallum. 1904.

University of California Publications. Physiology. The Possible Influence of the Amphoteric Reaction of Certain Colloids upon the Sign of their Electrical Charge in the Presence of Acid and Alkalis. By Jacques Loeb.

Concerning Dynamic Conditions which contribute toward the Determination of the Morphological Polarity of Organisms. By Jacques Loeb. 1904.

Medical and Surgical Report of the Presbyterian Hospital in the City of New York. January, 1904.

Modern Ophthalmology. A Practical Treatise on the Anatomy, Physiology and Diseases of the Eye. By James Moores Ball, M.D. Illustrated. Philadelphia: F. A. Davis Co. 1904.

Unconscious Therapeutics; or, the Personality of the Physician. By Alfred T. Schofield. Philadelphia: P. Blackiston's Son & Co. 1904.

Progressive Medicine. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, assisted by H. R. M. Landis, M.D. Vol. II, June, 1904. Philadelphia and New York: Lea Brothers & Co. 1904.

The Practical Medicine Series of Year Books, comprising ten volumes on the Year's Progress in Medicine and Surgery. Issued monthly, under the general editorial charge of Gustavus P. Head, M.D. Vol. VI. General Medicine. Edited by Frank Billings, M.S., M.D., and J. H. Salisbury, M.D. Chicago: The Year Book Publishers. 1904.

Third Annual Report of the Metropolitan Water and Sewerage Board. January 1, 1904.

University of California Publications. Physiology. Artificial Parthenogenesis and Regular Segmentation in an Annelid (Ophelia). By G. Bullot. June 1, 1904.

# Addresses.

## ANOMALIES OF THYROID SECRETION.*

BY FREDERICK C. SHATTUCK, M.D., BOSTON,
*Jackson Professor of Clinical Medicine, Harvard Medical School.*

Mr. President, Members of the Maine Medical Association:

I thank you for the honor you do me in inviting me to address you this evening. Perhaps I should apologize for venturing to bring before you a subject which is not new. But all that is new is not true, and my subject is, at all events, replete with interest, practical as well as more strictly scientific, with well laid foundations, though the superstructure is still far from complete. Indeed, it seems to me there is nothing even in modern surgery more striking, I could say more dramatic, than some of the results which flow from our gain in knowledge as to the function of that little gland which is saddled across the trachea just above the root of the neck.

And we shall see that the surgeon's knife has lent its aid in fashioning the links of the chain of evidence, enforcing the lesson of the unity of medicine and of the interdependence of the physician and surgeon, the special work of each being based upon the general principles of anatomy, physiology, pathology and chemistry.

I hope it will not be a waste of time to briefly sketch the evolution of our present knowledge of thyroid function. Of the four chief ductless glands in adult life the adrenals were the first with regard to which we gained a definite knowledge, thanks to Addison's classic work which showed that their destruction is followed by mortal disease characterized by more or less well defined symptoms; that these glands, small as they are, are in some way indispensable to health and eventually to life. The far larger and usually single spleen is still something of a puzzle to-day. Its total extirpation seems to be compatible with the maintenance of good health even in the absence of one or more supplementary spleens. In case of necessity the bone marrow and lymph glands appear to be able to do the work of the spleen. Here we have a sharp contrast between the spleen on the one hand and the twin adrenals and Siamese twin thyroids on the other. If they are destroyed the organism seems to be unable to supply their place. The still smaller and single pituitary body is the last to yield up its secrets, in part, at least.

Enlargement of the thyroid gland — goitre — must have been recognized since anatomy, begotten of dissection, was born. Save in its mildest degrees it cannot escape notice. Atrophy of the gland, on the other hand, is not often easy to recognize in life, save indirectly through its symptoms.

While isolated cases of goitre occur everywhere it has long been notorious that in certain localities, some of the shut-in Alpine Valleys, for instance, it is far more common, so common in some places that its absence in an individual may be regarded almost as a deformity. And it was, furthermore, noted that where goitre is endemic a peculiar form of impairment, mental, physical or both, is rife, so peculiar as to deserve a special name — cretinism. Among the fanciful explanations for this endemic disease the drinking of water from melted snow was a favorite, winning credence alike from the profession and the laity. I well remember in 1869 my guide in the Tyrol trying to dissuade me from allaying my thirst from an icy mountain rill, and assigning the danger of goitre as a reason for his advice.

The connection between thyroid disease and cretinism was masked by the fact that there is no obvious relation between the degree of goitre and that of mental and physical health,— that one person with great thyroid enlargement might be otherwise well, while another with far smaller or no tumor might be a repulsive idiot, small in stature and asymmetrical in development. This, with dense ignorance as to the function or necessity of the thyroid gland, was the situation in 1873 when that great physician and acute observer, Sir W. Gull, published his paper entitled, "On a peculiar cretinoid state supervening in women in adult life." Note, please, here, the truly scientific mind. He described what he saw, fully, clearly. He indulged neither in hypothesis nor theory. Note also the word "cretinoid." His keen eye detected the broad resemblance of the acquired to the congenital state. Next Ord in 1877 first follows the trail to the autopsy table and introduces the term "myxœdema," on account of the remarkable mucin reaction presented by the puffy but non-pitting integument, so different from the ordinary œdema. He also discusses the relation between myxœdema and cretinism, sporadic and endemic, and notes thyroid changes in his fatal case. It is interesting that Curling and Fagge had already called attention to atrophy and absence of the thyroid in sporadic cretinism. Mark again Ord's purely descriptive term, expressive in one word of a definite group of symptoms from the true pathology of which we seemed to be still nearly as far away as ever. Next the great Frenchman, Charcot, in 1879 describes the condition and applies another purely descriptive name, "cachexie pachydermique," the thick-skinned cachexia. In 1880 Savage first recognizes the disease in the male.

Now surgery steps on the scene which shifts to Switzerland, a home of goitre. Safety, the daughter of cleanliness, had encouraged operative relief for the disfigurement and tracheal pressure of goitre. The unknown function of the gland and analogy seemed to warrant total extirpation, which also seemed better and easier surgery when the whole gland was involved. But it was found that in some of the cases thus operated on a train of symptoms began to develop and progressed producing a state to which the name "cachexia strumipriva" was applied. The publications by Kocher and Reverdin on this subject

* Oration before the Maine Medical Society at the Annual Meeting in Portland, June 2, 1904.

were almost simultaneous, and their experience led them to the resolution in future to leave a portion of the gland behind. The term "operative myxœdema" marks the recognition of the similarity of the symptoms following total removal of the thyroid and the myxœdema of Gull and Ord. It was not long before it was seen that they were identical. Thus was firmly established the pathology of myxœdema, and much light was thrown on the physiology of the thyroid gland. The report of the London Clinical Society, published in 1888, ably collected and analyzed the evidence, which was so complete that the experiments of Schiff and Horsley on dogs and monkeys, though affording highly interesting results, did not materially affect the main question.

We had now learned to recognize the condition resulting from the total absence or loss of thyroid function, congenital and acquired. We had also learned that the presence and activity of a portion of the gland, or of an accessory thyroid, prevents the development of the group of symptoms to the acquired form of which Ord's term "myxœdema" still remains attached. These symptoms when fully developed are so striking and distinctive as to permit probable diagnosis at a glance. Some years ago I was called to the suburbs to see a man with general peritonitis. While the family physician was going over the history the patient's wife came into the room. One look at her was enough to reach the diagnosis of myxœdema. Subsequent treatment cured a condition which had lasted for years, so near as to be practically in the "Hub of the Universe."

The story of myxœdema, like that of polyneuritis, is an illustration of how much easier it is to see what is pointed out to us than to see for ourselves — how rare is original thought. How many really obvious things now pass under our very eyes without penetrating beyond the retina!

The evolution of the therapy of myxœdema is scarcely less remarkable than that of its pathology. Transplantation of the gland was first practiced, and was followed by marked improvement which was, however, only temporary. The gland did not seem to live and persist amid strange surroundings; but the results showed that we were on the right track. In the first edition of Osler's Practice, 1892, we find "Unfortunately no satisfactory treatment is known. The patients suffer in cold and improve greatly in warm weather. They should, therefore, be kept at an even temperature and should, if possible, move to a warm climate during the winter months."

But while these words were going through the press the light was breaking. It was found that hypodermic, and even rectal, injection of the raw gland prepared and used under strict aseptic precautions was efficacious. Then feeding with the raw, the cooked gland, and, finally with liquid or dried extract of the gland was successively tried with the surprising result that the important active principle is, for practical purposes, unchanged either by the preparation without the body or by the digestive process within it. Thus was the battle won, and thus did we come into a position to readily recognize and cure the condition first described by Gull less than twenty years before, and which had been uncertain and obscure in pathology and hopeless in outlook.[1]

A year ago a middle-aged man came under my care at the Massachusetts General Hospital. His friends, weary of the burden of his support and care, were ready to send him to the poorhouse. He was practically an idiot, sluggish to the last degree both in body and mind. After several months' treatment he returned home, and his own mother failed to recognize as her son the man, active mentally and physically, whose bald head with here and there a long wisp of dry hair had become thickly covered with normal growth. I have seen him recently; he is perfectly well, self-supporting with steady work. I know nothing in medicine comparable to the change in a myxœdematous patient after treatment unless it be the effect of potassium iodide in certain cases of syphilis.

If the thyroid gland be congenitally absent or if it cease to act in early life, growth is seriously arrested and distorted. A child of eight, weighing twenty-three pounds, a typical cretin, entered my service this winter. Under treatment she has lost nearly six pounds in weight, but gained greatly in strength, intelligence and appearance. If the gland be destroyed by disease or extirpated in adult life certain nutritional and mental changes occur. Cretinism and myxœdema are essentially identical in nature, the only real difference lying in the period of life at which the cause begins to act. The relation of cause and effect is as certain as anything in medicine. But as to how the effect is produced we are still far from clear. The prevalent view is that the ductless glands secrete something which finds its way directly into the blood — internal secretion, so-called. However interesting it might be to touch upon the modern views as to the existence of an internal secretion also in glands furnished with ducts, nay even of the parenchymatous organs, such discussion would be aside from our present issue and would lead too far. I will mention only the relation of Langerhans' islands in the pancreas to, at least some cases of, diabetes. This seems established. The effects, then, of arrested thyroid secretion being so distinctive, what happens if, for any cause, secretion be excessive? For it seems highly probable that myxœdema is due to purely quantitative change. The failure of symptoms to develop if a portion of the gland remains active is one point favoring this view. With regard to this most interesting and important point — excess — we have not as yet succeeded in getting on as firm ground, though it seems as if more positive knowledge might not be far off.

There is one disease the symptoms of which are almost diametrically opposed to those of myxœdema and in many cases of which the thy-

[1] It is interesting to note that Englishmen took far the largest part in the solution of the mystery of myxœdema.

roid gland is manifestly enlarged. This enlargement, moreover, is capable of undgeroing such variations in size as to suggest that the enlargement must be in part, at least, due to actively increased blood supply, which, presumably, entails increased glandular activity. In passing, the thyroid enlargement — vascular — which occurs sometimes in connection with pregnancy and menstruation is worthy of note. I allude, of course, to that remarkable group of symptoms so obscure in origin until lately, to which the name "Graves' disease" is attached, though priority of description belongs to Parry. Parry's observations were lost sight of and, for convenience, I shall use the common English name. Contrast the facies of terror, the nervousness and tremor, the intolerance of heat, the moist skin and vasomotor instability, the emaciation of Graves' disease with the cow-like placidity, bodily and mental sluggishness, intolerance of cold, dryness of the skin and its appendages, scanty urine, and the swollen and puffy integument of myxœdema. The suggestion that symptoms so absolutely opposed must depend, at least in a measure, on opposed pathological conditions cannot but demand most serious consideration. I think it was Möbius who first, in 1890, maintained this view in print. How is proof to be secured? We *know* that myxœdema is cured by introducing into the system the thyroid of some animals, the sheep, for instance. Does such introduction produce Graves' disease in a healthy person? What is the effect on patients already the subjects of Graves' disease? For obvious reasons full experimental evidence on man with regard to the first of these questions cannot be secured. But that thyroid over-dosage does quicken the pulse, raise the temperature and cause loss of weight admits of no doubt. I have a lively recollection of a patient whom I nearly killed with thyroid extract some ten years ago. He was the first case I recognized as having partial myxœdema, a gentleman who had been treated for all sorts of things, "a dropsical tendency" among others. Though I felt sure of the diagnosis I asked Dr. J. J. Putnam to see and examine him without me and without knowing my opinion. He concurred. Putnam had just received the first sample of Parke Davis' dried extract which had reached Boston, and kindly placed it at my disposal. The patient took 15 gr. three times daily, and it was not many days before the pulse shot up from 70 to 140, the temperature from sub-normal to 103, and anginose pain was severe enough to require several half-grain hypodermics of morphia within a few hours. He has taken the extract ever since, occasionally intermitting its use for a short time; but never in 15-gr. doses. He is now seventy-nine. I have never poisoned anyone else to that degree. The cretin I alluded to before entered the hospital with a pulse of 70 and normal temperature. The pulse now runs 130–140, temperature 100–103, under one grain three times a day. By increasing or diminishing the dose, the pulse and temperature can be raised or lowered. A rapid pulse is the most constant single symptom of Graves' disease. Exophthalmos and goitre may be absent in severe and even, as Thomson has seen, fatal cases. The name "exophthalmic goitre" is, therefore, wholly inapplicable to the disease and should be dropped as it tends to perpetuate the error from which Kocher himself has not been able to free himself. As a surgeon he naturally sees only the cases with goitre and hence denies that Graves' disease can exist without goitre. This error reminds one of that of the great Hebra who maintained the identity of varicella and variola. I have always thought for the reason that he had seen but little varicella.

Thyroid extract, then, is capable of producing the most constant, if not essential, symptom — rapid heart action — and some of the minor symptoms of Graves' disease. Improvement in all symptoms often follows partial extirpation of the thyroid, as also it may follow ligation of arteries resulting in diminished blood supply, and hence, presumably, diminished glandular activity. These facts, taken together, constitute strong evidence as to an intimate relationship between the thyroid gland and Graves' disease.

It has been thought that the parathyroid glands may play something the same rôle in Graves' disease that the thyroid does in myxœdema, and keen investigators are studying the question. Extirpation of the parathyroids in animals is followed by acute and convulsive disorders — tetany, while extirpation of the thyroid alone is followed by chronic and nutritional disorders. The parathyroids were formerly supposed to be accessory thyroids and inconstant. They were discovered by Sandström in 1880, rediscovered by Gley in 1892. Positive clinical and pathological evidence with regard to the parathyroids in man is still meager, partly from the short time the work has been going on, partly from the inherent difficulties of the problem. Analogy would suggest that their action is essentially the same in the higher vertebrates. The known sequence of their removal in animals has suggested the possibility that the alarming frequency of pulse and respiration, too often fatal, which sometimes occurs rapidly after thyroidectomy for Graves' disease, may be due to removal of the parathyroids rather than to flooding of the system with thyroid secretion, poured out from the cut surface of the gland and rapidly absorbed from the extensive wound. If the parathyroid theory be true it would seem as if such cases should be invariably fatal, as they are not. The facts do not, as yet, warrant any final conclusion; but for the present, at least, the injunction by Jeandelize to make a point of sparing the parathyroids in thyroidectomy should be heeded by surgeons. MacCallum has fed the parathyroids to a patient with Graves' disease without appreciable effect. Whether the action of the thyroid and parathyroids is antagonistic, complemental, or unrelated we do not to-day know. But what evidence we have does not

seem to indicate a vital causal connection between the parathyroids and Graves' disease.

Let us then assume, for the sake of argument at least, that myxœdema and Graves' disease are both dependent on states of the thyroid gland, and that the former represents loss of function of the gland. Does it then follow that the latter — Graves' disease — represents excessive function or purely quantitive changes in secretion? We do not know. Qualitative change may or may not be operative. That glandular activity of any kind may be increased or diminished in greater or less degree, or even arrested, for considerable periods and simply from faulty innervation, we do know. The stomach tube which enables us to extract the gastric contents at any period of digestion has demonstrated to us the existence of both hypo- and hyperchlorhydria as phases of nervous dyspepsia, so-called. We have no such direct means of determining the amount and character of thyroid secretion, which, moreover, is probably far more subtle in its nature than that of the peptic glands. However plausible the theory that Graves' disease is the result of purely excessive thyroid secretion may be, proof is still lacking.

I have just received from my friend, Dr. W. H. Thomson, of New York, his most interesting monograph on Graves' disease, fresh from the press. He, as you know, doubts the causal relation of the thyroid gland to Graves' disease, and believes the main factor to be toxin absorption from the intestines. After study of his therapeutic results, which are better than any with which I am acquainted, it is hard to escape the conclusion that diet and mercurials are of great service, while we yet provisionally hold the view that morbid thyroid activity is the central and essential factor in Graves' disease. Thomson tells me that he prefers to get a bad case as his results in such are more striking.

It is certainly conceivable that intestinal toxins should have a peculiarly bad effect on the subjects of thyroidism. We are ignorant as to whether the thyroid puts something into the blood useful for constructive nutrition, though the fact that the earlier in life the gland ceases to act the greater the effect on growth would suggest this to be the case; whether its action is destructive toward toxins; or whether it acts in both ways at once. If the gland has a double action it is possible that either variations in the demand for the one or the other action, or variation in the supply to meet one or the other demand may occur in the complex conditions which constitute life. A double supply, a double demand; the extreme subtlety of the chemistry of the living body; and our fragmentary knowledge of the subject afford ample scope for speculation and hypothesis, which are in place in matters scientific, provided always that they be recognized for what they are.

Thus far I have had in mind fully developed cases of myxœdema and Graves' disease. They are easily recognized. But are we as a profession sufficiently alive to the fact that all grades of each exist? Do we recognize the "*formes frustes*," as the French call them? I think not as often as we should. Personally, I happen to have been interested in the subject, and during the past year I have seen at least four cases of Graves' disease in males and two in females, the nature of whose trouble had in some certainly, in others apparently, not been suspected by their previous attendants. These were, of course, cases entirely without or with only slight exophthalmos and goitre. Only yesterday a gentleman called with a pulse of 150, tremor, sweating. I have seen him at intervals of about six weeks for as many months and feel sure of the diagnosis. His return of rapid pulse of yesterday I think due to recent unavoidable business strain, for on the whole he is decidedly better than he was six months ago. Although the heart's action was violent as well as rapid, shaking nearly the whole chest, he was entirely unconscious of it, though he was conscious of his "nervousness." [2] If we keep clearly in mind the characteristic symptoms, minor as well as major, of myxœdema and Graves' disease, I feel sure we shall now and then encounter undeveloped cases of one or the other condition. Among the important symptoms of myxœdema a small renal secretion with a still smaller, proportionally, output of urea is not the least. Myxœdema, alike partially and fully developed, I think more rare than Graves' disease.[3]

In case there be doubt as to the diagnosis of these "*formes frustes*," tentative treatment, especially perhaps of the myxœdematous class, may confirm or negative our suspicions. Therapeutic truth lies at the bottom of a very deep well, deeper than the philanthropic drug and prepared-food manufacturers, distributing sample bottles, wish us to believe; and it is, of course, not safe to conclude that any gain following the use of thyroid extract is the direct result of its use and a proof of hypothyroidism, any more than that symptoms relieved after quinine were malarial; or that those disappearing after potassium iodide were syphilitic. At the same time a marked gain in physical and mental alertness with the return of a normal relation to cold are significant. Hertoghe seems to me to attach far more final value to the therapeutic test than it deserves.

The whole treatment of myxœdema is practically comprised in the administration of thyroid extract. It is safer to begin with moderate doses, say three to five grains twice a day for an adult, increasing the dose in size, frequency, or both, as the tolerance of the patient is developed. The presence of notable arteriosclerosis or of degenerative myocardial disease should make us

[2] Very recently I have seen a lady who was seen by my friend and assistant, Dr. W. H. Smith, some years ago. He tells me that at that time her somewhat rapid pulse and nervous manner led him to look for goitre which, as also exophthalmos, was quite absent. Under recent psychical perturbation the nervousness and tachycardia have greatly increased and goitre is manifest.

[3] We still need light on the interesting question as to how often thyroid atrophy, greater or less in degrees, results from thyroiditis complicating or following acute infectious disease.

very cautious as to dosage, at first at least.[4] It is easier to add to a deficient or to supply a lost thyroid secretion than to directly restrain or modify one which is excessive or otherwise morbid. The treatment of Graves' disease has long been unsatisfactory at the best. Real recovery is rare, though much may be done in alleviation if a quiet life without much nervous strain can be secured. A cool summer resort is very important. The improvement reported in some cases from mountain resorts and attributed thereto I believe should probably be credited to the temperature rather than to the altitude. Sexual excitement should be infrequent. A shrewd Canadian doctor once remarked to me that he had noticed aggravation of the symptoms of Graves' disease in the wives of commercial travellers coincident with the homecoming from trips.

The diet should be comprised mainly of fats, starches and sugars, with great moderation in or abstention from highly nitrogenous food; due regard being had, of course, to digestive peculiarities, temporary or fixed, of the particular patient. Oatmeal is probably the least desirable of the cereals from its excitant qualities. The bowels are apt to be either constipated or relaxed. Diarrhea, if genuine, may be regarded as an internal sweating and may be treated by some form of bismuth. Personally, I use Squibb's sub-nitrate in teaspoonful doses, less constipating than the smaller doses, perhaps, on account of its crystalline and hence scratchy nature. If there be constipation or any evidence of faulty intestinal chemistry I shall be tempted in future, acting on Thomson's suggestion, to give calomel regularly once or twice a week. And yet I have seen two cases recently, one with fifteen or twenty loose movements a day, the other with constipation, promptly acquire normal defecation under the neutral bromide of quinine alone.

Digitalis, far too frequently ordered under all sorts of conditions simply because the pulse is rapid, should not be used unless there be indication of insufficiency of the heart muscle. Strychnia is to be avoided. Three of the cases of Graves' disease seen lately had been taking digitalis and strychnia for longer or shorter periods without benefit.

Nearly four years ago my friend, Dr. F. Forchheimer of Cincinnati, told me of his results from neutral bromide of quinine. I have used it since and have thought it more helpful than any other drug I have used before. The toleration of quinine in Graves' disease is remarkable, and is seemingly proportional to the severity of the symptoms. I give it in five-grain pills three or four times a day. Two patients, cases of moderate severity, have now taken twenty grains daily almost constantly for more than three years without the least cinchonism, and with decided amelioration of all the symptoms, tachycardia and nervousness especially. A gentleman with acute Graves' disease, exophthalmos and goitre absent, was amazed that he could take twenty grains a day without discomfort, as he had always been highly susceptible to the action of quinine. Another similar case, a lady who has just come under my observation, gives the same testimony. At my suggestion the treatment has been largely used in the Out-Patient Department of the Massachusetts General Hospital with, as is reported to me, very satisfactory palliative results. The remarkable freedom from cinchonism and the small amount of bromide in twenty grains of the salt make it highly improbable that the latter is the active agent though, doubtless, as diminishing reflex excitability, it helps somewhat.

With thyroidectomy I have little experience, less, I am inclined to believe, than I should have considering my opportunities. The alarming symptoms and rapidly fatal termination after some cases of operation deter one from advising the knife in moderate cases, and the severe ones are bad subjects for serious surgery. On the other hand, a severe and chronic case perhaps justifies almost any risk. I have seen a few cases which have been greatly improved after operation, and Osler tells me within a day or two that they are having good results in bad cases at the Johns Hopkins operating under cocaine. A Massachusetts General Hospital case operated on by Mikulicz a year ago with distinct benefit has, I am told, since relapsed. I now regret not having advised operation in a very severe case in a young Jewess I saw some six months ago. All the symptoms were extreme. The prominence of the eye-balls was so great that corneal ulceration of a week's standing when I saw her had already destroyed her sight. It is the only case that I have seen of this disaster. Under such circumstances death is a true friend; but one shrinks from being the executioner.

With Rodagen, prepared from the milk of thyroidectomized goats or the serum, I have no experience.

To sum up: Graves' disease for the present is to be treated by rest, diet, climate, attention to the bowels and neutral bromide of quinine. If these measures are not followed by distinct improvement operation is to be seriously considered in severe cases, especially in patients whose circumstances in life are unfavorable for the general management of their disease.

In conclusion it only remains for me to thank you for the patience with which you have listened to me. If I have succeeded in imparting to my presentation a fraction of the interest which I feel in the subject, and, above all, which it merits, I shall be satisfied.

The fascination of the constant advance in knowledge tempts one, even in moments of weariness, to share the wish of Professor Hagen, the celebrated entomologist: "I wish I could be my own great-grandson."

[4] Larger doses are required, or may be used, to cause the disappearance of symptoms than to prevent their recurrence. The thyroid extract must, of course, be taken for the rest of life. A lady whom I saw in consultation eleven years ago came to see me within twenty-four hours about a friend. Under two grains, once, daily, she considers herself absolutely well, but experience has convinced her that this amount is indispensable.

# THE SIGNIFICANCE OF THE TUBERCULOSIS CRUSADE, AND ITS FUTURE.[1]

BY EDWARD O. OTIS, M.D., BOSTON.

ORGANIZED effort for the purpose of fighting pulmonary tuberculosis is now being made in nearly every civilized country of importance in the world. It is called the "Crusade," the "Warfare," the "Struggle" against consumption. Governments and rulers, sanitarians and physicians, philanthropists and "the people" of all classes are taking part in this movement. It is singularly impressive to observe this great and widespread wave of combined effort against a single foe; and it would be difficult to find a parallel to it, comparable either in extent or activity, in any similar movement of the past. A brief enumeration of some of the principal anti-tuberculosis associations and special forms of activity in different countries may aid us in more vividly realizing the extent and magnitude of this crusade.

In Great Britain there is the "National Association for the Prevention of Consumption and other Forms of Tuberculosis," under the patronage of the king and the presidency of the Prince of Wales. Branches of this association exist all over England, and it has its own publication. At its instance there was held in London in 1901 the International Congress of Tuberculosis, attended by delegates from various parts of the world. As one result of this congress Sir Ernest Cassel placed at the disposal of the king $1,000,000 for the establishment of the King's Sanitorium now in process of erection.

In Germany anti-tuberculosis societies and associations for the erection of sanatoria exist in most of the cities, and about ninety sanatoria for the poor and working people, with accommodations for many thousands of consumptives, have already been erected. There is a German Central Committee for establishing sanatoria under the patronage of the empress, and an International Bureau for the Prevention of Tuberculosis has been organized in Berlin, with its special organ. In 1899 a tuberculosis congress of an international character was held in Berlin under the patronage of the empress. The German Workman's Insurance, which insures against invalidity, largely employs the sanatoria, either of its own construction or others, for its consumptives, on purely economic grounds, finding it more economical to cure or so improve such patients that they may resume their occupation rather than pay sick benefits for a longer period of time while they are slowly dying of the disease.

In France, both the government and the people are working together in various directions. In 1899 the government appointed a large commission to determine the preventive means to be adopted throughout the republic. There are seventy-eight anti-tuberculosis societies in the different cities, united in a national federation under the patronage of the president. The anti-tuberculosis dispensary was first inaugurated in this country, Dr. Calmette founding the first one at Lille. Several congresses for the study of tuberculosis have been held in Paris, and an international one is to occur there in 1905. In December last the *Figaro*, a leading Parisian journal, dedicated an entire issue to the fight against consumption.

In Denmark there is a national association founded two and a half years ago at Copenhagen, and through voluntary contributions from members of this society three sanatoria have been erected. National leagues likewise exist in Italy, Austria, Belgium, Spain and Portugal. In Russia many such leagues have been formed in various portions of the vast empire: at Moscow, St. Petersburg, Odessa, Sebastopol, Tiflis, etc. In Norway the government enacted in 1901 a very comprehensive law regarding the prevention and control of tuberculosis. In Sweden, on the occasion of the twenty-fifth anniversary of the King's reign, the sum of $644,000 was raised by a national subscription and presented to him; this amount, together with $238,000 voted by the Reichstag, was applied to the erection and maintenance of three sanatoria in different parts of the kingdom. The educational propaganda, by means of popular essays and the press, has been very active in this country. The official almanac, which enters every household, has for the past two years contained a brief account of tuberculosis and practical rules for the government of the consumptive and his household.

In Switzerland almost the entire population, one can say, is taking part in the struggle. In most of the important cities various organizations exist for the purpose of aiding the tuberculous poor and disseminating anti-tuberculosis literature. More than a dozen popular sanatoria have already been established in this little country, and twenty paying ones. There are also several sanatoria for tuberculous children. In Holland there is a national association for the creation of sanatoria for the poor, with subcommittees in the principal cities. The queen-mother Emma has taken an active interest in this movement, and has made substantial contributions. In Turkey, Hungary, Bulgaria and Roumania, both the government and various societies are at work with the same general objects in view as in other countries. In South America leagues exist in Brazil, Argentina, Chili, Uruguay, Paraguay, Bolivia, Equador and Cuba. A general Latin-American congress met at Santiago in 1901 and formed a permanent international commission to direct the crusade in these countries.

In Canada, there is the Canadian Association for the "Prevention of Consumption and Other Forms of Tuberculosis," whose honorary president is the Earl of Minto, the governor-general. Ontario and Montreal also have their leagues. In the provinces of Ontario and Quebec sanatoria have been established. In Mexico, Central

[1] Read before the American Social Science Association, Boston, May, 13, 1904.

America, Australia and New Zealand similar anti-tuberculosis agitation is in progress; and in Japan the imperial government has created a large hospital for the study and treatment of the disease. In the United States there are various state and local associations. The first one of the kind was the Pennsylvania Society for the Prevention of Tuberculosis, founded in 1892. Quite recently Mr. Henry Phipps of New York donated $1,000,000 for the establishment in Philadelphia of an institute for the study, prevention and treatment of tuberculosis.

This great crusade is of comparatively recent origin, dating back hardly more than a decade, and its incentive is the result of a *discovery* and a *fact*. The discovery is the finding or isolating of the tubercle bacillus and the proof that this micro-organism is invariably the cause of the disease, or, in other words, that pulmonary tuberculosis is communicable or infectious. The fact is, the enormous prevalence of the disease, and, further, that its greatest mortality is at the best period of a man's life, between fifteen and forty-five years of age; of all who die during this period fully one third die of pulmonary tuberculosis. Possessing this knowledge of the cause of the disease and the method of its communicability, it is at once apparent that it is preventable, if we can find a sure and ready way of controlling the cause, *i. e.*, the infecting germ. Happily, this is easy, for it is through the sputum alone of the consumptive that the contagion is conveyed. The breath, the perspiration, the other discharges from the body, do not contain the specific germ, only the sputum; and this is dangerous only when it becomes dry and releases into the air the infecting micro-organism. The conveyance of the disease by animals suffering from it is still under discussion, the weight of evidence so far being in its favor. If it is a fact, it counts for relatively little in comparison with the sputum cause of infection. Few, if any, phthisio-therapeutists would, I think, agree with Von Bering that everybody has latent or active tuberculosis caused by the ingestion of milk during infancy.

The tubercle bacillus is a vegetable parasite, a seed, and, like other seeds, requires a favorable soil for its germination and growth. Furthermore, it resembles other seeds in the characteristic of exhausting or changing the character of the soil in producing the crop. Tuberculosis, by its growth, not only feeds upon the normal lung tissue and renders it incapable of performing its proper respiratory function, but so changes its structure that it becomes a ready prey to other destructive micro-organisms.

It is at once evident, then, that not all individuals exposed, even for a prolonged period, to the tubercle bacilli, contract the disease, provided their tissues are sufficiently resistant; and in this fact lies the whole theory of the present method of the treatment of the disease,— to convert a previously receptive organism into a resistant one.

It was the stony soil which afforded no depth of earth to the sower's seed, and "because they had no root they withered away." So the tubercle bacillus will not grow in a healthy organism. But the seed falling into good ground produced an ample crop, thirty, sixty, an hundredfold. So it is the conjunction of the bacillus and the favorable soil whose fruition is pulmonary tuberculosis.

The favorable soil is the human organism depressed below its normal standard of health by many and various influences and conditions, either chronically or temporarily. Here comes in the influence of heredity as a factor in producing this favorable soil. Whereas consumption is not inherited, for a contagious disease is caught not transmitted, yet experience indicates that a "tendency" to it, a special sensitiveness to the tubercle bacillus, appears to be inherited in a certain proportion of cases, not, by any means, in all.

The causes working to prepare this favorable soil are all those which we class under the head of unhygienic life and environment, or, in other words, they are the evil resultants of civilization. It is hardly necessary to enumerate them. Unsanitary dwellings and workshops, alcohol, unwholesome occupations, excessive labor, insufficient and improper food, and, more potent than all the rest, vitiated air. "He who has been the free child of nature," says Mr. Edward Carpenter,[2] "denies his sonship; he disowns the very breasts that suckled him. He deliberately turns his back upon the light of the sun, and hides himself away in boxes with breathing holes (which he calls houses), living ever more and more in darkness and asphyxia, and only coming forth, perhaps once a day, to blink at the bright god, or to run back again at the first breath of the free wind, for fear of catching cold."

Tuberculosis is an ubiquitous disease, and no region, whatever its climate and latitude may be, is exempt from it. The countries of the north and the tropics are alike swept by its ravages. Wherever human beings congregate, as in thickly settled portions of great cities, or wherever they shut themselves up in a vitiated atmosphere, like the Scandinavian farmers of Minnesota, or the peasants of Brittany, there it is most prevalent.

The yearly holocaust is appalling, but we have become so inured to it that it no longer startles us like some sudden catastrophe which destroys a few hundred lives. The annual sacrifice to it in France, for instance, is one hundred and fifty thousand lives, equal to the number of inhabitants of the city of Rouen. In this country it claims an equal number of victims, and so on in much the same proportion throughout the civilized world.

Is it any wonder that at last men are awakened to the realization of the destruction caused by this grim monster? Now that we know its cause through the transcendant discovery of Koch, and are able to control it, the enemy is no longer veiled in mist, but stands clearly revealed before

[2] Civilization, Its Cause and Cure, by Edward Carpenter.

us. It is only a matter of the selection of weapons, the mobilization of forces, and the persistence of the warfare to defeat the enemy, to exterminate this "great white plague."

It will be instructive now to consider some of the weapons and the different lines of attack employed in this warfare. There are five main lines along which the advance is being made: the Educational, Social, Isolation, Governmental and Medical.

Under Educational is comprehended the various methods of instructing the people in the simple facts regarding tuberculosis, its prevalence, cause, communicability, prevention, curability, conditions producing the favorable soil symptoms suggestive of its presence. This is accomplished by means of popular lectures, pamphlets, illustrations, placards and the like. Existing organizations of all kinds are asked to furnish audiences, or they themselves ask for lectures and information upon the subject. The schools, labor unions, lodges, educational centers, clubs, churches, neighborhood settlements, employees in great department stores,— are all available for audiences. Physicians, sanitarians, laymen who have had exceptional opportunities to become conversant with the subject, like Professor Fisher of Yale College, are available for lecturers. Leaflets, pamphlets, or more elaborate productions are furnished gratuitously by boards of health, dispensaries, anti-tuberculosis associations, or philanthropic individuals or societies. Tuberculosis exhibitions for conveying knowledge upon the subject in a popular form have of late been instituted. Such an exhibition was recently held in Baltimore lasting a week. Here were sections devoted to statistics: tenement houses, sweat shops and factories, state and municipal prophylaxis, hospitals and sanatoria, pathological anatomy and bacteriology. Small groups from all classes of society — students, nurses, teachers, working women's clubs, charitable societies and associations were conducted through the exposition and the various exhibits explained. Daily popular lectures were also given.

Similar exhibitions have been held in Moscow and St. Petersburg, and one is to take place in St. Louis during the Fair. In June of last year the International Tuberculosis Museum was opened in Berlin, "intended," as Dr. Kayserling says, " to be a popular object lesson, and to represent one of the means for enlightening the people as to the nature of tuberculosis." There were divisions upon the history, prevalence, cause, prevention and treatment of the disease, the whole subject being exhaustively portrayed in this way.

Another educational means is the use of the press, by popular articles on consumption in the daily and weekly papers and monthly magazines, such as the admirable article by Professor Fisher in the *Outlook*, or those of Dr. Knopf in some of the New York daily papers. Reports of lectures upon tuberculosis, the transactions of anti-tuberculosis associations, and other articles upon the subject in special publications like *Charities*, the *Club Worker*, nurses' magazines and the like — all have an educational value.

Under Social are included all efforts towards the general betterment of the masses, the workingman, the tenement-house dweller, the factory operative, child life. Indeed, the social condition of the individual has such a direct influence for or against one's receptivity to tuberculosis, that it has been called a " social disease." The question of housing, overcrowding, intemperance, the feeding of infants and adults, wages and labor, — all have a more or less direct bearing upon the prevalence of tuberculosis. The decrease of the disease prior to the active warfare against it now in progress is undoubtedly largely due, as Hoffman says, to the improvement in the mode of life of the masses. By an amelioration of the conditions of their life they become more resistant to the disease, and, as the great Genoese investigator, Maragliano, has recently said,[3] "the victims of tuberculosis will diminish in number, in proportion as the human organism is in condition to resist the disease."

As the modern surgeon now realizes that absolute cleanliness is really the cause of his marvellous results after operation, and that all his antiseptic precautions are only a means to this end, so in the ultimate analysis, the social problem is the struggle towards cleanliness. Clean bodies, clean houses, clean workshops, clean air, clean water and food, and clean minds are the essential factors involved in the solution. Indeed, we even use the word as indicative of character, and the phrase, a "clean man," conveys a very fair estimate of the moral status of the individual.

Again, under Social may be included the various methods of relief and control of the poor tuberculous individual by frequent visitations at his home by visitors or nurses under the direction of anti-tuberculosis associations or dispensaries. Through this instrumentality the victim of the disease and his family are instructed as to the proper disposal of the sputum, and the general care of the patient. Material aid in the form of food or other necessary articles is also furnished when needed.

Anti-tuberculosis dispensaries, previously referred to, perform a very important social rôle, as well as therapeutic. The consumptive who applies to such an institution is not only given medical care, but is kept under constant observation by the visitor or nurse. He is supplied with sputum receptacles, and generally guided in his plan of life when possible. Opportunity for change of occupation, if considered desirable, or of residence, or entrance into a sanatorium or hospital is provided for.

As it is the task of the engineers of an army to collect information regarding the enemy and to discover the topography of his country, so, under the social side of the tuberculosis problem are the various statistical investigations regarding the disease and its social relations, such as has been so admirably made by Miss Lillian

[3] Medical News, April 2, 1904.

Brandt, the statistician of the Committee on the Prevention of Tuberculosis, of the Charity Organization Society of New York. Such information enables one to prosecute the siege more intelligently, more effectively, and at more points of attack. "The struggle with tuberculosis," said M. Casmir Périer at the meeting of the Central International Tuberculosis Committee, in Paris, last May, quoted by Miss Brandt, "is intimately bound up with the solution of the most complex economic problems, and no plans will be complete which have not for their basis the material and moral improvement of the people. The struggle with tuberculosis demands the mobilization of all social forces, public and private, official and voluntary."

*Isolation.* — Under this head are included all measures of prevention dependent upon the segregation of the tuberculous individual when he becomes dangerous to those about him through the dissemination of the infecting sputum. This is accomplished through the instrumentality of boards of health, sanatoria, consumptive hospitals, and various "homes," or almshouses. In some countries, as Norway for instance, and in many cities, compulsory notification of the disease is required by law, and the same authority can be exercised in dealing with it as with any of the other contagious diseases; that is, the government or board of health can remove a consumptive from his abode when in their opinion he is a menace to those about him. This usually happens in the later stages of the disease. Consumptive hospitals for advanced cases of consumption are sadly needed in our American cities, and it is one line of attack and an exceedingly important one to arouse public opinion so that they will demand of the municipality the establishment of such institutions. It is no hardship to remove a poor consumptive to such a hospital, for he will receive far better care than is possible in his wretched abode.

Sanatoria also effect isolation, although their primary object is to cure. The workingman in the earlier stages of the disease and still able to pursue his avocation may be quite as dangerous to his fellow-workmen as the more advanced case. By his entrance into a sanatorium he obtains the benefits of treatment and has the chance of cure, while at the same time he is isolated. From obvious reasons isolation at one's home is hardly practicable.

*Governmental.* — Whatever anti-tuberculosis regulations originate from or are executed by the authority of the government, central, state or municipal, may be included under this division. Such are compulsory notification, already referred to; inspection and disinfection of infected abodes; free examination of sputum by state or city boards of health; ordinances against promiscuous spitting now in force in so many countries; sanatoria established and maintained by the government, as that of the United States Marine Hospital Service in New Mexico, and various similar state institutions, a most conspicuous example of which is the Massachusetts State Consumptive Hospital at Rutland. When the government is paternal, other measures for the prevention and control of the disease emanate from the central authority, and many of the national associations for the prevention of tuberculosis receive the endorsement and enjoy the prestige of the ruler of the country in which they are situated. As in Germany and England, — indeed in almost every country in Europe, — the rulers and government have shown themselves most intelligent and progressive in zealously supporting and aiding this great crusade. It is to be hoped that shortly a national association will arise in this country with the approval and co-operation of our government.

Finally, under Medical or curative are embraced all means instrumental in curing or arresting the disease, the chief of which is the modern sanatorium. As consumption is, for the most part, only curable in the early or incipient stage, only such cases are generally received into a sanatorium as appear susceptible of a cure or of such improvement as will enable them to again resume some occupation. The distinction between a sanatorium and a consumptive hospital is to be noted: the function of the former is to cure or improve, while that of the latter is to care for and isolate the hopeless cases.

The sanatorium treatment, also called the hygienic, dietetic, or open-air treatment, is based on the principle of increasing the resisting power of the consumptive to the tubercle bacillus. This, in brief, is accomplished by constant exposure to fresh air, abundant feeding, and mental and physical rest. Such treatment has been so preeminently successful that sanatoria are springing up all over the civilized world with amazing rapidity, as has been noted earlier in this paper. From present indications it will not be very long before every state in our own country will have one or more such establishments. It has been determined from experience that it does not matter very much what the climate is where the sanatorium is situated, provided fresh, pure air is obtainable. Both private and governmental initiative or a combination of both is active in founding such beneficent curative institutions.

Incidentally, as has been referred to above, the sanatorium exercises a preventive influence of no small degree by isolating its patients. Another very valuable incidental influence of the sanatorium is the educational propaganda carried on by its graduates, or cured patients; as they return to their homes they become apostles of fresh air and wholesome living to their less enlightened neighbors. This result of the sanatorium training has been strikingly exemplified in the state of Massachusetts.

In this connection I may again refer to the anti-tuberculosis dispensary as a curative instrument of no mean value. But comparatively few consumptives from the great mass of them can go to sanatoria, and for one reason or another they must remain at home, and these home con-

sumptives the dispensary looks after. Through its visitors or trained nurses it keeps in constant touch with them, enables them to obtain proper food and fresh air by various expedients, such as sleeping on a piazza, or an improvised platform, and by day in the open air in parks, or roof gardens. Thus many economic cures at least are effected, and often while the patient, perforce, continues at his occupation.

In the foregoing I have briefly and imperfectly, it is true, considered the various lines of attack and the weapons at present in use in this great warfare, and it remains to forecast the probable results of the struggle. What of the future? Theoretically, consumption is a perfectly preventable disease, and I believe it will be proved to be practically so. If, by the general improvement of the mode of life of the masses, the mortality from tuberculosis has been so materially reduced in the past, as it has in those countries where sanitary efficiency is high, it is reasonable to suppose that the continuation and increase of this general betterment of the masses, in conjunction with all these specific and special agencies now in operation, will cause the diminution of the disease to progress at a far greater rate from this time forward, and the evidence at hand corroborates this inference.

In Germany, if the decline in the mortality from tuberculosis continues at the same rate as at present, the disease will be exterminated in less than thirty years, and in England in about forty. The striking drop in the Prussian tuberculosis death-rate from 31 per 10,000 inhabitants in 1886 to 21 per 10,000 in 1900 is attributed to three causes: (*a*) The widespread knowledge as to the infectious character of tuberculosis; (*b*) the provision for a large number of sanatoria for the working classes; (*c*) the early and systematic resort to sanatoria which the workingmen's State Insurance Department in Germany encourages and assists. In Belgium the mortality which in 1888 was 38.4 per 10,000 inhabitants was reduced in eleven years to 24.5 per 10,000 in 1898; a diminution of 36%. In five eastern states and ten other cities of the United States the mortality has been reduced from 27.2 per 10,000 in 1887 to 21.2 per 10,000 in 1900, a diminution of 18%. In Massachusetts from 1892 to 1902, a period of ten years, the diminution has been from 24.5 to 15.8, or a little over 35%. In New York city the diminution from 1886 to 1901 has been more than 30%, and Dr. Biggs of the department of health of that city, in quoting this diminution, says that it is his belief that with a complete and efficient scheme for dealing with tuberculosis, including suitable hospital accommodations, and the proper enforcement of precautionary measures, the death-rate from tuberculous diseases in New York City may be further reduced one third within a similar period, which would mean the saving of three thousand lives annually.

It is to be borne in mind that the beginning of this rapid diminution is coincident with the diffusion of the knowledge of the present facts regarding tuberculosis, and when the special methods of fighting it were beginning to be operative. Koch discovered the bacillus in 1882, and in 1886 the results of the direct attack were beginning to be appreciable.

The process of civilization, from a sanitary standpoint, at least, has been painful and costly, and it is still a debatable question in many minds whether the present manifestation of it is worth the cost. In its past, by its ignorance and filth, it has inflicted upon the human race many and frightful pestilences. By its increasing enlightenment in sanitary science and preventive medicine it has shaken itself free from the majority of these enemies. Tuberculosis still remains to mock it with its ghastly smile. It is evident, however, from the present weighty movement in progress, that there is a determination to fight it to the death. From the constant increase of anti-tuberculosis associations, the universal dissemination of the facts concerning the disease, the rapid increase of sanatoria, it is apparent that this great movement gains daily in momentum and power. The great awakening is at hand, and from every indication it seems destined to grow and grow until the final consummation is achieved and the "Captain of the men of death," this great white plague, is exterminated.

## Original Articles.

### THE PHYSIOLOGY OF THE URETER.

BY BYRON ROBINSON, B.S., M.D., CHICAGO, ILL.

THE physiology of the ureter is practically comprised in three functions, viz.: (*a*) peristalsis; (*b*) secretion; (*c*) absorption. All visceral muscles must contract and relax, execute rhythm or atrophy. All epithelial surface — mucosæ — absorbs and secretes. The object of ureteral function is to conduct the urine from the kidney (a urine secreting organ) to the bladder (a urine reservoir), and to prevent its return from the bladder into the ureter (trigonum vesicæ). The method utilized by the ureter in transporting urine from kidney to bladder is by means of periodic rhythm or peristalsis. The ureter in passing from the kidney to the bladder is forced to assume a sinuous course from pressure of adjacent structures which impose on the ureter an irregular form consisting of ureteral dilatations (urinal reservoirs) and ureteral constrictions (isthmuses, spincters).

First, I shall assume from the distention of one hundred and fifty ureters three constant main isthmuses, viz.: (*a*) one adjacent to the distal kidney pole which I shall term the *proximal ureteral isthmus* (ureteral neck); (*b*) one at the arterio-ureteral crossing of the vasa iliaca and ureter, terming it the *middle ureteral isthmus* (flexura iliaca ureteris); (*c*) one at the entrance of the ureter into the bladder, demonstrating it as the *distal ureteral isthmus* (vesico-ureteral sphincter or vesico-ureteral valve).

Second, consequently I shall assume three

ureteral dilatations or urinal reservoirs, viz.: (*a*) one consisting of the calyces and pelvis, the *proximal ureteral dilatation* or reservoir; (*b*) the main lumbar, middle ureteral dilatation or *lumbar spindle;* (*c*) the main pelvic ureteral dilatation or *pelvic spindle.*

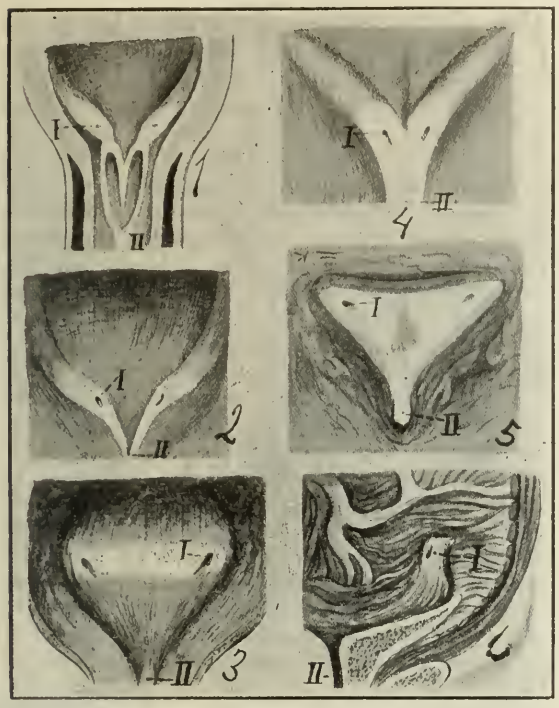


Fig. 1.

The strictures, isthmuses, dilatations, and reservoirs endow the ureter with a definite form which adds interest to its physiology. The chief ureteral constrictions and dilatations are undoubtedly mainly due to the physiology or functional activity of the ureter and the environments of erect attitude. However, ureteral constrictions and dilitations are a heritage of the irregular calibered Wolffian ducts. It is of practical importance to call attention to the fact that ureteral constrictions or isthmuses obstruct ureteral calculus, and also that the ureteral strictures or isthmuses may be mistaken for pathologic ureteral strictures. I will also call attention to the fact that, frequently, apparently physiologically, the ureteral constrictions and dilatations may become exaggerated; however, it is the ureteral dilatations alone which have become chiefly increased, for the ureteral isthmuses yield comparatively little. The ureteral catheterizer perceives the ureteral constrictions from obstruction to the ureteral catheter and the ureteral dilatation from the freedom of the ureteral catheter and excessive flow of urine while the instrument is in the dilatation.

### EXPERIMENTAL OBSERVATION.

If one takes a spare dog of some twenty pounds, anesthetizes him in a room of 75°, incises the abdomen from the xiphoid cartilage to the symphysis pubis, and with warm towels separates the abdominal viscera in order that the ureter may be noticed shimmering through the dorsal peritoneum, the following phenomena may be observed: every three to five minutes a peristaltic wave passes from the proximal to the distal end of the ureter. The rhythmical movements begin in the ureteral pelvis and calices. The time required for the ureteral rhythm or wave to pass from kidney to bladder is ten to fifteen seconds.

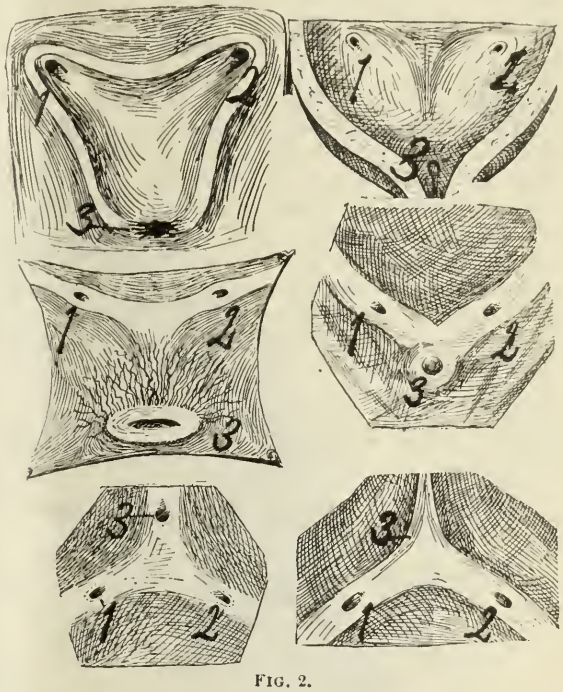


Fig. 2.

The phenomena observed during the passage of the ureteral rhythm are: (*a*) rapid circular, muscular, ureteral contraction; (*b*) longitudinal muscular contraction; (*c*) a white circular band due to exsanguination at the point in the ureter where the rhythmical wave is traveling. The caliber and diameter of the ureter at the point of the passing wave is smaller and more cylindrical than at adjacent segments; (*d*) the periodic ureteral peristalsis is of extreme vigor and brusqueness as one may perceive by sight and by holding the ureter between the finger and thumb during the distalward movement of a ureteral wave. The brusque, energetic, vigorous ureteral rhythm differs from that of all other glandular exit ducts. It resembles more the peristalsis of the tractus intestinalis. Yet it also resembles in its brusqueness the vigorous cardiac contractions. The phenomena are modified by environments, viz.: temperature, kind, degree and length of anesthesia, trauma, visceral exposure, fatigue, irritation of ureter, electricity, blood supply, amount and composition of urine secreted, vigor of subject, etc. The periodic peristaltic wave proceeds, regardless of the position of the subject, hence, force of gravity may practically be disregarded. The ureter appears to begin to contract at about the distal pole of the kidney, near the proximal ureteral isthmus. The ureter existing as a white or bluish gray cord suddenly assumes a cylindrical form, its lumen and volume diminish, its color

becomes a pale white for about three quarters of an inch, from exsanguination. Its muscular bundles, acting like living ligatures, limit the blood, exsanguinate the current, in the ureteral wall. A fine oscillating movement begins at the proximal ureteral isthmus, the sensitive segment of the ureter, and in a moment the ureteral pelvis contracts; whence at the same moment the ureteral wave is rapidly, vigorously and brusquely propagated distalward on the ureter to the bladder. During the contractions the whole ureter appears to be erecting, drawn proximal to the ureteral pelvis or kidney. The rotatory erection is perhaps due to the contraction of the longitudinal ureteral muscles. Noel Halle says that the ureter may be observed to contract two to ten times a minute. In all our experiments no such rapid ureteral waves occurred. By the watch it recurred every two to five minutes. Halle observes that if the ureter be severed its proximal and distal segments will continue to contract isochronous, and if the ureter be severed twice the intermediary segment will contract. This is in accord with experiments that segments of the ureter will continue to contract in warm normal salt solution, similar to an oviduct.

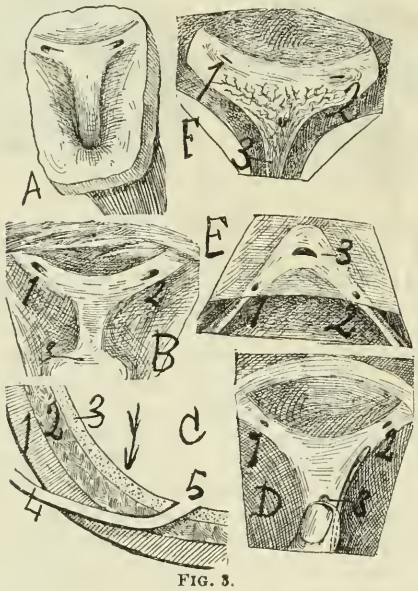



FIG. 3.

THE CAUSE OF THE URETERAL PERIODIC URETERAL RHYTHM.

The periodic ureteral peristalsis, rhythm, is due to the sympathetic nerve ganglia located in the wall of the ureter, especially in the tunica fibrosa ureteris, the cellular tissue framework support. The ureter, like all other viscera, has its own peculiar periodic peristalsis, rhythm, ruled by what I shall term the automatic ureteral ganglia.

A VESICO-URETERAL VALVE.

*Physiologic Data from Cystoscopic Inspection of the Distal Ureteral Orifice in Woman.* — The cystoscope reveals the most practical physiology of the distal ureteral orifice and its relation to the bladder. The distal ureteral orifice is practically vesical mucosa and is subject to the same laws as the vesical mucosa. The normal function of the ureter is to convey urine from the kidney to the bladder and to prevent its regurgitation or return into the ureters. It is impossible for the urine to regurgitate from the bladder into the ureter under normal conditions. I proved this by injecting air and fluids under varying conditions into the bladder. The urine enters the bladder by periodic spirts and jets. The distal ureteral orifice presents no material change during ureteral contraction until the spirting urine appears, when the orifice retracts and the column of urine is projected into the bladder, whence the vigorous contraction of the distal ureteral orifice obstructs further passage of urine. The ureter relaxes and the ureteral orifice resumes its normal location and state of rest. The wonderful adjustible vesico-ureteral valve, a non-regurgitant valve, is the location around which is clustered vast physiologic functions, and from lesions and consequent bacterial disease it becomes the atria of innumerable ureteral and renal infections. Practically, the chief ureteral physiology, for medicine, is located at the distal ureteral orifice. The vesical segment of the ureter changes its form and caliber under varying conditions, contraction and distention of the bladder (diastole and systole), but in all the changing vesical panorama one can note distinct provisions for guarding the lumen of the ureter whereby regurgitation, return of



FIG. 4.

urine in the ureter, is prevented. In the distended bladder the ureteral valve is markedly oblique. In the contracted bladder the ureteral valve is relatively extended. Besides, during ureteral peristalsis the distal ureter puckers its mouth like a contracting anus. However, the guard to prevent urinal regurgitation into the ureter is the physiologic action of the vesico-ureteral valve, for this valve adjusts itself to all intra-vesical pressure, to all physiologic conditions of the bladder. The vesico-ureteral valve is the guard, the sentinel for the ureter and kidney, it is the policeman for the ureter and kidney. Its integrity alone prevents ascending infection. The health of the ureter and kidney depends absolutely on the protection — non-regurgitation — of the vesico-ureteral valve. Its physiologic integrity decides the limits of health and life.

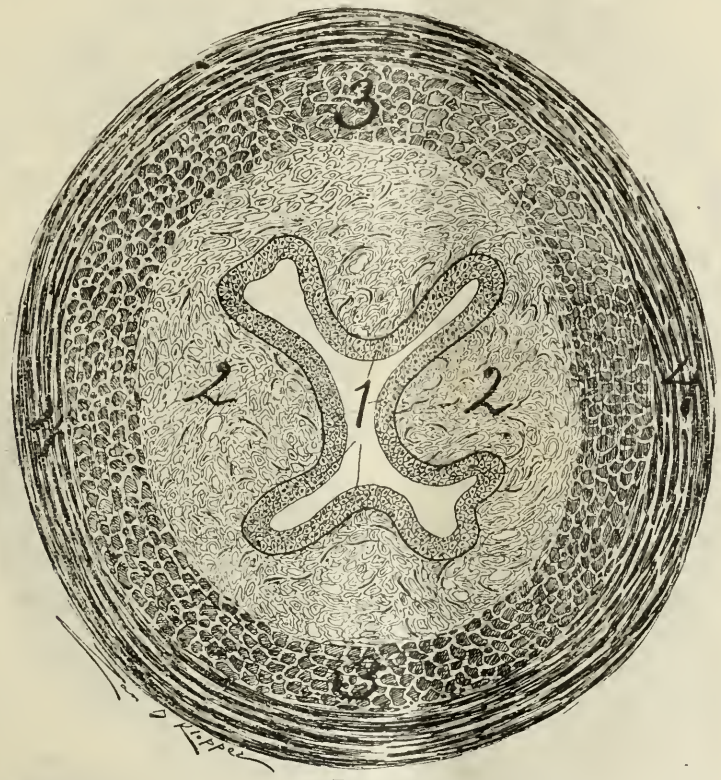



FIG. 5.

FIG. Dog. (Author.) Ureter of dog, drawn under tunica mucosa. 2, Tunica propria. 3, Tunica muscularis longitudinale (internal). 4, Tunica muscularis circulare (external). The tunica propria is more extensive in dog than in man and has a more definite contour. The longitudinal and circular layers are more definitely isolated in dog than in man. The tunica mucosa ureteris is almost an unchanging structure in all animals.

Physiologic experiments demonstrate that the ureter possesses certain conditions which explain its functions.

### SENSIBILITY.

The ureter possesses sensitive nerves, as may be noted by irritating it. The tunica mucosa is excitable. Some years ago I ligated quite a number of ureters of dogs to note resulting obliteration of renal function. I observed that such ligature was painful — however periodically. All observers note the ureteral calculus is painful. The terrific pain of some ureteral calculi is sufficient to indicate that numerous sensitive nerves reside in the ureter, and especially in the tunica mucosa. The pressure of urine on the mucosa of the ureteral pelvis and calices appears to interrupt rhythm. However, ureteral segments with no urine on the mucosa will contract rhythmically.

### CONTRACTILITY.

The ureter is provided with contractile power from the possession of a muscular wall. One can distinctly observe the peristaltic wave in dogs. According to my records of experiments it repeated itself on the average every three to five minutes. Boari notes that it may repeat itself several times a minute. In none of our experiments did such contractions occur. The physiologic peristaltic ureteral wave is very energetic in dogs, as one can perceive while manipulating the ureter. The mechanically induced contraction is less vigorous; it is more diffuse, irregular in rhythm and direction. The peculiar energetic brusque and vigorous ureteral rhythm may be observed in the consequent dilatation of the ureter proximal to a ureteral stricture.

*The summation of factors influencing ureteral contraction, are:*

(1) Sympathetic nerve ganglia located in the ureteral parietes, especially in the tunica fibrosa ureteris.

(2) The flowing and pressure of urine on the tunica mucosa ureteris (similarly as food on the

mucosa of the tractus intestinalis induces peristalsis).

3. The tunica mucosa ureteris is excitable, sensitive. This is demonstrated by violent ureteral peristalsis induced by ureteral calculus, concentrated or morbid urine or the ureteral catheter. Also by ureteral obstruction as ureteral stricture, flexion, pressure.

(4) The ureteral contractions increase with increased quantities and concentration of urine, which demonstrates that urine pressure plays a rôle.

(5) Diaphragmatic contractions. (6) Vascular peristalsis. (7) Peristalsis of the tractus intestinalis. (8) Temperature. (9) Condition of muscle (fatigue or quietude).

If urine pressure or ureteral irritation be excessive, the ureter relaxes from fatigue and slows its rhythmical wave.

(10) Mechanical, chemical or electrical irritation. (11) Tumor pressure as in pregnancy. (12) Cerebral activity or irritation.

(13) The renal function has a capital influence on the physiology of the ureter, especially as regards quantity and condition of the urine.

(14) The ureteral pelvis usually holds several teaspoonfuls of urine and hence will experience the greatest intra-ureteral pressure. Microscopically the ureteral automatic ganglia are difficult to demonstrate, requiring usually numerous trials.

### PHYSIOLOGIC AND ANATOMIC INDEPENDENCE OF THE URETER.

The ureter is an independent organ, physiologic and anatomic, performing its function as independently as the heart, uterus, oviduct, intestine, liver and pancreas. If the oviduct be extirpated, immediately placed in warm salt solution and gently irritated, it will pass through its rhythmical motion for about a half hour. Similarly, if a segment of severed ureter be placed in normal salt solution at 100° F., the ureter being gently irritated, it will continue its rhythmical, periodic contractions. The ureter is independent of the bladder as the ureteral rhythm is propagated to or from the bladder, demonstrating independence of vesica urinaria and ureter. I found by repeated dissections that the ureter is anatomically independent of the bladder wall, for it is separated from the vesica urinaria by a stratum, a cylindrical sheath of connective tissue, in exactly a similar manner that the ductus choledochus communis is separated from the caput

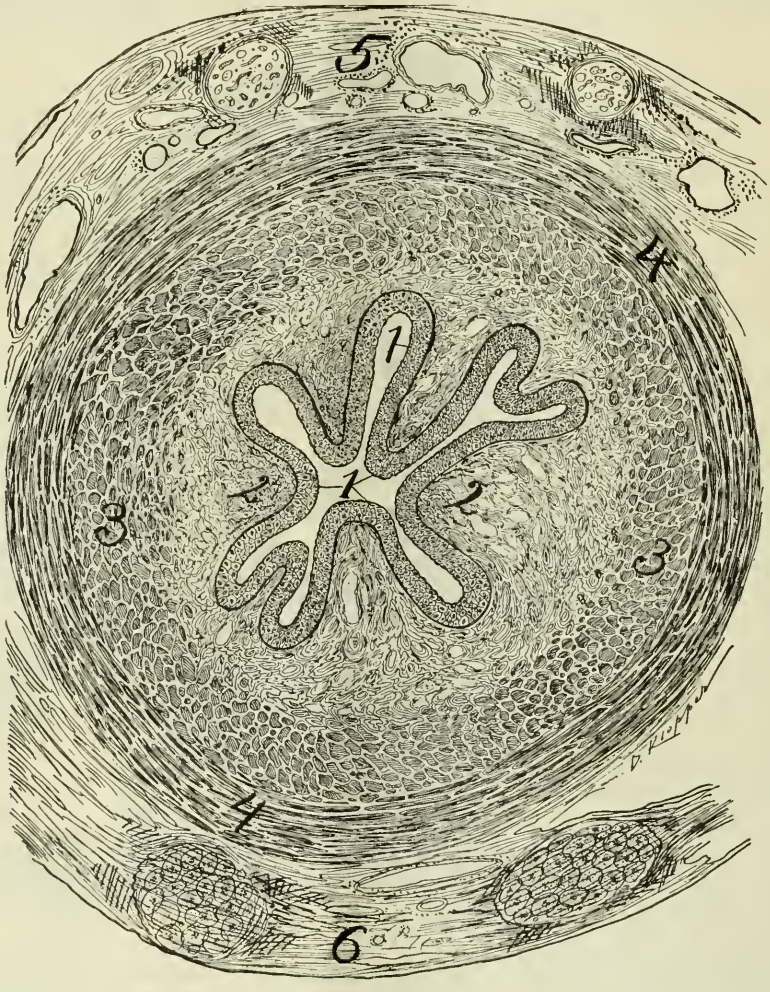



FIG. 6.

pancreatis as it passes in its journey to enter the duodenum. The ureteral and vesical muscularis do not blend. The ureter penetrates the bladder obliquely with its three tunics. The intravesical pressure perhaps does not influence the pressure in the ureteral pelvis. Regurgitation of urine into the ureter is impossible, as the vesical mucosa forms a valve, and the more urine in the bladder the more secure becomes the valve (hence the greater pressure); by coaptation against regurgitation. Slow pressure may produce extensive ureteral dilatation from constant physiologic efforts. The resistance of the ureteral sphincter — uretero-vesical valve — is remarkable. In pathologic cases the ureteral orifice participates in the dilatation. The ureteral orifices may be patent, patulous, admitting a sound. When the obliquity of the ureteral orifice — the valve — is deficient, the ureter and bladder communicate freely as one tract, one continuous channel.

DIRECTION OF THE URETERAL PERISTALSIS.

Physiologically, the peristalsis moves distalward. It begins in the region of (*a*) the distal ureteral pelvis; (*b*) the proximal isthmus; (*c*) the calices. The regular physiologic ureteral rhythm travels from the proximal ureteral end (kidney) to the distal end (bladder). The three-quarters inch of longitudinal, whitened, exsanguinated ureteral zone representing the segment of the ureter immediately proximal to the ureteral wave, represents phenomena quite different from intestinal or genital peristalsis. Thomas Engleman, the celebrated Berlin physiologist, noted that artificial irritation of the tunica mucosa does not induce ureteral contraction. The irritation must involve the tunica muscularis. This does not accord with conditions causing pain, with ureteral colic, induced by calculus irritating the tunica mucosa. Mechanical irritation may induce anti-ureteral peristalsis. Boari reports that the injection of sulphate of indigo in the veins produces visible ureteral rhythm (in rats and rabbits).

PHYSIOLOGY OF THE URETER CALICES.

The function of the ureteral calices is to collect and conduct urine from the renal pyramid to the ureteral pelvis. This continues uninterrupted through life, if no obstruction is offered. Any obstruction is liable to disorder the function (peristalsis) by depositing urinal residue in the lumen, which serves as a bacterial medium, whence, from deposits, calculus arises.

The calices have resting and acting periods. They act rhythmically. The urine secretes continually, but the ureteral calices act only when sufficient quantity of urine is collected to produce by pressure a peristaltic wave of the calices.

The main disease of the ureteral calices results from mechanical obstruction. The movements of the diaphragm and liver on the kidney aid the ureteral calices to empty themselves. Also, the contractions and dilatations of adjacent organs aid in promoting ureteral peristalsis. The ureter is a muscular conduit, and hence possesses rhythmical waves. Force of gravity may aid slightly, but the ureter would force the urine in the bladder with the subject standing on the head. As the urine collects on the mucosa of the calices it induces relax action and a rhythm. The ureter is contractile, as one can observe regular peristaltic waves on animals. Electrical application to the ureter induces ureteral contraction. The irritability of the calices is influenced by temperature, composition of urine, repose, activity and the quantity of fluid poured on their mucosa. Doubtless the chief cause of calicular rhythm is urine pressure on the mucosa, as food on the mucosa of the tractus intestinalis is the chief cause of its peristalsis. Also pressure of urine in the calices releases peristalsis.

## CONSERVATIVE SURGERY OF THE UTERINE APPENDAGES WITH ESPECIAL REFERENCE TO THE OVARIES.*

BY EDWARD L. TWOMBLY, M.D., BOSTON,

*Gynecologist to Saint Elizabeth's Hospital and Boston Dispensary.*

In bringing this subject before the Society, it is not to take an extended survey, for it has already been very ably done by distinguished observers like Dr. A. Palmer Dudley in his chairman's address before the American Medical Association at New Orleans; by Dr. Howard A. Kelly in his book; by Dr. H. C. Coe on "Secondary Laparotomies"; and by Dr. W. L. Burrage who has very carefully tabulated 187 cases. My point is not to present statistics at this time, but to call attention to one important factor in the conservative operations on ovaries alone, without reference to tubes or their complications.

The pendulum of surgery in women's diseases swings back and forth. In former years, it was for the complete removal of all diseased organs, but now it is for the preservation of the same and of any part which may perform its function again. Since 1897, our best operators in gynecology have advocated very conservative measures, and I believe that all our gynecological staff at St. Elizabeth's Hospital are in accord on this subject.

While each man has his individual way in doing his work, we are harmonious in the following conclusions:

For myomectomies by the abdominal route, no deaths or bad results have been noticed, and the animal suture has invariably been used. If one ovary is diseased, and the other ovary healthy, the diseased one is generally removed. Where both ovaries are diseased, resection of one or both is practiced. Whatever healthy ovarian tissue there seems to be, however small, is left. Dr. F. W. Johnson reports one secondary operation after both ovaries had been resected. Dr. R. A. Kingman reports none. Dr. W. L.

* Read at the meeting of the Section for Obstetrics and Diseases of Women of the Suffolk District Medical Society, April 27, 1904.

Burrage reports that in a large number of cases (85) which he has tabulated for a number of years, five secondary operations have been done, and in four more cases, another operation is needed. In my own 42 cases, seven secondary operations are indicated, but only two have been done. It is very true that all our chickens do not come home to roost, so that it is fair to infer that the proportion of secondary operations is larger than appears.

Dr. Burrage very aptly replies to my question, "How many secondary operations because of conservative work on the ovaries," by saying, "None 'because of,' but I can recall several cases in which secondary operations have been necessary owing to the development of further lesions."

Dr. H. C. Coe remarks that a secondary operation does not imply careless or imperfect work on the part of the former operator. He says, "An ovary which appeared perfectly normal has undergone cystic degeneration or become the seat of a large tumor, and develops rapidly from apparently healthy organs after a primary operation." He queries whether it may not be "circulatory disturbances after ligation of large vessels." Conservative work on the tubes has not thus far proved very satisfactory, especially in gonorrheal cases. I prefer to remove them by the V-shaped incision into the horns of the uterus, and leave the uterus when possible, although many operators advocate removing the uterus as well.

I wish, however, to-night, to limit my paper to the discussion of the preservation of the ovaries or resection of the same as the best surgery of the present day. In some of my cases which I shall mention in brief, I have been ultra-conservative, and so have a larger number of secondary operations indicated. I believe that the procedure, which I wish later to emphasize, will do away with a number of such operations in the future.

When is a conservative operation *not* indicated?

(1) In women forty years and over, or in other words, those who are at the menopause. Dr. Burrage further limits this class in his paper to "pronounced neurasthenics."

(2) In gonorrheal affections, where the pain and distress and repeated flare-ups in diseased tubes and ovaries cause a life of continued suffering.

(3) In malignant disease of one ovary, such as a papilloma, sarcoma, or carcinoma. Dr. Kelly disagrees in this conclusion saying, "If such a disease as a superficial papilloma is seen at the very beginning and the other ovary appeared perfectly normal, I should without hesitation save it in a young woman with the expectation of carefully watching the patient for several years, and of operating at once upon detecting the slightest evidence of disease."

(4) In tumors that involve the whole organ.

(5) In tuberculosis of the ovary.

In all other cases, and especially in young women where some risks must be taken to preserve the menstrual life, Dr. Kelly says in his admirable chapter on "Conservatism," the surgeon should act as if the patient were "his nearest relative, and try hard to avoid mutilation." In other words, the conservative operation should be done.

What are the diseases which attack the ovaries, and where can we resect them without great danger of their recurrence? The two great divisions are cystic and solid. The solid tumors are fibromata, sarcomata and carcinomata — 5% of all cases. They are malignant types, or may become so in the case of fibromata, and there is no question of not removing them entirely.

The cystic tumors are divided into simple, proliferating, dermoid, and parovarian. We have especially to do with the first three. Cysts may originate in any part of the tubo-ovarian structure, that is, in the medullary or parenchymatous portions of the ovary. The surface of the cyst varies from the bluish white or greenish, to brown, yellow, or glistening white.

The follicular cysts and those of the corpus luteum are simple and easily dealt with. The best treatment is to let them alone. Sometimes fifteen to twenty follicular cysts are found (dilated Graäfian follicles) which rarely attain great size, although some may enlarge to the size of a goose egg. This disease is generally bilateral, and there is pain at the catamenia and to the touch, so extensive resection is indicated.

Dermoid cysts originate in the parenchyma and often occur with large glandular or proliferating growths. All operators can testify to the irritating qualities of their contents, so every precaution should be used to prevent rupture, and the escape of their contents into the abdominal cavity. Teratoma have been classed with dermoids, and are a malignant and gigantic growth.

The proliferating cysts form the greatest class of ovarian tumors, and originate both in the parenchyma and in the hilum which is richly supplied with blood vessels. They are the glandular and papillary growths, and the latter are often seen bursting through the connective tissue from which they may also spring, forming tufts, and infecting the general peritoneal cavity.

In these proliferating cysts, there is always danger of malignancy, and if both ovaries are in anywise affected, both should be removed. "One ovary being affected, it is justifiable to remove both, although not always advocated." (Pozzi.)

We are thus narrowed down to a small class of tumors in which resection should be done, namely: — the non-proliferating cystic tumors which have their origin in the parenchymatous zone or cortical portion. If seen early, much of the ovary may be saved. If seen later when much of the cortex is involved, and the germinal epithelium of the cyst has proliferated to form glandular structures, we have the so-called adenoma which is very common and may attain a great size. It is made up of numerous small cysts and the whole ovary will have to be sacrificed.

It is taken for granted that conservatism on the ovaries is far more satisfactory than such work on the tubes, therefore such operations should be performed upon the class mentioned, although the general adoption may be a cause for more secondary operations.

The patient should be made to understand that possibility, but she is given the additional hope of the preservation of ovulation, menstruation, and the chance of bearing children. In no case should we make a promise to our patients to save an ovary or ovaries that will render our operation useless and of no value.

To the question, "In a doubtful case, would it not be wiser to let an ovary alone, if we do not feel justified in removing it," I would reply, decidedly, "No." In any young woman, a suspicious ovary should be incised, examination of its interior be made, and if healthy, it can be sutured again with fine cat-gut without harm (according to my belief). I think this is best done by splitting longitudinally on one part of the convex border down to the hilum, and, if necessary, enlarging the incision in the longitudinal direction so that the diseased portion or cysts can be excised. Careful approximation and closure of the incision with fine cat-gut should follow afterwards. Simple puncture of cysts with cautery or the knife, unless very superficial, give rise to pain, swelling, and enlargement from slight hemorrhage which takes place and is often overlooked. I do not recommend this procedure. Secondary operations are reported where the cysts had been previously thus treated.

My plea is,—that an exploratory incision should be made in an ovary which has been the seat of constant pain, with exacerbations during the menstrual periods, even if it appears normal or slightly enlarged. The same procedure should be done in both ovaries where there have been constitutional symptoms pointing to the ovaries, when they seem normal, or large but otherwise healthy. As a large cyst involving the ovary is likely to be duplicated on the other side, I advise the exploratory incision in the second ovary, thereby lessening the chance of recurrence, and saving a secondary operation, often finding and removing by resection a similar growth beginning in the apparently unaffected ovary. Careful resections of the ovaries presenting any abnormalities would eliminate many a cyst and the ovaries still perform their functions. I am convinced that pain would be relieved by a wedge-shaped incision and the wedge removed in thickened capsules; and, by a more careful approximation, adhesions, which are stated to be the greatest cause of secondary operations, would be more and more avoided.

I wish to illustrate my position, by giving briefly the outlines of a few of my cases.

Case I. Where incision probably saved years of suffering. E. G., fifteen years. Single. Backache and pain in abdomen. Sharp pains in right inguinal region. Dysmenorrhea.

Diagnosis: Retroversion with prolapsed ovaries, right one enlarged.

Operation Aug. 28, 1900. Curettage, resection of right ovary and suspensio uteri. Conditions above noted were found, and right ovary somewhat cystic. Incision made and carried deeper to find a small dark-blue cyst in the center of the ovary which was removed without rupturing. It proved to be a dermoid cyst with hair and part of a tooth. Recovered well from operation and was free from symptoms for a year. April, 1904, her physician reported that the pains had returned gradually and that he had found the uterus retroverted, and ovaries normal. Office treatment for six weeks for retroversion had caused all symptoms to disappear.

Case II. A. P., twenty-four years. Married, one child. Menstruation profuse and painful. Enlarged left ovary. Operation July 12, 1900. Curettage, removal of left tube and ovary which was disorganized by a large cyst, size of an orange. Many adhesions. She was better for a time afterwards but is under my care now for a large mass involving both ovary and tube on the right. She has never been well. I believe that I could have saved her much suffering by resection of the right ovary, which should have been investigated further, at the first operation.

The next two cases show that I was ultra-conservative, with poor results.

Case III. V., seventeen years. Single. Always delicate. Constant pain in back and in both ovarian regions. Headache. Menorrhagia. Prolapsed and slightly enlarged ovaries.

Operation Nov. 10, 1897. Curettage, suspension of uterus and ovaries. The ovaries though somewhat large did not appear either cystic or diseased. They were equal in size and I contented myself by suspending them close to the uterus, shortening the ovarian ligaments. Good recovery but relief very short. 1900. Examination showed right ovary twice as large as the left, with the same pains, and general health only slightly improved. February, 1904. Patient married and four months pregnant, but reports backache, "hard time with her stomach," and general weakness. She is afraid that she will not be able to go to term or "ever do anything like other girls."

A resection of both ovaries or even removal of one ovary and resection of the other would have saved her these years of discouragement.

Case IV. B. L., single, twenty-three. Backache for two years. Menorrhagia every two weeks. Retroversion and small cyst of left ovary.

Operation July 30, 1900. Curettage. Cyst of left ovary punctured, and hydatid of morgagni tied off. Suspensio uteri. Good recovery, but six months afterwards, she writes that the same symptoms persist, although menstruation is regular. She is unable to work. September, 1902, she reports, "Able to work most of the time, but far from well. Backache all the time." The cyst of the left ovary was quite deep and bled freely. It should have been resected or removed, and the right ovary investigated.

Case V. E. H., thirty years. Married, one child. Backache, menorrhagia. Right ovary large as a hen's egg. Operation Nov. 4, 1902. Curettage. Right ovarian cyst removed with its tube. Left tube and ovary tied down by adhesions, but freed and left in. Appendix normal.

July, 1903. Patient felt very well until she went in surf-bathing, when she noticed pain and swelling in left side. Examination showed enlarged and cystic ovary, and a secondary operation is under consideration. Again, an incision might have removed a beginning cyst, which developed within a year.

The following two cases had the second operation with the following results. Both were neurasthenics.

CASE VI. M. A., thirty-five years. Married, no children. Operation July 19, 1898, for "dragging on right side" and sterility. Curettage. Trachelorraphy; right cystic ovary and occluded tube removed, suspensio uteri. Many adhesions between uterus, adnexia, omentum, and intestines. Left side freed and left. Good recovery from operation, but not relieved. March, 1901, Dr. Johnson did a second and complete operation, removing remains of right tube by V-shaped incision into horn of uterus, also removing left tube and ovary, and appendix by inversion. More adhesions were broken up, and uterus suspended. 1904. Uterus in position but great pains in right side, occasional vomiting, and not relieved. *Query*: Was the first operation too conservative, or would the results have been better if the entire right ovary and tube had been removed and the left resected?

CASE VII. M. E., thirty-six years. Married, four children. Pain in back and vagina. Cannot sit down without pain. Retroflexion. Operation July 5, 1898. Curettage. Both tubes and ovaries found apparently normal and free from adhesions, and were allowed to remain. Ventral fixation. No relief. Aug. 13, 1898; coccyx removed by Dr. C. A. Porter, as several of the staff diagnosed it as the probable source of continued pain. Still no relief. September, 1899, patient returned from her home, and a complete hysterectomy, with the removal of the appendages also, proved her salvation, and everything relieved.

In such a case, the last operation should have been the one of election, and not the conservative operation.

CASE VIII. P. K., sixteen years. Single. Pain in stomach, back and left side, radiating down left leg. Retroversion, and mass close to uterus on left, size of pigeon's egg. Operation Aug. 28, 1902. Pelvis full of adhesions. Abscess of left ovary fixed in broad ligament removed. Right ovary and tube which was patulous with no pus in it, were freed from adhesions, and allowed to remain. Recovery good. Pathologist's report, "Gonorrheal Abscess." Pain began on right side and continued for a year, when a secondary operation was done, removing the right ovary and tube, which proved to be a lighting up of the gonorrheal infection.

Had I known the facts, which were denied at the first operation, I would have removed one ovary and both tubes.

Conclusions drawn from all observers agree that, in young women who are desirous of having children, part of the ovarian tissue should be preserved, even at some risk. They also affirm that resection of an ovary is not a cause *per se* of secondary operations, or of increased mortality.

Therefore in doubtful cases, I go so far as to advocate the exploratory incision. (1.) It has not been proved to increase the danger. (2.) It is a wise proceeding when the other ovary is cystic or contains a papillary growth. (3.) It may prevent a secondary operation. (4.) It should prevent removal of a normal ovary. (5.) It may disclose a growth within or beginning cystic formation which can be easily excised. (6.) It is a conservative operation, consuming but little more time.

Ultra-conservative operations have not proved successful in my hands.

# Medical Progress.

## PROGRESS IN OTOLOGY.

BY PHILIP HAMMOND, M.D., BOSTON.

### EXTERNAL AUDITORY CANAL. — ECZEMA.

RANDOLPH [1] believes in abstaining from the use of water, and finds great relief from the use of either yellow oxide of mercury, or salicylic acid in the form of an ointment (2%). For the itching which so often accompanies this disease, he sometimes adds a few drops of carbolic acid to the salicylic ointment, and the application of solutions of nitrate of silver, ($\frac{1}{10}$ or $\frac{1}{20}$) to the canal is strongly advocated by Mangan.[2] Where there is vesicular eruption the skin may be dusted with a drying powder such as zinc oxide, calomel, or subnitrate of bismuth.

### FURUNCLES.

Sack [3] employs the following method in the treatment of furunculosis: The canal is first thoroughly cleansed and dried, and then a cotton tampon, previously dipped in a solution of carbolated glycerin, is pushed tightly into the ear. This is allowed to remain from a few hours to a day, the object being to exert considerable pressure on the inflamed part of the canal. Incision should be practiced only when there is definite abscess formation.

Reich [4] claims superior results in the treatment of furunculosis from the use of hot dry air. There seems to be no deleterious action upon the skin from its use, there is an increased hyperemia, promoting phagocytosis, and rapid absorption of infiltration.

An affection of the ear which seems to attack Europeans living in the tropics has recently been described by Müller [5] as ossifying otitis externa. Inspection shows a narrowing of the external canal, with great infiltration of the soft parts, closely simulating hyperostosis of the external meatus. This swelling in many cases disappears rapidly when moist compresses are applied. In no case was the middle ear found involved, and in only one was there exostosis of the canal.

### MIDDLE EAR.

In the treatment of acute inflammation of the middle ear, Brunel [6] advocates local bleeding during the early and painful stage, leeches being used for this purpose. He also uses a carbolated glycerin solution ($\frac{1}{10}$) in the ear, at the same time shrinking any hypertrophy in the nares by the use of frequent inhalations of mentholated oil. The danger of inflation at this stage of the inflammation is pointed out by Randolph who believes, as does also Coussieux,[7] that a mixed infection may in this way be produced which will be worse than a suppurative process due to one organism.

[1] Progressive Medicine, Mar. 1, 1904.
[2] Touraine méd., July 15, 1903.
[3] Monatschr. f. Ohrenh., Jan., 1903.
[4] Zeit. f. Diastet. und Physikal. Therapie Bd. vi, H. 12.
[5] Zeit. f. Ohrenh. lxi., H. 1.
[6] Rev. Heb. de laryng. etc., 1903, No. 23.
[7] Ann., des mal. de l'oreille, etc., May, 1903.

Botey [8] insists that after paracentesis of the drum membrane no irrigation be used immediately, but that a small wick of sterile gauze be introduced, drainage being kept up in this manner. Even after removal of ossicles he employs the gauze drain, believing that in this way the entrance of infectious germs may be prevented, and that only when they have already gained admission should we try to inhibit their growth or destroy their activity.

S. MacCuen Smith [9] states that we are more apt to have intra-cranial complications following influenza than with the exanthemata, and the infection in these cases is so insidious that it may be well advanced before the complication is discovered, and in this way occur even when the physical symptoms denote marked improvement in the general condition. Early and free incision of the drum should be made in these cases.

### DISTURBANCES OF HEARING IN ACUTE SUPPURATIONS OF THE EAR.

Ostmann,[10] from a careful examination of a series of cases of acute suppurative inflammation of the middle ear, believes that the inflammation is not confined to the tympanic cavity solely, but that the labyrinth is often affected, because of the disturbance of hearing for the upper scale. He accounts for this phenomenon in the lighter cases by the existence of a slight hyperemia, and thinks that in the severer forms there is undoubtedly a new formation of connective tissue. To detect these changes in the hearing it is necessary to employ some instrument capable of producing the high notes, and Ostmann regards the recently modified Galton whistle as in every way suitable and necessary for this examination. Without such careful inquiry into the physical changes of the ear it is impossible to give an intelligent prognosis regarding recovery.

In a consideration of the aural affections of infancy, Morse [11] emphasizes the following points: Otitis media is extremely common in childhood, and of great importance in differential diagnosis. It should be looked for in all doubtful cases where the symptoms cannot otherwise be easily explained. Inflammation of the ear is not necessarily associated with ear-ache, and the putting of the hand to the ear is common even when the ear is not diseased. Tenderness around the ear is an extremely unreliable guide. The only satisfactory way to examine ears is with a speculum, one smaller than usually sold with most sets being required. Among the common manifestations of otitis media are serious constitutional symptoms, suggestive of meningitis, pneumonia, gastritis, etc.

### TUBERCULOUS OTITIS MEDIA.

Grimmer [12] observes that the tuberculous process in the tympanic cavity may reach quite an advanced stage before the external surface presents any pathological change. The reason for multiple perforations of the drum he attributes to the greater resistance of the middle or fibrillary layer to the destructive process, as this yields only after the mucous layer has ulcerated. According to this authority, primary tuberculosis of the ear is very rare, involvement of the ear almost always following some general infection. The characteristic symptoms are absence of pain, caries, and multiple perforations. The granulations are pale and bloodless looking, instead of red, as usual.

### DISEASES OF THE EAR AND LIFE INSURANCE.

Burger [13] believes the ordinary examiner unable to properly estimate the risk involved in accepting the application of a person having aural disease. Particular attention should be paid to the suppurations of the middle ear, as these are most liable to prove dangerous. His conclusions are that an applicant for life insurance should unquestionably be refused when he has chronic suppurative otitis media with any of the following complications:

(1) Tuberculosis, or cholesteatoma formation.
(2) An inflammation of the attic or mastoid.
(3) Encroachment of the process on the bone.
(4) Facial paralysis, vertigo or hemicrania.

### TREATMENT OF MIDDLE EAR.

Bezold [14] is strongly opposed to packing the canal with boric acid powder or gauze, and alludes to some twenty cases which he has seen in the past few years which were treated in this way. Maceration and infiltration of the canal are promoted, and pus is apt to be backed up in the tympanum. A review of the cases which he has observed shows four cases of empyema of the mastoid, two cases of gravitation abscess in the neck, two of caries of the mastoid, and one of necrosis of the labyrinth.

McKernon [15] suggests the use of crystals of carbolic acid in the treatment of chronic suppurations of the ear. The canal is filled with the crystals, the patient being in a recumbent posture, and they are allowed to remain for several minutes. After removal, alcohol is used to counteract the influence of the caustic on live tissue, while the diseased area is cleansed and stimulated. But little pain is said to attend this procedure.

Lednev [6] believes that the best results in the treatment of otorrhea are obtained from the use of iodoform. He reports twenty-three cases treated in this way, with cure in all but one.

Haug [16] has experimented with anesthesin in inflamed ears, mixed with alcohol and glycerin, or alcohol and water, and carried into the ear on a piece of gauze. Painful affections of the ear, especially of the external canal, seem to be relieved in from two to five minutes, lasting for at least two hours. Apparently its use exerts no influence on the course of the disease, and it does not seem to lessen the pain of paracentesis.

[8] Rev. heb. de laryng. etc., 1903, No. 22.
[9] Laryngoscope, June, 1903.
[10] Zeitschr. f. Otiatrie, Bd. xlii, H. 3.
[11] Jour. A. M. A., July 18, 1903.
[12] Zeit. f. Ohrenh., Apr., 1903.
[13] Klinische Vortrage aus dem Gebiete der Otologie, etc., Bd. v, H. 4.
[14] Arch. of Otol. May, 1903.
[15] Medical News, Jan. 17, 1903.
[16] These de Toulouse, 1903.

PREVENTION OF SERIOUS COMPLICATIONS OF EAR DISEASES.

In a paper on this subject, Hiram Woods [17] states that comparatively few cases of otitis media are seen by the aurist in their incipiency, yet early recognition may be necessary to save life, or at any rate to preserve the hearing. Relief of pain presents itself as the first duty of the physician, and he who trusts to the use of narcotics for this purpose is probably losing valuable time. Pain alone as a symptom of acute suppurative otitis media is of little value. The only satisfactory way of ascertaining the condition of the tympanum is by objective examination of the membrane, and when bulging occurs, indicating infection of the middle ear drainage by incision should be at once called for. Meierhof [18] believes that few cases which have the benefit of early expert treatment require major operation. He also insists on the importance of early and free drainage of the drum cavity.

Alexander [19] has used constant heat in the treatment of mastoiditis. He applies it by means of an apparatus similar to Leiter's coil. The patient is put to bed, and the apparatus used for from one to seven hours, the temperature of the water being from 111 to 114. Eighteen cases are reported, and of these, seven seem to have benefited from the use of the heat. Three did not tolerate the coil, and in the remaining cases, while the heat was grateful, it was subsequently necessary to operate.

Bezold [14] has noticed that the more severe cases of mastoiditis, and particularly those cases having protracted suppuration from the middle ear, are apt to have large pneumatic cells, usually remote from the antrum. The empyema may become localized here, even after the tympanic perforation has closed, and remain latent for a considerable period of time. He makes it a rule to operate when a suppuration has persisted for more than two months, and he has always found large cavities filled with pus and granulations.

Various contrivances for applying treatment to the Eustachian tube in the chronic catarrhal diseases of the middle ear continue to interest many writers. Rourse [20] employs a sound for mechanical dilatation, although he generally introduces some medication along with this, such as a glycerin-iodine mixture, passing this well up into the tympanic cavity. The sound is left in place for five minutes and then withdrawn. Reference to the electric bougie is also made by several.

Urbantschitsch [21] reports further observations upon a series of old catarrhs of the middle ear treated by galvanism. Some cases which had not yielded to any other treatment were apparently helped, but in many, but slight if any improvement was noticed.

[17] Maryland Medical Journal, Sept., 1903.
[18] Arch. of Otol. v. xxxi, No. 1.
[19] Monatschr. f. Ohrenh., Sept., 1903.
[20] Ann. des mal de l'oreille, etc., Feb., 1903.
[21] Monatschr. f. Ohrenh. Nov., 1902.

LUMBAR PUNCTURE FOR TINNITUS.

Babinski [22] reports eight cases so treated, in all of which marked improvement of subjective noises and hearing was noticed. In every one of the cases the tinnitus disappeared following the first puncture, and the results seemed to be reasonably permanent. One case which was kept under observation three months showed no recurrence.

Chavasse and Mahu [23] in speaking of lumbar puncture, believe that it is of the greatest value as a means of diagnosing intra-cranial troubles of otitic origin, and that the operation is practically harmless. If, on examining the fluid after having used the centrifuge, it is found to contain either bacteria or polynuclear leukocytes, or both, we have a meningitis. If the liquid is clear and contains quantities of lymphocytes, we probably have a tubercular meningitis.

[22] Soc. méd. des hôpitaux de Paris, Apr. 24, 1903.
[23] Rev. heb. de laryng., d'otol., etc., Oct. 24, 1903.

## Reports of Societies.

### AMERICAN MEDICAL ASSOCIATION. SECTION ON PRACTICE OF MEDICINE.

(Continued from No. 25, p. 682.)

THIRD DAY. THURSDAY, JUNE 9.

SYMPOSIUM ON GALL-BLADDER DISEASES.

ETIOLOGY OF CHOLECYSTITIS AND CHOLELITHIASIS.

DR. WALTER L. BIERRING, of Iowa City, Ia., in his consideration of this subject said it was necessary to recognize that this viscus constituted one of the most vulnerable points for infection in the abdominal cavity, and in this respect was analogous to the Fallopian tube and the appendix, in which latter structure, infective agents were more or less constantly present in its lumen normally, while the gall bladder was generally free of micro-organisms; furthermore, infection of the gall bladder concerned itself more with the contents than the walls, the sterile bile becoming a culture medium for micro-organisms, while in appendix infections the coats were more prominently involved. The liability of gall-bladder disease was due mainly to its position, between the bacterial hordes of the intestine and the liver, exerting a very important rôle in the immunity possessed by the liver. Results of experimental infection demonstrated that a great many pathogenic micro-organisms flourish in the bile quite vigorously, though at one time the bile was supposed to act as a bactericide. Clinical and experimental observation showed that infection occurred in two ways: (1) By way of the blood, descending or hematogenous, (2) ascending or by way of the common bile duct. The effects of stoppage of the bile by gallstones or foreign bodies favors the growth of bacteria. The etiologic relation of cholecystitis and cholelithiasis has been found to be so close that that which pertains to the etiology of gallstones would be contributory and in most instances causative of cholecystitis. Cholelithiasis, he said, was very rare in early adult life, occurring more frequently after the age of forty. It was far more frequent in women than men, — child bearing, tight lacing, sedentary habits and constipation probably explaining this fact. From the accumulated experimental and clinical knowledge of the pathogenesis of gallstones, Dr. Bierring made

the deduction that while the essential cause usually is cholecystitis, there were other factors at work besides infections, and special consideration should be given infectious diseases and states of altered metabolism which promote a change in the quality of the bile chemically, so as to constitute an irritant. Cholecystitis and cholelithiasis he believed to be secondary affections, and, if it were possible to eliminate such influences as age, improper wearing apparel, lethargic habits, constipation, gastric and intestinal catarrhal disorders, cholelithiasis would soon become a very rare disease.

DISEASES OF THE GALL BLADDER AND BILE DUCTS, IN RELATION TO DISEASES OF THE GASTRO-INTESTINAL TRACT.

Dr. Bertram W. Sippy, of Chicago, read this paper, and said that owing to the close anatomical proximity of the gall bladder and bile ducts to certain portions of the gastro-intestinal tract, disease of one of these structures may be readily transmitted to the other. Disorders of the stomach and intestine arising from disease of the gall bladder and bile ducts he divided into those of nervous or reflex origin, and those due to a direct extension of the anatomical diseases. Of the nervous disorders he said the functional activity of the stomach and intestine was influenced in a reflex way by disease of the biliary tracts, but no serious permanent effect was likely to result; while the direct extension of anatomic disease from the bile tracts to the stomach and intestine might be fraught with most serious consequences. From personal observation and study he has found that pyloric and duodenal obstruction from cholecystitis was serious when co-existent with pyloric stenosis. In reference to the management of duodenal and pyloric obstruction arising during or immediately following an attack of cholecystitis, his advice is not to operate until the patency of the pylorus is tested by rest and rectal feeding, except in those cases in which immediate operation is necessary, on account of the seriousness of the local inflammation, when operation should be directed to relieving local inflammation. Gastro-enterostomy should rarely be performed at the same time, except when is there evidence of old pyloric or duodenal obstruction. If the obstruction does not diminish with rest and rectal feeding, operation for cholecystitis may be combined with gastro-enterostomy if the condition of the patient permits. He has found great difficulty in differentiating ulcer of the stomach from gallstones at times. Gallstones usually pass from the gastro-intestinal tract with the feces, but a stone may occlude the lumen of the bowel sometimes, with fatal results. The most common seat of obstruction was near the ileo-cecal valve. He has found it of great value in diagnosis to remember that there is not a single symptom in gastric or duodenal ulcer that might not be present in cholelithiasis and *vice versa*. In conclusion he said that in the majority of cases a fairly accurate differential diagnosis could be made between the two conditions by carefully studying the whole clinical picture. Mistakes might occur when evidence was faulty or incompletely elicited, or when too much stress was laid upon some individual symptom.

DIAGNOSIS OF CHOLECYSTITIS AND CHOLELITHIASIS.

Dr. Parker Syms, of New York City, enumerated the important diseases of the gall passages. They were: (1) inflammatory disease of the gall bladder and gall ducts with or without stone; (2) gallstones in the gall bladder and gall ducts with or without inflammation; (3) inflammatory condition of the region surrounding the gall passages causing obstruction by pressure or distortion; (4) neoplasm of the gall passages, benign and malignant, with or without gallstones and with or without inflammatory disease. The prominent symptoms produced by gall-passage disease were: pain, tenderness, fever and chills, vomiting, change of pulse rate, collapse, tumor, jaundice, urinary changes, blood changes, stools. The pain is colicky, occurring most often when the stomach is empty; tenderness was localized, he said, to the region involved, which is usually opposite the juncture of the ninth rib with its costal cartilage; fever was of an acute type, rapidly subsiding as it rose; vomiting was of a reflex character coming on with the pain and independent of nausea; pulse was accelerated and tension increased; collapse occurred in severe attacks; tumor might be felt below the free border of the ribs; jaundice might be present or absent, depending upon the amount of obstruction to the flow of bile into the intestine; urinary changes were of interest in determining the presence and degree of jaundice; blood changes also aided in determining the presence and degree of jaundice, and the amount of leucocytosis aided in determining the presence of suppuration; stools showed the presence or absence of bile; so far, x-ray examinations had been unsatisfactory. Bile passage disease should be distinguished from the following conditions: gastric ulcer, appendicitis, renal colic, pancreatitis, phlebitis portalis, angina pectoris, empyema, subphrenic abscess, malignant disease of the pylorus, duodenum, pancreas, liver, kidney, etc., all of which he described. For the purpose of aiding in a more accurate diagnosis and estimate of the conditions present, the author embodies a diagnosis chart of diseases of the gall bladder and ducts.

THE TREATMENT OF CHOLECYSTITIS AND CHOLELITHIASIS.

Dr. Lucius W. Hotchkiss, of New York City, called attention to the growing tendency to place diseases of the gall bladder and bile ducts within the category of surgical affections, thus establishing the foundation of rational treatment. This treatment he divides into two classes; first, the medical or palliative, and second, the surgical or radical and curative. He quotes the opinions of experimenters some of whom believe that gallstones may be dissolved by administering sodium glycocholate; or alkalis and bile salts with a rich diet. The treatment by olive oil has not fulfilled the hopes of its discoverer as a specific. Hence the *rationale* of the treatment which aims to relieve congestion, and increase the flow of bile, he states, is perfectly sound. In the treatment of the disease he believed the great point to be determined was the border line between balneological and surgical procedures, *i. e.*, when the former should cease and the latter be begun. He believed that as greater certainty in diagnosis was reached there would be less call for the more difficult and dangerous operations upon the common duct, and a decreasing number of cases requiring cholecystenterostomy. The danger in operation lay principally in delay. Choledochostomy, choledochectomy, choledo-enterostomy, he thought, were possible only in rare conditions, and operations upon the hepatic duct were still in their infancy. Reference shows, he states, that American surgery has played no unimportant part in the pioneer work of the operative treatment of gallstone disease, and in the later developments of important modifications in technic. Consideration of the treatment of certain cases showed that cases seen in the first mild attack quickly subside under medical treatment; cases seen

in subsequent mild attacks were ideal ones for cholecystectomy; cases with repeated severe attacks in which cholecystostomy was always justifiable and the operation of choice; cases which for a few days show evidence only of mild local infection, suddenly developing signs of peritonitis and sepsis which required early operation; cases of common duct obstruction by calculus, in which it was advisable to treat expectantly for a week or two. He says, in conclusion, that the treatment in these cases must ultimately be surgical, and it must be admitted that medical science had discovered no sure solvent for gallstones, or devised any means other than surgical for the drainage of the gall bladder and biliary ducts.

ERGOT IN GENERAL PRACTICE.

DR. ALFRED T. LIVINGSTON, of Jamestown, N. Y., aimed to demonstrate in his paper that inefficient tone of unstriated muscular fiber was a common and serious element of disease; that it was important to guard against, or to correct, such abnormal state of that tissue. His secondary object was to indicate a drug which would accomplish the work desired. The abnormal disturbance of blood distribution depended, he thought, upon a relaxed state of the muscular coat of the blood vessels. The location, degree and persistence of such vascular relaxation, together with the influence of irritants or etiological factors, determined a variety of diseases, most of which would not occur if there were a good degree of tone in all vascular walls. A relaxed state of unstriped fiber in the bowel and other hollow organs, produced disorders indicating a stimulating or toning of unstriped muscular fiber. He made the statement that only a small percentage of humanity had a good state of tone of all the unstriped fiber of the body, thus being more subject to disease. In treating his subject the author classified his subject under the head of (1)Disorders of blood vessels, speaking first of inflammation of the arteries, veins and lymphatics for which affection his prescription was rest for two to five months and daily injections of ergot. Septic inflammation of veins and lymphatics had repeatedly yielded to treatment. The serious and fatal elements of febrile diseases were treated in detail. He said the evidence afforded by the action of ergot in shock was that the condition was not so much a paralysis of vasomotor centers, as it was a tremendous disturbance of the equilibrium of the circulation; and the indication was, therefore, primarily, to contract these dilated and engorged vessels and again establish an active circulation; ergot was the agent that would do this. From all that he had said, it would be recognized that he regarded the toning of relaxed unstriped muscular fiber as important in a great variety of diseases, and of vital import in many instances. Ergot will do this, he asserted.

DR. J. O. STRANAHAN, of Rome, N. Y., spoke of the excellent use of ergot in the insane institutions of New York.

DR. HERMAN GRAD, of New York, reported the excellent results he had obtained from the use of ergot before, during and after surgical operations, in greatly relieving the nausea and vomiting which so often followed the administration of anesthetics.

DR. JAMES J. WALSH, of New York, referred to the cases in Dr. Wakefield's service in which ergot had been of great value. He referred to a certain relaxation of the blood vessels in the abdominal region and said that the general observers had claimed that two thirds of the blood of the body could be contained in the abdominal vessels. Therefore, in certain cases, by toning up the abdominal vessels, as by the administration of ergot, the circulation could be made better.

DR. ALEXANDER LAMBERT, of New York, said that last year there had been over 8,000 cases of alcoholism at Bellevue Hospital, and that while the death-rate in nine years had been about 3% in those patients with a wet brain condition, etc., he had been able to reduce the death-rate by ergot, 44%.

THE DIFFERENTIAL LEUCOCYTE COUNT AS AN AID TO THE DIAGNOSIS OF FEVERS.

DR. WILLIAM KRAUSS, of Memphis, Tenn., read this paper and presented the following conclusions: (1) It is not so much the absolute increased per cent of large lymphocytes which is diagnostic of malarial infection as the relative increase over the small lymphocytes. (2) In cases of malarial infection without much fever and without quinine history, the polynuclears are markedly diminished and the large lymphocytes very much increased in proportion. (3) In the absence of an adenopathy, possibly also of influenza and measles, the above finding is positive evidence of present or very recent malarial infection. (4) During the rise of a malarial fever or as a result of quinine therapy, the polynuclear leucocytes may reach 80%, but in that event the large lymphocytes exceed in number the small ones. (5) In malarial hemoglobinuria any of the various blood findings, characteristic of malarial fever, may be present in any stage, and there is no evidence now at hand to explain this. (6) Malarial and typhoid fevers can be more positively differentiated from fevers of sepsis, pneumonia, rheumatism, malignant tumors, etc., by the differential leucocyte count than by the hemocytometer, and it can be done on dried films, away from the bedside. (7) Malarial infection makes a strong impress upon the leucocytic relation, no matter what other disease it is associated with. (8) It is not safe to rule out typhoid fever when the malarial variation is found, but, as it calls for antimalarial medication, the therapeutic test may decide before a Widal would appear. (9) In a gradually developing fever, the absence of marked increase in large lymphocytes or polynuclears during the first week justifies a preliminary diagnosis of typhoid fever.

*(To be continued.)*

## Recent Literature.

*Treatise on Diseases of the Skin for the Use of Advanced Students and Practitioners.* HENRY W. STELWAGON, M.D., Ph.D. Third Edition. W. B. Saunders, 1904.

It is but little more than a year since we had the pleasure of noticing the appearance of a second edition of Dr. Stelwagon's textbook. In the third edition, which appeared in January of this year, very few changes or additions naturally have been found necessary. Owing to the prominence of the x-ray and Finsen light treatments, as well as the high-frequency current, a reference has been made to these methods.

*The Extra Pharmacopœia of Martindale and Westcott.* pp. xxiv+809. Eleventh Edition. London: H. K. Lewis. 1904.

This small book in its eleventh edition has been brought up to date. Many drugs have been omitted from consideration, allowing the addition of three hundred new remedies.

THE BOSTON

# Medical and Surgical Journal.

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## CONSUMPTION IN NEW ENGLAND.

The American Statistical Association has recently published a paper by Dr. S. W. Abbott, secretary of the Massachusetts State Board of Health, on "The Decrease of Consumption in New England." The paper is largely statistical, and embodies facts of the most striking interest to students of the problem of tuberculosis. The New England states have for years had the advantage of a fairly accurate system of vital statistics, extending for different periods in the several states, but for the last twelve years existing in all. The occupations and social conditions of the people in these states vary widely, as well as the population, and the rate of its increase during the past fifty years. Vermont has been the most stationary as regards population, whereas the manufacturing states, of which Rhode Island and Massachusetts are the examples, have been more decidedly affected by immigration than the others during the last ten years. Italians, Scandinavians, Germans, Southern Russians and Canadians have been large factors in the increase of population. These facts are of interest for future studies of problems of tuberculosis, but as yet the effect of this immigration upon the prevalence of the disease is not to be determined.

Dr. Abbott sets himself the following questions to consider: The prevalence of consumption at the present time; its decrease in the last years of the nineteenth century; the comparative mortality of the sexes from consumption and the relative decrease in each sex; the comparative mortality from consumption at the different ages of life and the relative decrease at each age. Some of these questions it is possible to answer satisfactorily, whereas others can be estimated merely. Regarding the per cent of mortality from consumption in New England, complete figures are available for the years 1892 to 1901 inclusive. This includes a total of 99,002 deaths in these ten years, or an annual mortality of 18.81 per ten thousand living inhabitants. Of the various states the mean death-rate has been greatest in Massachusetts, followed by Rhode Island. The reason for this is to be found in density of population, as Dr. Abbott has previously shown in a consideration of the geographical distribution of the causes of death in Massachusetts. He finds that, the mortality of densely settled districts being taken as one thousand, districts of medium density show 810, and thinly settled district, 727. It was also shown that deaths from consumption diminished steadily from the seacoast districts toward the western portion of the state. In estimating the diminution in the death-rate from the disease, the extraordinary fact is disclosed that deaths have declined in Massachusetts from 3901 per million inhabitants in 1851 to 1595 in 1902. The death-rate from the disease in 1902 constituted but 37.3% of that prevailing in 1853. A comparison of these figures with those in England for a similar period shows essentially the same conditions, although the entire mortality from the disease was less than in Massachusetts. If such figures are to be regarded as an augury for the future, it is clear that tuberculosis is somewhat rapidly tending toward extinction. Dr. Hillier, in a recent paper, has predicted its extinction in England and Prussia within about a generation. Dr. Newsholme is quoted as saying that there is more hope for the almost complete extermination of tuberculosis than of any of the acute infectious diseases, with the possible exception of typhus and smallpox. Von Behring has likewise expressed a similar opinion.

Regarding the third proposition, as to comparative mortality from consumption in the two sexes, it appears that in 1851 in Massachusetts the mortality among females was much greater than among males, being 45% greater. The tendency has been toward a steady decline in the death-rate in both sexes, as already pointed out, but a much more rapid decline among females than among males. In 1902 the conditions were reversed, and the male death-rate had become 12% greater than the female. Finally, the matter of the age incidence of consumption also shows interesting figures, with general improvement all along the line, but particularly in the later periods of life. Dr. Abbott's general conclusions

are that the death-rate from consumption in New England at the present time is somewhat less than twenty per ten thousand living inhabitants, that the death-rate has diminished largely in all the New England states, in some as much as 50% in the half century, and that this decrease is going on now more rapidly than in earlier years. The death-rate of women has particularly decreased, and, as just stated, the incidence of the disease has decreased in greater proportion in the old than in the young.

Such statistical papers as this to which we have called attention do more than a vast amount of theoretical discussion in bringing home to the people at large the actual facts regarding tuberculosis. Dr. Abbott shows conclusively by figures, the general accuracy of which cannot be doubted, that tuberculosis has diminished markedly in the last fifty years, and that its ultimate extinction is by no means chimerical. The whole agitation regarding the subject, and particularly the attempt to educate the masses, is doing much toward a completion of the campaign so satisfactorily begun. We are glad in this connection to call attention to a communication from Dr. Knopf, which appears in another column of this issue, on "The National Association for the Study and Prevention of Tuberculosis." After many vicissitudes, it appears that a strictly representative national association has been formed, which will do much toward concentrating effort and directing investigation toward the most profitable ends. The gentlemen composing the association as its official representatives are all associated in the professional, and to a less degree, in the popular mind with the problems of tuberculosis. We cannot question, therefore, that this association will fulfil its onerous function in the most satisfactory way possible.

## A DEPARTURE IN THE TRAINING OF NURSES.

At the graduating exercises of the Nurses' Training School of the Boston Children's Hospital, recently held, certain suggestions regarding the training of nurses were presented, which are of interest not only to the nurses themselves but also to the profession at large. Dr. R. W. Lovett spoke for the medical staff, and pointed out certain projected changes in the training of nurses at that hospital to which we wish to call attention. He alluded to the fact that the ordinary training school for nurses is usually an appendage to a hospital rather than an independent educational institution, and that therein the schools which educate women for other professions are very far in advance of the training schools for nurses. Dr. Lovett then proceeded to sketch the history of the training school at the Children's Hospital, and the previous development which it had from time to time undergone.

Among these changes were the lengthening of the course to three years, a reduction in the daily duty from twelve to eight hours per day, and a discontinuance of the payment of nurses on the ground that the instruction obtained was equivalent to their work. He showed how the whole question of nursing has become elaborated with the development of medicine, and brought out the neglect of the proper systematic training in fundamental branches. The announcement was then made, and it is to this we desire to call particular attention, that an arrangement has been effected by means of which Simmons College, devoted to the training of women in practical technical work, is to co-operate with the hospital in the early training of the nurses. Hereafter, instruction during a period of four months is to be given each nurse in the branches of anatomy, physiology, chemistry, bacteriology and sanitation, this instruction to be wholly at Simmons College. Thereafter the more practical side of nursing will be taken up much as heretofore in the hospital wards. In spite of the somewhat brief period of preliminary instruction, it was pointed out that the lengthening of the probation period is a step of importance, that the training given in a properly equipped institution for fundamental branches will be of great value in inculcating proper habits of observation, and that ultimately it may be possible to extend this preliminary course. Professor Sedgwick also spoke on the subject, and in his capacity as a member of the corporation of Simmons College promised the hearty co-operation of that institution in the scheme which has been elaborated.

So far as we have followed the somewhat extraordinary development of training schools for nurses during the past ten years, this step is one of the most fundamentally important which has been suggested. The idea of improved preliminary instruction, the suggestion that the nurses should pay rather than be paid for their services, and the general elevation of the calling to a profession, have naturally been discussed from many points of view. So far as we know, however, an actual plan, such as this suggested for the Children's Hospital, has hitherto not been

put into practice, although various steps in that direction have been taken. The experiment on the face of it would certainly seem worth trying, and we have no doubt that it will prove a success in augmenting the education of the nurses on various theoretical matters in which they are supposed at the present time to be versed but often are not.

We have from time to time commented on the development of nursing, and have expressed a certain skepticism as to the ultimate product of the increased educational facilities. We certainly can have no objection to education of any sort, provided only it does not take the place of that for which the nurse alone exists — the care of the sick. We must not lose the nurse in developing the profession of nursing.

## THE FOURTH OF JULY.

As our national holiday approaches, speculation as to the effect of recently attempted legislation and much popular discussion on the subject of the celebration of the day is justified. The attempt to abolish noise is evidently quite impossible and quite without the bounds of legislative enactment. We are inclined to think, however, that the widespread feeling on the subject will have a certain influence in restraining the excesses to which we have been accustomed. The plea which is annually put forth that some restraint on the noise-making propensity be enforced in the neighborhood of hospitals cannot be too strongly emphasized. The positive discomfort, to put it in the mildest way, which bedridden and debilitated patients must suffer ought, at least, to have a deterrent influence even upon the young. In this connection it is a trifle discouraging to observe in the daily press that a member of our city government has introduced an order into one of the legislative branches seeking permission to begin the noise-making at midnight on the third of July, to continue unabated for twenty-four hours. The matter of tetanus no doubt this year, as heretofore, will receive a large amount of comment and protest after the fact. There seems however some evidence to show that a systematic attempt to keep certain danger dealing weapons and explosives out of the hands of the public will be forthcoming

## MEDICAL NOTES.

Post-Graduate Teaching in Germany. — It is announced that hereafter towns in Germany having hospitals of reasonable size may create institutions for post-graduate clinical teaching. The nearest universities will supply the members of the teaching staff, in return for which the university concerned is to pay the cost of maintenance of certain patients sent to its clinics. The object of this system is to utilize the clinical material of large cities which do not themselves support a university.

Radiology at the University of Vienna. — It is announced that the science of radiology has been officially recognized in the faculty of medicine in the University of Vienna by the appointment of several men as docents in the subject.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, June 29, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 45, scarlatina 14, typhoid fever 15, measles 41, smallpox 0.

William Osler, LL.D. — Prof. William Osler of Johns Hopkins University received the honorary degree of LL.D., at the annual commencement of Harvard University, held June 29.

Harvard Medical Alumni Association. — The annual meeting of the Harvard Medical Alumni Association was held at the Harvard Medical School, June 28, with an attendance of about fifty members. Dr. D. W. Cheever addressed the association on the subject of the Boston Medical Library. Councillors were elected as follows: Dr. C. M. Green, Boston; Dr. Elliott P. Joslin, Boston; Dr. William B. Coley, New York.

### NEW YORK.

Seaside Hospital of St. John's Guild. — The Seaside Hospital of St. John's Guild at New York, Staten Island, was opened for the season on June 20, and it is stated that the largest number of patients ever received on the opening day was admitted. The floating hospital of the Guild has not yet commenced its trips, but a nurse and orderly are in attendance on the boat conveying mothers and children to the Seaside Hospital.

New York Water Supply. — Urging that means be devised to test public sentiment on the question of asking Governor Odell to call a special session of the legislature to pass a water supply bill for New York City, Mayor McClellan recently sent a long communication to the Board of Aldermen, and by the board it was referred to the committee on water supply with the understanding that a public hearing

should be held on the matter as soon as possible. In this message, which is an intelligent discussion of the whole subject, the Mayor states that in signing the Smith bill (which prohibits the city from obtaining any water supply from Dutchess County, on the east bank of the Hudson), the Governor excluded New York from utilizing the most valuable immediate source of supply. He expresses some doubt, however, as to whether the same legislature would be willing to give the city relief. "As we stand now," continues the message, "the city is dependent to a great extent upon the continuance of an abundant water supply from natural sources. Should this supply of nature at any time undergo any considerable diminution for two successive years, the city would suffer a calamity almost indescribable. . . . The importance of a reservoir connection with streams in Dutchess County as a part of the chain of our supply system lies in the fact that such connection would not only furnish a large quantity of wholesome water, but it could be used, by extension, to draw from streams beyond that county which, on account of the quantity and the quality of the water obtainable there, would not justify the expense of an independent aqueduct. These waters, it is asserted by competent authorities, would be worthless to the city unless they could be commingled with the waters of Dutchess County. . . . The prosperity of the city, as well as the health of its inhabitants, is largely dependent upon an abundant and wholesome water supply, and I would suggest, therefore, that this matter should receive your most earnest consideration."

## Obituary.

### NATHAN SMITH DAVIS, M.D., LL.D.

DR. NATHAN SMITH DAVIS of Chicago died in that city June 16 at the age of eighty-seven years. He was born in New York state and received his medical education at Fairfield in that state. His practice began in Vienna, N. Y., and was continued in Binghamton, and later in New York City. In 1849 he removed to Chicago, accepting the chair of physiology and pathology at the Rush Medical College. Dr. Davis' name is chiefly identified with the foundation of the American Medical Association as far back as the year 1845, when he brought about a convention for the discussion of medical education, from which the American Association has grown to its present proportions. He was also prominent in the foundation of various scientific institutions in Chicago, and at one time had a national reputation in his profession. He was at various times the editor of several medical journals, and in 1883 he became editor of the *Journal of the American Medical Association*. During the later portion of his life a certain tendency to controversy, which had stood him in good stead earlier in his professional career, became a bar to his continued recognition. He will, nevertheless, be remembered as a man of strong personality and high ideals as well as a physician of great merit.

## Correspondence.

### THE NATIONAL ASSOCIATION FOR THE STUDY AND PREVENTION OF TUBERCULOSIS.

NEW YORK, June 21, 1904.

MR. EDITOR: I am in receipt of a number of inquiries from all over the United States and from abroad concerning the outcome of the various meetings which have taken place in Baltimore, Philadelphia, New York and Atlantic City in regard to the formation of a national tuberculosis association. Although your esteemed paper brought out a short paragraph concerning the Atlantic City meeting, it must have escaped the notice of many of my correspondents, and I ask you, in the interest of the cause, to kindly publish the following in the next issue of the JOURNAL.

An American national organization for the study and prevention of tuberculosis has been formed at last. The constitution and by-laws of this new society were adopted on Monday, June 6, at Atlantic City. The objects of the organization, as stated in its constitution, are as follows: (*a*) The study of tuberculosis in all its forms and relations; (*b*) the dissemination of knowledge about the causes, treatment and prevention of tuberculosis; (*c*) the encouragement of the prevention and scientific treatment of tuberculosis.

The following are the officers of this association: Dr. Edward L. Trudeau of Saranac Lake, N. Y., is the first president; Dr. William Osler of Baltimore and Dr. Hermann M. Biggs of New York are its vice-presidents; Dr. George M. Sternberg of Washington, D. C., late surgeon-general, is its treasurer; and its secretary is Dr. Henry Barton Jacobs of Baltimore. The board of directors, in addition to the officers above named, consists of Dr. Norman Bridge of California; Dr. S. E. Solly of Colorado; Dr. John P. C. Foster of Connecticut; Dr. George M. Sternberg of Washington, D. C.; Dr. Arnold C. Klebs and Dr. Robert H. Babcock of Illinois; Dr. J. N. Hurty of Indiana; Dr. William H. Welch, Dr. William Osler, Dr. H. B. Jacobs and Dr. John S. Fulton of Maryland; Dr. Henry M. Bracken of Minnesota; Dr. William Porter of Missouri; Dr. Edward O. Otis and Dr. Vincent Y. Bowditch of Massachusetts; Dr. Frederick L. Hoffman of New Jersey; Dr. Hermann M. Biggs, Dr. S. A. Knopf, Dr. Edward L. Trudeau and Mr. Edward T. Devine of New York; Dr. Charles L. Minor of North Carolina; Dr. Charles O. Probst of Ohio; Dr. Lawrence F. Flick, Dr. Mazyk P. Ravenel, Dr. H. S. Anders and Dr. Leonard Pearson of Pennsylvania; Dr. M. M. Smith of Texas; Dr. George E. Bushnell of the United States Army Hospital, and Surgeon-General Walter Wyman of the United States Marine Hospital.

Its membership is to consist of three classes:

(*a*) Members — those who are elected by the board of directors and who pay annual membership dues of $5. (*b*) Life members — those who pay $200 and are already members of the association. (*c*) Honorary members — persons distinguished for original researches relating to tuberculosis, eminent as sanitarians, or as philanthropists who have given material aid in the study and prevention of tuberculosis.

The government of the association, the planning of work, the arrangement for meetings and congresses, and everything that appertains to legislation and direction are to be in the hands of the board of directors, and committees are to have the power to execute only what is directed by the board.

The board of directors is empowered, however, to appoint an executive committee of seven members to which is entrusted the executive work of the association. This committee, chosen at the meeting in Atlantic City, consists of Dr. Edward L. Trudeau, Dr. Henry Barton Jacobs, Dr. Edward O. Otis, Dr. Mazyk P. Ravenel, Dr. Arnold C. Klebs, Dr. John N. Hurty and Mr. Edward T. Devine.

The board of directors is empowered to appoint representatives in the International Committee on Tuberculosis. It was decided at the meeting of organization, that this representation was to be headed by Dr. William Osler, and his associates will be selected later. The board is authorized, also, to appoint such committees as may be necessary for scientific and educational work, and for the holding of meetings and congresses.

Drs. Osler, Trudeau, Biggs, Devine, Barrier, Huber, Knopf and others addressed the meeting on the scope of the work which was before the association. The addresses of the various speakers were received with enthusiastic applause, but the ovation given when Dr. Trudeau appeared on the platform surpassed anything the writer has ever been privileged to witness before. It was spontaneous, genuine, and lasted for minutes. It was a grand tribute from the vast assembly, not only to the pioneer of the sanatorium treatment in American, but to the grand qualities of Dr. Trudeau as a physician, scientist and humanitarian. Dr. J. M. Barrier of Delhi, La., in speaking of the fearful mortality from tuberculosis among the negroes, urged the new society to take up also the work of prevention of tuberculosis among the colored population of the United States.

Concerning the character of the new organization, I may be permitted to quote in conclusion the opinion of a layman, the editor of *Charities*, the organ of the New York Charity Organization Society:

"There are two conspicuous and equally gratifying features of this national movement. It is thoroughly representative of the leaders of the medical profession; and at the same time there are ample evidences of their determination to make the association of direct practical value in legislation, in the education of the public, and in bringing about a co-ordination of philanthropic, medical and educational agencies for the conquest of the great scourge.

"While the scope of the association has not been officially outlined, it is evident from the stirring addresses made on the evening of the first meeting, that it will work directly for the better education of the public as to the means by which tuberculosis is communicated; for the erection of hospitals and sanatoria; for the adoption by local boards of health of such measures as have been so effective in reducing the death-rate from the disease in New York City; for the formation of local committees and associations in various communities, and for the intelligent co-operation of state and municipal authorities, private, voluntary agencies, and the medical profession.

"The question as to whether a special journal shall be established was left over for later consideration; but either through a special periodical or through the use of the medical or the lay press, the association will aim to bring about a practical and beneficial interchange of experiences, and a more intimate knowledge on the part of those who are at work in any community of the measures which have been found effective elsewhere. The executive committee was empowered to select an executive secretary, who will probably be a layman, and as soon as the condition of the association's treasury warrants it, a determined and aggressive campaign will be opened.

"It will be a source of pride and gratification, not only to physicians, but to all who have taken a sympathetic interest in the warfare against consumption that there is now a national body to which local associations and committees, hospitals and sanatoria, legislatures and local municipal administrations may turn with confidence for the last word on any disputed subjects, and for encouragement and sympathy for all good work on lines which experience has approved as promising of good results."

The majority of the vast audience present at the Atlantic City meeting were enrolled as members of the new organization.

S. A. Knopf, M.D.

## RECORD OF MORTALITY
### For the Week ending Saturday, June 18, 1904.

| Cities. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Cerebro-Spinal Meningitis. | Typhoid Fever. |
| New York . . | 3,908,644 | 1,669 | 422 | 21.48 | 9.63 | 3.00 | 3.17 | .42 |
| Chicago . . . | 2,021,086 | 380 | 84 | — | — | — | — | — |
| Philadelphia | 1,407,968 | 388 | 129 | 33.68 | 7.63 | 1.05 | — | 1.84 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 175 | 51 | 29.71 | 6.28 | 2.28 | .57 | .57 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 122 | — | 31.15 | 9.00 | 2.45 | — | 9.00 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 49 | 10 | 30.60 | 4.08 | 2.04 | 2.04 | — |
| Boston . . . | 617,950 | 134 | 32 | 25.37 | 13.43 | 2.98 | 1.49 | — |
| Worcester . . | 136,925 | 37 | 11 | 8.10 | — | — | 2.70 | — |
| Fall River . . | 119,349 | 25 | 11 | 40.00 | 16.00 | — | — | — |
| Lowell . . . | 104,402 | 25 | 12 | 8.00 | 28.00 | — | — | — |
| Cambridge . | 100,998 | 17 | 4 | 35.29 | 5.88 | — | 5.88 | — |
| Lynn . . . . | 73,875 | 19 | 4 | 21.05 | — | 5.26 | — | — |
| Lawrence . . | 72,348 | 16 | 1 | 37.50 | 12.50 | — | — | — |
| Springfield . | 72,020 | 18 | 3 | 22.22 | 5.55 | 5.55 | 5.55 | 5.55 |
| Somerville . | 70,413 | — | — | — | — | — | — | — |
| New Bedford | 68,863 | 13 | 3 | 7.70 | — | — | — | — |
| Holyoke . . . | 50,538 | 11 | 4 | 18.18 | — | — | — | — |
| Brockton . . | 46,601 | 9 | 1 | — | — | — | — | — |
| Newton . . . | 39,310 | 5 | 1 | 20.00 | 20.00 | — | — | — |
| Haverhill . . | 39,061 | 8 | — | 25.00 | — | — | — | — |
| Malden . . . | 37,205 | 7 | 1 | 28.60 | — | — | — | — |
| Salem . . . . | 37,188 | 13 | 7 | 15.40 | — | — | — | — |
| Chelsea . . . | 36,499 | 13 | 3 | 15.40 | 7.70 | — | — | 7.70 |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 11 | 4 | 18.18 | 9.09 | — | — | — |
| Everett . . . | 30,209 | 1 | — | 100.00 | — | — | — | — |
| North Adams | 29,201 | 4 | 1 | — | — | — | — | — |
| Quincy . . . | 26,798 | 4 | 3 | — | — | — | — | — |
| Gloucester . | 26,121 | 3 | — | — | — | — | — | — |
| Waltham . . | 25,797 | 4 | — | — | 25.00 | — | — | — |
| Brookline . . | 23,576 | — | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | 9 | 0 | 22.22 | — | — | — | — |
| Medford . . | 21,956 | 4 | — | 50.00 | 25.00 | — | — | — |
| Chicopee . . | 21,692 | 1 | 1 | — | — | — | — | — |
| Northampton | 20,314 | 3 | 1 | 33.33 | — | — | — | — |
| Beverly . . . | 15,807 | 2 | 1 | 50.00 | 50.00 | — | 50.00 | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 5 | 2 | 20.00 | — | — | — | 20.00 |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | 1 | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 1 | 1 | — | — | — | — | — |
| Newburyport | 14,478 | 6 | 1 | — | — | — | — | — |
| Woburn . . . | 14,315 | — | — | — | — | — | — | — |
| Melrose . . . | 13,819 | — | — | — | — | — | — | — |
| Westfield . . | 13,809 | 4 | — | 100.00 | — | — | 25.00 | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 1 | 1 | — | 25.00 | — | — | — |
| Revere . . . | 13,609 | 0 | — | — | — | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 2 | — | — | — | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 1 | 0 | — | — | — | — | — |
| Weymouth . | 11,350 | 2 | 0 | — | — | — | — | — |
| Plymouth . . | 11,139 | 1 | — | — | — | — | — | — |

Deaths reported, 2,843; under five years of age, 726; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 687; acute lung diseases 254, consumption 317, scarlet fever 26, whooping cough 10, cerebrospinal meningitis 61, smallpox 2, erysipelas 11, puerperal fever 10, measles 28, typhoid fever 29, diarrheal diseases 124, diphtheria and croup 68.

From whooping cough, New York 3, Philadelphia 4, Pittsburg, Worcester and Lawrence 1 each. From smallpox, Philadelphia and Baltimore 1 each. From cerebrospinal meningitis, New York 53, Baltimore 1, Providence 1, Boston 2, Worcester, Cambridge, Beverly and Westfield 1 each. From typhoid fever, New York 7, Philadelphia 7, Baltimore 1, Pittsburg 11, Springfield, Salem and Clinton 1 each. From erysipelas, New York 4, Philadelphia 1, Baltimore 1, Pittsburg 2, Providence 1, Boston 2.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending June 4, the death-rate was 14.6. Deaths reported 4,277; acute diseases of the respiratory organs (London) 73, whooping cough 125, diphtheria 40, measles 217, smallpox 2, scarlet fever 30.

The death-rate ranged from 5.5 in Kings Norton to 34.9 in Wigan; London 13.2, West Ham 13.2, Brighton 14.9, Southampton 13.4, Plymouth 12.3, Bristol 12.9, Leicester 12.3, Nottingham 12.4, Birkenhead 17.3, Liverpool 17.9, Bolton 15.1, Manchester 17.7, Salford 17.8, Bradford 14.4, Leeds 16.3, Hull 13.8, Sheffield 14.2, Cardiff 15.7, Rhondda 16.2, Merthyr Tydfil 15.1, Hanley 16.3.

## METEOROLOGICAL RECORD.

For the week ending June 18, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S..12 | 30.02 | 58 | 62 | 53 | 65 | 70 | 68 | N | E | 5 | 3 | C. | C. | 0 |
| M..13 | 30.16 | 54 | 58 | 50 | 63 | 62 | 62 | N E | S | 12 | S | O. | C. | 0 |
| T..14 | 30.07 | 59 | 68 | 50 | 54 | 67 | 60 | S | S | 7 | 10 | C. | C. | 0 |
| W..15 | 29.97 | 61 | 73 | 49 | 55 | 76 | 66 | S W | S | 9 | 12 | C. | C. | 0 |
| T..16 | 29.91 | 69 | 80 | 58 | 76 | 74 | 75 | S W | N E | 10 | 9 | O. | O. | .07 |
| F..17 | 29.96 | 64 | 69 | 60 | 53 | 56 | 54 | N E | S | 12 | 10 | O. | C. | 0 |
| S..18 | 29.82 | 70 | 82 | 58 | 60 | 56 | 58 | W | W | 13 | 7 | F. | F. | 0 |
| ☞ | 29.99 | | 70 | 54 | | | 63 | | | | | | | .07 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JUNE 25, 1904.

A. W. BALCH, assistant surgeon. Ordered to the Naval Museum of Hygiene and Medical School, Washington, D. C.

I. W. KITE, surgeon. When discharged from treatment at the naval hospital, Pensacola, Fla., ordered home and granted sick leave for two months.

C. BIDDLE, surgeon. Ordered to the "Wisconsin" for duty as fleet surgeon.

J. R. DYKES, assistant surgeon. Ordered to the "Rainbow."

W. W. VERNER, assistant surgeon. Ordered to the "Wisconsin."

C. M. OMAN, assistant surgeon. Detached from the naval station Cavite, and ordered to the "Frolic."

J. P. DEBRULER, F. W. S. DEAN, assistant surgeons. Ordered to the naval station, Olongopo, P. I.

A. J. GEIGER, assistant surgeon. Ordered to the naval hospital, Yokohama, Japan.

W. H. RENNIE, W. S. HOEN, C. C. GRIEVE, assistant surgeons. Ordered to the naval station, Cavite, P. I.

E. T. MORSE, pharmacist. Ordered to the naval station, Cavite, P. I.

R. O. MARCOUR, assistant surgeon. Detached from the "Hancock" and ordered home, and granted leave for three months, and resignation to be accepted September 27, 1904.

W. A. ANGWIN, assistant surgeon. Ordered to the naval hospital, Mare Island, Cal.

## EXAMINATION FOR ARMY MEDICAL SERVICE.

THE examination of applicants for commission in the Medical Corps of the Army will be materially modified after July 1, 1904, when the amended regulations governing the matter will go into effect. Immediate appointment of applicants after successful physical and professional examination — the latter embracing all subjects of a medical education — will be discontinued; thereafter applicants will be subjected to a preliminary examination and a final or qualifying examination, with a course of instruction at the Army Medical School in Washington intervening.

The preliminary examination will consist of a rigid inquiry into the physical qualifications of applicants and written examination in the following subjects: Mathematics (arithmetic, algebra and plane geometry); Geography; History (especially of the United States); Latin grammar and reading of easy Latin prose; English grammar, orthography, composition; Anatomy; Physiology; Chemistry and Physics; Materia Medica and Therapeutics; Normal Histology. The subjects in general education above mentioned are an essential part of the examination, and cannot under any circumstances be waived.

The course of instruction at the Army Medical School will consist of lectures and practical work in subjects peculiarly appropriate to the duties which a medical officer is called upon to perform. While at this school, the students will be held under military discipline, and character, habits and general deportment closely observed.

The final or qualifying examination will be held at the close of the school term, and will comprise the subjects taught in the school together with the following professional subjects not included in the preliminary examination: Surgery; Practice of Medicine; Diseases of Women and Children; Obstetrics; Hygiene; Bacteriology and Pathology. General aptitude will be marked from observation during the school term. A general average of 80 per cent in this examination will be required as qualifying for appointment, and candidates attaining the highest percentages will be selected for commission to the extent of the existing vacancies in the Medical Department. Candidates who attain the requisite general average who fail to receive commissions will be given certificates of graduation at the school, and will be preferred for appointment as medical officers of volunteers or for employment as contract surgeons; they will also be given opportunity to take the qualifying examination with the next succeeding class.

Admission to the preliminary examination can be had only upon invitation from the Surgeon General of the Army, issued after formal application to the Secretary of War for permission to appear for examination. No applicant whose age exceeds thirty years will be permitted to take the examination, and the authorities at the War Department desire it distinctly understood that this limit of age will be rigidly adhered to. Hospital training and practical experience are essential requisites, and an applicant will be expected to present evidence of one year's hospital experience or its equivalent (two years) in practice.

The first preliminary examination, under the amended regulations above referred to, will be held about August 1, 1904; those desiring to enter the same should at once communicate with the Surgeon General of the Army, Washington, D. C., who will be pleased to furnish all possible information in regard thereto.

## RECENT DEATHS.

JOHN H. DORN, M.D., a retired New York physician, died suddenly from cardiac disease, in London, on June 17. Dr. Dorn was born in Johnstown, N. Y., in 1842, and served for the first two years of the Civil War as a member of a New York regiment. He then began the study of medicine, and was graduated from the Albany Medical College in 1865. His professional life was spent in New York City, and from 1875 to 1896 he was a police surgeon. He retired from active practice about eight years ago, largely on account of his health.

THEODORE FRELINGHUYSEN BRECK, M.D., M.M.S.S., died in Springfield, June 25, 1904.

CHARLES EVERETT VAUGHAN, M.D., M.M.S.S., formerly of Cambridge, died in Santa Barbara, Cal., June 24, 1904, aged sixty-eight years.

## BOOKS AND PAMPHLETS RECEIVED.

The Practical Medicine Series of Year Books. Comprising ten volumes on the Year's Progress in Medicine and Surgery. Issued monthly. Under the general editorial charge of Gustavus P. Head, M.D. Vol. V. Chicago: The Year Book Publishers. 1904.

Uric Acid. An Epitome of the Subject. By Alexander Haig, M.A., M.D., Oxon., F.R.C.P. Philadelphia: P. Blakiston's Son & Co. 1904.

Society Report, American Medical Association, Section on Medicine. By J. M. Anders.

The Clinical Study of Blood-Pressure. A Guide to the Use of the Sphygmomanometer in Medical, Surgical and Obstetrical Practice, with a Summary of the Experimental and Clinical Facts Relating to the Blood-Pressure in Health and in Disease. By Theodore C. Janeway, M.D. Illustrated. New York and London: D. Appleton & Co. 1904.

Arteria Uterina Ovarica. The Utero-ovarian Artery or the Genital Vascular Circle. Anatomy and Physiology, with their Application in Diagnosis and Surgical Intervention. By Byron Robinson, B.S., M.D. Illustrated. Chicago: E. H. Colegrove. 1903.

A Plea for Justice to the Consumptive; A Reply to Recent Attempts to Discriminate against the Consumptive, not only on account of his Physical Infirmity, but also of his Alleged Mental and Moral Defects. By S. A. Knopf, M.D. Reprint.

Twenty-seventh Annual Report of the Managers of the Adams Nervine Asylum. 1904.

A Text-Book of Operative Surgery. Covering the Surgical Anatomy and Operative Technic Involved in the Operations of General Surgery. Written for Students and Practitioners. By Warren Stone Bickham, Phar.M., M.D. Second Edition. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

Epilepsy and Its Treatment. By William P. Spratling, M.D. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

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## Address.

# PRESIDENT'S ADDRESS BEFORE THE AMERICAN GYNECOLOGICAL SOCIETY.*

BY EDWARD REYNOLDS, M.D., BOSTON.

Fellows of the American Gynecological Society:

You will all remember that when Lincoln was asked to speak at the dedication of the national cemetery on the battlefield of Gettysburg he embodied in his address the now familiar words, "The world will little note, nor long remember, what we say here, but it can never forget what they did here." The American Gynecological Society owes its pre-eminence along its chosen line less to the words than to the prolonged and daily labor of the eminent men who have composed it in the past, and must owe its future to the life-work of the equally able men who are to fill its membership in the coming years. He who has been elevated, however unworthily, to its presidency must necessarily feel, as he begins his presidential address, that what he has to say here will be of little note nor long remembered; and as he looks back along the line of his distinguished predecessors may well question whether he too can worthily occupy his allotted portion of your too scanty time. Yet he can but feel that so time-honored a custom as the delivery of a presidential address must have a well-established reason for its existence, and, as he searches his thoughts for material that may be worthy of the occasion, may well wonder what that reason is.

In the commercial world there is a custom which is universally conceded to be essential to prosperity, of devoting a periodic portion of its working time to the process known as "taking stock," of pausing in its labors to estimate the present, to review the past, and from its failures or successes to forecast the future. Such, it seems to me, should be the purpose of our presidential address.

The president of the society may not be, indeed, must often feel himself far from the wisest or most devoted of its members, yet his fulfillment during the year of the duties of the office must necessarily have led him to give thought and consideration to many matters affecting the welfare of the society, which, but for those duties, would hardly have attracted his attention. It is therefore fitting that he should have an opportunity of making to the society such suggestions for the better guidance of its business as his work may have led him to conceive.

Among the many and striking changes in the habits of professional life which have occurred within the memory of the elder of you, indeed, among those which we younger men have noted, even in the last two decades, we must be struck with the decreasing prominence of the medical society. With the increasing complexity of modern life in general the annual meeting has become far less the great event of the year than it was to our fathers. With the enormous and from many points of view regrettable increase in the number of medical publications, with the increasing prevalence of the habit of having everything come to the office desk, to be abstracted and prepared by assistants before it reaches the eyes of the chief, the actual hearing of the papers presented at any society has become of less pressing importance to all of us. There has been of late years a notable tendency towards consolidation of local societies and a consequent decrease in the number of meetings of which one is notified, or which he is expected to attend, and although geographical circumstances have as yet delayed the appearance of this tendency among national societies the signs of it are in the air. Few societies still persist which do not worthily fill some special niche. Only such are likely to continue to exist in the future, and we must keep an eye upon our laurels.

The main *raison d'être* of such a society as this must, it seems to me, lie in the opportunity which it, and it only, presents to each of us of knowing and appreciating the abilities of a set of picked men coming from sections distant to us, of knowing and appreciating both the men and their work as we could not without these meetings, and to this end the written paper presented by one man is of far less value than the spoken and more informal debate which calls out the energies and develops the peculiarities of knowledge and ability, even of the foibles and weaknesses, of many men. It is in the discussion, rather than by the written paper, that we learn to know and appreciate each other.

Our program is always a crowded one, and it is desirable that it should be so, that it should guide the discussion through many phases of gynecological work, and set forth the ideas of many men; but to insure full discussion of a varied and interesting list of papers demands, year by year, an increasing accuracy of organization. The twenty minutes' time which we now allot to each reader is already longer than is given by most scientific societies, and I think we have all noted that but few fellows succeed in commanding the undivided attention of their audience for the whole of even this period of time. Yet we must not forget that the papers are afterwards to reach a larger audience through publication, and that it is difficult, if not impossible, to worthily present an important topic within the limit which can be delivered in even a longer time. In this dilemma we may well turn to the collective experience of other societies, to the various expedients which one or another of them have adopted to meet their difficulties, and to a consideration of how such expedients as have been there found useful may be adapted to our peculiar needs.

The use of the printed abstract published beforehand has of late become increasingly prominent in many of our sister societies, and in

* Read at the 29th annual meeting, Boston, May, 1904.

the British Medical Association, the meetings of which have the reputation of being among the most successful and interesting of all societies, this use of the abstract has reached its highest terms, as yet. It is seldom wise to adopt wholesale the regulations of other organizations. It is usually better to let changes follow a more gradual and natural evolution under the needs of the individual assembly, but the methods of the English association may well be worth a passing consideration from you, and especially from those of you who must in their turn guide the destinies of our society.

A fellow of the British Medical Association who desires to present a paper at one of its meetings must put it in the hands of the secretary, complete and in the form in which he desires its publication, a number of weeks before the meeting, and the communication may be of any length he chooses. A paid secretary, a qualified and experienced medical author, then abstracts each paper into the form and length which he considers best fitted for spoken delivery. This official then reads the abstracts to the society, as they are called from the program. Such a reading inaugurates each discussion, and the member whose ideas have been thus succinctly set before his associates takes part in the discussion and closes it. It is said that their experience shows that the ideas of the individual member are by his method better and more intelligibly presented to the society than if he had read to them his complete paper. The time of the society is economized, full debate is encouraged, and at the same time the member has the advantage of publishing to the world a paper in which his points are set forth at the fullest length and without time limitation. Such a method is perhaps too far advanced for our present needs or possibilities, yet it has many advantages, and has seemed to me worth calling to your attention as one towards which we might well advance. A similar method has been adopted by common consent in the Association of American Physicians, and is spoken of with much enthusiasm by the members of that society. Would it not be wise for us to give this method, or a modification of it, a year's trial?

We must not underestimate the value of the other, the social, side of our meetings; but, indeed, none of us are likely to forget or undervalue the warm friendships and charming half hours which accrue to all of us from our membership in the society.

In limiting the remainder of my address to the expression of my opinion that in the now crowded state of our programs it would be better for the society that the conventional length of the presidential address should be curtailed, I feel that if I am right in this opinion, it will be evidenced by the conduct of my successors in this honored office. If their course should show me wrong, may I hope that you will at least believe that I have not been actuated by any unworthy desire to curtail my own labors, but rather that I have been willing to risk the possibility of incurring such odium for what I believe to be the advantage of the society.

In conclusion, may I take this opportunity of expressing to each and all of you my thanks for the kindly personal feeling which must have actuated you when you elected me to your presidency, for which, and for the many personal pleasures which I have enjoyed in this society, I am, and must always gladly remain, your willing debtor.

## Original Article.

### ACIDURIA (ACETONURIA) ASSOCIATED WITH DEATH AFTER ANESTHESIA.

BY E. G. BRACKETT, M.D., J. S. STONE, M.D., H. C. LOW, M.D., BOSTON.

*Presented for the Staff of the Children's Hospital, Boston.*

THE attention of the surgical staff of the Children's Hospital has been challenged by the following facts:

On the 6th of October, a boy of ten years and a girl of eight years entered the hospital. Each had an extensive infantile paralysis of long standing. Otherwise each was well at the time of entrance. The boy remained perfectly well until four days after his entrance to the hospital, when he began to vomit persistently. The vomitus was watery, of light green color. Up to that time the bowels had moved freely. The abdomen was soft, but not distended. When the vomiting began, the pulse became very weak and increased in rate from 95 to 150. The temperature which had been normal rose gradually to 105.8. The child became unconscious, the condition gradually failed until death, twenty hours after the onset of the vomiting.

The girl had, on several occasions during the preceding year, had attacks of persistent vomiting, associated with collapse and rapid pulse. The child seemed delicate, but of sound health, except for the infantile paralysis. Four days after entrance, three tendon transplantations were done under ether anesthesia. The operations consumed one and one-half hours in time, but were insignificant in severity, and no blood was lost. The child took ether rather poorly, and during the operation had a rapid pulse. She vomited in coming out from the ether, as is usual, but seemed comfortable and in fair condition twelve hours later. She then suddenly began to vomit persistently. The pulse became very rapid, about 190, and of poor quality; the temperature gradually rose to 106. The vomiting lasted about thirty hours. The child then gradually sank into a delirious stupor and died forty-two hours after the operation, thirty hours after the vomiting began.

Six weeks later, on Nov. 16, a girl of five and a half years, also with an extensive infantile paralysis, entered the hospital. On the day after entrance, under ether anesthesia, the fasciæ on the upper outer part of both thighs were cut by open incision. The operation was short and very little ether was used. The child recovered well from the ether and was comfortable up to thirteen hours after operation. She then began to vomit. During the night she was very restless and noisy, sleeping only three hours during the night following the operation. Twenty-four hours after the operation, the circulation became very poor. In spite of the fact that there was no obstruction to respiration the color became livid blue, the face grew

cyanotic, the extremities were cold, the pulse weak and rapid, the expression was anxious. Thirty hours after operation the child became delirious. On the second morning after operation, the child became more dull and apathetic, until she gradually passed into a condition of coma, and died forty-eight hours after operation.

In this case the peculiar, sweet, chloroform-like odor of the breath led to the examination of the urine for acetone and diacetic acid, both of which were found to be present. No test for acetone was made in the two cases entering on the 6th of October; in one of them, however, the characteristic odor of the breath was remembered very distinctly.

On Dec. 17, two more patients, each with extensive infantile paralysis of long standing, entered the hospital. They were girls, aged six and eight years. One child began to vomit six hours after entrance; the other fifteen hours after entrance. Both became markedly dull and stupid. In each case the odor of the breath was characteristic, each had acetone and diacetic acid in the urine. Both fortunately recovered.

On Dec. 26, a girl four years old entered the hospital. For six days before she had been vomiting at frequent intervals. There had been no movement of the bowels since the vomiting began. The odor of acetone in the breath was very strong, acetone was present in the urine. An intestinal obstruction by Meckel's diverticulum was found and relieved by operation. The child died twenty-six hours later, having gradually become unconscious. In this case the presence of acetone seems probably to have been incidental to the intestinal obstruction; perhaps undue importance was attached to it because of the preceding six cases, in some of which acetone had been found. Operation was delayed a little because it was uncertain at first that obstruction existed.

After this, the sweet odor of the breath was noticed in a number of patients after operation. In these the urine was examined for acetone, which was found to be present. In most of them vomiting occurred, and some showed marked prostration, but in only the following case, however, were the symptoms alarming:

A girl of four, rather delicate and nervous, suffering from double congenital dislocation of the hip, had been operated upon by the Lorenz method five months before. Reduction of the hip had been easily effected, and the limb placed in the frog position with the usual spica bandage. Both hips were not reduced at once, as the child did not seem strong. The patient recovered from the operation without trouble and was returned home after a few days. The child was unable to learn to walk about, and returned to the hospital five months later in rather a poorer condition than on her first entrance, though her condition was not at all alarming. The child was quite nervous and frightened at her second operation. In manipulating the reduced hip, and changing it from the first to the second position, requiring but little force, as well as in the manipulative reduction on the unreduced hip requiring more force (though much less than is required in many cases), a separation of the epiphyses at the lower ends of both femora occurred, which indicated that the child was less strong than at the first operation. A double plaster spica was applied, and the child returned to the ward, the operation having been a short one, not requiring more than half an hour in all. The child recovered from the anesthesia well. There was a little nausea, there was absolutely nothing in any way unusual or alarming in the condition until six o'clock on the morning after operation, an interval of twenty hours. The pulse then grew suddenly weak and rapid, the color became poor, but after a hypodermic injection of strychnine she improved. The child seemed a little dull, there was no vomiting, the breath was sweet. Acetone was found in the urine. Three hours later there was another sudden collapse. During the day the child grew rapidly worse, she sank into a restless, unconscious condition, the lips became very blue. Except for rallying somewhat during the evening, the child gradually failed, until she died forty-two hours after the operation.

These cases present certain features in common: Vomiting associated with collapse; a very weak and rapid pulse; an absence of fever until just before death; cyanosis, in the fatal cases, causing extreme dyspnea; apathy and stupor, alternating with periods of restlessness at first, but in the fatal cases gradually deepening into coma and death; and the presence of acetone in the breath and urine.

Excluding the case of intestinal obstruction, there remain 6 cases in which the symptoms came on without operation. In three of these cases the symptoms came on the day after entrance, and in one two days after. In one case the symptoms came on after the child had been in the ward for four weeks and was up and about. In the sixth case the symptoms came on four days after entrance. This child died.

There are 7 cases in which the symptoms followed operation. Three of these patients died, 4 recovered. In the 4 milder cases which recovered, no symptoms at all appeared within the first twelve hours after operation. The symptoms came on between twelve and twenty-four hours afterward. In the 3 fatal cases alarming symptoms came on after about twelve hours, but in none of the cases was the recovery from the operation quite normal. The condition of the children caused anxiety, although there was no one definite symptom which could be defined as its sufficient cause.

Those children in whom the symptoms were severe were of a high strung, nervous temperament. The symptoms coming on after operation were usually more severe than those coming on without operation, although in the latter group one rapidly fatal case is included.

The first symptom to attract serious attention was, except in one case, the vomiting. The vomitus was always bile stained, becoming dark, but never bloody. In one fatal case, however, vomiting occurred but twice, each time from an obvious cause. Otherwise, the symptoms differed in no way from those in the cases in which vomiting was a prominent symptom.

In one case the symptoms seem unquestionably to have been due primarily to acute intestinal obstruction. And yet, even in this case, the presumably secondary acetonuria confused and masked the ordinary, or what might be termed the mechanical, symptoms of intestinal obstruction.

Restlessness at first was associated with the vomiting. Occasionally there was a certain amount of apathy either preceding or alternating with periods of restlessness.

In the milder cases there was a varying degree of prostration; in the severer cases marked collapse which was often repeated. The children would rally for a few hours only to fail again suddenly.

After a short time in some of the severe cases cyanosis and dyspnea became marked. None of the cases with marked cyanosis recovered. As the color changed, the restlessness was followed in some instance by delirium, but in all the fatal cases there gradually came on a stupor which became more profound, changing gradually to coma. Death in the fatal cases occurred from twelve to thirty-six hours after the onset of the symptoms, generally after about thirty hours. Death seemed to be due in some cases to a lack of oxygen. The struggle for breath seemed very striking till exhaustion came on.

*Pathology.* — The autopsy reports in the first two cases were made by Drs. Christian and Brinckerhoff. They were both cases of infantile paralysis with extensive muscular paralysis and degeneration of both lower limbs. In the first case there was a double intussusception of the jejunum, which was very evidently post-mortem. No important lesions were noted. In the second case no anatomical lesions were noted; no sufficient cause of death was found. There was a moderately fatty liver and large kidneys.

The other two autopsies occurred after the fact of the acetonuria had been fully appreciated. The third case was one of rather extensive infantile paralysis, dying within twenty-four hours after the comparatively simple operation of fasciotomy. The pathological interpretation of the cause of death in this case was practically negative, except for a very extensive fatty metamorphosis in the liver and less marked one in the kidneys. The fourth case was one of double congenital dislocation of the hips, which died within forty hours after operation. There was extreme fatty degeneration of the muscles of both thighs and a fatty liver and kidneys. In addition there was in this case a large number of eosinophilic cells in the spleen and the glandular epithelium of the stomach, which were only seen in small numbers in the intestine of the third case. These were in some cases phagocytic and similar to the cells which Mallory has shown in scarlet fever and acute infectious disease.

The only marked anatomical lesion which these cases showed was the extreme fatty degeneration of the liver and the muscles. This fact is more interesting when associated with the clinical knowledge that in the eight most severe of these cases there was either a paralysis or some disability resulting in the degeneration and atrophy of an extensive part of musculature.

Fatty liver is generally the result of the quality and quantity of the food and the general constitution. Diet rich in fat and carbohydrates may lead to it. These cases of paralysis in children often are the cause of an over-indulgence in sweets and an excess of milk and cod-liver oil which may induce the fatty liver. Gastro-enteritis in children, and in adults carcinoma, infectious disease, phthisis and drug poisoning are the causes of fatty liver. It will be noticed that these conditions are also associated with the increased excretion of acetone.

We can make no sharp distinction between fatty infiltration and fatty degeneration (Taylor). Pathologic accumulation of fat may occur in the liver without degeneration and without functional impairment of the cells, or it may occur with serious cellular changes. Clinical symptoms are slight if functions remain intact, even with great fat deposit. And that these children were all in apparent good health is evidence that there was not previous fatty degeneration of the liver. The microscopical examination of the liver cells in these cases shows only slight degenerative process and extensive fatty infiltration.

A physiologically fat liver may arise within a few hours after the ingestion of fat, but the extreme fatty liver due to phosphorous poisoning or chloroform similar to the liver in these cases does not develop for two or three days. So it seems evident that in these cases there was nothing in the anesthetic or the operation to produce the extreme fatty infiltration of the viscera. At least, we have proven that in animals the administration of acetone does not produce fatty liver unless it is prolonged for some time.

It is probable, however, that the fatty liver in these cases was not a sufficient cause of death, but that it was only associated, as is the acetonuria, with an acid intoxication which may, through general toxemia, or an excessive process of oxidation in the blood causing lack of oxygen, have been fatal. In clinically healthy children, such as these appeared to be, the fatty liver is rare. Wollstein in 390 autopsies in children found fatty liver in 133 cases (28%) and an extremely fatty liver in 39 cases (10%). These conditions, however, were noticed especially in cases of suppurative inflammation, pneumonia, and intestinal disease.

The adipose tissue of the body furnishes the fat in the liver. This has been proven by fattening animals for some time on mutton fat, and then producing a fatty liver by the administration of phlorizin, and observing that the acute infiltration of the liver consisted of mutton fat (Rosenfeld). In starved chickens, phosphorus does not cause fatty liver. So it may be that the disturbed metabolism of these cases is sufficient to cause an intoxication similar to that of phosphorus, and, occurring in these individuals with very extensive fatty deposits in the muscles and subcutaneous tissues, has a great store of fat to draw upon to cause the hepatic deposits. Although the presence of these primary intestinal poisons has not been shown, it is probable that they do exist and are the cause of the formation of the acetone bodies (Kraus). In phosphorus poisoning there is a marked increase of acetone excretion, due to the destruction of fat tissue, and this is probably true of acetone excretion after chloroform and other forms of narcosis (Schwarz).

The first two of these cases died in October, 1903, and the odor of the breath in them aroused the suspicion of acetonemia. Since the first of November, 425 surgical cases have been admitted to the wards of the Children's Hospital, and over

300 of them have been tested for acetonuria. Acetone has only been found present in the urine in 11 cases, and it has always been associated with other more or less severe symptoms.

The urine was tested in these cases by the standard tests for acetone and diacetic acid. Five cubic centimeters of urine, a crystal of sodium nitro-prussiate and a sufficient quantity of sodium hydrate to make it strongly alkaline were shaken up in a test-tube. The addition of glacial acetic acid to this gives a purple color to the foam if acetone is present. The urine was tested for diacetic acid by the addition of the strong aqueous solution of ferric chloride. A Burgundy red color shows its presence. This test for acetone is a modification of Legal's, and is at least more delicate than Gerhardt's, Le Nobel's or the sulphuric acid tests. Of course, this is not by any means a quantitative method, but it nevertheless allows one to distinguish between the presence of a trace and a considerable excess. A slight modification was introduced by one of the internes which made it even more delicate. A piece of bibulous paper, dipped in the foam and then dried, showed the characteristic purple color more delicately in the presence of quite small amounts of acetone. The more difficult quantitative tests were not practical in the routine of hospital work. In only one case was a quantitative test of the urine made.

The presence of acetone in the urine of ordinary cases of *diabetes* was first recognized by Petters in 1857, and soon after this Kaulisch described the clinical picture known as acetonemia. Many physiologists have demonstrated the presence of acetone normally in the urine. An excretion in the urine of 0.02 gm. per twenty-four hours is physiological; but under pathological conditions this may be enormously increased. The lungs excrete more acetone than the kidneys (Gelmüyden, Schwarz, L. Müller), but there is only a very small amount carried off in the feces.

There are various conditions, mostly associated with alimentation, in which acetonuria has been noted. First, in diabetes, especially of long duration, acetone is generally present in the urine. In starvation, inanition and the cachexia of malignant growths it is not uncommon, and with but few exceptions, it occurs in pregnancy with dead fetus. In peritonitis, where there is often auto-intoxication, and in the fevers of acute infectious diseases, sepsis and pneumonia, acetonuria occurs. In various nervous lesions and mental disease there is often a digestive disturbance which results in acetonuria. The excretion of acetone has been much increased artificially by alimentation, by drugs as phlorizin, and in chronic morphinism; in experiment by extirpation of the solar plexus or pancreas, and after general anesthesia.

Not even with the recognition of an excess of acetone excreted in the urine under these pathological conditions, do we have sufficient evidence of the existence of acetonemia. It is far from sure if acetone is really the toxic substance in the blood as Kussmaul thought; it is more probable that it is some of the various fatty acids from which acetone is obtained. Acetone may be in excess in the blood without producing marked symptoms or anatomical lesions. Considerable quantities can be exhibited with no harmful effects and very little increase in its secretion (von Jaksch, F. Müller, Kussmaul, Frerichs and Schwarz). We have injected, both intra-peritoneally and subcutaneously, large amounts into guinea pigs without causing anatomical lesions, unless the administration was prolonged for many days.

It is probable, as Naunyn says, that acetone *per se* is practically harmless; that the so-called picture of acetonemia is an acid intoxication or an acidosis due to the presence of diacetic and $\beta$-oxybutyric acids, and also probably lactic and various volatile fatty acids. At least, up to within the last two or three years the importance of acetone as a poison in the system has been overestimated. $\beta$-oxybutyric acid, the principal one of this group, is harmful only through its acid property of removing alkali from the body tissue. It may remove not only the fixed alkalis but also the bases of the proteids (Magnus-Levy) and thus destroy the efficiency of tissue very needful to life. However this may be, it is evident that the quantitative estimate of the acetone excretion is less important than the total acidity of the urine.

In one case of our series, the quantitative estimation of the acetone in the urine was made by Dr. Joslin. This was a child of eight years, dying twenty hours after the operation of fasciotomy. The total excretion of acetone for twenty-four hours was shown to be approximately 142 mgm. which is considerably more than normal. In cases of diabetes of long duration the daily excretion of acetone during the state of coma often reaches 100,000 mgm., but it may be true that the diet favors the secretion, and the accommodation of the system becomes gradually accustomed to the effects of this great formation of acetone.

Joslin has shown that the ingestion of 100 gm. of oleic acid will cause in a healthy man an excretion of over 1,700 mgm. of acetone in twenty-four hours without producing any other symptoms. He did not administer different amounts of the oleic acid to show whether the excretion of acetone was directly dependent on the amount ingested, but he did observe that those fatty acids that were only partially absorbed produced much less acetonuria. In these experiments the acetonuria was probably the direct result of fatty metabolism of the ingested fats taking place in the intestine, which, though of sudden inception and resulting in the formation of very large quantities of acetone, did not compare in its seriousness with a similar process taking place in the body fats of the liver and muscles.

The comparatively small amount of acetone excreted in one of our fatal cases shows that the quantitative estimation of the acetone excretion does not give a true index of the severity of the

condition, and that the presence of any considerable amount of acetone in the urine should be considered only as a probable sign of a more or less serious acid intoxication.

Now in these eleven cases showing acetonuria, there were only two in which diacetic acid was not found in the urine, and in one of these the test was not made for it. This is in accord with the idea that diaceturia and acetonuria cannot be separated (Lorenz). In most severe disturbances both are seen or they may alternate. This was clearly evident in case five in which the quantities of acetone and diacetic acid varied alternately from day to day. Gerhardt was the first to recognize this association of diacetic acid with acetone in the urine, which leads to the explanation of the origin of the acetone, from the acids, diacetic and $\beta$-oxybutyric.

Acetone has generally been said to have its source in the destruction of proteids, such as takes place in fevers and starvation. Though tissue destruction is conceded to be essential, it is not evident that acetone is the result of the breaking down of proteids (von Noorden, Honigmann). Acetone excretion may be diminished by a diet of proteids. Waldvogel administered to fasting men a diet of pure proteids and one of pure carbohydrates, but in neither case did acetonuria occur. Stadelmann and Minkowski showed an exception to this in the case of diabetes where, due to a sudden and complete administration of a meat diet there was a diminution of carbon dioxide in the blood, making it less alkaline, and coma and acetonuria resulted. A diet of proteids does not *increase* and a *diet* of *carbohydrates* generally *diminishes* the production of *acetone*. A reduced proteid diet causes the excretion of considerable acetone as a result of the destruction of body tissue (Schwarz). And in cases of poor nutrition we know that the fats of the body are drawn upon first. Bernert found acetone present eleven times in ninety-four cases of typhoid fever, but he says after the intestinal disturbance with the high fever had subsided, it was due to subnutrition and disappeared when the proteids were fed freely. Chemically there has never been success in producing acetone from proteid, but as it has been formed from gelatin (Blumenthal and Neuberg) it is probable that it may be obtained from proteid. It is, however, readily obtained from fats, and has been obtained from carbohydrates.

A constant excessive fat diet causes a large increase in the excretion of acetone (Waldvogel). When fats were fed to starving people acetonuria developed; but the subcutaneous injection of fat did not cause this result. So acetonuria is probably dependent on a fat metabolism generally associated with intestinal disturbance. That it can be induced artificially without intestinal disturbance is very true. In the normal person with full diet the addition of fat causes only a very slight increase of acetone excretion (Schwarz). A diet largely of fats, especially the volatile fatty acids of butter, results in acetonuria (Schwarz, Satta, Joslin). In the experiments of Joslin the ingestion of large amounts of sodium bicarbonate greatly increased the acetone excretion, but the reason for this is not known, and it is opposed to the statement of von Noorden that alkalis frequently decreased the excretion of acetone.

The formation of acetone is due to fatty metabolism with the formation of free fatty acids, and is largely dependent on a reduction of the carbohydrates and proteid diet and general sub-nutrition. In most of the pathological conditions in which acetonuria is recognized clinically there is a sub-nutrition, or an intestinal disturbance which results in a defective nutrition of the body, and it is associated with waste of body tissue. It may be the body fat or the food fat which is the source of the acetone, but the immediate cause is the disturbance of the metabolism.

The recognition of the occurrence of fatalities after narcosis, in which acetone and its allied compounds have been present in the urine, is by no means new. In 1894 Becker, from the Bonn clinic, reported three fatalities, after operation on diabetic subjects, in which the clinical conditions were quite similar to those observed in these and other isolated cases. The clinical symptoms in the three cases of Becker were so similar as to suggest some common cause, the condition noticed beginning as a slight but increasing dullness after the anesthetic, and after twenty-four to forty-eight hours the occurrence of a stupor, passing into a complete unconsciousness and coma, with a lack of autopsy findings. All clinical conditions seemed to him to point to some form of poisoning through acetone, and his experience with these led him to investigate the literature, where he found reported twelve fatalities, under like conditions. These were all associated with marked acetonuria, but were in cases known at the time, or after found out to have been, diabetic subjects. The condition of the patients before operation had not been such as to give reason for apprehension for the outcome, nor were the operations in themselves such as to give cause for alarm. It led him to formulate, from his observations, the statement that diabetic patients, who, even up to the time of operation, had shown no unusual symptoms under ordinary conditions, were, through some form of disturbance of metabolism, liable to pass from the narcosis into a stupor, and finally into a fatal coma, and that this is due to a condition which, at the time, was known as acetonuria, the term then used to indicate the manifestation of the presence of acetone in the secretions, particularly in the urine. There were no pathological findings in his cases which came to autopsy, except that in some there were lesions in the organs, similar to those found in cases of severe phosphorous poisoning. His supposition was that in some way the effect of the anesthetic was such that this condition resulted. This series was, however, collected from the

literature in which they had been reported as unusual fatalities, and they had not been so thoroughly investigated as would have been the case, had special interest been brought to bear on them. Becker's three cases of the series were distributed over a period of a number of months.

Brewer, in *Annals of Surgery*, October, 1902, reported a fatal case of acetonuria occurring after an operation for appendicitis. The case had presented nothing unusual in the condition previous to the operation to intimate an unusual result, and the operation itself offered nothing of remarkable interest. In clinical symptoms, the condition following the operation closely resembled the cases of Becker, and those of the series here reported, the acetone being detected both in the urine and breath.

In 1903 Dr. Leonard Guthrie published an article on "Fatal Effect of Chloroform in Children Suffering from a Peculiar Condition of Fatty Liver," in which he describes exactly the clinical condition found in the cases here reported. In addition to his own, he collected a large number of cases of fatal results after chloroform, in which at autopsy there was found the same peculiar condition of fatty liver. In a number of cases the symptoms were what he called the "cerebral type," and these had so close a resemblance to the cases here under observation that a portion of his description could almost be taken as an illustration of some of those here reported. In it he says: "After recovery from the immediate effects of the chloroform, there was usually an interval of a few hours, at the end of which the child would begin to utter piercing cries at intervals, disturbing the whole building by its shrieks, grinding its teeth, tossing, struggling, and requiring constant attention lest dressings should be torn off or fractured bones displaced. The pupils were often dilated, sometimes unequally, the face being flushed or pale, with a look of wild terror and anxiety. Consciousness was sometimes lost early and never regained; sometimes there were intervals in which the child would be dull and apathetic, but would answer rationally when addressed, and usually deny being in pain. Vomiting was a marked feature in all but one case. It was copious, frequent and persistent, and the vomited matter sooner or later almost exactly resembled the dregs of beef-tea. In one case it was described as 'bloody,' and in another as 'coffee-ground.' Headache seemed to be absent in all cases. Pyrexia, was not a marked feature, but in some instances it rose to 104° or more. The screaming at length subsided, perhaps lulled by the morphia and other sedatives given, the vomiting became less frequent, unconsciousness led to coma, and the respiration and the pulse gradually failed, the latter becoming often imperceptible before breathing ceased. In some the vomiting and the restlessness continued almost till the end, and death occurred, with suddenness, from heart failure." In his cases the urine was examined and note made of albumin. It was reported as never suppressed, but no mention was made of the presence of acetone or its allied compounds, or of any attempt to find it. He considers at length the probable causes of the condition, among them fat embolism and toxemic poisoning. The question of carbolic acid poisoning was considered, but this cause was found to be impossible. These cases seem to have particular interest, inasmuch as they so closely resemble, clinically, this series here reported, and also that in the pathological findings they so closely resemble two of this series. In others of his, as in this series, also, there was no pathological condition found. All of his reported cases occurred after a narcosis by chloroform, but it must be remembered that this was the agent used by him.

The conclusions which were given by Guthrie as to the cause of death in his cases were:

(1) In all but two cases due to auto-intoxication.

(2) Fatty condition of the liver, and therefore functional disturbance of that organ resulted before operation.

(3) Chloroform and operation shock combined aggravated the condition already present, and led to the formation of toxic alkaloids which the kidneys were unable to eliminate.

Guthrie, in support of the theory that it was due to fatty infiltration of the liver, quotes results by a number of men who experimented upon the effect of chloroform on animals for a greater or less period. These researches appeared to prove that long continued administration of chloroform produced fatty changes in body in general, and in the liver particularly. It was also found that the fat which appeared in the organs a few hours after the inhalation of chloroform did not disappear for several days.

With the exception of Becker's three cases which occurred in diabetics, and Brewer's isolated case, no mention is made of the seriousness of this condition, independent of its association with diabetes, but the cases were reported as being of interest, as they were fatalities after operation, under conditions which had given no cause for alarm. The phenomenon of acid autointoxication had then been thoroughly recognized, other than in its association with diabetes. The condition had been studied by von Jaksch, Lorenz, Baginsky and others. Baginsky, in 1888, from a thorough study of the subject, reported that acetone is frequently present in fever patients, the amount corresponding to the height of the fever; that it also came from disturbances of the metabolism, and could be induced by the cutting off of some forms of nourishment, as shown both in experiments and bedside observations.

Its occurrence after an anesthetic, and in individuals in whom there had been, up to the time of the operation, no unfavorable symptoms, although diabetic, led Becker to investigate as to whether this might have resulted from the use of the anesthetic, and whether the kind of anesthetic made a difference in the production of acetone, and he made between fourteen and

fifteen hundred observations, with narcosis by different agents, with reference to its effect in producing acetone in the urine. It was shown by these, that there usually existed, after a narcosis, for a longer or shorter time, and in healthy people, a distinct amount of acetone in the urine. This occurred independently of the form of anesthetic used, although ether being the usual form of anesthetic used in the Bonn clinic, the larger number of observations were made with this agent. It was also found that acetonuria appeared without being influenced by the length of the narcosis, the kind of disease, or operation, whether bloody or bloodless, or by age in the adult person, or sex. It was found, however, that children were far more susceptible in this respect; that in children, a larger number of cases of acetonuria appeared, and the amount of acetone was greater. The average duration was from two to three days. In some cases, however, it did not disappear until the eighth or ninth day.

Lorenz, in 1890, from his observations, was inclined to attribute it to gastro-intestinal disturbance, and recognized the different forms of allied intoxications. He also pointed out the fact that it was found in those forms of gastro-intestinal disturbance which were secondary to a nervous affection, but also showed that the amount of acetone was much less when the disturbance was of nervous origin. That it could be caused by intense nervous disturbance, as fright, was shown by the well known experiment, in thrusting a dog from a window at a high altitude, as if to throw him out, and the presence of acetone demonstrated in the urine after the conclusion of the experiment.

## ETIOLOGY.

The question at once arises as to the cause of the condition in the cases here reported. It is obvious that something incident to entering the hospital induced the condition in some cases, while in other more serious cases it was induced by the operation or something incident to it, and yet it is plain that there must be some deeper underlying cause or causes. A number of conditions are suggestive as having an etiological bearing, and are to be considered.

In such a series of cases the first thought is that the conditions might have resulted from anesthesia, or that they were in some way the remote results of the anesthesia. In analyzing the cases, however, we find that in one of the fatal cases and five of the milder cases the symptoms came on without operation or even anesthesia. One of the fatal cases had taken ether and been operated upon several months before without any ill effects whatever. In one case ether had been given several years before without any ill effect, and ether was given again a few days after the acetone had disappeared from the urine without any ill effect and without any reappearance of the acetone.

It seems fair to conclude, then, that anesthetization alone does not bring on the condition, or at least in a serious form.

Operative interference and operative shock cannot be regarded as the underlying cause, as is evident from the fact just stated, that in five milder and one fatal case the condition came on without operation. Furthermore, in none of these cases were the operations severe. None showed the ordinary symptoms of shock. None lost much blood, and in none was there any extensive injury of the tissues.

*Ptomaine poisoning.* — The question will be asked, Is not this condition one of ptomaine poisoning? The sudden onset, the nature and the severity of the symptoms, certainly suggest it, but in no case was there any diarrhea, which is scarcely ever absent in ptomaine poisoning if the patient lives long enough. There was no material rise of temperature except in the fatal cases soon before death. In one case the vomiting was slight, though otherwise the symptoms corresponded exactly to those in the other fatal cases. Furthermore, other children in the same ward at the same time and eating the same food have shown no symptoms to suggest ptomaine poisoning. These facts seem to bar out poisoning from this source.

Homesickness is suggested as a cause of the symptoms. The fact that the condition appeared usually about twelve hours after operation, no matter how long the child had been in the hospital before, would not necessarily militate against this suggestion. One patient, however, a boy with acute hip disease, four weeks after entering the hospital, while up and about the ward, was taken sick with vomiting and marked collapse. The vomiting lasted but one day, and acetone persisted for three or four days. In this case homesickness certainly was not a factor. The condition occurred also in other children who had been in the hospital before, who were old enough to know what they had been through, what they had to expect and who seemed absolutely happy. In one of the milder cases, however, a child who spoke no English and who cried constantly really seemed to bring on the condition.

Fright has been suggested as a possible cause. Two children had been in the hospital and knew what they were to expect. In some of the cases dread or homesickness or both did exist, but not to any greater degree than with many other children. The acute fright sometimes incident to taking ether did not seem to be more prominent in any of the cases than in many other children, though in the last fatal case it was quite noticeable.

One condition existing in the hospital at the time of the occurrence of these cases, though fortunately since removed, should be mentioned. Owing to the increased demands of the operative work at the hospital, the recovery ward for children after operation was taken as a service room. It had been the practice to return the patients to the wards immediately after operation. The children in the wards were necessarily

witnesses of the recovery from the intoxication of anesthesia with the noise and incoherent exaggeration of suffering. It is manifest that such a condition of affairs was calculated to increase the nervousness and anxiety of a nervous child and may have served as a contributing cause to the alarming symptoms under consideration.

The confinement of the hospital may possibly be regarded as a factor. Yet it seems that four days' confinement could not possibly have brought on a fatal condition, and it seems unlikely that the conditions would, if caused by confinement, come on after four weeks' stay, while the child was up and walking about the wards.

*Change of food.*— One very important factor suggests itself, especially in view of what is known in regard to the appearance of acetone in the urine after fasting, especially after cutting off of carbohydrate food. The change in diet on entering the hospital or the loss of appetite incident to it or the starvation and thirst incident to the taking of ether are factors present in every case except one, that of the child in whom the condition developed after four weeks' stay in the hospital. On the other hand it seems inconceivable that symptoms sufficient to cause death should come on so soon as a result of change or diminution in the amount of food, taken except in the presence of some other underlying conditions. In these cases the after effect of ether, the shock, or even the change in conditions and diet may have been sufficient to cause an intestinal disorder with disturbance of metabolism which set free from the excess of fats stored in the liver, muscles and subcutaneous tissues various fatty acids which caused the serious symptoms and were partly changed to acetone and so eliminated.

In looking over the cases one very striking fact appears. Barring out the fatal case of intestinal obstruction, there remain four fatal cases. Three of these had very extensive atrophy of the muscles of the lower extremities resulting from long standing infantile paralysis; the fourth had marked muscular atrophy, the result of confinement of one lower extremity in a plaster of Paris spica bandage for several months. Of the nine cases which recovered two had extensive infantile paralysis, with its consequent muscular atrophy; one had muscular atrophy; one had very acute hip disease associated with marked atrophy of the limb. Thus all the fatal cases and four of the nine cases which recovered had marked and extensive muscular atrophy. It seems a little unreasonable to maintain that two of the remaining five cases had muscular atrophy resulting from rickets, for the consequences of which they were admitted.

As Waldvogel says, acetone is certainly a production of fat, and it appears in abnormal amounts in the urine when the demand for energy must be met by tissue waste and the breaking down of body fats, and when there are large amounts of fat in the intestine. There was not in these cases any excess of fat ingested, but the store of body fat was in nearly all of them exceptionally great, and though they were apparently well, it is evident that most of them were afflicted with some chronic wasting trouble, which made them more susceptible to a slight change of conditions, or this demand for energy which could only be met by breaking up the store of fats into nutritious and at the same time toxic products.

At least, it remains for experiment to prove whether an extensive fatty degeneration of the muscles may not take away the metabolic efficiency of so much muscle tissue, and leave a deposit of fat to co-operate with the fatty liver in the cause of the serious results associated with acetonuria.

There are many conditions in these cases which present questions of special interest. A number of similar cases have been presented by different observers, and cases having so close a resemblance that they must be considered to be of like etiology. This group of cases, however, has a bearing of special interest, in that it represents a series, occurring within a comparatively short time, under different conditions, but alike in clinical manifestations. In looking back over the history of the hospital, a number of cases are brought to mind, by all connected with the institution, which, clinically, so closely resemble these as to be considered by them as undoubtedly of like origin; but in no instance, however, have they occurred in such a way that they could be regarded as a series, or grouped as regards their relation to time or etiology.

No attempt is made in the presentation of this series to formulate a definite theory as to their causation. At the present time, not enough is known about the physiological condition which results in the appearance of acetone and its allied compounds, to formulate a complete working theory. In the present state of knowledge, one can offer only the suggestions which have been given in the clinical presentation of the paper, and which point to the different conditions under which they have made their appearance. Neither is the opinion offered that the condition as seen, or that the fatal results, are due to an intoxication with acetone from its presence in the blood, for it is known that the same symptoms are present when other allied compounds are found in the blood, urine and breath. It may be that the poison is not particularly injurious when acting on proteids in circulation, but becomes so when demanding its affinity from that which is fixed in the cells.

The object is to report, (1) The occurrence of these cases which give a distinct clinical evidence of being a form of acute intoxication, due in some way to a disturbance of the metabolism, and which has, among its peculiar manifestations, the presence of acetone and its allied compounds in the excreta. (2) The occurrence of these cases in a series or group, comprising twelve or more, in the course of a comparatively short period. (3) Their apparent occurrence under many conditions, but particularly fatal when following the administration of an anesthetic, and under cir-

cumstances which gave no reason to expect an untoward result.

This series of cases establishes certain facts. It can be stated positively that the symptoms are not the result of anesthesia, operation or shock, unless in the presence of certain underlying causes still undetermined. It is merely suggestive to say that most of the cases have occurred in children with a high-strung, nervous temperament. In such children the confinement, the changed habits, the changes in diet, the homesickness, the dread of operation, the anesthesia, and the operation itself, may lead to changes in metabolism which have not hitherto been taken into account. These changes may lead to serious or fatal consequences unless all the organs, including the muscular system, are not only sound, but performing their functions normally.

The fact that acetone is found in such very much larger quantities under various conditions without producing symptoms, and the fact that experimentally acetone can be injected into the blood of animals without producing symptoms, as has been shown above, prove that the presence of acetone is not the cause of the symptoms in the series of cases reported.

The fact that acetone had been very rarely found in the urine of the children in the hospital, except when there were the symptoms described in the cases reported, suggests that the toxic agent may be produced by the same conditions which cause the appearance of acetone in the urine, and that the appearance of acetone in the urine, in quantity sufficient to give the ordinary clinical reaction, is to be regarded as an indication of serious and possibly dangerous disturbance of metabolism.

In the cases reported, it is plain that the ordinary cardiac stimulants, brandy, strychnine, digitalis, proved useless. Acting on the assumption that the symptoms were due to an acid auto-intoxication, bicarbonate of soda was given to all the cases after acetone was found in the urine. Some of these cases died, though even to them the soda seemed to give sometimes temporary relief. Several of the children who recovered were seriously sick before the soda was given. So far as can be judged from the limited number of cases, bicarbonate of soda or some other alkali is the only remedy which promises to be of any decided benefit, and should be given in large amounts by mouth and in enemata. In some instances, the infusion of large quantities of salt solution under the skin or into the veins seemed to be of decided, though usually of only temporary, benefit.

This report is given with the hope that it may stimulate further and more careful observation of cases, for although one is not able to point to the definite origin of the disturbance, yet one may, in conclusion, give certain suggestions in regard to it which are gathered from a study of the different conditions under which the phenomena occurred. These suggestions are based upon circumstantial evidence, but point to the need of paying more attention to certain conditions in the hospital care of children, both operative and nonoperative. These are: First, that greater attention should be paid to temperament, and to the conditions which influence it, realizing the anxiety and fright, with the accompanying physical disturbances, caused by entering a hospital, remembering that these are particularly noticeable in children of high-strung and apprehensive temperament. Second, that the absence of any gross evidence of a pathological condition, as shown by heart murmurs, evident changes in the lungs and kidneys, or abdominal tumor, may not constitute immunity from the danger of acetonemia, and possible death after operation. Third, decided caution should be paid to those cases in which there may be reason to suspect a fatty condition of the liver. The reported experience of many writers, as well as that derived from those cases here reported, warrant this view. Fourth, it is more than probable that unusual care should be exercised in those cases showing extensive degenerative change, and, particularly, degenerative muscular change, such as is seen in extensive infantile paralysis. The large percentage of cases in this series, which present this condition, seems to indicate that special stress should be laid on this point.

CASE I. L. R., a boy, aged ten years, of Roxbury, entered the Children's Hospital on Oct. 6, 1903.

Excepting for measles, the child had always been well until an attack of severe infantile paralysis nine months before. He had in part recovered the power to use his arms, but there remained paralysis of some muscles of the back and abdomen, and complete paralysis with marked atrophy of all the thigh and leg muscles on each side. The urine was acid, clear in color, and free from sugar and albumen. The pulse was 100; the temperature 99.5.

Four days after entrance, up to which time he had been perfectly well, the boy began to vomit persistently. The bowels had moved freely. The vomitus was watery, of light greenish color, not fecal. The abdomen was soft, and not distended. This lasted for two days, and on the third, the condition was improved, and the vomiting nearly ceased. Toward evening the pulse became very weak and rose from 95 to 150. The temperature, which had been normal, shot up to 105.8. There was no response to stimulation. The child became unconscious, and died in about twelve hours.

Autopsy, Oct. 11, 1903. Dr. W. R. Brinckerhoff.

Body of a well developed, fairly nourished white boy, twelve years of age. Rigor mortis present. Pupils equal, of normal size. Subcutaneous fat 1 cm.

Peritoneal cavity: Surface smooth and glistening. Two greenish black coils of jejunum lie on the left side of the cavity at the level of the umbilicus. These two coils, respectively each 10 cm. long, are somewhat distended, and in the upper end of each coil is an intussusception. The invaginated portion of the gut is 1.5 cm. in diameter; the greenish black distended portions being 3 to 4 cm. There is not fibrinous exudate in this region. Appendix normal. Mesenteric lymph nodes normal. Diaphragm at normal height.

Pleural cavities normal.

Pericardium contains a few centimeters of clear,

straw-colored fluid. The epicardium on the posterior aspect near the auricular-ventricular groove presents a few 1-mm., cherry-red spots. Other valves and cavities normal. Myocardium normal in color and consistency. Heart weight, 120 gms.

Lungs: Air containing, crepitant and pink.

Spleen: Weight 40 gms. Consistence flabby; color light red.

Pancreas normal.

Liver: Weight 1,130 gms. Light yellowish brown; markings distinct. Gall bladder contains much bile.

Gastro-intestinal tract: Mucosa presents no ulcerations at any point.

Stomach contains bile, stained fluid and the mucosa on the summit of the folds is somewhat injected. Duodenum and first portion of jejunum normal. Twelve centimeters of the intestine above the first intussusception contains a greenish black tenacious material (changed blood). The distended bowel below each intussusception is filled with the same material, which extends to a point 20 cm. or more below. The remaining portion of the intestine contains rather fluid, normal contents. The mesenteric veins tributary to the intussusception are normal.

Kidneys: Weight 130 gms. Pale, reddish brown; capsule strips readily leaving a smooth surface. On section cortex is pale brown; markings distinct. Adrenals normal. Bladder normal.

Cranium not opened. Cord: Consistency normal throughout. On section in the lumbar region is a pin-point, reddish area in one anterior horn.

*Anatomical diagnoses.* — Double intussusception of jejunum. Punctate ecchymoses in epicardium. Anterior poliomyelitis (clinical).

Case II. M. J. B., a girl, aged eight years, of Fitchburg, entered the Children's Hospital on Oct. 6, 1903. She had an extensive infantile paralysis involving most of the muscles of both lower extremities which came on five years before, and necessitated the use of crutches in walking.

On several occasions during the preceding year, the child had several very acute attacks of severe and persistent vomiting, accompanied by marked prostration and rapid pulse, and the physician in attendance stated that the condition of the child at the time of these attacks, very closely resembled that described to him as existing on the first day of the fatal one. The attacks were severe enough to cause considerable alarm as to their outcome.

The child seemed rather delicate, but was well nourished, and physical examination showed nothing abnormal aside from the infantile paralysis already mentioned. The urine was acid, with specific gravity of 1,020, free from albumin and sugar. The pulse was 100; the temperature was 100.

Four days after entrance the child was etherized, and three tendons were transplanted. The loss of blood was insignificant, though the operation and the application of the plaster bandages kept the child under ether about an hour and a half. The child took ether rather badly, being rather blue, and having a rapid pulse, but at no time during or immediately after the operation, was there ground for anxiety in regard to the condition.

During the recovery from ether the child vomited as usual, and then seemed comfortable, and in good condition till twelve hours later. She then suddenly began to vomit persistently. The vomitus was at first watery and light green in color, but later dark. The pulse became very rapid, jumping to about 190, the temperature rose to 106. The vomiting lasted for about thirty hours. The child, who had been restless, gradually sunk into a delirious stupor, and died forty-two hours after the operation, thirty hours after the vomiting began.

In this case no test was made of the urine for acetone or diacetic acid. It was clearly recalled afterward, however, that the peculiar odor of the breath was very strong. Stimulation had no effect.

Autopsy, Oct 12. Dr. H. A. Christian.

Body of a well-developed, well-nourished female child.

Pleural cavities are free from adhesions and contain a normal amount of fluid.

Pericardial cavity likewise normal. Heart: Weight 100 gms. Scattered over the surface of the left ventricle are about one dozen subpericardial ecchymoses from 1 to 2 mm. in diameter. Heart of normal appearance throughout.

Lungs: In the anterior portion of the mediastinum in the loose areola tissue there are numerous small gas bubbles, and on the surface of the anterior portion of the right lung there are several subpleural areas about 3 mm. in diameter, and 1 cm. in length, which are distended with gas. These suggest in course the distribution of some of the subpleural lymphatics. About these, as also about the gas bubbles in the mediastinum, there is no evidence of inflammatory reaction. The surface of both lungs is smooth. The lungs anteriorly are grayish pink; posteriorly darker red; are everywhere air containing. Anteriorly they are more evidently crepitant, though there is a distinct crepitation posteriorly. The bronchial mucosa is very slightly congested; there is no apparent exudation. Bronchial lymph nodes show no change.

The thymus is quite large, coming well down towards the base of the heart. However, it is not very thick, and there is no evidence of any pressure on the deeper tissues from this.

Abdomen: Subcutaneous fat well developed. Peritoneal cavity, particularly on the left side, contains a considerable amount of dark, sour-smelling fluid. This is seen to originate from the stomach, and greater curvature in the region of the spleen is completely digested away. (This is apparently a post-mortem change.)

Vermiform appendix normal, free from adhesions. Mesenteric lymph nodes show slight general enlargement. The intestines are contracted. Peritoneal surface everywhere smooth and glistening.

Spleen is of normal size; is smooth. Its surface is much discolored in places by the action of intestinal gas; it is soft and flabby; cut surface is grayish red. Malpighian bodies are not made out with distinctness. There is a moderate increase in the pulp. The spleen was exposed to the action of the gastric juice, and some of the softening may be due to this.

The stomach, with the exception of the area of self-digestion, appears normal, as do also the intestines.

Pancreas is normal.

Liver: Weight 510 gms. Surface is smooth and irregularly mottled with yellowish areas from 3 to 5 cm. in diameter, scattered over a reddish brown surface. Cross section is yellowish brown in color. Markings are indistinct. There are a few very small areas of a darker reddish color.

Kidneys: Of normal size; capsule strips readily leaving a smooth surface. From cut surface cortex appears to be of normal thickness, is greyish in color; glomeruli are visible as small reddish points; pyramids are redder in color, and their markings are quite distinct. The contrast between the two is quite sharp.

Adrenal glands normal. Bladder normal. Aorta normal. Genitalia normal.

Brain: Weight 1,360 gms. The meninges everywhere appear normal. There is no evidence of exu-

dation nor chronic thickening. There is no apparent increase of subpial fluid. The ventricles do not contain an increased amount of fluid and the ependyma is smooth. The choroid plexus are also congested, as are also the meningeal blood vessels. Section of the brain in the usual way reveals no lesion. There is no evidence, either by flattening of the convolutions, or pressure ring on the cerebellum, of increased cerebral pressure.

Spinal cord shows, particularly in the lower lumbar region, an atrophy of the anterior horn on one side. The blood vessels lie on the surface of the cord, are much congested. No other lesion found.

*Anatomical diagnosis.* — Chronic poliomyelitis, anterior.

*Cultures.* — One culture spleen — bacillus of colon group. Two culture liver — very slight growth of same.

None of three show any staphylococci or streptococci.

*Histology.* — Spinal cord: The anterior horn of one side shows marked atrophy with almost complete disappearance of the anterior nerve cells.

Anterior mediastinum: The loose tissues of the anterior mediastinum show an acute inflammatory process of slight degree, evinced by the presence of polynuclear leucocytes in the tissue, adjacent to the gas cysts described in the gross. Sections of this tissue stained by Gram-Weigert method show no micro-organisms. Sections of liver, spleen, kidneys and lungs are negative. From these sections it is evident that to the marked process in the cord there is added some slight acute inflammatory process in the anterior mediastinum.

Case III. E. W., a girl, aged five and a half years, living in Fall River, entered the Children's Hospital Nov. 16, 1903. When a year and a half old she had a severe attack of infantile paralysis, which kept her in bed some time with a high fever. A very general paralysis of the muscles of the thighs and legs persisted with contracted fasciæ, causing permanent flexion of the thighs, for the section of which she entered the hospital. The child has been about on crutches for about a year. Otherwise, the history was unimportant and the physical condition showed nothing abnormal, except, as was afterwards found, a slight trace of diacetic acid in the urine. The pulse was 100; temperature 99.

On the day after entrance, early in the morning, fasciæ at the upper outer part of both thighs were cut by open incision. The operation was very short, and very little ether was used. A double plaster of Paris spica bandage was applied.

After operation the patient seemed comfortable and passed a little urine. At 11 P.M., about thirteen hours after operation, she vomited a small amount of dark-brown thin fluid, and during the next ten hours vomited similar material several times. She slept in all three hours during this time. While awake she was very restless and noisy.

Twenty-four hours after operation the condition of the patient was very poor. The extremities were cold, the pulse was weak and rapid, the expression was anxious. The peculiar sweet odor of the breath became noticeable during the morning. At noon, twenty-six hours after operation, five ounces of urine were passed. This contained large traces of acetone and diacetic acid.

The child had not responded well to stimulation by strychnine given subcutaneously. A pint of salt solution was then given intravenously, after which the child became more quiet, though the pulse did not improve. Thirty hours after operation the child began to be delirious. The pulse became scarcely perceptible at the wrist. Attempt to move the bowels by enemata and cathartics were without avail, except for one small constipated movement.

Thirty-six hours after operation, twelve ounces of two-percent bicarbonate of soda solution was given intravenously, and also under each breast. Throughout this time there had been nausea, and occasional vomiting. Three hours later the child had an hour's sleep, and the pulse became more regular.

On the second morning after operation, the child became more dull and apathetic. She gradually lost consciousness. Coma came on. The odor of the breath became more and more marked as the condition became worse. The alæ nasi were working vigorously as though the child suffered from lack of air, and in the last few hours cyanosis was marked. The temperature after the operation remained about 102.

Autopsy, Nov. 19, 1903.

Body of female child, five and a half years of age. Well developed and nourished. No rigor mortis. No lividity. Pupils equal and normal, 3 mm. No edema. About 2 cm. subcutaneous fat.

Peritoneal cavity: No fluid nor adhesions. Serous membrane glistening and not congested. In mesentery of large intestine are numerous scattered small hemorrhagic points. Appendix is retrocecal, 7 cm. long. Mesenteric lymph nodes are not enlarged. Diaphragm at fifth rib or either side.

Pleural cavities negative. Pericardial cavity negative.

Heart: Fresh examination shows moderate amount of fat. Tissue is red, firm. Ventricles contracted, and the organ contains only a little fluid blood.

Lungs: Soft and crepitant. On section there is considerable white frothy exudation. The tissue is rich dark red, moist, crepitant everywhere. The bronchi are slightly injected. Bronchial lymph nodes are negative.

Spleen is firm and holds its shape well. Surface is dark red. The tissue is dark red, fairly firm, and only a moderate amount of pulp can be scraped off with the knife edge.

Gastro-intestinal tract shows nothing abnormal. The vessels are not congested. It contains little mucus, and a small amount of yellow feces. Pancreas is pale yellow and firm.

Liver: Surface smooth and pale yellow, and, in places, of reddish color. Stellate veins are in places well marked. Cut surface is pale yellow, oily and homogeneous. There are, in places, small, evenly distributed yellow areas corresponding with the centers of the lobules. The periphery of the lobules is pale red. The tissue is rather soft and friable. Fresh examination shows very marked fatty infiltration. Gall bladder moderately distended with brown bile.

Kidneys: Normal size. Capsule is thin and strips easily. Surface smooth and very pale yellow. In the section the lobulations are noticed, the cortex is very pale, yellowish, with some minute red points. The sub-cortical tissue is very dark red, and in marked contrast to the very pale red of the rest of the pyramids. Pelvis and ureters are normal. Fresh examination shows marked fatty infiltrations. Adrenals normal.

Bladder contains about 2 oz. of clear, straw-colored urine, which was drawn off in clean bottle with about 1 dr. of chloroform. Wall of bladder is negative.

Genital organs negative.

Aorta negative.

Organs of neck: Tachea and larynx are slightly congested. Thyroid normal. Thymus present, not large.

Brain: Calvarium thin, almost no diploe. Dura

only slightly adherent to bone. Slight congestion of meningeal vessels. No increase of fluid. Convolutions normal. Ventricles normal. Ependyma normal. Tissue not very moist.

Middle ears negative. Bone marrow red and soft.

Cultures from heart, spleen and liver were sterile. Cultures from kidney showed the colon bacillus.

DIAGNOSIS.

*Microscopical description.* — Heart negative. Lung and spleen show considerable acute congestion. Stomach negative. Small intestine shows many eosinophilic cells in the glandular epithelium. Pancreas negative.

Liver: Cystoplasm of liver cells is almost wholly replaced by vacuoles, both large and small, and what little there is stains poorly. The nuclei of the liver cells stain well. Many of the cells are phagocystic. Sections stained with Scharlach show very much fat.

Kidneys: The epithelium of the convoluted and descending tubules is swollen, vacuolated, and poorly stained. The nuclei stain well. Sections stained with Scharlach show considerable fat.

Sections of the thyroid, thymus, brain and pituitary body are negative.

*Anatomical diagnosis.* — Acetonuria. Very marked fatty infiltration of liver. Moderate fatty infiltration of heart and kidneys. Fatty degeneration of muscles of lower limbs.

Case IV. M. S., a girl, aged eight years, of Boston, entered the Children's Hospital on Dec. 17, 1903. She had an extensive infantile paralysis of muscles of the right lower extremity, of seven years' standing. Otherwise, the child was in good physical condition. She entered at noon, was given dinner, and put to bed. In the afternoon she began to vomit, and continued to do so at intervals during the next forty-eight hours. On the evening of entrance the odor of acetone was detected in the breath. Next morning acetone and diacetic acid were present in the urine, the reaction being marked. The specific gravity was 1,020, sugar was absent; there was the slightest possible trace of albumin. During this time the patient had been restless, but on the second day after entrance, periods of stupor, from which the child could be easily roused, alternated with periods of restlessness, in which she cried out suddenly. A large part of the time she lay with her eyes open with a vacant stare.

Immediately after the onset of the vomiting nothing but hot water had been allowed by mouth. Enemata of salt solution and beef juice had been given every six hours. Peptonized milk and sodium bromide were later given by enema. Bicarbonate of soda was given in drachm doses every three hours from the day after entrance, at first by rectum, but after a week by mouth. The child slept nearly the entire third night, but on the following morning the vomiting began again and continued at intervals for the next three days, when it ceased entirely except for several times two days later. The vomitus was always watery and light green in color.

Aside from the facts mentioned, there were no other symptoms, and nothing abnormal could be found on physical examination. The abdomen was soft and not distended. The bowels moved freely. The temperature varied but little from 99. The pulse ranged about 100. The acetone and diacetic acid disappeared from the urine at the end of two weeks. The general condition had improved decidedly. Three weeks after entrance, the Achilles tendon was divided subcutaneously under local cocaine anesthesia, and a plaster bandage was applied. Ten days later this was changed under nitrous oxide anesthesia. The next day the over-corrected position of the foot caused considerable pain, but nothing else.

Twenty days later the child vomited again several times, and acetone again appeared in the urine, but only for a day. She was discharged well nine weeks after entrance.

Case V. M. McL., a girl, aged six years, of Cambridge, entered the Children's Hospital on Dec. 17, 1903. When a year and a half old she had an attack of infantile paralysis, which had left her unable to walk. Except for fair power in the psoas and glutic, there was almost complete paralysis and atrophy of the muscles of both thighs and legs. The pulse was 110; the temperature 99. The urine was acid, specific gravity 1,025, free from albumin and sugar.

On the morning after entrance the child vomited once. The vomitus was watery, of light green color. Acetone and diacetic acid were not then present in the urine, but on the following morning both were present, and the child was very dull. There were no fever or other symptoms. Bicarbonate of soda was given in half-drachm doses every two hours. The condition slowly but steadily improved. After twelve days the acetone and diacetic acid disappeared from the urine. The bicarbonate of soda was continued during this time. After a few days the urine became alkaline. The after history was uneventful. Splints were fitted. The child was discharged five weeks later.

Case VI. M. G., a girl, age four years, residence, Roxbury, was admitted to the Children's Hospital Dec. 26, 1903. Previous history was negative except for an attack two years ago. This illness lasted three days. The prominent features were absolute constipation for three days and vomiting. This was finally relieved by enemata.

Dec. 21, 1903, vomiting again began. Constipation had existed for some time previously. From Dec. 21 to Dec. 26 there was only one dejection. The vomiting occurred during this time frequently. Nothing, even water, was retained. Patient had become weak. Enemata had failed to relieve the condition of constipation. There was great thirst.

Dec. 26. On examination the patient was found to be weak. The face was somewhat haggard and anxious. Marked "acetone" odor to the breath. Abdomen somewhat distended and tympanitic; not especially tender. The physical examination was otherwise negative. Temperature 98.6. Pulse 140. The urine was clear, acid, specific gravity 1,024, albumin and sugar absent, acetone (marked) and diacetic acid present. Blood examination showed white count of 24,000.

Dec. 27. The vomiting has continued. Is now thin, light brown, foul smelling, *i. e.*, fecal in character. Patient has not been relieved by treatment, and attempts at feeding have failed. The abdomen is somewhat more distended and peristaltic movement of the intestine can be seen. The urine is clear, acid, 1,023, albumin 0, sugar 0, acetone (slight), diacetic acid. The patient was etherized, and the abdomen explored through a median incision by Dr. H. W. Cushing. A band formed by a Meckels diverticulum was found which extended from the ileum, in the vicinity of the cecum to the anterior abdominal wall, to the left of the median line near the umbilicus, completely obstructing the small intestine. This band was resected. One end was inverted into the ileum, which was closed over it by a "purse string" suture. The abdominal end was ligated close to the peritoneal attachment on the abdominal wall. The distal collapsed portion of the intestine immediately filled, and the obstruction was relieved. Examination of the rest of the intestine showed no other obstruction and

the abdominal wound was closed by sutures. The patient's condition at the end of the operation was quite serious and required free stimulation. That the "shock" was more pronounced, and the danger of the patient increased by the use of an anesthetic in the "acetonic" condition of the patient could not be definitely decided. There was good reason to expect marked shock in a case of this nature and duration, even had no anesthetic been used.

The patient reacted fairly well from the active stimulation, and during the afternoon and evening was quite bright. Temperature 100.4, pulse 150, fair quality.

Dec. 28. After 12.30 A.M. patient's condition became worse. Pulse was of poorer quality. There was gradually increasing stupor. No dejection. The abdomen rapidly became distended. At 9.45 A.M. (without anesthesia) the abdomen wound was opened, a loop of intestine found, and a rubber tube inserted for drainage, forming an artificial anus. Considerable liquid feces and gas drained off through this tube. The contents of the intestine had a marked acetone odor. The patient's condition became steadily worse. She was apparently unconscious, then comatose. The acetone odor in the breath increased. The pulse failed, and the patient died at 12.15 P.M. The urine (post-mortem specimen) showed a very marked reaction of acetone and diacetic acid. The temperature in this case was not especially elevated, while the pulse corresponded with the patient's general condition.

In this case two conditions existed: first, intestinal obstruction from mechanical cause; second, the "acetone" disturbance. This latter case indicated by the persistent vomiting, thirst, odor of breath, urine, stupor changing to coma without especial constitutional disturbance. The constipation, leucocytosis, abdominal distention, marked the condition of intestinal obstruction, which would cause the fecal character of the vomitus. The condition of the patient was quite serious immediately after the first operation, but after the reaction there seemed no reason why the patient should not recover, except for the disturbance from the acidosis; and it is probable that had not this existed the case would not have ended fatally.

CASE VII. T. D., a boy, aged seven years, of Melrose, entered the Children's Hospital on Jan. 2, 1904, with hip disease which had existed for nineteen months, but which had been very acute for only three weeks. An abscess had appeared. During the preceding two years there had been several attacks of diarrhea. The child also had measles and whooping cough and inflammation of the middle ear. Under rest and traction the acute symptoms about the hip subsided. The patient then got up and was walking about the ward with a Taylor hip splint. The pulse was 100; the temperature, 99. The urine was clear, acid, free from sugar, albumin and acetone and diacetic acid.

On Jan. 28, 1904, nearly four weeks after entrance, he vomited several times and was considerably prostrated. The characteristic odor of the breath was noticed. Acetone and diacetic acid were present for several days in the urine, which was rather high colored and had a specific gravity of 1,029. There were no further symptoms except a rise of temperature to 102.

CASE VIII. R. K., a boy, aged four years, of Boston, entered the Hospital on Jan. 27, 1904, for the radical cure of a left inguinal hernia. Aside from the hernia there was nothing noticeable in the history or physical examination. The boy was a Russian Jew, who neither spoke nor understood English, and apparently, as a result of homesickness, he cried almost constantly after entrance for several days. The urine was of normal color, acid, reaction, and free from albumin, sugar, bile pigment, acetone and diacetic acid. The urates were increased.

Two days after entrance, under ether anesthesia, a Bassini's operation was performed. The child recovered from ether well. Next day a sweet odor of the breath was noticed. Acetone and diacetic acid were present in the urine. There were no other symptoms except the constant crying and pulling off the dressings. There was no vomiting. After two days the acetone disappeared from the urine. While there was acetone in the urine the child was kept on a fat diet, and was given bicarbonate of soda by mouth. The child was discharged well in three weeks.

CASE IX. C. K., a girl, aged four years, of East Boston, entered the Hospital on Feb. 15, 1904. She had a congenital dislocation of both hips. On Sept. 4, 1903, a little over five months before, the right hip had been reduced by the Lorenz method. The etherization and convalescence were without incident. Since that time the right thigh had been kept in plaster. The plaster was removed. The skin was in fair condition. There were no excoriations. Otherwise the child was in good physical condition. The urine was acid, clear, and of slightly high color, free from sugar and albumin.

Three days after entrance, on Feb. 18, 1904, the child was etherized. In attempting by manipulation to change the right thigh from the first to the second position, the lower epyphysis of the femur was separated in spite of the fact that but little force was used.

An attempt was then made to reduce the dislocation on the left, when the same accident happened on that side. No further attempts at reduction were made. A double spica bandage of plaster was applied reaching to the toes. The child was under ether between a half and three quarters of an hour.

The child recovered from the ether as usual. There was but little nausea. In the evening the pulse was not strong; the rate had increased from 130, before the operation, to 150. The color was good and the skin warm. The child slept well. She had taken liquids. The bowels moved. She passed urine. There was absolutely nothing in any way unusual in the condition until six o'clock in the morning after the operation, an interval of twenty hours. The pulse at that time grew suddenly weak and rapid. The color became poor. A hypodermic injection of strychnine was given, and a few minutes later the color and pulse improved. The child seemed a little dull. There was no vomiting. The breath smelled sweet.

The condition improved, the color grew better, the pulse became stronger during the next three hours. There was another sudden relapse. The pulse became weak and rapid, the lips blue, the face looked drawn. Three ounces of urine were withdrawn by catheter. Acetone and diacetic acid were present. An enema of brandy, coffee and salt solution was given. The pulse improved a little. A half a drachm of bicarbonate of soda was given every three hours by mouth, and two drachms every three hours by rectum from this time on. During the day the child grew rapidly worse. She sank into a restless coma. The lips were very blue in spite of oxygen given freely. The drawn expression of the face increased, the eyes became sunken. She seemed to rally a little after the hot enemata were given. Considerable liquid was given

by mouth and retained, with the exception of vomiting a little milk once and a dose of soda once.

At 6 P.M. an injection of salt solution was given under both pectorals. Marked improvement followed in the pulse and in the color, and the child came out of the coma. At that time the temperature was 104. Only an ounce and a half of urine was obtained with the catheter. Hot poultices were applied over the kidneys. Urine was passed naturally at midnight and at 2 A.M.

At 9.30 P.M. the child was able to recognize her mother. At midnight, however, the condition again grew suddenly worse. The pulse grew weaker and more rapid; the respiration became poor. The temperature rose to 106 at 3 A.M. The coma returned. Stimulation by digitalis and strychnine subcutaneously, and by oxygen were of no avail. The child died at 5.30 A.M., twenty-three hours after the first collapse, forty-three hours after the operation.

Autopsy, Feb. 20, 1904.

Well-developed and nourished girl of three and a half years. Skin translucent white with marked lividity of the back. Flesh of body and thighs quite flabby. Body length, 95.5 cm. Slight rigidity in hands and feet. Five hours post-mortem. The layer of subcutaneous fat in the abdominal wall is 2 cm. thick.

Peritoneal cavity: Omentum short and contains little fat. No adhesions or fluid. Peritoneal vessels not congested. Intestines are moderately filled with greenish fluid. Mesenteric lymph nodes are slightly enlarged. Appendix hangs into pelvis, 5 cm. long, with short mesentery. Diaphragm is at the fourth rib on the left, and third intercostal space on the right.

Pleural cavity negative. Pericardium negative.

Heart: Normal size, tissue pale, fairly firm. Ventricles contracted, blood dark and fluid. Fresh examination shows a small amount of fat in the tissue.

Lungs: Soft and crepitant except in very posterior parts where the tissue is darker red and moist.

Spleen: A little large, rather firm, dark red, and the cut surface is moderately pulpy. Malpighian corpuscles quite numerous and distinct.

Gastro-intestinal tract: Stomach is partly filled with greenish-yellow liquid. Vessels of mesentery are congested. Mucous membrane apparently normal. Intestines are not remarkable. Pancreas normal size, tissue firm and straw colored.

Liver: Quite large, very pale yellow with a pink color in places. Veins on the surface are well marked. The cut surface is pale yellow and the lobules are indistinctly marked. The knife edge scrapes up much fatty material. The tissue breaks easily on pressure.

Gall bladder distended with green bile.

Kidneys: A little large; capsule strips easily, leaving a smooth surface. Cortex is pale red and 4 mm. thick; pyramids dark red. Fresh examination shows considerable fat in the epithelium of the convoluted tubules. Adrenals negative. Genital organs negative. Bladder contains about 30 cc. cloudy urine.

Bone marrow bright red.

All the muscles of both thighs are small, soft and flabby, and pale yellow.

Organs of the neck, negative.

Brain: Vessels of meninges congested. Brain tissue firm, quite moist and apparently normal. Moderate amount of fluid in the ventricles. Ependyma normal.

*Anatomical diagnoses.* — Extensive fatty infiltration of liver. Fatty infiltration of kidneys. Eosinophilia of gastric mucous membrane and spleen. Fatty degeneration of muscles of the thigh.

Cultures of heart's blood and spleen are sterile.

Bacillus of the colon group in liver and kidneys.

*Microscopical examination.* — Sections of the heart, lungs, pancreas, adrenals, ovary, thymus, thyroid, brain and pituitary body show nothing remarkable.

In the spleen there are some large phagocytic cells in the corpuscles, and there are numerous large cells, with generally one or two nuclei, which are filled with large eosinophile granules. Some of these are phagocytic.

In the epithelium of the peptic glands are many very large eosinophilic cells, in which there are numerous vacuoles and foreign bodies. In the small intestine these cells are very numerous, but there are few in the large intestine.

Liver: The nuclei of the liver cells are, in general, well stained, those of the connective tissue stain rather poorly. The liver cells are filled with vacuoles, which a section stained with Sharlach shows to be due to fat. Very little of the cytoplasm can be seen.

Kidneys: The epithelium of the convoluted tubules is broken down, stains poorly and is filled with vacuoles of fat droplets. The nuclei stain well. In the long tubules this is less marked.

In the bone marrow are numerous eosinophilic cells.

Case X. R. H., a boy, aged six years, of Quincy, entered the Children's Hospital on Feb. 16, 1904. He had begun to walk at fifteen months. About the end of his second year it was noticed that he was lame, and as time went on he fell more and more frequently. When trying to rise he climbed up his own legs, grasping first an ankle, then by great effort a knee, and finally straightening up. Five months before entrance he recovered from pneumonia which came on after measles and whooping cough. Since then he had been unable to rise alone, although he could still walk when on his feet. During the three months before entrance his feet began to turn under him. He had been treated in the Out-Patient Department for sixteen months by massage.

On entrance he was only in fair physical condition. There was slight mental impairment. The expression was vacant; he was a mouth breather. The chest and abdomen showed nothing abnormal. The pulse was 100; the temperature 99; the respiration was 25. The muscles of the arm and shoulder girdles were much atrophied and weakened. The atrophy of the leg muscles was less marked. The feet were held in slight position of equino-varus. The gait was waddling and unsteady. The grip of the hands was weak. There were athetoid movements of the hands. The urine was acid with specific gravity of 1,018 to 1,028, and was free from albumin, sugar, acetone and diacetic acid and bile.

Three days after entrance, under ether anesthesia, both Achilles tendons were cut subcutaneously, and the feet were put in an over-corrected position in plaster-of-Paris bandages. Next day the child was comfortable and in no pain. The recovery from ether had been normal. Two days after the tenotomy the pulse was noticed to have jumped to 142, and the child seemed a little dull, with periods of restlessness. There was no pain, no nausea. The temperature and respiration were not altered. The sweet odor of the breath led to another test for acetone in the urine. It was found to be absent. Next day the child seemed to be better. The pulse dropped again to 100 within three days. Six days after operation the child was discharged to the Out-Patient Department without any unfavorable symptoms.

Case XI. M.D., a girl, aged nine years, of Lowell, was admitted to the Children's Hospital on Feb. 18, 1904. She had been through measles and chicken-pox. She entered because of a valgus deformity of the foot, following an operation five years before for the correction of a congenital equino-varus. She was well

developed and fairly well nourished. Nothing abnormal was found on physical examination except the extreme valgus deformity of the right foot. The urine was acid, specific gravity 1,024 and free from albumin, sugar, bile, and acetone and diacetic acid. The temperature was 99; the pulse 100.

Two days after entrance the child vomited several times; complained that she felt sick, and seemed dull. The breath was sweet. Acetone was found in the urine.

She was at once put upon bicarbonate of soda, and given a diet as free from fat as possible. For the succeeding three days there was no acetone or diacetic acid in the urine. The child grew bright again. The vomiting ceased.

On the next day, the sixth after entrance, both acetone and diacetic acid again appeared in the urine, but there were no unusual symptoms.

Twelve days after entrance under ether anesthesia a complicated plastic operation on the foot was performed, and the limb part put up in plaster-of-Paris bandage. Considerable pain followed the operation, but there were no unusual symptoms and there was no reappearance of acetone or diacetic acid in the urine.

About three weeks later the child was discharged to the Out-Patient Department.

Case XII. M. L., a boy, five years old, of Boston, entered the Children's Hospital on Feb. 23, 1904.

The child had been knock-kneed ever since coming to this country from Italy four years ago.

He was fairly well developed and nourished. There were a few râles in the back of both sides of the chest; otherwise the lungs and heart were normal. The abdomen was distended and tympatic. The rosary and the epiphyseal enlargements at the wrist and ankles were marked. There was a very prominent knock-knee due to a curve in the upper left tibia. The urine was normal in color, specific gravity 1,012, sugar, albumin, acetone and diacetic acid absent.

On the first two days after entrance the child vomited several times. The odor of the breath was sweet. The child complained of the throat and cried constantly. There was no collapse and no stupor. The temperature was elevated to 101 on the second evening, but at only one other time did it rise above 99.5. The urine showed both acetone and diacetic acid. This lasted for three days. There was no albumin or sugar at any time. The urine was acid except on one day after the soda had been given. The child was put on a fat free diet and given bicarbonate of soda.

The vomiting ceased in two days. There were no other unusual symptoms.

Twelve days later a Macewen's osteotomy of the femur was done, and the leg was put in a plaster-of-Paris spical bandage. The child was very noisy in coming out from ether. This was controlled by morphine. There was no recurrence of the acetone in the urine. Three weeks after the operation the bandage was renewed, and the child discharged to the Out-Patient Department.

Case XIII. W. J., a boy, aged four years, of Roxbury, entered the Children's Hospital on Feb. 24, 1904, for the correction of double knock-knee. Three years before the child had chicken-pox and pertussis. Two years before had measles. He was markedly rachitic, but otherwise was in fair condition. Rosary and epiphyseal enlargements at the wrists and ankles were marked. The abdomen was distended and tympanitic. There was knock-knee on each side with forward and outward bowing of the tibia and femur. There was a coxa vara on the left. The heart and lungs were normal. The pulse was 90; the temperature 99, and respiration 30. The urine was acid, 1,026, normal in color and free from albumin, sugar, acetone and diacetic acid.

Two days after entrance a Macewen's osteotomy of both femora was done under ether anesthesia, and the legs were put in a plaster-of-Paris bandage from the toes to the umbilicus. The child recovered normally from the operation. Next day the odor of the breath led to the examination of the urine again. Both acetone and diacetic acid were present. There was no sugar or albumin. There was no rise of temperature. Within two days both the acetone and diacetic acid had disappeared. There were no other unusual symptoms at any time. The child was discharged three weeks later, still in plaster bandages, but with the legs in improved position and with good callus.

Case XIV. E. P., a girl, aged three years, of Dorchester, entered the Children's Hospital on Feb. 27, 1904.

A year before she had pertussis. She came in because of pleuritic effusion following measles. She was well developed and nourished. The right chest was hyperresonant, but except for some moist râles in the lower back, the respiratory sounds were normal. The heart sounds were heard more plainly on the right than on the left.

On the left the intercostal spaces were bulging. The respiratory excursion was diminished. Respiratory and voice sounds and tactile fremitus were diminished except that there was bronchial breathing above the fourth rib. There was dullness in both back and front to the apex. The abdomen showed nothing abnormal. The temperature was 99.6; the pulse 122; the respiration 33.

The left chest was at once tapped and eight ounces of slightly cloudy, straw-colored serum were withdrawn. On account of coughing the needle was then removed. Next day she was transferred to the medical side. Afterwards two ounces more were withdrawn by a second aspiration. It was then found that there were signs of consolidation in the left apex, — dullness, broncho-vesicular breathing and numerous medium moist râles.

On the day after the tapping, the urine showed the presence of acetone though the reaction was not marked. There was no vomiting, no stupor, nor other unusual symptoms. She was given a diet without fat and was given cream of tartar and phosphate of soda, two drachms every four hours. The child was discharged from the hospital relieved, but still with dullness at the left apex two weeks after entrance.

Child showed no unfavorable signs or symptoms after aspiration of chest, no odor to breath noticed. The condition of acetone in urine would have been entirely overlooked except that in the course of routine examinations at that time acetone was found and in such small quantities that violet color not seen, or overlooked in foam, but urine gave a distinct violet reaction when dried on paper. This condition lasted through Feb. 29 (three days after entrance). Urine of March 1 showed not even the reaction on paper.

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# Reports of Societies.

## AMERICAN GYNECOLOGICAL SOCIETY.

Twenty-ninth Annual Meeting, held in Boston, Mass., May 24, 25 and 26, 1904.

First Day.

The Society met in the Boston Medical Library, under the presidency of Dr. Edward Reynolds of Boston.

An address of welcome was delivered by Dr. Charles M. Green of Boston, which was responded to by Dr. Henry T. Byford of Chicago.

### THE TREATMENT OF GALLSTONES FOUND AS A COINCIDENCE IN ABDOMINAL OR PELVIC OPERATIONS.

Dr. John G. Clark of Philadelphia stated that among the unsettled questions in abdominal surgery, the treatment of gallstones found as a coincidence in abdominal or pelvic operations might be considered a debatable one. He followed the plan at present of removing gallstones which were found in the course of another operation, if the patient's condition permitted of this extra operation. Although it was stated that 95% of gallstones produced no symptoms, he believed that this statement should not be applied to cases as one met with them at the time of an operation. In his review of recent literature he had been especially impressed with the fact that knowledge of the early stages of cholelithiasis was very indefinite, and that many cases which came to operation for more or less urgent symptoms did not have the clinical symptoms of colic and jaundice, as usually taught in medical schools. In view of this hiatus in the early history of this disease, he believed that many symptoms now attributed to gastralgia, indigestion, functional disturbances of the gastro-intestinal tract, etc., would, as knowledge increased, be ascribed to the presence of gallstones with associated infection, which was so frequently found in cholelithiasis.

In referring to the etiology of gallstones, he said that three facts had been prominently established: (1) That the bile was not bactericidal; (2) that the micro-organisms in the gall bladder were predisposing, if not absolute, causative factors in the formation of gallstones; (3) when gallstones were present in the gall bladder, infection in that viscus was much more likely to take place.

He mentioned three general avenues through which infection might enter the gall bladder: (1) From bacteria circulating in the general blood stream and reaching the liver through the hepatic veins; (2) by the direct passage of bacteria into the common bile duct from the duodenum; (3) by the transportation of bacteria from the intestine through the portal circulation.

He then recurred to the frequently quoted statement that 95% of gallstones did not produce symptoms, and showed from his own series of cases that in at least 50% there were varying symptoms from undoubted attacks of colic and jaundice to less pronounced gastro-intestinal symptoms. To justify operative intervention in cases which were not producing well-defined symptoms, the mortality and morbidity should be a very low one. In his own experience no death had occurred, nor had there been any serious complication referable to the secondary operation. In lieu of the fact that the additional operation did not seriously jeopardize the life of the patient, and also because he had seen two patients die from cholelithiasis a year or more subsequent to an abdominal operation, in which, had the routine exploration been made, the gallstones might have been easily removed, he believed that the best interests of the patient would be conserved if the gallstones were removed as a secondary part of another operation, in the event of their being found. He appended the history of twelve cases to his paper, in which the various operative points, as well as the significant facts in symptomatology, were elaborated.

Dr. R. Stansbury Sutton of Pittsburg said that gallstones did not always produce symptoms which demanded or justified resort to operation. If they were encountered during the course of another operation, they had better be removed. There was a remedy, however, which obviated the necessity, in some instances, of surgical intervention, namely, kolalin. He had used kolalin in dozens of cases in which he had held operation in abeyance, and did not have to operate subsequently.

Dr. George M. Edebohls of New York had occasion at one time to operate on a woman who presented marked dyspeptic symptoms. In addition she had movable kidney, chronic appendicitis, and induration in the region of the gall bladder. He anchored the kidney, removed the appendix through a lumbar incision, pulled the gall bladder into the lumbar wound, and found the stone about four or five centimeters in length, pear-shaped, and nearly filling the gall bladder. The attending physician was positive that the gall bladder did not produce symptoms of stone in it. He would not let him remove the stone from the gall bladder. A year later he opened the woman's abdomen for some other condition, making an incision near the gall bladder. He investigated the gall bladder, found it was perfectly healthy, and that the large stone had either passed or had been dissolved. The treatment after the previous operation consisted of the use of olive oil for about a month, and whether this had anything to do with the passage of the stone, he did not know. At any rate, the stone had disappeared and had left no trace of its former existence.

Dr. A. Palmer Dudley of New York emphasized the importance of looking beyond the gall bladder for trouble. He believed that stones were formed in the liver ducts themselves, and that from a stagnant circulation cholesterin nuclei formed, and that only a small proportion of stones were found in the gall bladder. He would not hesitate to go into the center of the liver. In fact, in the last case he had, in which the diagnosis of gallstones had been made by a medical confrère, he boldly went into the gall bladder, but found no stone. He found the duct dilated; he went

five inches into the right lobe of the liver, as far as he could reach with his finger, and packed the liver full with iodoform gauze, put an apron of gauze over it, and the patient was well to-day. He would explore the center of the liver in searching for such deposits.

Dr. Brooks H. Wells of New York said that in the last few years he had used practically the same measures as those outlined by the essayist. A number of patients coming under his observation had complained of obscure symptoms of so-called functional indigestion. In them he found either disease of the gall bladder, an over-distended gall bladder from obstruction elsewhere, or trouble referable to gallstones. By making a small or large incision, as seemed necessary, cleaning out the gall bladder and draining it, the patients had obtained remarkable relief from the symptoms that were supposed to be due to functional indigestion.

Dr. Seth C. Gordon of Portland, Me., said that when the abdominal cavity was opened for other purposes, and he was quite sure the patient could stand it, he would examine the gall bladder thoroughly, and if gallstones were found, he would remove them. He cited cases in support of this line of reasoning.

Dr. Hiram N. Vineberg of New York said that under the influence of the teaching of Kelly he had been in the habit of doing what had been advocated by the essayist, but after hearing a discussion on gallstones in the common duct and in the gall bladder by one of the Mayos, he had changed his method. Simply opening the gall bladder and removing the stones did not effect a cure, as proven by three or four cases that occurred in his own practice. If the gall bladder was diseased, however, it should be removed.

Dr. J. M. Baldy of Philadelphia said that gallstones existed in the gall bladder for years without causing any material discomfort, but that when infection occurred they were liable to give trouble. There was not the slightest question but that large numbers of cases of so-called stomach trouble or chronic indigestion sooner or later proved to be cases of gallstones or of gall bladder disease. With reference to removing gallstones when operating for some other intra-abdominal condition, the surgeon should consider the physical condition of the patient, the surroundings, etc., and as to whether the patient was willing to undergo the additional risk of a second incision for the gall bladder operation.

Dr. Walter P. Manton of Detroit quoted Ochsner as saying that he had tried almost everything in the so-called cases of chronic dyspepsia without affording relief; yet after opening their gall bladders and removing gallstones which were found, the patients were cured. Dr. Manton had seen a number of such cases, and contended that the removal of gallstones, or the gall bladder, if diseased, was the thing to do. He did not believe there was any solvent ever invented which would dissolve gallstones.

Dr. Beverly MacMonagle of San Francisco, Cal., stated that when the abdomen was opened for some pelvic or abdominal trouble, the operator should investigate the gall bladder. If gallstones had been making the patient ill, causing dyspepsia, or if there were adhesions around the gall bladder, one should operate. The conditions that arose in the pancreas as a consequence of gall bladder disease and of gallstones were serious, and if the surgeon could do something of a prophylactic nature, without adding to the risk of the patient's life, it was a wise thing to do.

Dr. Clark, in closing, said the formation of gallstones through bacteria had been clearly demonstrated by a series of experiments. He did not believe anyone would strongly advocate operation unless the gallstones were producing symptoms.

### OVARIAN PREGNANCY.

Dr. J. Clarence Webster of Chicago reported a case of ovarian pregnancy. There was a right ovarian, irregularly-rounded swelling, measuring 7 by 8 cm. There was no evidence of rupture into the peritoneal cavity. The adhesions were recent. Sections of the ovarian swelling consisted mainly of extravasated blood and disseminated fragments of the chorion. No evidence of transformation of ovarian connective tissue into decidua was noted. It was certain that the pregnancy did not start in a Graafian follicle.

Dr. J. Whitridge Williams of Baltimore said there was no doubt that ovarian pregnancy occurred, but it was the rarest of all forms of extra-uterine pregnancy. In regard to the Muellerian origin of ovarian pregnancy, he was not quite convinced of it. While there was no doubt that Muellerian tissue might be found in the ovary, as mentioned by the essayist and confirmed by numerous observers, he thought it was going too far to advance that view in explanation of every case of ovarian pregnancy.

Dr. John T. Thompson of Portland, Me., referred to a case of ovarian pregnancy he had reported at a previous meeting of the society. He called attention to the nature of the structures in which pregnancy occurred, and to the frequency with which rupture might occur in the early days.

Dr. Edward P. Davis of Philadelphia removed an ovarian pregnancy about a year ago, the histology of which had not been completely worked up as yet, although a diagnosis was made very early of the nature of the tumor from the enlarged ovary. The indications were that the pregnancy did not originate in the Graafian follicle.

Dr. Lapthorne Smith of Montreal had diagnosed ectopic pregnancy by the clinical symptoms; had operated, and found hematoma of the ovary. He had said to his students that he was sorry that his diagnosis was wrong, because authorities maintained that there was no such thing as ovarian pregnancy, but after hearing what had been said, he was convinced there was.

### URETERO-LITHOTOMY.

Dr. J. Wesley Bovee of Washington, D. C., in a paper on this subject, gave the history of the operation, and then discussed the size and number of calculi. The routes for reaching and extracting ureteral calculi, he said, were the transperitoneal and the extraperitoneal. The latter might be subdivided into loin, inguinal, vaginal, rectal, sacral, perineal, and transvesical. The transperitoneal route should never be the one of election, as the danger of peritoneal infection from the urine was too great. Of the extraperitoneal routes, the selection would depend largely upon the location of the calculus or calculi, although the operation of Ceci, of removing it through the rectum, should only be considered justifiable when the stone had practically sloughed through into the rectum. In a class of cases characterized by the stone having been lodged in the intravesical portion of the duct and later sloughed into a pocket in the bladder wall, which it had made for itself, the vaginal and inguinal routes were the only safe ones, although in so stating he was not unmindful of the number of cases in which suprapubic cystotomy had been done. He discussed the removal of the calculus from the ureter, and the methods for so doing; also the treatment of the ureteral opening.

Speaking of drainage, he stated that all ureterolithotomy wounds should be drained. This was because the urine was practically never normal, therefore rendering wound infection probable. The possibility of urinary leakage subsequent to operation afforded another positive indication for drainage.

### NEPHRECTOMY FOR PRIMARY TUBERCULOSIS OF THE KIDNEY.

Dr. Hiram N. Vineberg of New York read a paper on this subject. Tuberculosis of the kidney, both primary and secondary, was more frequently met with in women than in men, in the proportion of about two to one. It was different from what occurred in men; renal tuberculosis in women was rarely associated with tuberculosis of the genital organs. A cystitis in women that resisted the topical applications of the silver nitrate solution by the Kelly method should be looked upon with marked suspicion as being of tuberculous character, even though repeated examinations of the urine should show an absence of the tubercle bacillus. The differential diagnosis of a non-tubercular from a tubercular cystitis with the aid of a cystoscope was not as reliable as the therapeutic test outlined in the preceding sentence. Pronounced reddening or ulceration about the mouth of one of the ureters, with absence of other bladder changes, was held by some authorities as pathognomonic of tuberculosis of the corresponding kidney; while the sign was an important one, too much weight should not be attached to it in women. In most cases, the removal of the diseased kidney would bring about practically a cure of the descending cystitis. He doubted the wisdom of the advice to cure the cystitis before undertaking the removal of the kidney. In women, owing to the fact that the disease was most frequently primary and unilateral, the modern tests for determining the functional capacity of the second kidney were not so essential as in men. Catheterization of the supposedly healthy kidney was a procedure to be avoided, when, as was frequently the case, there was associated a tuberculosis of the bladder. The prognosis of nephrectomy in renal tuberculosis in women was exceedingly good. Of the writer's four cases operated upon, seven, five, two, and one and a half years ago, respectively, all were alive and in good health.

Dr. Joseph E. Janvrin of New York reported a case of a woman who had been ailing for two years with what was supposed to be a renal calculus. Before operating, Dr. Willy Meyer examined the woman, and agreed with him that the case was probably one of calculus in the pelvis of the kidney, with possibly calculi in the ureter. The kidney was removed, and it was found that its pelvis was infiltrated with tubercular deposits in the very early stage. The patient made a good recovery and was well to-day.

Dr. J. Wesley Bovee said that if one read the proceedings of the late meeting of the German Congress, one would be impressed with the comparatively large proportion of cases in which primary tuberculosis was found in both kidneys, or the very small proportion in which one kidney alone was involved. As to the indications for operation, on tuberculous kidney, the surgeon should be sure that the opposite kidney was capable of carrying on the function of excreting urine for the whole body before he decided to remove one tuberculous kidney. A nephrotomy might be done, and the kidney most markedly diseased drained, without taxing the other kidney to a great extent. As regards cystitis in tuberculosis of the kidney, it was a late, not an early, symptom.

Dr. Philander A. Harris of Paterson, N. J., said that in cases of tuberculosis of the kidney it was difficult, where the bladder was corrugated and changed by the process present, to find the ureter; but by painting the entire field of the bladder with some solution sufficiently colored, with a swab, as Prussian blue, he had succeeded in finding the ureters, in the case of a girl, which he could not otherwise locate.

Dr. Seth C. Gordon operated on a man, removing a kidney which was situated low down in the abdomen, painful, and bound down by adhesions. The patient died eleven days after the operation, and post-mortem examination showed that the man had no other kidney. Two years afterwards he removed a very large kidney from a woman, who lived twenty-eight days after operation. For twelve hours she did not have a single uremic symptom, nor was a drop of urine secreted, and she died in full possession of her faculties. Post-mortem examination revealed that she had no other kidney.

Dr. J. M. Baldy said it was not uncommon to have medical men in the wards of the policlinic ask if the ureters had been catheterized in the cases of supposed kidney disease, and not infrequently a perfectly healthy kidney was palpated and found on one side, which utterly failed to secrete, with the patient under an anesthetic or without it. In some instances, this failure on the part of the kidney to secrete was undoubtedly brought about by the influence of the anesthetic. At any rate, anesthesia would reduce the quantity of secretion very materially. He had had exactly that same experience a number of times in patients whose ureters he had catheterized, but to whom no anesthetic had been given.

Dr. George M. Edebohls said that some four or five years ago he read a paper on "The Other Kidney and Contemplated Nephrectomy." In it he advocated that before removing a kidney an incision should be made on the opposite side to determine by actual inspection and palpation, first, the presence of another kidney, and second, its probable health, so far as could be determined macroscopically, before removing the diseased kidney. In spite of the advance made in diagnosis, and its limitations in kidney diseases, he had adhered to that rule in all nephrectomies performed since that time, and in one case he had saved a woman's life by so doing.

Dr. J. Riddle Goffe of New York reported a case bearing on the removal of the ureter in connection with tuberculosis of the kidney, the patient having been operated on by him in 1896. She was a woman of twenty-two, who had a very large tuberculous abscess of the right kidney. He removed the kidney and three inches of the ureter. She made an excellent recovery, excepting that she had a sinus which lasted four months and then healed. Patient was now a graduate nurse and in perfect health.

Dr. Edward Reynolds of Boston gave his experience of 10 nephrectomies for tubercular disease, 7 of them being complete nephro-ureterectomies, all successful, so far as operative mortality was concerned.

### HYPERTROPHIES AND INFLAMMATIONS ABOUT THE URINARY MEATUS.

Dr. Robert L. Dickinson of Brooklyn read a paper on this subject, saying that their frequency and the suffering caused gave them an importance out of all proportion to their minute size. Overlooked because hidden among folds of mucous membrane. They were explained by embryology. A tiny ribbon ran from the rear of the vaginal opening forward, on each side of the vaginal and urethral openings across the vestibule, to disappear beneath the clitoris. This fold was persistent in those cases where the hymen ran forward of the meatus, or the meatus seemed to open

on the anterior vaginal wall. This fold was enlarged by friction or traction to produce flaps or labia, hanging out each side of the meatus. They were found only with corrugated labia. Dilated or dilatable urethra often accompanied them. The urethral glands opened near the apex of the flaps. They were long, running down into the anterior column of the vagina. Swelling from infection differed from hypertrophy. The cure of chronic inflammation was only feasible by obliteration of the glands. A fine probe passed to the bottom of the gland rendered the vestibular-vaginal surface tense; the cautery wire cut out the probe. For piles of the meatus, the cautery wire was used after cocaine; for prolapse or dilatation of the urethra, resection of the anterior vaginal wall or paraffin injections into the urethro-vaginal septum produced a sigmoid profile.

*(To be continued.)*

## AMERICAN MEDICAL ASSOCIATION. SECTION ON PRACTICE OF MEDICINE.

(Concluded from No. 26, p. 710.)

THIRD DAY. THURSDAY, JUNE 9. — (Continued.)

### THE PATHOGENESIS OF UREA AND ECLAMPSIA.

DR. ROBERT N. WILLSON, of Philadelphia, presented this paper and offered the following conclusions: (1) That it is probable that there are at work in the cerebrum as well as throughout the system of uremia subjects, at least one, and probably several, toxic substances, which exert their influence more or less locally upon the cortex. (2) That it is equally certain that other portions of the brain than the cortex are also acted upon, as in the production of coma, etc. (3) That no small part in the production of the uremic and eclamptic condition is played by intracranial pressure, due to a temporary excess of fluid, whether acting independently of, or in conjunction with, the toxic substances already mentioned. (4) That lumbar puncture will at least temporarily relieve certain of the symptoms most readily ascribed to localized intracranial pressure; and that cases in which pressure is the main factor, drainage of the spinal canal may save life. The procedure, together with free bleeding, purging and diuresis, should be added to our routine treatment of the condition. (5) That transfusion of normal salt solution by intravenous injection or hypodermoclysis except in cases of anuria, or a greatly diminished urinary secretion, is contra-indicated, as tending to increase the liability to saturation of the tissues. (6) That the results of lumbar puncture in the three cases cited in the paper would not warrant the assumption that relief of intraspinal or intracranial pressure could alone be depended upon to cure the uremic or eclamptic condition, provided the toxic influences were prominent.

DR. JAMES TYSON, of Philadelphia, thought that we must consider some toxic agency responsible for the phenomena.

DR. ALEXANDER LAMBERT, of New York, said that in eclampsia the lesions noted were often identical with those of acute yellow atrophy of the liver.

DR. ROBERT N. WILLSON, of Philadelphia, emphasized the fact that when bloody fluid was withdrawn by lumbar puncture, the cases terminated fatally, whereas if clear fluid was obtained patients could recover.

### AMEBIC DYSENTERY: ITS LOCAL LESIONS AND TREATMENT.

DR. JAMES P. TUTTLE, of New York, read this paper. His paper was based upon personal experiences of seventy-four cases of amebic dysentery, together with what he had gained from literature. The cause of the disease was the infection or invasion of the colon by amebæ dysenteriæ. At about the temperature of the body the life of the amebæ was indefinite, but if the temperature got below 70° F. the motility and life of the amebæ became extinct and no amount of heat would restore the same. He said the whole treatment should be directed toward the local lesions, the destruction of the amebæ and the prevention of a redevelopment from the spores, and as these were buried in the tissues it was evident that superficial washing or flushing of the intestinal canal would not destroy them. It is found that simple cold water served every purpose in destroying the amebæ. The patient was placed in the knee-chest posture, and the bag or fountain was elevated not more than three feet above the level of the hips and the fluid was allowed to run in slowly, the amount of water used being limited only by the tolerance of the patient. Local ulcers of the rectum and sigmoid were treated by local measures. Recognizing the fact that the appendix might be the seat of amebic infection he said it would be wise to remove this organ in those cases in which the appendix was utilized, to introduce the cold water into the large intestine. In seventy-three cases treated by this method cures resulted in seventy cases.

DR. FENTON TURCK, of Chicago, called attention to the futile attempts to destroy the amebæ, for it had been his experience that the various solutions had little, if any, effect upon them. He referred to the use of oil which acted as a powerful irritant and which excited peristaltic hyperemia and which had more or less effect upon the plasmodiums. It was his plan to use hot water, starting with a temperature of 115° F. and gradually raising it to 131°. After every treatment the amebæ disappeared. This then was followed by the use of ice water, and the results he obtained were far better than if he had used the ice water alone.

DR. A. W. WARDEN, of Union Hill, Weehawken, referred to the beneficial results that he has obtained from the use of chaparro or nargosa.

### THE FAMILY PHYSICIAN AS A FACTOR IN THE SOLUTION OF THE TUBERCULOSIS PROBLEM.

DR. S. A. KNOPF, of New York, read this paper, and after referring to the conception of the family physician, said that he should be carefully trained in the early recognition of pulmonary tuberculosis and should make calls at regular intervals, whether the family was ill or not. The importance of periodic examination of the chest of each member of the family was dwelt upon, and the inauguration of necessary preventive measures at slightest indication of predisposition to tuberculosis. He appealed for more sanatoria, more special hospitals, better tenement buildings, etc., all of which were of such value in the eradication of this disease, particularly before another generation had passed. The family physician should not only be the medical adviser, but also the friend of the family, and it was the family physician and friend more than any other person who would be able to prevent the marriage of a consumptive or between consumptives.

### HAS INFLUENZA BEEN A CAUSATIVE FACTOR IN THE INCREASE OF APPENDICITIS?

DR. PHILLIP MARVEL, of Atlantic City, referred briefly to both influenza and appendicitis, and gave a statistical review of the periods from 1884 to 1894 and from 1894 to 1904 as copied from the Episcopal Hospital and from the Pennsylvania Hospital. Com-

parison of these periods showed a great percentage increase of appendicitis in the latter period, and also the greater increase over all of the more important pelvic and abdominal inflammatory diseases reported in the former period. The rapid increase was not satisfactorily explained through our better knowledge of diseases. He made certain suggestions and abstracts, and said that whether they would enable us to arrive at fixed conclusions did not affect the following deductions: (1) That appendicitis had increased in the past five years much more rapidly than in either of the previous five-year periods studied. (2) That the accessory cavities are more frequently attacked, and when diseased, more likely to be aggravated by influenza than by other diseases. (3) That there is more than a possibility of the existence of chronic interstitial influenza, therefore a probability of its causative relation to appendicitis. (4) That the observations as set forth in the abstracts referred to must be admitted as a measure of proof in favor of the inferences drawn and the conclusion arrived at.

## Fourth Day, Friday, June 10.

### aneurism of the innominate artery.

Dr. Albert P. Francine, of Philadelphia, read this paper, and in conclusion he said that a delayed and weakened beat in the right radial, absence of pulsation in the right temporal, a turgid external jugular, in association with paroxysmal attacks of dyspnea and pain at the root of the neck, or referred to the right side, were very suggestive of innominate aneurism. But the two signs to which the writer would like to call especial attention and which had not, so far as he was aware, been before described in this connection, were the regurgitant quality in the right radial pulse, and even more convincing are the signs of aneurism in the supersternal notch behind and above the right sterno-clavicular articulation in association with a distinctive angle of re-entry in the second interspace. Unless relieved by operation, these aneurisms sooner or later would rupture. The operation consisted in distal ligation of the right common carotid and subclavian, one or both, either consecutively or if necessary at the same time. In uncomplicated cases it had proved highly successful, the sac becoming obliterated by organized clot.

## Symposium on Arthritis Deformans.

### pathology and etiology of arthritis deformans.

Dr. Thomas McCrae, of Baltimore, read this paper and offered these conclusions: The uncertain state of our knowledge of arthritis deformans was dwelt on, and the importance of determining whether or not we had one or more diseases included under the term. The anatomical distinctions between the two types were described, but the view was expressed that these were varying manifestations of the same disease. This seemed to be supported by their occurrence in the same patient. The various theories as to etiology were gone over and the possibility of an infection being the cause was favored. There was as yet no positive evidence of a specific infection as against the possible casual agency of various ones.

### symptomatology of arthritis deformans.

Dr. James J. Walsh, of New York City, read this paper. He said that uric acid had nothing to do with rheumatic conditions. Rheumatic gout had disappeared, and there was no middle term between the two. Chronic rheumatism was vanishing. Arthritis deformans could be traced in history at nearly all times. The bones of bodies buried probably fifty-five hundred years ago show in certain cases the signs of the changes in arthritis deformans. Certain English authorities divided arthritis deformans into three groups as follows: (1) The disease commonly known as osteo-arthritis, often confined to the hip-joint and most common in old men. (2) A disease in milder form and often not recognized, most common in women in middle life and represented by deformities occurring in the terminal joints of the fingers. The deformity becomes considerable and ultimately due to bony outgrowth. (3) This form was one simulating ordinary acute rheumatism and produced lasting changes in the joints and had a certain tendency to recur, and ultimately made the victim hopeless and a pitiable cripple. It occurred more commonly in young women. Perhaps the most characteristic of the differential diagnostic symptoms was that the salicylates failed to reduce the fever very materially and failed to lessen the pain and discomfort. One of the most important features of this affection was its tendency to recur.

### the treatment of arthritis deformans.

Dr. Clarence Edward Skinner, of New Haven, Conn., said that what had given him the most satisfaction as a routine treatment, to be modified according to the conditions surrounding the individual cases, was as follows: (1) A diet as generous as could be digested and assimilated by the individual case, and consisting largely of red meats. (2) Rest in bed for at least ten hours out of the twenty-four. (3) A pill consisting of 1-40 of a grain of strychnia sulphate and 1½ grains of ferrous iodide three times daily, half an hour before meals, and in the emaciated cases one to four drams of cod liver oil three times daily, after meals. (4) A dose of some one of the mineral waters before breakfast two or three times a week if constipation was present. (5) A body dry hot air treatment two or three times weekly. (6) Central galvanization once or twice weekly. (7) A general application of mechanical vibratory stimulation two or three times weekly. (8) A static electrical application, at least once every day, consisting, in acute cases, of the Morton wave current localized over the affected joints or spine, and in the chronic cases of long, thick sparks to the affected joints one day and the Morton wave current localized over these joints the next. (9) With anchylosed joints wherein the acute condition had subsided and the functional impairment was not due to osteophyte formation, passive movements every day, in the form of alternate flexion and extension, the attempt being made to increase the excursion of the manipulated member each time, were of considerable use.

Fifty-one cases that had been treated in private practice during the past four years illustrated what could be done by the application of the treatment outlined. A practical and easily-comprehensible summary of the results obtained in these 51 cases were as follows: Out of 24 patients who were totally incapacitated for the performance of their daily duties, 6 were restored to a condition of unimpaired usefulness, 3 to a condition of but slightly impaired usefulness, and 8 of the remainder discontinued treatment prematurely; out of 27 who were partially incapacitated, 7 were restored to unimpaired usefulness, 4 but to slightly impaired usefulness and of the remainder 14 discontinued treatment prematurely. Out of 36 patients who were suffering constantly from pain, 10 were relieved entirely; in 12 the pain was relieved to such an extent as to be troublesome only ocasionally, and 11 of the remainder discontinued treatment pre-

maturely. Of 15 cases in which pain was present only on movement, 5 were relieved entirely, 3 were greatly relieved, and of the remainder 8 discontinued treatment prematurely. Of 11 cases in which complete anchylosis of one or more joints was present, complete relief was obtained in one or more joints in 2, partial relief in 4, and 5 discontinued treatment prematurely. Of 25 cases in which partial anchylosis of one or more joints was present, 13 were completely relieved, 12 partially and 11 discontinued treatment prematurely. Of 27 cases, wherein the general condition was bad when the treatment was commenced, 10 were restored to normal health, 12 were greatly improved; of 19 cases wherein the general condition was fair, 5 were restored to normal and 8 were greatly benefited.

DR. J. E. GOLDTHWAIT, of Boston, said that the nomenclature used was unimportant so long as we knew what was meant by the terms used. In arthritis deformans Dr. McCrae spoke of two types, the atrophic and the hypertrophic, but there were many cases encountered which he termed infectious arthritis. At times it was impossible to differentiate between the atrophic and hypertrophic at first glance; but with the radiograph it was now quite possible. In the disease described by Still, occurring in both children and adults, he did not know whether it was atrophic or hypertrophic in character; it seemed to be a matter of personal opinion. It seemed to him surprising that we should have these two types of the same disease, and one man had stated, and frankly too, that from the start the disease never became chronic, and others that at the start it was chronic and never became acute.

DR. ALLEN JONES, of Buffalo, did not believe we should throw out the term chronic rheumatism until we had demonstrated positively either the specific cause for acute articular rheumstism, or a specific cause for acute rheumatism and arthritis deformans.

DR. DELANCEY ROCHESTER, of Buffalo, said that the treatment advised by Dr. Skinner was practically out of the question for the general practitioner because of lack of the apparatus. Still he thought very good results could be obtained by them by carefully watching and handling these patients. He thought the application of hot air not so hot as advocated would be productive of good results. The use of the cabinet and friction was of value.

### HOW THE GENERAL PRACTITIONER SHOULD TREAT GONORRHEA.

DR. FERDINAND C. VALENTINE, of New York, read this paper and offered the following conclusions: (1) Every general practitioner is practically competent to successfully treat uncomplicated anterior gonorrhea, if he will devote as much attention to this as he does to any one other disease. (2) Every patient with gonorrhea is entitled to the services of his family physician, just as much as if he had acquired any other disease in consequence of drunkenness or other violation of ethics or morals. (3) The general practitioner who declined to treat uncomplicated acute anterior gonorrhea avoids one of the most sacred duties to the profession and to humanity. (4) The patient who, because he has gonorrhea, is refused the services of his physician is likely to become an opponent to scientific medicine, to the detriment of his health, that of his family and of the community. (5) The scientific treatment of at least acute anterior uncomplicated gonorrhea is perfectly within the power of the general practitioner. (6) The irrigation treatment of gonorrhea is, as yet, the most effective method and most in accord with the modern scientific understanding of the disease.

### PROBLEMS AND THE TUBERCULOSIS CONVALESCENT.

DR. A. MANSFIELD HOLMES, of Denver, Colo., read this paper. He said pure air and sunshine could avail but little if the patient was not provided with an abundance of suitable food. The wisest advice to patients would avail nothing if the patients are not sufficiently impressed with the importance of proper living, and it was in this that the sanatoria treatment surpassed the home treatment. The danger lay concealed in a latent form long after all subjective symptoms had disappeared. To form a correct estimate of convalescence one should form a composite picture of all the available clinical evidence. If there was a gradual gain in weight extending over a comparatively long period, if this gain was accompanied by a gain in strength, if the gain of weight and strength were permanent, and if the cough, sputum and bacilli diminished and finally disappeared, and if these conditions were maintained for a comparatively long period, a cure might be considered as practically established.

### ELECTION OF OFFICERS.

For Chairman, Dr. Richard C. Cabot, of Boston; for Secretary, Dr. Joseph L. Miller, of Chicago. Executive Committee, Dr. Frank A. Jones, of Memphis, Tenn.; Dr. W. S. Thayer, of Baltimore; Dr. Alexander Lambert, of New York.

## Recent Literature.

*Mammalian Anatomy, with Special Reference to the Cat.* By ALVIN DAVISON, Ph.D. 12mo. 1903. Philadelphia: P. Blakiston's Son & Co. pp. 250. 108 figs.

This little book offers an excellent brief introduction to the anatomy of the cat, and being based on the author's practical experience is well arranged and illustrated. Most attention is given to the skeleton. The majority of the illustrations are original and good, though the appearance of some of them is marred by the undue size of the lettering. Its brevity and clearness will recommend this work for use in elementary courses in anatomy in colleges, while the figures, from the author's directions, will give it a wider value. Professor Davison confines himself, except for a few interpolated explanations of wider aspects of his subject, to descriptive anatomy. We cannot but think that the value of this meritorious manual would have been much increased had the author laid more stress upon the fundamental morphological notions, which must underly all correct understanding of anatomical forms; for example, no student would suspect from his descriptions and diagrams that the heart is simply a contorted tube, or that there is a fundamental difference between the thyroid and the other so-called ductless glands. The volume is well printed, and supplied with a good index.

THE BOSTON

# Medical and Surgical Journal.

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## THE QUESTION OF IMMIGRATION AND PUBLIC HEALTH.

This country more than most others is exposed to a certain positive danger from the constant advent of foreigners, who either bring with them disease or else are of so low a physical standard that they are little able to maintain a reasonable degree of health on their arrival. Few problems are more difficult than the framing of just laws to meet the peculiar exigencies which immigration to this country presents. In the first place, freedom must be allowed if we are to remain faithful to our traditions, and in the second place it is no less a duty of the authorities to guard those already in the country against disease and incompetency through physical deterioration which a certain class of immigrants brings. The whole question has been ably discussed in a recent article by Dr. Allen McLaughlin of the United States Public Health and Marine Hospital Service, published in the *Popular Science Monthly*. He discusses the matter from the point of view of the physique of the immigrant, his destination and the presence or absence of incurable disease.

Of these three factors, the physique of the immigrant is regarded as by far the most important. It appears that good physical condition was much more general among immigrants twenty-five years ago than at present, when the great majority came from the strong races of Northern and Western Europe, in whom disease of an incurable character was exceedingly rare. Now such immigration has sunk into insignificance when compared with that of the Slavs, Italians, Hebrews and others from the more southerly countries of Europe. This has led to a perfectly defined deterioration in the physique of the immigrant, with a corresponding increase in the percentage of disease. According to present laws, immigrants, however physically defective, are still permitted to become citizens of this country, provided only there is reasonable certainty that they are not likely to become public charges. Those suffering from dangerous, contagious, or venereal disease, or from marked mental derangement, are, on the other hand, deported.

The next point of importance is the distribution of the immigrants. It is a well-recognized fact that individuals of low physical standard will herd themselves together in the most unsanitary parts of our large cities, whereas the strong are more inclined to scatter into smaller towns and to become useful citizens. Of the various races, it is interesting to observe that more Hebrews are sent to hospitals on arrival, proportionate to the number landed, than any other race, whereas a very much larger percentage, namely, 70% of this race coming to New York, remain in the city. More Hebrews are also deported than those of any other race. On the other hand, the Scandinavians are deported in a vastly smaller ratio, fewer are sent to hospitals, and only 18% remain in New York. Between these two extremes come the Italian, Slav and Irish immigrants, the Irish, next to the Scandinavians, being the most acceptable of the immigrant class.

A third factor, naturally of very great importance, is the presence of communicable diseases among the immigrants. The detection of these is by no means a simple matter and requires constant vigilance and skill on the part of the medical inspector. Of these diseases, trachoma is of the most importance because of its frequency. Eighty-seven per cent of the total number of cases of loathsome and dangerous disease is due to trachoma, and 10% to favus. A careful investigation of the presence of trachoma was begun in 1897, in consequence of which many steerage immigrants were found suffering from the disease and were deported. Various subterfuges were forthwith undertaken to avoid the medical inspector, largely through becoming temporarily cabin passengers. Thereafter, in 1898, cabin passengers were also inspected, which has led to much less evasion of the law. The steamship companies have been brought to a sense of their duty in the matter by being made subject to a penalty in transporting diseased immigrants. In 1902 statistics show that among the Syrians landed in this country, one in 66 suffered from trachoma, whereas but one in 4,173 of the Irish

were afflicted with the disease. Within these wide extremes the other types of immigrants are classed, with cases running from one to several hundred up to one to several thousand.

It is interesting to note that tuberculosis of the lungs is a rare disease among immigrants, probably due to the fact that the bulk of our immigrants come from agricultural districts, where tuberculosis is far less prevalent than in large cities. The situation after landing almost immediately changes, inasmuch as tuberculosis is quickly spread through the tenement districts among immigrants lately landed, due naturally to filthy surroundings, often poor general physique and overcrowding, with all that that entails. Dr. McLaughlin finds that the real danger to the public health from immigration lies in that class whose physical condition is far below American standards, and who take up a residence in the East Side tenements of New York City. In conclusion, the following excellent suggestions are made:

If we debar any undesirable class of immigrants under the law, we should endeavor to make the law as nearly perfect as possible and debar all undesirable classes. We debar the immigrant with trachoma, syphilis, leprosy or favus; also the insane, the epileptic and the idiotic, but we admit the immigrant with poor physique, unless it is so marked as to make him undeniably a public charge.

There should be but one standard of physique for the immigrant, no matter whether his destination be the Pennsylvania mines or the New York sweat-shops. The skilled laborer should be expected to possess the same rugged physique as is now expected of the unskilled laborer. The standard should be fixed by law by comparison with other well-recognized standards of physique, and should be sufficiently high to exclude all who could not beyond doubt make a living at hard manual labor. The wording of the law should be definite enough to make the medical certificate of poor physique equivalent to deportation.

This requirement of a definite physical standard in immigrants could be exacted without undue hardship of all unmarried male immigrants within certain age limits, for instance, eighteen to forty-five. In regard to families, comprising women, children and old men, in addition to males between the ages of eighteen and forty-five, each family should be required to have at least one member constituting its chief support who could comply with the physical requirements of the law. The law need not apply to parents coming here to join their children, provided the children have established a home here and presented evidence of ability to care properly for their parents.

If the thousands of recruits for the sweat-shop army which arrive each year could be thus checked for ten years, the present existing tenement house problem would solve itself. The terrible congestion of the tenements would be relieved; the scale of wages for the sweat-shop worker would be elevated, and the general sanitary conditions of life in such districts as the Lower East Side, New York City, could be improved sufficiently to reduce the menace to the public health from this cause to a minimum.

## THE MEDICAL PRESS.

THE medical profession is quite used to the flattery and eulogy of orators, and accepts with good grace and sufficient humility what is continually being said of it. There is, nevertheless, a certain gratification in hearing the praises of the profession sung by a layman where no special call for such eulogy is apparent. For example, the Hon. S. W. McCall, in his address last week before the Harvard Phi Beta Kappa Society, made the following remarks:

The nobility of the work of a calling will elevate those who devote themselves to it. Take the profession of medicine. Undoubtedly, the physicians might flaunt their cures, might play with the lives of their patients for their own financial gain and might show the same sort of enterprise that is too often shown by editors. If it be said that the newspapers give the public that which it is willing to pay for and that the responsibility for the press lies with the people, the quack could make a similar plea, and if he possessed skill in his calling he might gain wealth by its degradation. But inspired in the mass by the noble ethics which the profession imposes upon itself, we see physicians risking their lives in battle to save while those about them are striving to kill; we see them exposing themselves freely to the more deadly perils of infection, drawing generously upon their own strength that they may give it to others; we see them, in short, a profession of heroes.

Congressman McCall's oration concerned itself with the newspaper press, in which he found much to criticize, as conducted at the present time, in spite of the high ideals which should stand back of the profession of journalism. His discussion was confined to the daily press, and took no note of what is being done in the journalism of special callings. We accept with gratification as essentially true what he said about the ideal of the physician in his attitude toward his professional work, and our modesty is not too great to tempt us to carry the simile a step further and allude to the really high standard toward which most of our medical journalism has striven, and which it has in general maintained amid many temptations and discouragements. The element of sensationalism rarely finds its way into medical periodicals which are read by the rank and file of the profession, and

it is certainly the exception to find that surrender to the commercial spirit which Mr. McCall so strongly deprecated in the daily press.

## BOSTON FLOATING HOSPITAL.

The Boston Floating Hospital began its ministrations for the summer July 6. It is proposed to make daily trips down the harbor, provided the weather permits, except on Sundays, from this date to some time in September. On Sundays and every night up to eight o'clock in the morning the patients will be admitted to the hospital at Pickert's Wharf, East Boston, near the North Ferry. The trips of the hospital will be from City Wharf, South Ferry, leaving at 9.30 in the morning and returning about four. Patients will also be received at these hours. The limit of age for patients is six years, and the requirement for admission a certificate signed by a physician from the Floating Hospital office, 178 Devonshire Street, from many of the dispensaries and hospitals, and from physicians and agents of charity organizations in the city proper, as well as from greater Boston. Admission cards may be had by application.

This hospital has had many years of usefulness, and certainly this type of hospital, not only in this city but in others, fills a place which can hardly otherwise be supplied, and particularly, under the conditions now existing in Boston, is it desirable that infants and small children during the hot months should have some means of obtaining the fresh air and direction regarding food and other details which are so essential to the preservation of their health. The usual closing of the infants' hospital throws an added burden on the managers of the Floating Hospital, which it has hitherto borne with excellent results. The institution is largely a charity, and is dependent in great measure for its continuance upon the subscriptions of those interested in the undertaking. We regret at times the sentimentalism which appears to be inevitable in the conduct of this hospital, but that after all this is wholly a minor consideration in view of the unquestioned value to the community which the institution provides. We certainly wish for it this year, as heretofore, a satisfactory season, unhampered as far as may be by anxiety as to ways and means.

## MEDICAL NOTES.

A Proposed Statue to Dr. William Elias B. Davis. — A statue in memory of Dr. William E. B. Davis, late of Birmingham, Ala., is to be erected under the auspices of the Southern Surgical and Gynecological Association of which Dr. Davis was the originator. It is proposed to have the statue ready by Dec. 1 in order that it may be unveiled at the coming meeting of the Southern Surgical and Gynecological Association.

President of the American Medical Association. — Regarding the election of Dr. Lewis S. McMurtry of Louisville to the presidency of the American Medical Association, the *New York Medical Journal* takes occasion to pay him the following tribute:

> There has been no lack of efficient and graceful occupants of the presidential chair of the American Medical Association, especially in recent years, but we venture to say that the president elected at the last meeting, Dr. Lewis S. McMurtry of Louisville, will bring to bear on the duties of his office such alertness of mind and such courtesy and forbearance as are rarely to be met with in a single individual.

Honors for Medical Men. — Dr. William S. Halsted, professor of surgery in the Johns Hopkins University, was given the degree of LL.D. at the recent commencement exercises at Yale University. Dr. Halsted this year delivered the address to the graduating class at the Yale Medical School.

Dr. Frederick H. Gerrish, professor of anatomy in Bowdoin Medical College, the author of the well-known textbook on anatomy, has received the degree of LL.D. from the University of Michigan.

The University of Dublin has conferred the doctorate of science upon Prof. F. Klein of Göttingen, Major R. Ross, professor of tropical medicine at Liverpool, and Dr. W. H. Thompson, King's professor of the institutes of medicine.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, July 6, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 40, scarlatina 15, typhoid fever 8, measles 45, smallpox 0.

Bequests to Hospitals. — By the will of the late Mrs. Henry Whitman of Boston, public bequests amounting to upwards of $200,000 are made. The hospitals to be benefited are: The Children's Hospital, Boston, $10,000, for the endowment of two beds; the Home for Incurables, Boston, $5,000; Massachusetts Infant Asy-

lum, $5,000. In addition to these bequests $20,000 is left to the Society for the Relief of Crippled and Deformed Children.

BOSTON MORTALITY STATISTICS. — The number of deaths reported to the Board of Health for the week ending July 2 was 180, as against 168 the corresponding week last year, showing an increase of 12 deaths, and making the death-rate for the week 15.28. The number of cases and deaths from infectious diseases was as follows: Diphtheria, 41 cases, no deaths; scarlatina, 12 cases, 1 death; typhoid fever, 13 cases, 3 deaths; measles, 42 cases, 1 death; tuberculosis, 51 cases, 23 deaths; smallpox, no cases and no deaths. The deaths from pneumonia were 16, whooping cough 1, heart disease 23, bronchitis none, marasmus 3. There were 10 deaths from violent causes. The number of children who died under one year was 41, under five years 55, persons over sixty years of age 32, deaths in public institutions 65.

## NEW YORK.

MEDICAL EXAMINATION OF STREET CLEANERS. — Dr. Woodbury, Commissioner of Street Cleaning, has made public the result of the medical examination which has been going on for some weeks among the sweepers employed in his department. Out of 1,872 men examined, 60 were found to be affected with tuberculosis, and 223 with chest affections liable to result in that disease, making a total of 283 cases, or about 15%.

IN MEMORY OF DR. JARED LINSLY. — Among the gifts to the University announced by President Hadley at the meeting of Yale Alumni, on June 28, was a bequest of $250,000 from William B. Ross of New York, of the class of 1852, in memory of the late Dr. Jared Linsly, a prominent and highly esteemed New York physician of the last generation. This fund is to be used for the construction of the much needed central section of the university library.

AWARD FOR HEROISM. — The first gold medal to be awarded for heroism in connection with the "Slocum" disaster has been presented, together with a handsome purse, by the coroner's jury in charge of the case, to Mary McCann, an Irish girl, sixteen years of age, who only arrived in this country on May 11. At the time the "General Slocum" was beached on North Brother Island she was convalescing from scarlet fever in the hospital there, and she personally saved the lives of five children and one woman. In rescuing the latter from the water she very nearly lost her own life, and when she and her struggling charge were at last dragged ashore by one of the hospital attendants, she was completely exhausted. It is gratifying to learn that the exertions of this brave young girl and the exposure to which she was subjected were not followed by any serious effects.

TRANSFERENCE OF ASSISTANT SANITARY SUPERINTENDENTS. — On June 29 there was a general "shake up" among the assistant sanitary superintendents of the various boroughs, Dr. Bensel being transferred from Manhattan to Brooklyn, Dr. Sheil, from the Bronx to Manhattan, Dr. Murray from Brooklyn to Queens, Dr. Moore from Queens to Richmond, and Dr. Sprague from Richmond to the Bronx. President Darlington announced that there was no politics in this general transfer, stating that it was made simply for the good of the service and after a consultation with the chief sanitary superintendent, Dr. Roberts, and other officials. It was thought advisable, he said, that the assistant superintendents should become familiar with the work of the department in boroughs other than those in which they had been serving, and the change was designed as only a temporary one, as it must necessarily put the physicians to some inconvenience to do duty at considerable distances from their homes.

EXCITEMENT OVER A CASE OF SMALLPOX. — Much excitement was recently caused among the thirty families living in a tenement house on upper Third Avenue, by the death, in the house, of an Italian from smallpox. It became necessary to call upon the police to preserve order and compel the tenants to submit to vaccination. The patient had arrived from Europe only thirty days before his death, and was attended by a man known only as "Tony," who admitted that although he had been practising among the Italian families of the Bronx as such, he was not a qualified physician. The case was concealed until after the patient's death, and the way it became known was through Tony's asking Dr. Granna, a neighboring physician, for a death certificate, for which he offered to pay three dollars. Failing to obtain this, Tony thought it advisable to disappear, and no trace of him has as yet been found. This is the first case of smallpox which has occurred in the Bronx during the present year, and the house in which it occurred contained about three hundred persons.

Appointment of Miss Jane Delano at Bellevue Hospital. — It appears from a ruling given last month by the Municipal Civil Service Commission, that Dr. William P. Spratling of the Craig Colony for Epileptics at Sonyea, who was recently appointed superintendent of Bellevue Hospital, New York, was not eligible to that position because he had not been subjected to a civil service examination. It was then open to the trustees of Bellevue and Allied Hospitals either to appoint a superintendent from among those persons already holding positions at Bellevue, or to transfer to the head of Bellevue some one connected with one of the other hospitals under the jurisdiction of the Board of Trustees. It is now announced that the appointment has been given to Miss Jane Delano, who for several years has been at the head of the Bellevue training school for nurses. Miss Delano was graduated from the Bellevue school in 1886, and in 1888 took charge of the yellow fever hospital at Jacksonville, Fla. The year following she was made superintendent of the Copper Queen Mining Company's hospital at Bisbee, Ariz., under the direction of Dr. Thomas Darlington, now president of the New York Health Department. While there she was appointed assistant superintendent of the hospital and training school for nurses of the University of Pennsylvania, where she remained for six years.

## Obituary.

### THEODORE F. BRECK, M.D.

Dr. Theodore F. Breck, medical examiner for the Second Hampden District, died in Springfield, June 26, in his fifty-eighth year. His great-great-grandfather graduated at Harvard in 1742, and was a prominent physician in Western Massachusetts. His father also was a physician, graduating from Harvard in 1854. Dr. Breck graduated at the Harvard Medical School in 1866, and studied thereafter in Vienna and Paris. Returning from Europe in 1869 he began medical practice in Springfield, and there remained up to the time of his death. Since 1870 he was surgeon of the Boston & Albany Railroad, and since 1877 medical examiner for a part of Hampden County. He also served for twenty-four years on the staff of the Springfield Hospital, from which he had but recently resigned. He was a member of the Massachusetts Medical Association, the Massachusetts Medico-Legal Association, the National Association of Railway Surgeons, and various other medical organizations.

## Miscellany.

### MEDICAL ASPECTS OF THE WAR IN THE EAST.

Sir Frederick Treves, writing from Tokyo, publishes in a recent number of the *British Medical Journal* certain comments, in part as follows, on the war now in progress:

Thanks to the kindness of Surgeon-General Koike, the Director-General of the Army Medical Service, I was able to visit military hospitals and to learn something of the organization of the service he so ably controls. There is at Tokyo, also, Lieut.-Col. Macpherson, R.A.M.C., who is the medical attaché appointed by the English War Office, and his report of the condition of the Japanese Army Medical Service will be of great value and interest. Nursing sisters are not employed by the Japanese Medical Corps, nor indeed have female nurses any part in the organization of the department. The field equipment of the Army Medical Corps in Japan is excellent, light, simple, and inexpensive, and full of ingenious devices in almost every department.

In times of war the Red Cross Society supplements the medical work of the service. This society is remarkable in its size, its many branches all over the country, its important work, and its very admirable organization. It is a society of voluntary workers, has no direct official connection with the Army Medical Corps, but the utmost use is made of its invaluable services.

It not only maintains hospitals for soldiers in Japan, but it supplies an immense staff of civil surgeons and nurses. More than that it concerns itself in every way with everything that relates to the comfort of the soldier in times of war. The officers, non-commissioned officers and male sick attendants accompany the troops to the front. The military hospitals in Japan are thus emptied of their staff and are taken over by the Red Cross Society. That society provides civil surgeons for these hospitals and female nurses. The nurses are, of course, Japanese, and are well trained. Three years' training is required. The Red Cross Society is able to supply through its various branches no less than 3,000 female nurses and 2,000 male nurses. Female nurses will not be sent to the front, but will undertake duty in Japan in the military and Red Cross hospitals in various parts of the country. It is needless to say, therefore, that the military authorities need neither surgeons nor nurses, and it is difficult to understand how foreign nurses with no knowledge of the language and little insight into Japanese modes of living could be made use of. Pecuniary support to the Red Cross Society is the most practical way of helping the Japanese in their efforts to provide liberally for the sick or wounded soldier.

During a residence of two months in Japan I have been greatly struck by the admirable bearing of the people — in all classes of society — in connection with the war. The Japanese are intensely patriotic, but their patriotism is a solemn sentiment and not a temporary neurosis. There is no boasting and no bragging, and no symptom or trace of "Maflicking." In discussing their successes they are always modest, and their attitude towards an enemy who has experienced a temporary reverse is almost sympathetic. If the attitude of a people during a time of war can be discussed as a matter of taste, it may be appropriate to say that the attitude of the Japanese has been characterized by such good taste that it is worthy of imitation.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JUNE 25, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Cerebro-Spinal Meningitis. | Typhoid Fever. |
| New York . . | 3,908,644 | 1,691 | 481 | 26.31 | 7.51 | 2.07 | 2.84 | .41 |
| Chicago . . . | 2,021,086 | 393 | 98 | 25.69 | 7.63 | 1.27 | — | 1.53 |
| Philadelphia | 1,407,968 | 395 | 123 | 27.34 | 10.88 | 2.02 | — | 1.77 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 154 | 52 | 33.76 | 4.54 | — | — | 1.95 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 142 | — | 40.84 | 7.74 | .70 | 2.11 | 6.34 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 55 | 18 | 18.18 | 5.45 | 3.63 | 1.81 | — |
| Boston . . . | 617,950 | 174 | 51 | 21.84 | 10.34 | 1.72 | — | 1.14 |
| Worcester . . | 136,925 | 29 | 9 | 6.90 | 10.34 | — | 3.45 | — |
| Fall River . . | 119,349 | 38 | 15 | 31.57 | 7.89 | — | — | — |
| Lowell . . . | 104,402 | 27 | 9 | 25.92 | 3.70 | — | 3 70 | — |
| Cambridge . | 100,998 | 17 | 5 | 17.65 | 5.88 | 11.76 | — | 5 88 |
| Lynn . . . . | 73,875 | 13 | 3 | 15.40 | — | 7.70 | — | — |
| Lawrence . . | 72,348 | 17 | 9 | 29.41 | 17.64 | — | — | — |
| Springfield . | 72,020 | — | — | — | — | — | — | — |
| Somerville . | 70,413 | 18 | 4 | 27.77 | — | — | — | — |
| New Bedford | 68,863 | 26 | 7 | 26.95 | 3.85 | — | — | 3.85 |
| Holyoke . . . | 50,538 | 17 | 6 | 5.88 | 5.88 | — | — | — |
| Brockton . . | 46,601 | 8 | 1 | 37.50 | — | — | — | — |
| Newton . . . | 39,310 | 8 | 1 | 25.00 | — | — | — | — |
| Haverhill . . | 39,061 | 7 | 1 | 14.30 | 14.30 | — | — | — |
| Malden . . . | 37,205 | 4 | 2 | — | — | — | — | — |
| Salem . . . . | 37,188 | 13 | 3 | — | 15.40 | — | — | — |
| Chelsea . . . | 36,499 | 16 | 4 | 31.25 | 18.75 | 12.50 | 6.25 | — |
| Fitchburg . . | 36,335 | 3 | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 8 | 4 | 25.00 | 25.00 | — | — | — |
| Everett . . . | 30,209 | 7 | 3 | 28.60 | — | 28.60 | — | — |
| North Adams | 29,201 | 6 | 1 | 33.33 | — | 16.67 | — | — |
| Quincy . . . | 26,798 | 9 | 4 | 44.44 | — | 22.22 | — | — |
| Gloucester . | 26,121 | 9 | 1 | 11.11 | — | — | — | — |
| Waltham . . | 25,797 | 6 | — | 16.67 | — | — | — | — |
| Brookline . . | 23,576 | 3 | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | 15 | — | 33.33 | 6.66 | — | — | — |
| Medford . . | 21,956 | 3 | — | 33.33 | — | — | — | — |
| Chicopee . . | 21,692 | 6 | 2 | 33.33 | — | — | — | — |
| Northampton | 20,314 | 3 | — | 33.33 | — | — | — | — |
| Beverly . . . | 15,807 | 4 | — | — | 50.00 | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 1 | — | — | — | — | — | — |
| Adams . . . | 14,745 | 2 | 0 | 50.00 | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 8 | 3 | 12.50 | — | — | — | — |
| Newburyport | 14,478 | 6 | 1 | — | — | — | — | — |
| Woburn . . . | 14,315 | 6 | 3 | 16.67 | 16.67 | — | — | — |
| Melrose . . . | 13,819 | — | — | — | — | — | — | — |
| Westfield . . | 13,809 | 1 | — | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 2 | 0 | — | — | — | — | — |
| Revere . . . | 13,609 | 2 | — | — | — | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 1 | — | 100.00 | — | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 2 | 0 | — | — | — | — | — |
| Weymouth . | 11,350 | 0 | — | — | — | — | — | — |
| Plymouth . . | 11,139 | 3 | — | 33.33 | — | — | — | — |

Deaths reported, 3,378; under five years of age, 924; principal infectious diseases (smallpox, measles, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 839; acute lung diseases 264, consumption 388, scarlet fever 28, whooping cough 7, cerebrospinal meningitis 55, smallpox 1, erysipelas 6, puerperal fever 9, measles 41, typhoid fever 36, diarrheal diseases 251, diphtheria and croup 65.

From whooping cough, New York 1, Chicago 4, Baltimore 1, Pittsburg 1. From smallpox, Philadelphia 1. From cerebrospinal meningitis, New York 48, Pittsburg 3, Providence 1, Worcester 1, Lowell 1, Chelsea 1. From typhoid fever, New York 7, Chicago 6, Philadelphia 7, Baltimore 3, Pittsburg 9, Boston 2, Cambridge 1, New Bedford 1. From erysipelas, New York 5, New Bedford 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending June 11, the death-rate was 14.1. Deaths reported 4,136; acute diseases of the respiratory organs (London) 64, whooping cough 124, diphtheria 38, measles 202, smallpox 7, scarlet fever 25.

The death-rate ranged from 7.0 in Walthamstow to 25.6 in Warrington; London 13.3, West Ham 11.8, Brighton 14.5, Southampton 10.7, Plymouth 9.2, Bristol 12.2, Leicester 11.6, Nottingham 11.9, Birkenhead 12.7, Liverpool 20.5, Bolton 9.8 Manchester 16.3, Salford 18.4, Bradford 14.8, Leeds 15.6, Hull 17.7, Sheffield 14.2, Cardiff 11.8, Rhondda 19.2, Wigan 18.3, Merthyr Tydfil 13.6, Kings Norton 11.0.

## METEOROLOGICAL RECORD.

For the week ending June , in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. . 19 | 30.06 | 69 | 76 | 62 | 51 | 60 | 56 | N W | S | 6 | 7 | C. | C. | 0 |
| M . 20 | 29.92 | 70 | 80 | 61 | 46 | 74 | 60 | N E | S W | 4 | 13 | C. | C. | 0 |
| T. . 21 | 29.62 | 75 | 84 | 66 | 78 | 74 | 76 | S W | S W | 12 | 10 | F. | C. | .12 |
| W . 22 | 29.68 | 74 | 85 | 62 | 84 | 65 | 74 | S W | N | 4 | 21 | O. | O. | .05 |
| T. . 23 | 30.26 | 66 | 73 | 58 | 53 | 48 | 50 | N E | S | 10 | 11 | C. | F. | 0 |
| F. . 24 | 30.22 | 70 | 84 | 57 | 56 | 65 | 60 | W | S W | 12 | 16 | C. | C. | 0 |
| S. . 25 | 29.98 | 76 | 90 | 63 | 69 | 86 | 78 | S W | S W | 8 | 12 | F. | R. | .23 |
| ☞ | 29.96 | | 82 | 61 | | | 65 | | | | | | | .40 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## RECENT DEATHS.

SAMUEL LEONARD ABBOT, M.D., M.M.S.S., died in Boston, July 1, 1904, aged eighty-six years.

CHARLES S. WOODWARD, M.D., of New York, died at Glens Fall, N. Y., on June 26, after a lingering illness. He was a native of Michigan, and thirty-five years of age. He was graduated from the medical department of the University of the City of New York in 1891.

ROLLIN H. BURR, M.D., of Middletown, Conn., an instructor in the Yale Forestry School, was drowned in the Delaware River, near Port Jervis, N. J., on July 1, while saving the life of one of his pupils, who was upset in a canoe. He was camping on the river bank with a party of thirty students for training in athletics and the enjoyment of outdoor life, and had just finished a lecture on First Aid to the Injured, when the accident occurred. The young man whom he rescued was resuscitated, but Dr. Burr's body was not found for a considerable time.

## TREASURY DEPARTMENT.

BUREAU OF PUBLIC HEALTH AND MARINE HOSPITAL SERVICE,

WASHINGTON, D. C., June 29, 1904.

A board of officers will be convened to meet at the Bureau of Public Health and Marine Hospital Service, 3 B Street, S. E., Washington, D. C., Monday, October 3, 1904, at 10 o'clock A.M., for the purpose of examining candidates for admission to the grade of assistant surgeon in the Public Health and Marine Hospital Service. Candidates must be between twenty-two and thirty years of age, graduates of a reputable medical college, and must furnish testimonials from responsible persons as to their professional and moral character. The examinations are chiefly in writing, and begin with a short autobiography of the candidate. The remainder of the written exercise consists in examination on the various branches of medicine, surgery and hygiene. The oral examination includes subjects of preliminary education, history, literature and natural sciences. The clinical examination is conducted at a hospital, and when practicable, candidates are required to perform surgical operations on a cadaver. Successful candidates will be numbered according to their attainments on examination, and will be commissioned in the same order as vacancies occur. Upon appointment the young officers are, as a rule, first assigned to duty at one of the large hospitals, as at Boston, New York, New Orleans, Chicago or San Francisco. After five years' service assistant surgeons are entitled to examination for promotion to the grade of passed assistant surgeon. Promotion to the grade of surgeon is made according to seniority, and after due examination as vacancies occur in that grade. Assistant surgeons receive sixteen hundred dollars; passed assistant surgeons, two thousand dollars, and surgeons twenty-five hundred dollars a year. When quarters are not provided commutation at the rate of thirty, forty and fifty dollars a month, according to grade, is allowed. All grades above that of assistant surgeon receive longevity pay, ten per centum in addition to the regular salary for every five years' service up to forty per centum after twenty years' service. The tenure of office is permanent. Officers traveling under orders are allowed actual expenses. For further information, or for invitation to appear before the board of examiners, address

SURGEON-GENERAL,
Public Health and Marine Hospital Service,
WASHINGTON, D. C.

# Address.

## ANIMAL EXPERIMENTATION.[1]

BY HAROLD C. ERNST, A.M., M.D.,
*Professor of Bacteriology in the Harvard Medical School.*

While thinking upon the subject I have been asked to treat to-day, I chanced upon the editorial comment of *The Outlook* on two papers it recently published concerning animal experimentation, or, as it is there called, vivisection.

This comment seems so pertinent, that I have ventured to transcribe a portion of it, for it is well to show at the outset that the position I may take in this matter has the very recent support of high ethical authority.

After speaking of the nature of the articles printed, the comment goes on to say:

"Man's relation to the lower orders of creation is accurately expressed in the account by the ancient prophet, who wrote the account of creation in the first chapter of Genesis: 'And God blessed them, and God said unto them, Be fruitful, and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth.'

"The animal creation is made for man, and he has a right and a duty to use it in whatever way will best minister to his highest life. He has not a right to treat animals cruelly, because all cruelty is wrong, and because cruelty does not minister to man's highest life but dishonors and degrades and deteriorates him.

"But with this definition, which is a definition and not a qualification, the fish of the sea, and the fowl of the air, and every living thing that moves upon the earth are subservient to man, and to be used by him. He has therefore a right to hunt and to fish, to slay and to eat, to use the horse to carry burdens and the dog to watch his flocks, the bee to hive his honey, the hens to lay eggs for him, the birds of the air to sing to him; and by the same right, he may use them in vivisection, if such use will minister to the health, the life, the welfare of the human race.

"There are two and only two questions involved in the problem of vivisection. The first question is, Does it minister to the health, the life, the welfare of the human race? To this there can be but one answer, the affirmative one. Then it ought to be practiced under such conditions as will make its ministry to man the greatest, its pain to animals the least.

"The second question is, What are these conditions? Vivisection before pupils in the grammar school, vivisection merely to gratify an idle or morbid curiosity, vivisection which has no health-giving end in view, vivisection which is regardless of and indifferent to the suffering of the animal is wrong, because it does not really minister to human well-being. The vivisection of science, the vivisection which is really seeking to learn the secrets of life and death, vivisection pursued with serious purpose in order to alleviate human suffering, and to prolong human life, vivisection carried on under conditions that reduce as far as possible the suffering of the animal operated upon, deserves commendation, not criticism, and its practice under these conditions belongs in the rank of the great modern philanthropic achievements." — *The Outlook*, April 9, 1904.

This comment might easily be extended, so far as the good sought is concerned, for many results from animal experimentation have been secured that have tended to the marked benefit of the lower animals and not to that of man.

"We must take the Universe as we find it. It is one in which life is constantly destroyed, doubtless for the benefit of other lives. As the highest type of the animal species, we at least need not be consciously cruel, but we should be blind to the teachings of Nature and invite race destruction if we did not seek to strengthen our species by endeavoring in every way to provide for it safeguards against the ravages of the lower types of life." — Editorial, *Boston Herald*, March 8, 1900.

All other animals claim, without hesitation, the destruction of other species than their own for their own benefit. It is doubtful if any wild animal, at any time, ever dies a natural death, always one of violence or starvation. Man does not at any time hesitate to claim his right over other animals to use them for pleasure, for decoration, for service, or for food. How, then, should he hesitate to use them — as in many heroic instances he has used himself — for the benefit of the human race?

That this latter has occurred in innumerable instances, the history of every epidemic shows, and the moral heroism thus demonstrated is all the greater in that it does not receive recognition. One of my most honored medical brothers — since passed on to his well-earned rest — once offered himself to me for a demonstration that, if attempted, he knew and I knew would result fatally. I have never passed through a more solemn or elevating scene than when this example of moral heroism was presented to me.

For the advance of knowledge, and for the better relief of suffering, animal experimentation must go on; there is no alternative. Few of my hearers will take the position of one active opponent of the practice that she would prefer to die rather than benefit by its results; and none, I hope, would repeat the blasphemous declaration that they would rather see a crucifixion than that it should go on.

The clear position of the loving parent is, "Just in proportion as I love my own children, I am willing that certain guinea pigs should be experimented upon for their sakes. I am not willing that a single guinea pig should be tortured needlessly, but I want the man who takes the life of my child in hand to do no needless experimenting upon the child in order to save guinea pigs." (Rev. W. E. Barton, March 9, 1900, quoted by H. C. E., Boston Medical and Surgical Journal, June 14, 1900.)

[1] Read at the Annual Meeting of the American Social Science Association, Huntington Hall, Boston, May 13, 1904.

Speaking upon this subject, one of the clearest writers of the day says: "The insidious growth of selfishness is a disease against which men should be most on their guard; but it is a grave though a common error to suppose that the unselfish instincts may be gratified without restraint. The fatal vice of ill-considered benevolence is that it looks only to proximate and immediate results without considering either alternatives or distant and indirect consequences. A large and highly respectable form of benevolence is that connected with the animal world, and in England it is carried in some respects to a point which is unknown on the Continent. But what a strange form of compassion is that which long made it impossible to establish a Pasteur institution in England, obliging patients threatened with one of the most horrible diseases that can afflict mankind to go — as they are always ready to do — to Paris, in order to undergo a treatment which what is called the humane sentiment of Englishmen forbids them to receive at home! What a strange form of benevolence is that which, in a country where field sports are the habitual amusement of the higher ranks of society, denounces as criminal even the most carefully limited and supervised experiments on living animals, and would thus close the best hope of finding remedies for some of the worst forms of human suffering, the one sure method of testing the supposed remedies, which may be fatal, or which may be of incalculable benefit to mankind! It is melancholy to observe how often sensitive women, who object to field sports, and who denounce all experiments on living animals, will be found supporting with perfect callousness, fashions that are leading to the wholesale destruction of some of the most beautiful species of birds, and are, in some cases, dependent upon acts of very aggravated cruelty." (W. E. H. Lecky. The Map of Life, 1889, pp. 36 and 41.)

For some time *The New England Anti-Vivisection Society Monthly* (now known as *The Animal's Defender*) published the following: "What is vivisection, and what can I do to help the crusade against it? Answer: Vivisection is the mutilating, cutting and burning of living animals; they are dissected, roasted, boiled and skinned, when alive *and in full possession of their faculties* [italics mine]. Nerves are dissected out, laid bare and connected with the poles of a powerful battery, from which currents of electricity are passed over these nerves; this probably causes the greatest agony of which sentient beings are capable. The New England Anti-Vivisection Society opposes vivisection, (1) because the number of animals vivisected, with unknown and inconceivable agony to each one, is probably several thousand each day; (2) because anesthetics are very seldom efficiently used; (3) because the results of vivisection are as near to absolute worthlessness as it is easy to get, in fact cause great and absolute harm; (4) because, as recent revelations in the *Transcript* (1889) and other papers abundantly show, vivisectors of prominence and supposed character are, almost without exception, untruthful, and cannot be relied upon to tell the truth about their own acts," — and so on. These statements are so positive, and, if true, would be so overwhelming, that it is hardly conceivable that they would have been put forth with no better evidence to support them than has been offered from time to time. Full hearings have been given upon this subject by joint committees of the Massachusetts legislature, not only in one year, but for five successive years. Every opportunity has been given for the presentation of any specific evidence of cruelty or of the abuse of the practice of animal experimentation within this Commonwealth. The result has been uniformly the report of the committee giving "leave to withdraw" to the supporters of the various bills that have been presented favoring further legislation in restriction of or abolishing animal experimentation. If any portion of these statements of fiendish cruelty and useless experiment had been shown to be true, such a result before these successive committees would have been impossible.

None of the statements in the extract from the Anti-Vivisection magazine are specific of individual cases; only when this happens is it possible to make specific replies. The well-known case of Bayliss *v.* Coleridge is one in point and demonstrates how inaccurate, supposedly accurate observation may be; the circumstances should be of interest to all those concerned in the advancement of medical knowledge. They may be summarized briefly as follows: Two young Swedish women, of good education and social position, had been visiting various laboratories and attending lectures in courses on physiology, apparently with the purpose of securing evidence to be used in propaganda against animal experimentation. During the winter of 1902–03 they visited London, and in February, 1903, at one of a course of lectures in physiology at University College, they claimed to have witnessed experiments that were conducted with great cruelty and in violation of the law. They were at this lecture, as they had been at others, not as genuine students of physiology, but as seekers after evidence in their crusade against animal experimentation of any kind. They were well educated and might be supposed to be honest. It would be natural, therefore, to believe that they could see and understand what went on within a few feet of them, and would take pains to report truthfully what they saw. They testified that they saw no tube connection made for purposes of artificial respiration; that the animal experimented upon made many purposive movements, indicating a conscious struggling; that they smelled no anesthetic, and believed that none was given; that cries, whines, and barks had been heard, and that the animal had made a shrinking movement, as of fear, at the first approach of the operator. As against this professedly close and accurate observation, it was proved in court, before the Lord Chief Justice of England: (1) that artificial respiration was carried on all the time the animal was on the

table in front of them; (2) that the animal was profoundly anesthetized — one and a half grains of morphia (a very large dose) had been injected before it had been brought into the room and that six ounces of the "A. C. E." mixture (alcohol, chloroform and ether) had been used during the operation; (3) that this particular dog was affected with chorea, and that the movements seen were choreic, not purposive, in character; (4) that tracheotomy had been performed, and it was impossible therefore that any cries, whines or barks could have been heard; (5) that the shrinking movement of fear testified to could not have occurred for the above reasons.

The ladies, relying upon their own powers of observation, made a statement of what they claimed to have seen to Mr. Stephen Coleridge, honorary secretary of the Anti-Vivisection Society (of England), a lawyer and a member of the English bar. This gentleman, as he testified, accepted their statement without any attempt at verification, although he knew that giving publicity to it would be likely to be followed by prosecution. Apparently, however, the search for evidence to support the agitation had grown so desperate that this opponent of animal experimentation was ready, even anxious, to use the testimony, and did so, amid great enthusiasm, at the annual meeting of the Anti-Vivisection Society, early in May, 1903.

The prosecution for libel followed promptly, with the substantial verdict against the defendant of nearly ten thousand dollars (£2000).

That a lawyer, trained in the weighing of evidence and with a knowledge of the necessary responsibility accompanying specific assertions of cruelty, should have taken no step to verify his supposed facts, seems inexplicable. The defendant gave as his reason that he knew they would be denied, and during cross-examination went so far as to say that he still believed the women to have testified to the truth; this after their statements had all been denied under oath.

Here is the condition of mind we have found much nearer home. The opponents of animal experimentation deny its usefulness, in the face of overwhelming evidence to the contrary, evidence that to them is not such, for they do not believe it when it is stated, and take no pains to verify it by actual observation. It may, perhaps, be fortunate, after all, that such attempts at verification are not made by such people, if their interpretation of the facts seen by them is to be as false as it was in this instance.

It has not yet happened that specific allegations of cruelty have been made in Massachusetts. Of general assertions there have been many, all of the same character, and repeated year after year. Perhaps such a disastrous failure as that of Mr. Coleridge, in the exploitation of an unsubstantiated calumny, may prove a salutary warning even to the most violent opponents of physiological research and teaching. That simple limitation is not what they desire, but absolute prohibition, is becoming more and more evident year after year.

If the unhampered advance of medical knowledge is to go on, ever watchful care must be taken that methods like those illustrated in this trial are not successful. (H. C. Ernst, editorial, *Journal of the Massachusetts Association of Boards of Health*, xiv, No. 1, Feb., 1904.)

This case furnishes the best possible example of the difficulty of relying upon the observation of persons whose honesty of purpose may hardly be questioned, as one was not at first tempted to do, even in this instance. What, however, can be said, when, in spite of the testimony brought out in the trial of the suit for damages, showing that their observed and deduced facts were not facts; in spite of the advice of the defendant in this suit, whose reputation and pocket had suffered so severely by reason of his reliance upon their statements, — what can be said of the honesty of purpose that led these women to publish this same case as truth, and without a single qualifying word of doubt? Such methods of interpretation are not a surprise to one like myself, whose duty has required the close examination and sifting of assertions brought forward in support of repeated attempts to secure unnecessary and burdensome legislation upon this subject in this Commonwealth.

I have, I believe, been more or less actively concerned in opposition to every attempt at legislation of this sort in this state. I do not remember that I have missed a single hearing upon the matter; and I have attempted to sift every piece of assertion that has been brought forward in favor of the proposed legislation to further restrict or to abolish animal experimentation. I paid so much attention to the matter in the early days of my experience with it because I wanted to learn. I am myself a lover of animals, as all my neighbors know; and when my own work began to lie in the direction of animal experimentation in the hope of increasing the sum of human knowledge or doing some small thing towards the relief of human suffering, it became a matter of anxious consideration with me as to how much of this work I should do and how far such influence as I had should be allowed to support it.

So far as I have been able to do so, I have studied the matter from all its points of view, from its moral as well as its utilitarian side; and so far as its justification is concerned, the evidence has appeared to me to be so overwhelmingly in its favor that I have been compelled to become its uncompromising supporter. It seems to me impossible that anyone who has lived, as it is our privilege to live, in a generation that has seen the labors of a Pasteur, of a Koch, or of a Reed; who has had actual experience in seeing the sick snatched from the grave by the timely use of the results of similar labors; or who is able to realize the enormous saving of life to both man and the lower animals as the result of this method of study; it seems, I say, impossible that such an one can honestly oppose the continuation of the practice of animal experimentation in the freest possible way.

And by this I do not mean, nor do I know anyone else to mean, unlimited freedom to anyone to experiment at any time and in any way upon the lower animals. Such freedom does not and should not exist.

That it does not exist is not, I believe, generally known, for it is only because the present laws in the case are not known that much of the support is given to the annual agitation for further restriction of the practice. One example of this is furnished by a well-known and highly honored clergyman of this community, who signed the petition for one of the recent bills and appeared at a hearing in its favor. At this hearing he spoke eloquently and somewhat at length in favor of placing some restrictions upon the practice, evidently under the impression that none then existed. Upon being informed of the actual condition of the laws and that the passage of the bill would seriously interfere with the beneficent work of many of his friends, his consternation was amusing, and pathetic as well. He himself proposed the remedy that the remonstrants to the bill should get up a counter petition, and promised to sign that, too.

It is not true that restrictions to the practice of animal experimentation are lacking. The implications and assertions that none exist are not based upon facts, any more than is the description already quoted, of what "vivisection" is.

The editorial writer in *The Outlook* speaks of the needlessness of such demonstrations in the public schools, and in that I heartily agree with him. But there is now, and has been for years, a law upon the statute books absolutely prohibiting vivisection in the public schools, and no attempt whatever has been made, so far as I have heard, to modify or to evade its provisions. This part of the question is therefore absolutely closed.

The present laws governing cruelty to animals cover all remaining cases, and to show how completely this is true I may be permitted to quote them in part: "Whoever overloads, overdrives, or overworks, or deprives of necessary sustenance, or cruelly beats or mutilates an animal, or procures this to be done to any animal; or, having charge of or being in custody of any animal, inflicts unnecessary cruelty upon it, etc., is punishable by imprisonment in a jail for a period not exceeding one year, or by a fine not exceeding two hundred and fifty dollars, or both. A corporation which violates this provision is punishable by fine and is responsible for the knowledge and acts of its agents or servants. Officers are authorized to arrest without a warrant persons who are suspected of being guilty of this act." And finally, there is a most stringent and unusual provision to the effect that when a complaint is made to a court or magistrate and when the complainant believes, and has reasonable cause for believing, that this law is being violated in any particular building or place, and the magistrate or court is satisfied that there is reasonable cause, he may issue a search warrant to search the building." (Adapted. Public statutes, Chap. 297, par. 52.) First rate legal opinion comments as follows: There is, therefore, in Massachusetts, a law applicable to vivisection of the most extreme kind, which would enable any person who could satisfy a court that he has reasonable cause to suspect that cruelty was being practiced in a Massachusetts medical school, or elsewhere, to procure a search warrant to search the premises and discover the animal and the parties cruelly treating it, and to cause the arrest without a warrant of the persons who are suspected of practicing the cruelty. So that this agitation is directed, as, indeed, has many times been acknowledged, against the professional schools, for vivisection is not practiced in any other schools in this commonwealth.

This being so, the question at once arises as to the trustworthy character of the trustees of our educational institutions on the one hand; whether they are so negligent of the duties entrusted to them as to allow such fiendish cruelty to go on as is asserted to occur; and on the other hand, whether the instructors appointed by them, after searching inquiry as to character as well as training, are so callous and unfeeling as the accusations state. In all the years that the hearings have occurred at the Massachusetts State House no evidence has been brought forward proving the existence of such a state of affairs. It may justly, therefore, be supposed that the public confidence in these officials is not misplaced.

Much of the argument against animal experimentation, of late years, has rested upon assertions and implications that the experiments are conducted without anesthetics efficiently used, and while the animal is conscious and suffering. Assertions of this nature, like the description of vivisection already quoted, are absolute, and as I believe, intentional falsehoods. So far as my personal work is concerned or that of the laboratory under my charge, I may say that no experiment, except simple inoculations, has ever been made except under profound anesthesia. I have never seen one done, and I know them to be of the rarest occurrence, only considered at all, when the object to be gained can be reached in no other way.

In other words, the demand that such operations be conducted with all possible precautions to avoid unnecessary suffering is already met, in every institution of which I have personal knowledge or which has been brought to my notice.

I have said publicly many times that if evidence is presented to me or my friends in this matter demonstrating the existence of abuses that the present laws do not fully cover, we will support an active movement for reform. We must have evidence of worth, however. One can hardly be expected to ask for new legislation upon the testimony of an agitated lady near our medical school, who was much troubled by the daily current of beautiful collie dogs taken in every morning — and never coming out again. These were my dogs, who used to run in with me every morning as I rode or drove through the

park, and who never seemed to go out again, because, being the fall, we all went home after dark. I believe it to be possible to assert with truth that the requirements of careful supervision and a minimum of suffering are fulfilled in every institution where the practice of animal experimentation is carried on. Certainly, if this is not so, it is strange that I have never heard of any proof of the existence of the abuse of the power of man over animals in this direction that has not been promptly rebuked. If such abuses do exist there is plenty of law on the statute books to secure their punishment, and it would be my duty and pleasure to take part in the enforcement of these laws.

The Society for the Prevention of Cruelty to Animals finds no difficulty in securing convictions under the present laws in cases of abuse brought to its notice.

The complaint often made is that it is difficult to secure evidence of the abuse of the practice of animal experimentation, because those desiring to secure such evidence cannot get in to the laboratories or demonstration rooms where experimentation is going on.

That the desire of any intelligent person for information on this subject or for admission to any laboratory where this practice goes on has ever been denied, I do not believe. It certainly has not been so in any place with which I am familiar. On the contrary, it is the fact that some of the most prominent agitators against animal experimentation have refused direct invitations to come and see for themselves, and one in particular is on record with the remarkable assertion, "I do not need to go into a laboratory to know what is going on there."

The whole case may be summed up thus: if man's dominion over other animals is justifiable at all, then the use of those animals for the furtherance of his and their well-being is justifiable in the direction of experimentation, as in others. Such use must, however, be surrounded by all safeguards that it shall be merciful and as painless as possible. Such safeguards, those competent to judge have said again and again, are in existence, and no proof to the contrary has been brought forward.

## Original Articles.

### A STUDY OF AMPUTATIONS OF THE LOWER EXTREMITY.

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Amputations of the lower extremity, as a class, offer little of technical interest to the operator. They are usually traumatic cases of such extent that the saving of the patient's life is the main question. The operator is apt to consider the immediate result, while to the patient the ultimate usefulness of the stump is of major importance. Generally speaking, a good immediate result means a good end result, but in amputations this may be far from the truth.

When artificial appliances were in the crude state, the principle was taught, "save as much as you can," and to a remarkable degree such is the opinion held at the present day. Observations of numerous failures to obtain a serviceable stump by following this teaching suggested to me the investigation of the relative values of the various methods of amputation of the lower extremity as regards the production of a useful stump.

Through the courtesy of the staff of the Massachusetts General Hospital the hospital records were placed at my disposal, and Dr. J. Collins Warren kindly allowed the use of his name in correspondence with the patients and with the manufacturers of artificial limbs, for both of which favors I am deeply indebted.

Data were obtained from three sources, namely: the hospital records, the patients and the makers of artificial limbs.

In order to get an idea of the type of cases and the immediate results, that is, the results before leaving the hospital, the records of five hundred cases were abstracted. These cases were taken as nearly as possible in consecutive order and include the years from 1889 to 1901 and part of 1888 and 1902, but owing to the irregularity of the diagnoses it was not possible to depend upon the card catalogue, and certain few cases may have been overlooked in going through the individual record books.

The following list of questions was sent to each of these patients who had left the hospital alive, with a note asking them to answer the questions and return them to me in case they were not able to come to the hospital for examination:

"Do you wear an artificial limb? If not, why? How long after the operation was it before the tenderness would allow one to be worn? Can you walk without crutch or cane? Can you do any manual labor? What? Do you ever have pain in the stump? Is the pain localized in the end of the stump? Does the leg draw up with cramps? Has there been any sensation as if the toes were cramped? If so, how long before this sensation wore away? Has the weather any effect on the stump? Does the stump ever swell or discharge? Does the artificial limb cause pain or discomfort? Have you had any operation since the first amputation? Who made the artificial limb? What did it cost? How often has it been necessary to have the limb repaired? About what has been the cost of such repairs? After your experience, what suggestions would you make regarding the treatment of an amputation such as you have had?"

Recognizing the wide experience and ability of the best makers of artificial limbs, another list of questions was sent to eleven of the well-known firms of the East and West. These gentlemen have been more than courteous in their efforts to help me, both by replying by letter and pamphlet and by calling in person. I take this occasion to thank them, and to urge a closer coöperation

between the surgeon and the prosthetician, for it is by this means that the problem will be worked out and the best results given to the patients.

The following table shows the class of cases and the mortality in the hospital:

TABLE OF AMPUTATIONS.

| | Total. | Died. |
|---|---|---|
| For crush: | | |
| (Single) | | |
| Thigh | 66 | 27 |
| Leg | 172 | 8 |
| Partial foot | 32 | 1 |
| (Double) | | |
| Thigh | 1 | |
| Thigh and tibia | 11 | 2 |
| Thigh and partial | 1 | |
| Tibia | 19 | 6 |
| Tibia and partial | 5 | 1 |
| Partial | 1 | |
| For bad stumps of | | |
| Thigh | 11 | |
| Leg | 35 | 1 |
| Partial | 6 | |
| For sepsis: | | |
| Thigh | 11 | 4 |
| Leg | 4 | 1 |
| For gangrene: | | |
| Thigh | 31 | 11 |
| Thigh and leg | 1 | 1 |
| Leg | 23 | 12 |
| Partial (double) | 1 | |
| For new growth: | | |
| Double thigh | 1 | 1 |
| Thigh | 32 | 5 |
| Leg | 12 | 2 |
| For tuberculosis and osteomyelitis: | | |
| Thigh | 17 | 1 |
| Leg | 6 | |
| Partial | 1 | |
| | 500 | 84 |

The general and local conditions in individual cases exerted such an influence upon the result and upon the technic of the operation that statistical comparisons, either as to the immediate results or the mortality, would be impossible and unfair. But certain facts were boldly emphasized. As might be expected, the amputations for new growth did much better, as far as the healing of the stump was concerned, than those done for trauma and gangrene. In general, the immediate results of all the amputations as compared with the perfect healing seen in other classes of clean cases, were most disappointing. Union by first intention was the marked exception rather than the rule. Ordinarily in clean cases three weeks may be taken as a surgical unit of time which represents by a slight addition or subtraction the time of convalescence, but in these amputations it would be hard to fix a limit of time, so persistent were the indolent granulations and sinuses. In many instances the use of bruised tissue for emergency flaps was necessary, and in these cases the failure to obtain satisfactory healing was to be expected, but not infrequently the poor result seemed to be due to the technic rather than to the unavoidable conditions. These failures, with few exceptions, were due to the infection of the clot of blood and serum which had collected beneath the flaps or were caused by the failure to provide a suitable covering for the end of the bone. The skin flap with a circular incision was the one most often used, and it seems to me the least desirable, except in such regions as the lower third of the leg and when demanded by necessity. Certainly, the muscle flaps in the thigh and the upper part of the leg gave much more favorable results than when the skin alone was used.

Unless the soft parts were carefully approximated and held by buried sutures, the drained cases did noticeably better than when the attempt was made to obtain a complete first intention. These attempts not infrequently led to the following sequence: first intention of the skin, about the fourth to sixth day, expression of the blood clot by opening the line of incision, infection causing a sinus or further opening of the incision to pack the cavity, retraction of the flap sometimes resulting in protrusion of the bone followed by reamputation or skin-graft. Where muscle flaps were obtainable, the method of suturing the periosteum over the end of the bone and approximating the muscles and fasciæ by buried or mattrass sutures gave excellent results. There were no instances of osteoplastic flaps except in amputations at the ankle-joint. As a routine, the cases were operated as soon as it was possible to obtain a surgeon, so that no statement can be made as to the relative value of immediate or delayed operation in the traumatic cases. Judging from the records, the shock of amputation *per se* below the upper third of the thigh was not marked.

Except for the question of flaps and drainage, the immediate results of the routine leg and thigh cases have no special interest in connection with this paper. A class of amputations, such as the so-called Syme's, Pirogoff's, Chopart's, Lisfranc's, Hey's, etc., with their modifications, does, however, illustrate certain points which it will be well to bear in mind in considering the ultimate utility of these operations.

There were 44 operations of this class in which the immediate results could be judged. They included 12 tarso-metatarsal amputations, 3 of which were followed by reamputation; 17 mediotarsal amputations with 4 reamputations, and with 1 case which had not healed at the end of nine months and another which went on crutches for eleven months; 7 disarticulations at the ankle-joint, of which 1 was advised to have a reamputation, and another in which sinuses persisted; 8 Pirogoff's with 1 reamputation and 3 cases with faulty position of the fragment of the os calcis. In addition to these more marked failures, these amputations of the foot were generally slow to heal.

Failure to obtain a good result in about 33⅓% is significant.

The opinions of the makers of artificial limbs were in the main remarkably unanimous. Regarding minor details there were differences, and

rarely the position was taken that any stump could be satisfactorily fitted.

In the following comments I have endeavored to express the prevailing idea and that which seems to me to be the most reasonable.

Here, as was the case in considering the immediate results, exceptions may be cited to disprove any statement, but in general, that is, to obtain the greatest benefit to the greatest number, the experience of the makers of artificial limbs supports the following conclusions:

The Lisfranc's, Hey's, and Chopart's and the irregular midtarsal amputations were considered in a single class. The preservation of the attachment of the *tibialis anticus* gives a theoretical advantage to Lisfranc, but practically it is open to the same objections as the others, namely: a weak supporting arch and a tendency to extension of the stump even though the Achilles tendon be divided. Given an ample flap which assures the placing of the scar on the dorsum of the foot so that it will not be irritated by pressure, and a perfect result without extension of the stump, it was held by the makers that these operations were acceptable, but so rarely was this perfect result seen that generally such amputations were condemned. Even under the most favorable conditions, it was questioned whether these amputations gave as strong a supporting leg as a tibial stump. Any appliance, other than a simple cosmetic false foot which offers little or no support, is cumbersome and difficult to fit with comfort to the patient.

Operations of the type of the Syme and the Pirogoff formed the next group to be considered, and they, too, were disapproved. The Syme, or the modification with the lateral flap when perfect, offers simply a peg leg. Displacement of the heel pad so as to bring the cicatrix into bad position had been the general experience. The bone flap of the Pirogoff increases the length of the leg, and with a perfect result makes a smoother stump. Malposition, however, of the bony fragment or of the cicatrix had been the rule. The greatest difficulty had been found in providing a satisfactory apparatus after these operations.

Going above the ankle-joint the opinion was ananimous that the long stumps obtained in amputations through the lower third of the leg were undesirable. Different levels were suggested, varying between the middle of the middle third to the junction of the middle and lower thirds. In inches, lengths between 6 and 10 inches measured from the lower border of the patella were acceptable. The longer stumps have been found to show a tendency to swell at the end, and the greater leverage without material gain in handling the foot increased the liability of play in the socket, thus causing irritation of the anterior border of the tibia. A stump shorter than six inches has been found to decrease the usefulness of the leg by lessening the power of leverage. A tibial stump two inches long was accepted as the minimum which would give a satisfactory bearing for an artificial leg which would preserve the function of the natural knee joint. Amputations necessitating a shorter tibial stump opened the question of sacrificing the knee. The old operation of saving the short tibial stump gives with flexion a good, serviceable, end-bearing but cumbersome leg. As in amputations through the joint, it necessitates a bulky apparatus and in the sitting posture makes one thigh longer than the other. Amputations through the joint were generally considered to possess no advantage over those above the condyles, and to have beside the disadvantage of necessitating a clumsy apparatus and to be liable to irritation over the bony prominences.

Gritti's procedure of placing the patella at the end of the femur was not advised. When successful the end bearing is good, but the bone is apt to be displaced, and even the perfect result is open to the same objections as the other knee joint operations.

Above the knee it was advised that the stump be left as long as possible, provided the condyles of the femur be removed. Measured from the perineal fold, any thigh stump longer than five inches was considered to be satisfactory and useful. Stress was laid on the importance of obtaining a good, not redundant, end pad; the necessity of beveling the bony prominences, such as the anterior border of the tibia, and careful resection after traction of the nerves was emphasized.

In the short leg amputations it was suggested by some that the fibula should be sub-periosteally resected, and in all cases that it be cut off at a higher level than the tibia. "End bearing" was considered as desirable but not at all as an essential.

One hundred and sixteen of these patients were seen and personally examined or followed by letter. Results are considered as "fine" when the patient is able to walk without a cane and to do ordinary manual labor, as "good" when able to walk with a cane or with slight discomfort and to do light work.

In this series there were 35 cases of amputation of the thigh. Seven died without using artificial limbs to any extent, four from sarcoma, two from tuberculosis and one from gangrene. Five have not tried to use artificial limbs, either because the leg could not be obtained or because they are too comfortable on crutches. Nine are "fine" results and are able to do practically the same work as before the injury. Nine cases are classified as "good" results. Three are bad, two being in old men so weak that the uninjured leg will not bear the weight of the body, and one a conical stump in a child who was operated at four years of age. One patient has new bone reforming in the stump after an excision at the hip joint and will ultimately be able to wear an artificial leg. Another has a fine stump without evidence of neuromata or irritation, but thus far has not been able, on account of pain, to use an artificial leg. From these cases no special conclusions could be drawn. Where muscle flaps had been taken, the covering at the end of the

stump seemed much more fitted to stand rough usage than where the skin alone had been used.

Sixty-one cases of leg amputation were followed. Six have died, one of whom, at the time of death, would be classed as a "good" result. Six as yet have no artificial legs, four of whom are waiting to be fitted, one had sloughing of the flaps and the bone still irritates the skin, and one is an old man with a tender adherent flap. Forty are "fine" results and nine are classified as "good."

These tibial amputations illustrated most graphically the suggestions made by the prosthetic ians. The most perfect results were seen in the shorter tibial stumps, that is, about six inches. The long stumps from amputations of the lower third, almost without exception, caused trouble by swelling and from the irritation on the anterior edge of the tibia. Several cases were seen where the too long fibula caused marked tenderness in the end of the stump. The extra leverage above six inches gave no advantage. The shortest tibial stump observed was two and one-half inches with which the patient was able to do active and hard manual labor. On the whole the slight amount of disability caused by the loss of a foot was remarkable. The claim sometimes advanced by manufacturers that shoulder straps for support of the leg are not necessary was not borne out by these cases, as their use was almost universal.

The ten cases of double amputation are tabulated in order that a comparison between the stumps may be more readily seen:

Pirogoff — painful.
Partial — fine.

Pirogoff — fine; patient would much prefer a tibial stump.
Tibia, 4 inch, much the stronger leg.

Chopart — good, but patient wishes it were a tibial amputation.
Middle third of tibia, fine, much the stronger leg.

Tibia, 10 inch, fine.
Tibia, 2.5 inch, fine.

Tibia, 7 inch, fine.
Tibia, 8 inch, fine.

Tibia, 7 inch, fine, considerably the stronger leg.
Tibia, 9 inch, fine.

Tibia, 4.5 inch, fine, much the stronger leg.
Tibia, 10 inch, fine.

Thigh above condyles, fine.
Mid-tibia, fine.

Partial foot, fine.
Middle and lower third tibia, fine.

Mid-thigh, good.
Mid-tibia, good.

With the exception of the last case, who has been fitted with the artificial legs only a short time, these patients with a double amputation have experienced remarkably little discomfort. There are included laborers who do hard work and youngsters who go to school and play ball.

The partial amputations of the foot and those at the ankle-joint are also given in tabulated form:

Syme's, fine.
Syme's, fine.
Syme's, good, but patient would much prefer a short tibial stump.
Syme's, good, but there is bad displacement of heel pad and scar, and patient wants a reamputation.
Syme's (lateral flap), good, but patient would prefer a tibial stump.
Lisfranc's, good, but considerable pain.
Chopart's, fine; walks well but not so strong as a good tibial amputation.
Chopart's, fine.
Chopart's, good, but with apparatus makes a clumsy foot.
Chopart's, fine, but not satisfactory with artificial limb.

A failure of $33\frac{1}{3}\%$ in the immediate results and the unsatisfactory end results must, it seems to me, condemn all of the partial amputations of the foot or at the ankle-joint.

The summary of the replies to the questions which have not been considered in the preceding paragraphs is as follows:

Simple tenderness in the stump prevented the wearing of an artificial limb for from two months to two years. In the majority of cases the stump was ready for the leg in from five to seven months. Intervals of slight pain in the stump was the rule. The pain was rarely localized in the end of the stump, but was referred to the foot. The leg itself was universally reported as being free from cramps, but the absent toes almost as generally were subject to periods of more or less severe discomfort. To a very slight degree the sensation in the toes persisted, usually growing markedly less after about the first year. Opinions regarding the influence of the weather were most variable. In some, extreme cold caused discomfort, while in others heat was to be dreaded, and still another group felt a storm or an east wind. This discomfort, which was experienced by about one third of the patients, was apparently no more severe than is found in the average individual with a "rheumatic tendency." Only in the long tibial stumps or with improperly fitted sockets was there marked swelling or discharge from the stump. Any artificial appliance must of necessity cause some discomfort, but generally speaking the limbs were worn with remarkable ease. Twenty-four cases had undergone some secondary operation after leaving the hospital. Incompleteness in the replies prevents a definite statement regarding the exact character of these operations, but usually they had been of a trivial nature, such as the opening of an abscess or the removal of necrotic bone or neuromata. As "suggestions," nearly all of the patients confined their remarks to the after treatment of the stump. They complained, as did the makers of artificial limbs, that usually no directions were given on leaving the hospital as regards bandaging the stump. If left alone, the soft tissues hypertrophy and become flabby, necessitating later the wearing of a "shrinker" before a socket can be fitted. In order to prevent this the stump should be bathed frequently,




FIG. 1. Disarticulation at ankle-joint. Shows the displacement of the heel-pad "A" and the tender point "B" on the anterior edge of the tibia.



FIG. 3. Pirogoff and 4-inch tibial stump. The short tibial stump is the more useful.



FIG. 2. Tibial stumps, 10 inches and 4½ inches in length. The shorter stump is the more useful.



FIG. 4. To show how short a tibial stump can be and yet afford perfect function.

NOTE. — The writer is indebted to Mr. Walter J. Dodd of the Massachusetts General Hospital for the illustrations used in this paper.



Fig. 5. Six-inch tibial stump. Good free end pad. No discomfort. Perfect function. Patient weighs 206 pounds.



Fig. 6. Bad conical stump of thigh.



Fig. 7. X-ray of stump of a tibial amputation, showing bony change caused by constant irritation of the anterior edge of the tibia; also illustrates the common error of leaving the fibula too long.



Fig. 8. Cumbersome apparatus seen on Syme's amputation. Compare with Fig. 9.



Fig. 9. Ordinary artificial leg for tibial amputation. For comparison with Fig. 8.

either with cold water or some mild astringent solution, and kept bandaged with flannel under moderate tension so that there will be slight compression, or should be encased in a proper leather support. The cost of the limbs was from $50 to $100. With ordinary use and with a good make of leg, repairs were necessary once or twice a year. Their cost was, as a rule, insignificant. Often the repairs were made by the wearers themselves.

It is not the purpose of this paper to attempt to consider the merits or faults of the various styles and makes of artificial legs, but if it were, I should have great difficulty in condemning wholly any one type. Given a first-class artificial limb, whatever the make may be, and an intelligent patient with a satisfactory stump, and the functional result will be remarkably good. Failure on the part of the patient to practice a proper gait and to endeavor to correct the faults is, it seems to me, more often to blame than is the artificial leg.

The conclusions warranted by these observations are as follows:

Anterior and posterior muscle flaps when obtainable are to be preferred to the circular cuff of skin.

The fibula should be cut off at a higher level than the tibia in leg amputations, and care should be taken to bevel off bony prominences such as the sharp anterior tibial edge.

Suture of the periosteum and approximation of the muscles and fasciæ is desirable.

Drainage of the stump is advised, unless the dead space is obliterated by means of buried sutures.

Partial amputations of the foot or amputations at the ankle-joint, except under unusual conditions, are not as satisfactory as those above the ankle-joint.

Tibial stumps between 6 and 8 inches long are the most serviceable.

Amputations through the knee-joint are inferior to those just above the condyles.

The longer the thigh stump the better, provided the condyles have been removed.

In general, in tibial amputations down to 4 inches and in thigh amputations down to 5 inches, sacrifice bone in order to obtain good muscle flaps.

## EXPERIMENTAL DECAPSULATION OF THE KIDNEYS.

BY N. H. GIFFORD, M.D., BOSTON.

*From the Laboratory of Surgical Pathology. For the Division of Surgery of the Medical School of Harvard University.*

This article contains the results of a year's work on the experimental decapsulation of kidneys, performed on animals in the surgical laboratory of the Harvard Medical School, aided by the suggestions of Dr. E. H. Nichols.

Dr. H. A. Johnson, in the *Annals of Surgery* for April, 1903, and Albarran and Bernard, in the Société de Biologie in June, 1902, have published papers bearing on the first part of my work, that of the rabbit series. As my results differ in many respects and there are some additional observations, I take the liberty of presenting this paper.

The experiments have been conducted upon rabbits and dogs.

In each rabbit or dog I have decapsulated one kidney, always the left because it is normally smaller than the right by one fourth to one third and lies more inferiorly, thus giving greater ease of access from lumbar incision. The animals were etherized, the hair clipped, the remaining hair removed by sulphur paste, and the operation performed, as far as possible, under aseptic precautions. In no case, either in rabbits or dogs, have I found the peritoneum so closely adherent over the capsule of the kidney as to be torn in the delivery of the kidney into the wound for decapsulation. After delivery of the kidney the capsule was split along the greater curvature from pole to pole, stripped off by the help of forceps, if necessary, and the kidney returned to its original position in the retro-peritoneal fat. The wound was then closed with deep interrupted, heavy silk sutures, and the animal returned to the pen to be killed after an allotted time had elapsed. The animals were killed by the injection into the lung of from one-eighth to one-fourth grain strychnine sulphate.

The specimen was preserved immediately after removal in Zenker's fluid, by placing the kidney in the fluid, intact, for one hour, and then cross-sectioning into slices, two to four mm. thick. This method prevents slipping or tearing away of the capsule by the knife, as is true in making fresh sections. In all cases the unoperated kidneys were removed at autopsy and preserved in the same manner to be examined as controls.

The rabbit series comprises two, four, six, eight, ten, and thirty-one days and six months after operations.

Two days: The left kidney, by measurement, is one-third larger than the right. There is a thin layer of blood clot about the kidney.

*Microscopically.* — In places about and external to the cortex few very young connective tissue cells appear. There are no connective tissue fibrils by Mallory's connective tissue stain. There is moderate congestion of all the vessels and capillaries in the kidney substance. No change in renal epithelium appears.

*Microscopically.* — The right kidney shows a capsule two to four cells thick.

Four days: The left kidney is one-fourth larger than the right. Thin, fibrinous adhesions with little blood clot appear about kidneys.

*Microscopically.* — A layer of new connective tissue cells appears on the cortex, five to seven cells thick, showing by Mallory's connective tissue stain a few connective tissue fibrils. There are new blood vessels from the cortex and a slight infiltration with polynuclear leucocytes, plasma cells and eosinophiles. The capillaries of the outer cortical zone show slight injection. There is no change in the renal epithelium.

*Microscopically.* — The right kidney shows a capsule two to four cells thick.

SIX DAYS: The left kidney is one-fourth larger than the right. The blood clot has disappeared. The kidney is rather firmly imbedded.

*Microscopically.* — There is no injection of the vessels of the kidney substance. A new capsule appears about the kidney, ten to twenty cells thick, rather rich in blood vessels, showing by Mallory's connective tissue stain numerous medium long, well-formed intercellular fibrils. The cells of the outer layer of the new capsule are rich in yellow pigment. There is no change in renal epithelium.

*Microscopically.* — The right kidney shows a capsule three to five cells thick.

EIGHT DAYS: The left kidney is one-fifth to one-fourth larger than the right. There is no blood clot.

*Microscopically.* — No injection of the vessels appears. There is a new capsule of connective tissue ten to fifteen cells thick, rather rich in connective tissue fibrils and blood vessels. There is no change in the renal epithelium.

*Microscopically.* — The right kidney shows a capsule two to five cells thick.

TEN DAYS: The left kidney is one-fourth larger than the right and is firmly anchored. There is no blood clot.

*Microscopically.* — A new capsule, rather rich in connective tissue fibrils and blood vessels, appears, ten to fifteen cells thick. There is no injection. There is no change in the renal epithelium.

*Microscopically.* — The right kidney shows a capsule two to four cells thick.

THIRTY-ONE DAYS: The left kidney is slightly larger than the right, and is firmly anchored.

*Microscopically.* — The vessels are not injected. A new capsule appears, seven to fifteen cells deep, with long connective tissue fibrils in abundance, and a few new blood vessels. There is no change in the renal epithelium.

*Microscopically.* — The right kidney shows a capsule two to four cells thick.

SIX MONTHS: The left kidney is approximately the same size as the right. The capsule of the left kidney shows a few spots two to three mm. in diameter, yellowish and opaque but not appreciably thick to touch. The remainder of the capsule is transparent like that of the right kidney.

*Microscopically.* — There is a capsule of connective tissue two to four cells deep, with a few long, connective tissue fibrils closely packed and rather sparsely supplied with blood vessels. Sections through the opaque areas show a capsule four to eight cells deep. Except these slightly thickened areas, whole section of left kidney not different from that of right whose capsule is from two to four cells deep. No change in renal epithelium.

From the above we see that as early as the second day after the operation new connective tissue cells begin to appear in the clot about the decapsulated kidney. On the fourth day connective tissue fibrils begin to be formed, and by the tenth day a new capsule, rich in blood vessels and three to four times normal thickness, surrounds the kidney. That the capsule has been entirely removed by the operation shows in the two-day specimen and also in the three controls which I made, after seeing the article by Johnson in which he claims the impossibility of entirely removing the inner capsule. In the kidney substance there is a rather well marked intertubular congestion up to the fourth or fifth day, but no change in the cells of the blood vessel walls is observed at any time. The tubules and glomeruli remain unchanged.

In the operation when the capsule is split, it immediately draws back and the kidney pops out as if under tension. This is probably due to the congestion caused by putting the renal vessels on stretch and thus narrowing their caliber. This would have more effect on the veins because of their relatively thinner walls. This increase in size, however, persists.

The operated kidneys, as can be seen by the above, are increased in size up to thirty-one days afterwards. At the end of six months, however, they return again to nearly normal size, and at the same time the capsule is but little thicker than normal.

In the dog series sections were made three, eight, and fifteen days after operation on normal animals.

THREE DAYS: The left kidney is one-fourth larger than the right. There is considerable blood clot in the perirenal tissues but the kidney is held fairly well in place.

*Microscopically.* — There is moderate injection of the subcapsular vessels. There appears a capsule composed of young connective tissue cells, fifteen to twenty-five cells deep, with few rather short connective tissue fibrils and rather rich in new blood vessels. Both the left and right kidneys show areas in cortex of slight increase of connective tissue, including atrophied glomeruli and a few infiltrating lymphoid and plasma cells. There is no change of the renal epithelium.

*Microscopically.* — The right kidney shows a capsule six to twelve cells thick.

EIGHT DAYS: The left kidney is one-fourth larger than the right. Very little blood clot appears in the neighborhood. The kidney is firmly anchored.

*Microscopically.* — No injection of vessels appears. The capsule is composed of new connective tissue, ten to twenty cells thick, with medium long, wavy, connective tissue fibrils, and rather rich in newly formed blood vessels. There is no change in the renal epithelium.

*Microscopically.* — The right kidney shows a capsule six to twelve cells thick.

FIFTEEN DAYS: The left kidney is one-sixth larger than the right.

*Microscopically.* — There is no injection of the vessels. A new capsule is present composed of connective tissue with a few blood vessels, fifteen to twenty-five cells thick, and with quite num-

erous connective tissue fibrils. The new connective tissue of the capsule connects in places with some new connective tissue, running a short distance into cortex between the tubules. There is no change in the renal epithelium.

*Microscopically.* — The right kidney shows a capsule seven to fifteen cells thick.

Acting upon the idea that while no definite histological changes might follow the decapsulation of kidneys of normal animals, decapsulation of kidneys showing existing pathological changes might give more fortunate results, in that the conditions present were like those in the clinical cases which have been so successful — I next tried to induce nephritis. I chose nephrolytic serum as the best means of inducing nephritis. The nephrolytic serum was obtained by injecting an emulsion of washed dog's kidney subcutaneously into rabbits at three-day intervals, and at the end of two weeks the rabbits were bled and the serum injected into apparently healthy dogs.

Eight hours: A dog was injected with 0.5 cc. nephrolytic serum. No symptoms resulted. Six days later 2.0 cc. of nephrolytic serum were injected with no symptoms immediately following. On the fifth day after the second injection the dog was reported in convulsions and coma (with diarrhea and vomiting and anuria). Ether was administered and the left kidney decapsulated through the lumbar incision. A wedge-shaped piece of the cortex was removed for examination. After coming out of ether the convulsions and coma persisted, the convulsions becoming more frequent and the dog weaker, until he died eight hours after the conclusion of the operation. Autopsy revealed no gross lesions other than congestion of all the organs.

*Microscopically.* — The piece removed from the left kidney at the operation shows swelling of the tubular epithelium, with obliteration of the lumen and separation from the basement membrane.

*Microscopically.* — The decapsulated left kidney shows the capsule is removed completely from two thirds of the surface, being replaced by blood clot. There is marked injection of the intertubular vessels and the larger vessels of the pyramids. The epithelium of the parenchyma is swollen, with solid staining or absent nuclei, and everywhere is torn from the basement membrane. There is no increase of the intertubular connective tissue.

*Microscopically.* — The right kidney shows a capsule six to ten cells thick. There is less injection than in the left, but the remaining lesions are essentially the same. (Acute Desquamative Nephritis.)

*Microscopically.* — The rest of the organs show nothing abnormal, except marked injection of the vessels and small areas of hemorrhage into the spleen and the lungs.

Two days: April 29, 1903. Dog injected with 0.5 cc. nephrolytic serum.

May 11, 1903. No symptoms. 0.5 cc. nephrolytic serum injected.

June 11, 1903. No symptoms. 1.0 cc. nephrolytic serum injected.

June 19, 1903. No symptoms. 0.5 cc. nephrolytic serum injected.

July 21, 1903. No symptoms. 1.0 cc. nephrolytic serum injected.

Sept. 24, 1903. The dog was reported sick, frothing at the mouth and in convulsions. One-half grain morphine sulphate was administered followed by ether and operation. The left kidney was decapsulated, and the right kidney removed through the lumbar incision. The dog appeared perfectly well following the operation with no more convulsions. At the end of forty-eight hours the dog was killed with three-eighths grain strychnine sulphate. The left kidney was one and one-half times as large as right, which had been removed at the time of the operation.

*Microscopically.* — The left kidney shows that the capsule has been entirely removed over half the convexity and is replaced by blood clot containing at all edges a few new connective tissue cells. At the edge of the denuded cortex are a few short, thick, wavy, connective tissue fibrils. In the cortex are areas of intertubular infiltration of transitional plasma cells, varying in size from that of a glomerulus to five or six times as large. These infiltrating cells are in active mitosis, and the glomeruli and tubules included are degenerating. There are a few areas of slight increase of connective tissue in the cortex, including atrophied glomeruli. The tubules appear rather widely separated, and the tubules themselves are dilated and contain circular reticulum.

*Microscopically.* — The right kidney shows a capsule three to five cells thick, rich in long, thin, closely packed, connective tissue fibrils. The description of the cortex is the same as in the operated left kidney above.

*Diagnosis.* — Acute non-suppurative interstitial nephritis.

Eight days: A dog was injected with 0.5 cc. nephrolytic serum. One month later the left kidney was decapsulated through the lumbar incision, and a wedge-shaped piece of the cortex removed for examination at the time of the operation. The dog was killed eight days after the operation.

*Microscopically.* — The piece of the left kidney removed at the time of operation shows capsule absent.

*Microscopically.* — The left kidney shows a capsule fifteen to thirty cells thick, composed of new connective tissue cells with long, thin fibrils between, and without are some areas of blood clot undergoing organization. The cortex shows no injection of the blood vessels. In the cortex are areas of lymphoid and plasma cell infiltration, slightly larger than the glomeruli, rather more numerous towards the medulla, and with slight increase of connective tissue in and about these areas. The glomeruli included show slight to marked atrophy with fibrous changes. There is no general increase of the intertubular connective tissue. The epithelium of the tubules is normal.

*Microscopically.* — The right kidney shows a capsule ten to fifteen cells thick. The cortex and medulla show the same condition as in the left.

I then produced kidney infarction in dogs in two cases, in one of which I decapsulated the kidney and in the other, I did not.

FOUR DAYS (unoperated): Through the abdominal incision the left renal artery and left ureter were tied off. The animal was killed four days later.

*Microscopically.* — The left kidney shows capsular and peri-capsular connective tissue, much thickened, containing fibrin, red blood globules, polymorphonuclear leucocytes and new connective tissue cells. The capsule is thirty to forty cells thick, with fairly short, thick, wavy, connective tissue fibrils, both in towards and into cortex and outside of original capsule. There is a moderate increase of the intertubular connective tissue in the outer zone of the cortex. The cortex itself shows the epithelium to be necrotic, with polymorphonuclear leucocytes within and without cells. In medulla are a few areas of apparently normal epithelium. The vessels are everywhere injected.

*Microscopically.* — The right kidney shows a capsule seven to twelve cells thick. The section of the kidney substance is in every respect normal.

SIX DAYS (operated): The left renal artery was tied off through the left abdominal incision and the kidney decapsulated. The animal was killed six days later. The left kidney was slightly smaller than the right.

*Microscopically.* — The left kidney shows a capsule twenty to thirty cells thick, composed of new connective tissue cells with medium, long, wavy, connective tissue fibrils in between them, and containing in their meshes numerous red blood globules. All the kidney substance, except one fourth about the hilus, is infarcted. Beneath the new capsule a few young connective tissue cells extend in about the intertubular vessels.

*Microscopically.* — The right kidney shows a capsule seven to ten cells thick. There is no increase of the intertubular connective tissue. The epithelium and glomeruli are normal.

Finally, I removed the left kidney from a dog, and five and one-half weeks later decapsulated the right through the lumbar incision. At the end of eight days the dog was killed. The right kidney at time of operation was one and one-half times size of the left, which had been removed.

*Microscopically.* — The right kidney shows a capsule ten to twenty cells thick, with new connective tissue cells and medium long, fairly thick and slightly wavy connective tissue fibrils. Fairly numerous blood vessels appear in it. The intertubular blood vessels and the connective tissue are unchanged. The glomeruli and tubular epithelium appear normal.

From the dog series I find that, after decapsulation of the kidneys of normal dogs, of dogs after nephrolytic serum with the nephritis apparently induced thereby, and after the decapsulation of infarcted kidneys of dogs, and of kidneys of dogs with additional work thrown upon them by the removal of the kidney of the other side, the same results obtain as in the rabbit series. There are no new anastomosing vessels between the capsule and the cortex. Up to two to three days there may be a rather marked cortical injection. A new capsule begins to be laid down by the tenth day. There is no change in the kidney epithelium or the glomeruli following the decapsulation. The kidney is increased in size immediately following the operation.

### SUMMARY.

Following the decapsulation of kidneys in rabbits, in normal dogs, in dogs with induced nephritis, in dogs with infarcted kidneys, and in dogs with normal kidneys but with additional work thrown upon them I find the following conditions:

1. In all my cases of two days and under and in my controls the entire thickness of the capsule had been removed over two thirds of the surface by the operation of decapsulation.
2. There is a certain amount of intracapsular tension in undecapsulated kidneys, normal or with nephritis, as shown on removal of capsule.
3. There is an immediate increase in size of decapsulated kidneys persisting up to one month at least; afterwards, a decrease to approximately normal size complete at end of six months.
4. There is congestion, moderate in degree, most marked in the intertubular blood vessels in cortex, lasting three to five days after the operation.
5. No histological change in the renal epithelium follows the operation of decapsulation of kidneys.
6. A new capsule, very vascular, at first, two to four times thickness of old, is well marked at end of eight days. At end of six months it returns to approximately the normal thickness and vascularity. The new capsule arises chiefly from the connective tissue cells of the intertubular connective tissue, but in part from the retroperitoneal connective tissue which is present in the new bed of the kidney.
7. No new vessels are formed which anastomose with those of the kidney.
8. The increase in size is due primarily to the increase in blood supply, possibly resulting from the removal of the capsule.

## FUNCTIONAL ALBUMINURIA, WITH A REPORT OF A CASE.[1]

BY J. BERGEN OGDEN, M.D., BOSTON.

DURING the past few months the subject of so-called functional albuminuria has once more been brought to the notice of the medical world, through the somewhat extended and very instructive discussion which took place before the Medical Society of London on Dec. 14, 1903. It is not my purpose, this evening, to consider this subject in its entirety, but rather to emphasize

[1] Read before the Harvard Medical Society of New York, May 28, 1904.

some of the points brought out by our English contemporaries, and to call to your attention a few of the most important features of functional albuminuria, — important because of their relation to the prognosis and treatment of this phenomenon.

A word in regard to the names given to this condition: It has been variously termed functional, cyclical, physiological, postural, dietetic, albuminuria of adolescence, and albuminuria in the apparently healthy. We have no knowledge of the pathology of the condition, so that we are obliged to content ourselves with a name which implies very little and which is vague. The term " functional," which was introduced by Dr. Pavy and which he still retains, is probably most commonly used, and I believe it is the most satisfactory name that we now have for the albuminuria of the healthy person. West [2] and Broadbent [3] are opposed to the use of the term " physiological," since they believe that an albuminuria can never be physiological. Broadbent favors the term " postural," because the condition is always dependent to some extent upon the position of the individual; in other words, when the person is in the upright position the urine contains a good amount of albumin, but when he is recumbent, the urine is free or nearly free from albumin.

Functional albuminuria is a condition in which albumin is generally absent from the urine on rising in the morning. After breakfast, or before, depending upon the activity of the individual, albumin appears, and the quantity usually increases as the day advances, up to a point where the amount remains fairly constant for the remainder of the day or to the time of retiring at night. In some cases, there is considerable fluctuation in the quantity of albumin at different times of the day, or active period, as will be seen in the case that I am to report.

The condition is most common among boys under the age of twenty. Because of its frequency during the greatest period of growth and development, the term " albuminuria of adolescence " has been quite appropriately applied. In these cases there is generally an absence of organic lesions, the persons apparently being in perfect health. The albumin in the urine is almost invariably found by either the insurance examiner or the family physician during his routine physical examination; occasionally by the person himself, in order to satisfy a curiosity.

There are apparently two important elements which enter into the production of an albuminuria at one time in the twenty-four hours and not at another: (1) Muscular activity, and (2) the ingestion of food. We know that the albumin makes its appearance as soon as muscular exercise begins; we also know that in most instances the amount of albumin in the urine increases after a meal, whether the food be rich in protoid or consist almost entirely of carbohydrates, in contradistinction to the views of Senator, Grainger Stewart, and others who have held that an albuminuria follows the ingestion of food rich in albumin. Dr. Pavy finds, however, that the diet does not play as important a part as exercise, and particularly excessive exercise. Over brain work is another important factor in the production of a functional albuminuria (Pavy).

We are at once confronted with the question of the manner in which exercise and the diet influence an albuminuria in these cases. It is probably connected in some way with the circulatory system, either through an increase in arterial tension, an undue permeability of the walls of the blood vessels in the glomeruli of the kidney, or a cardio-vascular instability as pointed out by Sir Broadbent.[4] Drs. Pavy and Armstrong [5] have each observed a violent cardiac impulse in these cases, and Dr. Broadbent states that in his experience it is the impulse of the right ventricle which is forcible, the apex beat being weak. The contrast between a weak apex beat and the left ventricle sounds, and the powerful right ventricle impulse and its loud sounds has been found by Broadbent to be constant in these cases. Another phenomenon pointed out by the same observer is that the second sound of the heart is reduplicated when the patient lies down.

The observations of these eminent authorities are sufficient to lead us to look to the circulatory system for the fundamental cause of functional albuminuria. We know that exercise, the ingestion of food, mental excitement, cold baths, and the like, result in an increase in cardiac activity and work, and probably, also, an increase in arterial tension. We are, however, still in ignorance of the condition of the blood vessels of the kidney, which will allow the passage of albumin into the urine of a person, whose kidneys are otherwise in apparently a healthy state.

N. F., a boy of nineteen years, was born in Brooklyn of Norwegian parentage, and has lived the greater part of his life in the outskirts of that city. For the past nine months he has been employed as a laboratory assistant.

*Family history.* — Mother and father living. His mother has had several attacks of what have been called kidney trouble. His father is said to have some affection of the heart. He has two brothers, both of whom are well.

*Habits.* — His habits are excellent. No history of any venereal trouble.

*Past history.* — Pneumonia when three, and measles when seven years of age. At the age of ten he was vaccinated; this was followed by suppuration of the arm and considerable toxemia, which kept him in bed for several weeks. Nine months ago, after a winter of hard study in high school, he had grip and was in bed for about one week. His health has otherwise been good.

*Physical examination.* — Well developed and fairly nourished. General appearance good. The heart was not enlarged and no murmurs could be made out. The precordial impulse was quite marked; the apex beat was very strong. Pulse 75, regular, and of good

[2] Lancet, Jan. 16, 1904, p. 143.
[3] British Medical Journal, Jan. 2, 1904, p. 5.
[4] British Medical Journal, Jan. 2, 1904.
[5] Ibid.

strength and volume. He was rather excitable. During periods of excitability his face was flushed and there were rather marked visible pulsations in the temporal and carotid arteries.

*Present history.* — Early in September, 1903, out of curiosity, he examined his urine for albumin and found that it was present to the extent of a very slight trace. My attention was called to his discovery, whereupon I examined the sediment with the following results: An occasional hyaline and granular cast with blood globules and renal cells adherent. An occasional free blood globule and renal cell. Numerous primary and secondary crystals of calcium oxalate.

An investigation was then started to learn the cause of the oxaluria, which seemed the most probable cause of the renal disturbance. Upon inquiry as to diet and habits of living, I found that he had been using for several years a " root beer " as a table drink, because of poor water facilities in the section of the city in which he lived. This beer was made from the preparation known as " Hire's Root Beer Extract," and was prepared by the addition of sugar, yeast and water, after which the mixture was allowed to ferment. The bottles were then kept in a cool place and one was opened as it was needed. The use of this drink was forthwith abandoned, and on Sept. 23, 1903, about ten days after the last " beer " had been taken, the whole amount of urine for twenty-four hours was examined with the following result: Twenty-four-hour quantity: 902 cc.; color, slightly high; reaction, strongly acid; specific gravity, 1,029; albumin, very slight trace; sugar and bile absent; uric acid and indoxyl, both relatively much increased; urea, 2.77%, making a total of 25.09 grams in twenty-four hours. Sediment: Occasional granular and brown granular cast with renal cells and blood adherent. Occasional free blood globule and free renal cell. A large excess of mucin and numerous secondary crystals of calcium oxalate.

The patient was then advised to drink a larger quantity of water during each twenty-four hours and was given a tonic consisting of iron, quinine and strychnine, which resulted in an improvement of the appetite, and general condition.

Another twenty-four-hour quantity was collected on Oct. 15, 1903, the analysis of which gave the following: Total quantity in twenty-four hours, 1,220 cc.; color, normal; reaction, strongly acid; specific gravity, 1,025; the uric acid and indoxyl still relatively increased; albumin, slightest possible trace; bile and sugar, absent; urea, 2.08 present or 25.38 grams in twenty-four hours. Sediment: Occasional hyaline and granular cast with renal cells adherent. Rarely a blood globule and an occasional renal cell. An excess of mucin, and an occasional primary and secondary crystal of calcium oxalate.

All treatment was then stopped with the exception of the ingestion of plenty of water. Further systematic examinations of the urine were not thought necessary, but about once a month tests for albumin were made, and amounts varying from the *slightest possible trace* to a *slight trace* were invariably found. In December, 1903, although the albumin persisted, the sediment was found to be free from casts and other formed renal elements, and calcium oxalate crystals were absent. In January, 1904, a very thorough examination of the sediment failed to reveal the presence of any renal elements or an oxaluria, although the specimen contained a very slight trace of albumin. Still another specimen examined in February, 1904, gave the same result as those during the two previous months.

I had already become convinced of the fact that the albuminuria was dependent on something besides a disturbance or disease of the kidneys, since renal casts, renal cells, and blood could not be found during prolonged microscopic examinations of both centrifugalized and gravity sediments. Furthermore, that the general condition of the patient and the absence of physical or clinical signs did not point to any pathological changes in the kidneys. There was also no evidence of any local disease of the urinary tract to account for the albuminuria.

A complete quantitative analysis of the urine on March 2, 1904, gave the following: Quantity in twenty-four hours, 1,660 cc.; color, slightly pale; reaction, acid; specific gravity, 1,016; albumin, very slight trace; bile pigments and sugar, absent. Sediment: Rarely a blood globule. A few spermatozoa and a slight excess of neck of bladder cells. No casts could be found. Urea, 33.53 grams; uric acid, 0.68 gram; phosphoric acid, 1.31 grams; sodium chloride, 14.44 grams; preformed sulphates, 3.07 grams; ethereal sulphates, 0.083 gram; albumin, too slight to accurately quantitate.

This examination furnished no adequate cause of the albuminuria, the exceedingly slight neck of bladder irritation being insignificant. The output of uric acid was found to be somewhat excessive, while the excretion of total phosphoric acid was about one half the average normal. All of the other solid constituents were being eliminated in normal quantities.

A noticeable feature of the case was the varying amounts of albumin at different times of day, and it seemed to me important to determine the degree of variation by the examination of hourly specimens. It seemed also advisable to determine the effect of exercise and diet on the output of the albumin.

March 5, 1904. CHART I.

| Time. | Color. | Sp. Gr. | Urea % | Uric Acid. | Albumin.[6] | Diet. | Exercise. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 6.30 A.M. | N | 1,023 | 2.08 | Not incr. | Absent | Breakfast from 7.10 to 7.30: Sandwiches, about 300 grams; 2 glasses of milk, 1 soft-boiled egg. | At 7.30 walked about ¼ mile. After 8.30 active in laboratory until 1 P.M. | Arose at 6.30 A.M. |
| 7.30 ,, | N | 1,022 | 1.64 | Sl. ,, | Slightest possible trace | | | |
| 8.30 ,, | N | 1,022 | 2.14 | ,, | Very slight trace | | | |
| 9.30 ,, | N | 1,019 | 2.21 | ,, | ,, ,, ,, | | | |
| 10.30 ,, | N | 1,022 | 2.77 | ,, | Slight trace, 0.017% | | | |
| 11.30 ,, | N | 1,025 | 2.65 | Sl. ,, | ,, ,, 0.017% | | | |
| 12.30 P.M. | N | 1,021 | 2.20 | Sl. ,, | Slightest possible trace | | | |
| 1.30 ,, | N | 1,024 | 2.77 | Sl. ,, | Very slight trace | Luncheon from 1 to 2. Cornbeef sandwiches, about 330 grams. | From 1 to 2 P.M. sat quietly. From 2 to 5.30 active in laboratory. From 5.30 to 6.30 walked about ½ mile and active. | |
| 2.30 ,, | N | 1,026 | 2.77 | Sl. ,, | ,, ,, ,, | | | |
| 3.30 ,, | N | 1,025 | 3.21 | Sl. ,, | Slight trace, 0.017% | | | |
| 4.30 ,, | N | 1,018 | 2.14 | ,, | Very slight trace | | | |
| 5.30 ,, | Slt.P'le | 1,018 | 1.77 | ,, | Slightest possible trace | | | |
| 6.30 ,, | N | 1,021 | 1.89 | ,, | ,, ,, ,, | | | |
| 7.30 ,, | N | 1,023 | 1.70 | Not ,, | Very slight trace | Dinner from 6.45 to 7.20 P.M. Cornbeef sandwiches, about 300 grams. | Active from 7.30 to 10.30 P.M. | Retired at 10.30 P.M. |
| 8.30 ,, | N | 1,024 | 2.27 | ,, | Slight trace, 0.017% | | | |
| 10.30 ,, | N | 1,022 | 2.14 | ,, | Very slight trace | | | |

[6] Figures given only when sufficient albumin to quantitate.

March 6, 1904 (Sunday). CHART II.

| Time. | Color. | Sp. Gr. | Urea % | Uric Acid. | Albumin.[6] | Diet. | Exercise. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 5.00 A.M. | N | 1,021 | 2.14 | Sl. incr. | Absent | Breakfast from 8 to 8.30.: Sandwiches, about 300 grams; rice pancakes, about 50 grams. Dinner at 1.30: Pot roast with potatoes; prunes with milk. Luncheon at 6.30: Roast beef and cheese sandwiches, about 330 grams. | At 8.30 started on 1¼ mile walk. Quiet until 12. Active from 12 to 1.30. Quiet from 1.30 to 7.15. At 7.15 started on 1¼ mile walk. At 9.30 returned, walking 1¼ miles. | Arose at 7.30 A.M. Retired at 10.20 P.M. |
| 6.10 ,, | N | 1,020 | 1.83 | Not ,, | ,, | | | |
| 7.00 ,, | N | 1,019 | 1.51 | Not ,, | ,, | | | |
| 8.00 ,, | N | 1,018 | 1.71 | ,, | Slightest possible trace | | | |
| 9.00 ,, | N | 1,021 | 2.14 | ,, | Very slight trace | | | |
| 1.30 P.M. | N | 1,020 | 2.27 | ,, | ,, ,, | | | |
| 10.20 ,, | N | 1,025 | 2.71 | ,, | Trace, 0.025% | | | |

March 7, 1904 (Monday). CHART III.

| Time. | Color. | Sp. Gr. | Urea % | Uric Acid. | Albumin.[6] | Diet. | Exercise. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 7.00 A.M. | N | 1,029 | 3.40 | Incr. | Slightest possible trace | Breakfast from 7.15 to 7.30: Meat sandwiches, about 300 grams; 2 glasses milk, 1 boiled egg. Luncheon from 1 to 2 P.M.: Sandwiches, about 330 grams; meat and cheese. | Active exercise from 7.30 to 8.30 A.M. Moderately active from 8.30 to 1 P.M. Rested from 1 to 2 P.M. Moderately active from 2 to 5.30 P.M. | Arose at 6.30 A.M. |
| 8.30 ,, | N | 1,026 | 2.71 | M ,, | Trace, 0.033% | | | |
| 9.40 ,, | N | 1,021 | 2.77 | Sl. ,, | Slight trace | | | |
| 10.50 ,, | N | 1,022 | 2.90 | ,, | Very slight trace | | | |
| 11.50 ,, | N | 1,023 | 3.03 | ,, | Slight trace | | | |
| 1.35 P.M. | N | 1,024 | 2.77 | ,, | Very slight trace | | | |
| 2.35 ,, | N | 1,026 | 3.15 | ,, | Trace, 0.025% | | | |
| 3.35 ,, | N | 1,026 | 3.68 | ,, | ,, 0.033% | | | |
| 5.00 ,, | N | 1,024 | 3.47 | ,, | Very slight trace | | | |

March 9, 1904. CHART IV.

| Time. | Color. | Sp. Gr. | Urea % | Uric Acid. | Albumin.[6] | Diet. | Exercise. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 6.30 A.M. | N | 1,024 | 2.52 | Incr. | Absent | Breakfast from 7.15 to 7.30: Meat sandwiches, about 330 grams; 2 glasses milk. Luncheon from 1 to 1.20: Meat and cheese sandwiches, about 300 grams. Dinner from 6.45 to 7.10: Meat sandwich with vegetables and milk. Crackers and milk at 10.55 P.M. | Active from 7.30 to 8.30 A.M. Moderately active from 8.30 to 1. Rested from 1 to 2. Moderately active from 2 to 5.30. Active from 5.30 to 6.30. Between 7 and 8 walked 1¼ miles. Between 10 and 10.45 walked 1¼ miles. | Arose at 6.30 A.M. Retired at 11.30 P.M. |
| 7.30 ,, | N | 1,022 | 1.89 | ,, | Very slight trace | | | |
| 8.30 ,, | N | 1,021 | 2.27 | ,, | ,, ,, ,, | | | |
| 9.30 ,, | N | 1,020 | 2.52 | ,, | ,, ,, ,, | | | |
| 10.40 ,, | N | 1,023 | 2.77 | ,, | ,, ,, ,, | | | |
| 11.35 ,, | N | 1,023 | 2.65 | Sl. ,, | ,, ,, ,, | | | |
| 12.40 P.M. | N | 1,020 | 2.40 | Not ,, | Slightest possible trace | | | |
| 1.30 ,, | N | 1,021 | 2.40 | ,, | ,, ,, ,, | | | |
| 2.45 ,, | N | 1,019 | 2.27 | ,, | Very slight trace | | | |
| 3.45 ,, | N | 1,018 | 2.52 | ,, | ,, ,, ,, | | | |
| 4.30 ,, | N | 1,022 | 3.15 | ,, | ,, ,, ,, | | | |
| 5.30 ,, | N | 1,023 | 3.15 | ,, | Slight trace | | | |
| 6.30 ,, | N | 1,023 | 3.15 | ,, | ,, ,, | | | |
| 7.30 ,, | N | 1,024 | 3.28 | ,, | Slightest possible trace | | | |
| 8.00 ,, | N | 1,024 | 3.15 | Not ,, | Very slight trace | | | |
| 10.30 ,, | N | 1,021 | 2.52 | ,, | Slightest possible trace | | | |
| 11.00 ,, | N | 1,026 | 2.77 | ,, | Trace [7] | | | |
| 11.25 ,, | N | 1,024 | 2.40 | ,, | Slight trace | | | |

[7] Not sufficient urine for quantitative.

March 16, 1904. CHART V.

| Time. | Color. | Sp. Gr. | Urea % | Uric Acid. | Albumin.[6] | Diet. | Exercise. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 6.30 A.M. | N | 1,027 | 2.96 | Incr. | Absent | Breakfast from 7.10 to 7.30 A.M.: Meat sandwiches, milk and 1 boiled egg. No luncheon. Dinner from 6.45 to 7.05 P.M.: Cornbeef sandwiches, about 330 grams; milk. | Active from 7.30 to 8.30 A.M. Moderately active from 8.30 to 1. Walked between 1 and 1.30 P.M. Rested from 1.30 to 2 P.M. Moderately active from 2 to 5.30 P.M. Active from 5.30 to 6.30 P.M. Active from 7.05 to 12 P.M. | Arose at 6.30 A.M. Retired at 12 P.M. |
| 7.30 ,, | N | 1,026 | 2.40 | ,, | Slight trace | | | |
| 8.30 ,, | N | 1,026 | 3.10 | ,, | Trace, 0.025% | | | |
| 9.40 ,, | N | 1,021 | 2.77 | ,, | Slight trace | | | |
| 10.30 ,, | N | 1,024 | 3.21 | ,, | ,, ,, | | | |
| 11.30 ,, | N | 1,023 | 3.15 | ,, | Very slight trace | | | |
| 12.30 P.M. | N | 1,025 | 3.10 | ,, | ,, ,, ,, | | | |
| 1.25 ,, | N | 1,024 | 2.96 | ,, | Slight trace | | | |
| 2.35 ,, | N | 1,024 | 3.03 | ,, | Very slight trace | | | |
| 3.30 ,, | N | 1,024 | 3.28 | ,, | Slight trace | | | |
| 4.30 ,, | N | 1,025 | 3.21 | ,, | ,, ,, | | | |
| 5.30 ,, | N | 1,025 | 3.10 | ,, | ,, ,, | | | |
| 6.40 ,, | N | 1,028 | 3.54 | ,, | Trace, 0.025% | | | |
| 7.05 ,, | N | 1,028 | 3.03 | ,, | Very slight trace | | | |
| 12.00 ,, | N | 1,023 | 2.90 | ,, | Slight trace | | | |

March 18, 1904. CHART VI.

| Time. | Color. | Sp. Gr. | Urea % | Uric Acid. | Albumin.[6] | Diet. | Exercise. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 6.45 A.M. | Pale | 1,017 | 1.84 | Not incr. | Absent | Breakfast at 7.15 to 7.30: Beef sandwiches and milk. Luncheon at 1.15 to 1.30 P.M.: Meat and cheese sandwiches. Dinner from 6.45 to 7.15 P.M.: Roast beef, vegetables and milk. | Active exercise from 7.30 to 8.30 A.M. Moderately active from 8.30 to 12.15. Was lying down from 12.15 P.M. to 4.10 P.M. in cool room. Moderately active from 4.10 to 5.30 P.M. Active exercise from 5.30 to 6.30 P.M. | Arose at 6.45 A.M. |
| 7.30 ,, | N | 1,020 | 1.51 | Not ,, | ,, | | | |
| 8.45 ,, | N | 1,021 | 2.02 | ,, | Trace, 0.033% | | | |
| 9.50 ,, | N | 1,020 | 1.77 | ,, | Slightest possible trace | | | |
| 11.10 ,, | N | 1,021 | 2.14 | ,, | Very slight trace | | | |
| 12.10 P.M. | Pale | 1,020 | 1.89 | Sl. ,, | Slightest possible trace | | | |
| 1.10 ,, | Pale | 1,012 | 1.01 | Not ,, | Absent | | | |
| 2.15 ,, | Pale | 1,019 | 1.26 | Sl. ,, | ,, | | | |
| 3.10 ,, | N | 1,025 | 2.40 | Sl. ,, | ,, | | | |
| 4.10 ,, | N | 1,021 | 2.02 | Sl. ,, | Slightest possible trace | | | |
| 5.30 ,, | N | 1,018 | 2.40 | ,, | Slight trace | | | |
| 7.10 ,, | N | 1,021 | 2.46 | Not ,, | ,, | | | |
| 8.45 ,, | N | 1,024 | 2.02 | ,, | Trace, 0.05%. | | | |

[6] Figures given only when sufficient albumin to quantitate.

In March Mr. F. decided that he would try a change of occupation which would give him a greater amount of out-of-door exercise. Accordingly, about the 20th of the month, he took up carpenter work. Within one month he had gained about 10 pounds in weight, and was feeling very much better in every way than when he was confined to the work of the laboratory. I was naturally curious to know the effect of the unusual amount of exercise upon his urine. An analysis on April 23 gave the following results: Total amount of urine, 1,200 cc.; color, high; specific gravity, 1,029; reaction, strongly acid; urea, 2.4% or a total of 28.8 grams in twenty-four hours; uric acid, 0.58 gram in twenty-four hours; albumin, a very slight trace. Sediment: Rarely a blood globule. No casts or other formed elements which were significant.

On April 27 he made an effort to save hourly specimens, but he found it impossible. He, however, saved a number of samples, a record of which is given in Chart VII.

— from 12.15 to 4.10. This resulted in a complete disappearance of the albumin from the urine of that period.

The amount of albumin was, of course, somewhat dependent on the concentration of the specimen, but the charts show that in the majority of instances the specific gravity was in the neighborhood of 1,021, the extremes being 1,012 and 1,029. The percentage of urea varied between 1.01 and 3.68, the average for each day being generally above 2%. The qualitative tests for uric acid usually showed a relative excess, but in the quantitative determination, the quantity did not exceed 0.68 gram in twenty-four hours, — a moderate absolute excess.

The dict was, if anything, a little low for a growing boy, and there was lack of variety in the food, but what was taken was substantial,

CHART VII.

April 27, 1904. Total quantity for 24 hours, 1,140 cc.

| Time. | Color. | Sp. Gr. | Urea % | Uric Acid. | Albumin.[6] | Diet. | Exercise. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 5.50 A.M. to 11.10 A.M. | N | 1,026 | 2.4 | Incr. | Very slight trace | | | |
| 11.10 A.M. to 5.00 P.M. | H | 1,028 | 3.4 | " | " " " | | | |
| 5.00 P.M. to 6.05 P.M. | H | 1.029 | 3.15 | " | Slight trace | No record. | No record. | |
| 6.05 P.M. to 12.20 A.M. | N | 1,024 | 2.9 | " | Very slight trace | | | |
| 12.20 A.M. to 5.50 A.M. | N | 1,024 | 3.4 | " | Slightest possible trace | | | |

[6] Figures given only when sufficient albumin to quantitate.

Although we are unable to compare this chart with the preceding ones, because of the length of time between the individual specimens, it is plainly evident that the albuminuria was no more marked than six weeks before; indeed, the chart would, if anything, indicate less albumin than when the earlier observations were made.

We have in this case what I consider a fairly typical instance of functional albuminuria. The boy was apparently in every way healthy. Aside from a neurotic temperament, the albumin in his urine was the only thing to attract attention. The urine was generally free from albumin on rising in the morning. The amount then rose to a maximum of 0.05% in one instance (Chart VI). A study of the charts shows that the quantity of albumin was usually small, the fluctuation in quantity being largely due to the amount of exercise taken, and also, to a less extent, to the intake of food, irrespective of its quality or quantity. There was a lack of uniformity in the fluctuation. Generally, the largest amount of albumin was found in the evening or after he had reached home and had had his dinner; this was, however, not invariable, for in a few instances the quantity was no larger than at other times in the day. The experiments tried and recorded in charts V and VI are instructive. On one occasion (Chart V) no luncheon was taken but he remained active; the amount of albumin was apparently not affected. On another day (Chart VI) he was requested to lie down for four hours, and was apparently all that he required to maintain his weight and strength.

For the nine months previous to March 20, the exercise which he took was never excessive or violent. It consisted of walking at an average pace. In the laboratory he was on his feet the greater part of the time, standing or walking about the room. He was not obliged to do heavy work of any kind. After March 20 he had violent exercise and hard work, and yet the albuminuria was no more marked because of the change of occupation.

The proteid in the urine of this case consisted almost entirely of serum albumin. Repeated tests were made for globulin and for albumoses, but always with negative results. There was, however, a minute trace of nucleo-albumin in each of the samples tested; the amount was so small that I believe that we can disregard it.

A good deal of interest is attached to the relation between the renal disturbance and the oxaluria discovered in September, 1903, and the use of the "root beer." I was convinced that the very mild disturbance of the kidneys was in all probability due to the mechanical action of the crystals of calcium oxalate, for as soon as the oxaluria had disappeared the irritation of the kidneys was gone. I was inclined to suspect the "root beer" as the cause of the oxaluria, because of the number of roots and herbs which the preparation is supposed to contain. "Hire's Root Beer Extract" is supposed to be made

from hops, juniper berries, pipsissewa, sarsaparilla, spikenard, etc. The fermented preparation, when ready for use, was found to have a strongly acid reaction, and an acrid and sweetish taste. Microscopic examination of the deposit in the bottle showed the following: Starch and vegetable cells, spores, a little oil and much amorphous matter; numerous needles, plates and prisms; numerous octahedral crystals resembling those of calcium oxalate. I made an effort to quantitate the oxalic acid in the beverage, but for some reason I was not successful, and this led me to suspect that the octahedral crystals were perhaps not calcium oxalate, but rather a crystalline glucoside from the sarsaparilla or some of the other vegetable constituents of the beer. I have not yet been able to satisfy myself of the nature of these crystals.

The fact remains that there was some relation between the ingestion of the root beer and the oxaluria, either through an excess of oxalic acid in the beverage, or through an abnormal degree of intestinal fermentation set up by the beer. In this connection Simon [8] mentions having seen an albuminuria follow free indulgence in root beer, but he makes no reference to a coexisting oxaluria. I have not succeeded in finding any mention of similar instances of the effect of the free use of this beverage.

The root beer had been used a number of years by Mr. F., and we naturally are confronted with the question of the amount and extent of the damage to the kidneys by the long continued use of the preparation. From the fact that the slight irritation of the kidneys cleared up in about four months, as was manifest by the disappearance of casts and the other formed renal elements, I feel quite certain that any damage that might have been produced by the use of this beverage had been fully repaired, for if such were not the case, with the amount of albumin found, we would be very certain to find casts at some time, and yet no casts could be detected during a number of thorough microscopic examinations which have been made since October, 1903. I therefore believe that we can eliminate the possibility of an incipient chronic disease of the kidneys in this case.

The prognosis in these cases is favorable in the great majority of instances. Broadbent states that he has never known postural albuminuria to resist treatment or to develop into actual renal disease. Pavy has watched cases for upward of fifteen years, and he is satisfied that functional albuminuria must be regarded as something besides an incipient stage of organic renal disease.

The treatment is simple, and the reverse of what is ordinarily considered suitable in renal disease. The treatment that is usually required is good, simple food, fresh air, and vigorous exercise. Tonics, such as iron, arsenic, quinine and strychnine, are useful in many of these cases. Dr. Broadbent has emphasized one important point, *i. e.*, that if there has been an error in diagnosis and the patient is treated for renal disease by giving a milk diet, protecting from cold and forbidding exercise, he will probably go from bad to worse; he has met with several instances of confirmed nervous valitudinarianism, apparently attributable to this error in diagnosis during the early life of the individual.

[8] Clinical Diagnosis, 4th edition, p. 407.

## COAGULATION-TIME OF THE BLOOD.

### A COMPARISON BETWEEN THE WRIGHT AND THE BRODIE-RUSSELL INSTRUMENTS, BASED UPON SIX HUNDRED OBSERVATIONS.

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The coagulation-time of the blood is the interval which elapses between the moment of the withdrawal of the blood from the body and the moment when the blood coagulates. To determine this interval for clinical purposes, five methods are used: (1) The simplest procedure is still extensively employed, and requires merely that a drop of blood be placed upon a clean glass slide. The consistency of the blood is periodically tested by moving the drop with a needle. When the blood becomes gelatinous and fibrin shreds are thus demonstrable, coagulation has taken place. This is plainly crude technic. It cannot be relied upon to indicate a delayed coagulation, because of the rapid evaporation which occurs, upon subjecting the drop to the direct action of the air. (2) A decided improvement upon the old method just described is the microscopic examination of the blood. A fresh drop is placed upon a slide and covered with a cover glass. The blood is watched with the microscope until delicate fibrinous processes make their appearance. The recognition of the first shreds of fibrin is said to mark the end of the coagulation-time; but, since these shreds do not appear simultaneously in all parts of the drop, the method is inaccurate. (3) In the third method, described by Vierordt in 1878, a drop of blood is drawn into a capillary glass tube. A piece of horse hair, which has been properly cleaned, is inserted into the column of blood in the tube, and is moved up and down, at intervals. When the blood adheres to the hair, the moment of coagulation has come. The writers have had no success with this method and do not recommend its use.

In 1893 A. E. Wright constructed an apparatus, consisting of a number of similar, carefully calibrated, capillary tubes. A drop of blood drawn up into one of these tubes will adhere to the lumen when coagulation takes place. The exact moment when this adhesion occurs is determined by moving the blood column from time to time. This is done by blowing gently into the tube. When no response to this air pressure can be obtained the column of blood is coagulated. Several observations are made in this manner upon blood taken at regular intervals. No reliable results were obtained, by attempting to

judge of the degree of coagulation from the consistency of the column of blood when forcibly expressed from the end of the tube. It was at first thought necessary to protect the blood from changes in temperature by suspending the tubes against a water bath. This measure has been found to be superfluous, and now no particular effort is made to keep the blood at body temperature. The favorable results reported by Wright and others, in cases where this instrument was employed, led to its use by the writers. In this series of cases, an attempt has been made to find the simplest and most accurate instrument. For this purpose the Wright apparatus was compared with the (5) Brodie-Russell.

The last method to be described is a device of T. G. Brodie and A. E. Russell. Although introduced in 1897, it has not been so widely used as it merits. The original apparatus was furnished with a water bath to keep the moist chamber at body temperature, and with a stage to regulate the size of the drop, two features which made the apparatus complex and costly. The modification devised by Prof. Guntzner and Dr. J. H. Pratt simplified the construction by omitting the water bath and stage without impairing the accuracy of the instrument. This modified apparatus was used by us.

The instrument is made by fastening a metal ring about 5 mm. in height and about 2 cm. in diameter to the surface of a glass slide. A hole in one side of the ring admits a small metal tube to which is attached a rubber tube and bulb, while, on the opposite side of the ring, is a second hole which provides for the escape of the air current. The end of the metal tube is bent slightly upward so that, by moving the cover glass, the air may be directed on the edge of the drop of blood. The upper edge of the ring is anointed with vaseline, and a drop of water placed in the chamber formed by the ring and the glass. A drop of blood is caught on a heavy cover glass and the latter placed upon the ring so that the blood drop projects into the moist chamber. The vaseline prevents the entrance of air around the edge of the ring and holds the cover glass in place. The drop is now watched with a low power microscope, while a current of air is forced through the metal tube. In this manner the corpuscles are set in motion. At first the motion may be irregular, but soon a ring of serum separates at the edge and the whole drop rotates. As the end of the coagulation-time approaches translucent masses appear throughout the drop of blood. These masses increase rapidly in size, and about them coagulation seems to take place. The moment when the edge of the drop of blood fails to rotate in response to the air current marks the end of the coagulation-time. This phenomenon may take place slowly or suddenly. As a control in all cases the cover glass was removed and the blood drop pricked with the point of a needle. Demonstration of fibrin shreds was regarded as final evidence that coagulation had occurred.

The technical difficulties of the Brodie-Russell are fewer than those to be encountered when using the Wright instrument. If the drop whirls at all in the moist chamber, a practically accurate coagulation-time can be obtained. Occasionally the drop cannot be made to rotate by the air current. This is usually due to uncleanly technic, but is sometimes caused by the exposure of the drop to a cold draught.

The Wright tubes are cumbersome, easily broken, and difficult to clean. It is not possible to tell at once whether or not the preparation will be a successful one, as can be done with the Brodie-Russell. In a certain number of cases the blood will not coagulate at all. The failure of the blood column to adhere to the lumen of the Wright tube cannot always be explained. Although sometimes if the blood is moved, just as coagulation takes place, the serum collects around the outside of the clot, and an adhesion between the clot and the tube will never take place. This failure to adhere is the greatest imperfection in the method, because there is no way of determining the coagulation-time without moving the blood. From this and other causes the Wright instrument failed to give results in 15% of the observations, while the Brodie-Russell failed in less than 5%.

It is probable, as stated by physiologists, that the contact of the blood with the tissues outside the vessels causes, in some way, the elaboration of a fibrin ferment. If the needle prick is a deep one, the rapid flow of the blood will wash away the ferment and prevent immediate coagulation. The reverse is true of a superficial prick. It is obvious from this that the needle prick should be deep enough to cause a free flow of blood, and that only the first few drops of blood should be used.

In this series of 59 cases, we have used the Wright tubes and the Brodie-Russell moist chamber side by side. The experiments were done in open wards and in small rooms, at the Massachusetts General Hospital, where the temperature varied between 51.8 and 85 degrees Fahrenheit. The coagulation-time was not found to be influenced by the temperature within these limits. Six observations were made with each instrument on 42 of the cases. In the remaining cases, the scheme of 12 observations on each patient could not be carried out.

The surface of the skin was cleansed with soap, water and alcohol, and the glass instruments with water, ether and alcohol. The blood was drawn from the surface of the body in three places, namely: from the lobe of each ear and from the ball of a thumb, a large triangular needle being used for the puncture, to insure the free flow of blood.

There have been no marked differences between the coagulation-times of the blood-drops taken from different points on the surface of the body, provided the flow has been equally free, although the contrary was observed by Pratt. The writers are convinced, from numerous tests, that if several drops of blood are taken simultaneously from different points on the surface

of their body, their coagulation-times will coincide, if the technic is perfect. Our results have not always shown the coagulation-times to be exactly the same when done with two instruments at the same time. The variations beyond a reasonable limit of error have been few, and might be explained by faults in technic. The average coagulation-time with the Brodie-Russell instrument in 300 observations was three minutes and twelve seconds; the average with the Wright was four minutes and eighteen seconds. This result is somewhat lower than that usually given.

Variations were found in health between one and seven minutes with both instruments. We attribute the extremes to technical errors. The limits are presumably three to six minutes. The proof of a delayed coagulation must be based on several observations, in order to minimize the influence of technical errors.

In this series are included 15 jaundice cases, the lesions of which embraced nearly every known cause of jaundice, *i. e.*, gallstones, catarrhal jaundice, cholecystitis, cirrhosis of the liver, cancer of the liver, cancer of the head of the pancreas, chronic pancreatitis, etc. It is of interest to note that in none of these cases did the coagulation-time vary from the normal.

The conclusions to be drawn from these observations are as follows:

The Brodie-Russell is more reliable than the Wright instrument.

The average coagulation-time is between three and six minutes.

The proof of a delayed coagulation must be based upon several observations.

The coagulation-time is not affected by the ordinary changes in room temperature.

Blood obtained simultaneously from different points on the surface of the body shows no marked variation in the coagulation-time.

A delayed coagulation is not constantly associated with jaundice due either to benign or to malignant obstruction. [The writers are greatly indebted to the visiting Staff of the Massachusetts General Hospital for their courtesy in providing material for these observations.]

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## Clinical Department.

### ADENO-CARCINOMA OF INTESTINES INVOLVING THE BLADDER.

BY SARAH ELLEN PALMER, M.D., BOSTON,

*Surgeon to New England Hospital and to the Charity Club Hospital.*

E. C. Single. Fifty-seven. Overworked and nervous. Poorly nourished, appetite good, bowels regular. Has been losing flesh pretty steadily. Patient was well, so she says, until one year ago, when she had two attacks of grip, since which time she complains of frequent micturition accompanied by burning and smarting, until six months ago when she had an acute illness of which the nature was not very well determined. Chills, rise of temperature, and abdominal tenderness. During the time of confinement to bed the bladder annoyances were diminished and urination less frequent. Five months ago the present condition of frequent urination during the day and the need to rise four or five times during the night has existed. Occasionally blood is seen in the urine and shreds of some foreign substance. At times a clot of blood is expelled with pain, and of late the urine is often tinged with blood. Menstrual history uneventful and menopause at fifty. Three years after this, on occasion of a slight bloody discharge from the vagina, she was sent by her physician, Dr. Reid, to Dr. Call, who relieved this symptom and who found at that time no other lesion. Urine examined with negative results. On the 13th of November, 1903, Dr. Call referred her to me, with the history as given above.

Patient thin and pale. Abdomen flat and somewhat resonant to percussion. Vulva in process of senile atrophy and vagina partly involuted. Uterus was found to be, apparently, of normal size and sharply anteflexed, a little drawn to the right. Bladder examined cystoscopically under cocaine. Urethra somewhat congested in contrast to the bladder wall which, thoroughly well ballooned, was healthy in appearance, except a grayish mass a little to the right of and anterior to the fundus, apparently about three cm. by two cm. in width, and from the mass finger-like, club-shaped filaments extended into the bladder, giving the appearance of a coronoid polyp described by Clado. A small piece scraped off and sent to Dr. W. F. Whitney for examination.

Microscopic examination showed the piece sent to be composed of vascularized soft, cellular, connective tissue, surface of which was papillary and covered with a single layer of long columnar epithelium.

*Diagnosis*: *Papilloma.* — Several subsequent examinations were made in the office, and on two occasions the bladder seemed perfectly healthy; the gray mass could not be brought into view through the contracted bladder wall. Examined under ether at the Charity Club Hospital Dec. 3. Cystoscopic appearance as described above. Uterus apparently in normal position, and what had been supposed to be the body gave the sensation of a fibroid. The small finger introduced into the bladder after dilating the urethra. Bladder wall perfectly smooth for two thirds of the distance, then the finger entered a crypt through the contracting bladder wall, giving the sensation of the ring of Blandl in hour-glass contraction of the uterus with the placenta above. And so, in this case, the finger could sweep about a perfectly smooth bladder and then enter a crypt or cul-de-sac and come in contact with a soft spongy mass. Large mass scraped off and sent to Dr. Whitney, and the following statement returned: "The specimen from the bladder of Miss E. C. consisted of some tissue in which there was considerable thick mucus. Microscopic examination showed a fibrous tissue structure in places and distinctly myxomatous degeneration. As far as this specimen goes, the diagnosis is a myxoma."

Examination of the urine by Prof. E. S. Wood, who reported: "I am unable to find in the sediment of any of these specimens any evidence of malignant growth of the bladder. I am unable to find any cells which are at all suggestive of morbid growth. I do find, however, in the sediment of all these urines, even in the specimen passed after the bladder was washed out, particles of food, such as vegetable cells and partly digested muscular fiber. It does not seem to me rea-

sonable that these could have got into the urine after it was passed, and if they were in the urine while in the bladder, they show that there must be some connection between the intestine and the bladder. The urine also has a slight fecal odor. There is a good deal of suppuration which would be expected, of course, if there were a sinus between the intestine and the bladder. All that I can say about these specimens is, that they point more strongly to this diagnosis than to the existence of a morbid growth in the bladder."

After Dr. Wood's report we decided to open intraperitoneally, although my first idea had been to do a suprapubic cystotomy external to the peritoneum. While the patient was being prepared for operation, stimulated by Dr. Wood's report, I thought I could detect distinct gurgling in the mass anterior to the uterus.

Abdomen opened after the usual antiseptic precautions. On lifting the omentum the small intestine presented the usual grayish appearance with the exception of an intensely congested loop high in the abdomen. Uterus atrophied in good position and the ovaries sclerotic. Attached to and communicating with the bladder was a loop of small intestine. The lumen of the intestine was encroached upon by a new growth, soft to touch and deep crimson in color, forming half the wall of intestine and extending into the bladder. When the intestine was detached from the bladder, the cavity of the bladder opened directly into the abdominal cavity. The cecum formed a hard contracted mass attached to the right of the bladder, easily detached from the peritoneum covering the bladder and separated from the soft infiltrating mass, described above, by clean bladder wall. Appendix identified, small and anemic, and in usual relation to the bowel. Between the diseased cecum and the soft mass in the small intestine were loops of apparently healthy bowel. The cecum was with some difficulty detached from the broad ligament which was involved out to the pelvic wall in a small, hard, cartilaginous tissue. Special mention is made of this because in the final pathological report it is seen that the pathologist believes that the carcinoma originated in the cecum. The small intestine was detached from the bladder and resected. About 5 cm. of intestine were cut out and with it all the wall involved in the growth; two healthy ends brought together and united by the double Lembert suture of silk by the aid of Harrington's ring. The fundus of the bladder was also resected, removing the diseased mucous membrane from the bladder as far as possible, and the top of the bladder closed with a double row of Lembert suture, using chromicized catgut. Permanent catheter left in the urethra. The cecum was detached from the bladder and separated from the bowel by shoemaker stitch of catgut and then cut off. It was impossible to completely remove the diseased area, so extensive was it found to be in the peritoneal cavity.

The patient, although fifty-seven, was really a feeble old woman and in poor condition to stand so extensive an operation. Salt solution was given in large quantities into the breasts; gauze drainage was left in abdominal wound, and the rest of the wound sutured with through-and-through silkworm gut.

The patient rallied well from the operation. For twenty-four hours the amount of urine was small. On two occasions a leak of urine through the abdominal wound occasioned fear of permanent fistula, which, however, proved to be groundless, and the patient left the hospital the 4th of March, able to hold urine in the bladder for a period of three or four hours and to void it without difficulty. Bowels moved without trouble on the third day, and since that time with very little difficulty. Convalescence was slow in this underfed and delicate woman. The abdominal wound, after the stitches were removed, had made no effort to unite above the fascia. It simply fell apart in two dry surfaces, but, as she improved, this granulated up and was completely healed when patient left the hospital. The patient at present writing is at her own home and in fairly good condition.

PATHOLOGICAL REPORT FROM DR. WHITNEY.

The specimen received from you, Dec. 19, 1903 (T. 311–10 C), consisted of two pieces of intestine and some irregular fragments from the bladder wall. Examination showed the piece from the head of the colon to be a tubular mass about the size and half the length of the thumb. One end showed the normal structure of the intestine while the other was irregular and ragged as if from a new growth. Upon opening this mass there was a small tubular thickening on one side about the size of a Fallopian tube, and about 3 cm. in length. This opened freely into the cavity of the intestine. The other end was lost in a ragged new growth.

*Microscopic examination* showed the structure of the new growth to be that of an adeno-carcinoma with extensive mucous degeneration. The piece of small intestine showed a portion of a similar growth adherent to the outside, and into this was a fistulous opening from the interior of the intestine.

*Microscopic examination* of the piece of tissue from the bladder wall showed an infiltration of a similar new growth.

*Diagnosis:* Adeno-carcinoma of the head of the cecum involving the bladder and intestine.

In conclusion, I have to thank Dr. Charles H. Hare, who kindly assisted at the operation as well as at the etherized examinations, also Drs. Wood and Whitney, who gave their valued assistance and encouragement, and the house officers of the Charity Club Hospital.

## Reports of Societies.

### AMERICAN GYNECOLOGICAL SOCIETY.

TWENTY-NINTH ANNUAL MEETING, HELD IN BOSTON, MASS., MAY 24, 25 AND 26, 1904.

(Continued from No. 1, p. 20.)

FIRST DAY. — (Continued.)

SURGERY OF THE FEMALE URETHRA.

DR. ELY VAN DE WARKER of Syracuse, N. Y., read a paper on this subject. The urethra, he said, appeared like an insignificant part; its vital relations were negligible, its anatomy was relative and acquired its importance from its related organs, but it might be said to epitomize a large share of the suffering that woman's pelvic organs inflicted upon her. The amount of disturbance caused by a simple irritation of the urethra to the bladder, and indirectly to the kidneys, afforded striking proof of the validity of reflected nervous disturbance.

The term sacculation was regarded as better than the old one, urethrocele. Its major cause was mechanical, as inflammation alone was not adequate to its production. The urethra might be said to belong to the perineal rather than the pelvic zone of organs. The walls of the canal depended in a measure upon the support of the perineal body. It was often associated with long-standing rupture of this part. Restoration of the perineum was, therefore, essential to treatment of the sacculation. When large, an elliptical flap of the walls of the urethra was removed and the edges brought together by fine silk sutures. Prolapse of the mucous lining of the urethra the author had generally associated with long-standing urinary troubles of various kinds. It was, therefore, probably

due to a gradually progressive condition, and was a typical ptosis, and complied with the general law of genital prolapse. After removing the prolapsed portion, there was a marked tendency to recurrence unless the conditions which gave rise to it were treated and cured. Bladder incontinence and dribbling were often lifelong conditions. That this was due to a defective action of the sphincter vesicæ was more than doubtful. Dribbling was one of the symptoms of hysteria, of which a striking case was given in illustration.

Narrowing, by operation, the bladder and end of the urethra, linear cauterization at this point had afforded relief. Any treatment was liable to fail, and relapses were frequent. The powerful influence of hysterical disturbance over the urinary tract was constantly observed. Dribbling was the related phase of retention. The treatment of this form was more satisfactory. The urethral stricture, when of small caliber, was frequently found with dysuria and dribbling. The author referred to but two cases of urethral mucous polypus, and concluded that they must be rare. These growths ought never to be twisted off, as the tissues were too friable. Removal of the growth through the mucous membrane, so that no stump was left, was the proper procedure.

Stricture of the urethra, in the author's experience, is common in women. Any condition that tended to produce linear or annular thickening thus led to stricture. Specific urethritis might produce stricture, but it was not the frequent cause alleged by some writers. Stricture of large caliber might be located and measured by the Otis bulbs, but never by the sound, as was recommended by old systematic writers. Annular stricture of the meatus was the form most commonly met with. This ought to be incised and made to heal in an open condition by the frequent passage of the sound. Dilatation alone was too painful and required too much time. As to eversion of the mucous membrane at the meatus its prototype was the fusiform stricture of Otis, and its surest cure was by dilatation. Caruncle of the urethra was a common occurrence. Removal, involving the whole thickness of the mucous membrane, being careful not to leave a stump, was an effectual cure.

### PYELITIS COMPLICATING PREGNANCY.

Dr. Edwin B. Cragin of New York said the occurrence during pregnancy of a marked rise of temperature, with pain and tenderness on the right side of the abdomen, was always a source of anxiety to the obstetrician. Although several able articles describing the condition had appeared, it was not generally recognized that pyelitis was not an infrequent cause of the above symptoms. It might be confused with appendicitis, typhoid fever, or salpingitis. It occurred almost, if not quite, invariably on the right side. It was due to pressure on the ureter by the pregnant uterus plus an infection. This infection was usually descending, and was usually due to the colon bacillus. The urine was acid, contained at first albumin and perhaps a few casts, soon followed by pus and bacteria. The prognosis was usually good. Induction of labor was seldom indicated. The medical treatment by urotropin, or allied drugs, with ice bag over the kidney, fluid diet, and large draughts of water was usually sufficient.

### A SECOND CASE OF PUERPERAL ECLAMPSIA SUCCESSFULLY TREATED BY RENAL DECAPSULATION.

Dr. George M. Edebohls of New York said the first case, reported to the society a year ago, illustrated the immediate cure by renal decapsulation of puerperal convulsions, recurring with great and increasing violence after the birth of the child, a period at which the hitherto final resource of forced delivery was, of course, no longer available. In presenting the case the opinion was advanced that resort to renal decapsulation in the undelivered woman suffering from puerperal eclampsia might obviate the necessity of forced delivery. The case now reported illustrated the correctness of that opinion. Renal decapsulation was performed upon a woman pregnant near term, suffering from puerperal eclampsia, and almost complete suppression of urine. The convulsions were arrested, the flow of urine was re-established, and a threatened death from uremia was averted. Two days after all this had been accomplished labor began spontaneously, and living twins were born. One child died soon after birth. The second child and the mother were in perfect health four and one-half months after the termination of pregnancy. Renal decapsulation thus became the rival of forced delivery in cases of puerperal convulsions of renal origin in the undelivered woman. In puerperal convulsions, occurring or recurring after delivery, it constituted the final resort when all other measures had failed.[1]

## Second Day.

### PRIMARY REPAIR OF LACERATIONS OF THE CERVIX UTERI.

There was a symposium on this subject. Dr. Edward P. Davis of Philadelphia read the first paper. Experience in fifty-three cases had led to the following conclusions: When the patient was not infected, and when the tissues had not been subjected to sufficient violence to threaten necrosis, and laceration of the cervix, one-half inch or more in extent, was present, primary closure had been followed in his experience with good results. These cases usually occurred in primiparæ, where resistance in the soft parts occasioned sufficient delay and fatigue to require delivery by forceps. They were also seen in cases of premature labor, whether spontaneous or induced, where the cervix was not physiologically softened for perfect dilatation. They were also found in patients having spontaneous labor with very strong expulsive efforts, and with large children. Naturally those cases in which the mechanism of labor was abnormal through posterior rotation of the occiput, face presentation or breech presentation, predisposed to laceration of the cervix. While primary closure of laceration of the cervix was indicated in the conditions just described, certain conditions were necessary for its successful performance. These conditions were outlined. Dr. Davis then described the technique of the operation and the after-treatment.

The number of cases under observation was 53. In these, good union occurred in 45, fair union in 6, no union in 7, while infection developed in none. In 84.9% the operation was successful; in 11.3% it was moderately successful, and in 3.8% the operation failed. The percentage of infection was *nil*.

He pointed out the objections which were commonly urged against this operation, after which he said that in appropriate cases in his experience, immediate closure of the cervix had given no inconvenience to the mother, and had been followed by excellent results. The operation was not advised for those who do not practice obstetrics with good surgical technic, and who were not competent to operate on the genital tract.

[1] For the full paper see Journal, Vol. CL, p. 586, 1904.

THE PRACTICE OF CERVIX SUTURE ON THE FIFTH DAY AFTER DELIVERY.

DR. ROBERT L. DICKINSON of Brooklyn said that no complicated or considerable perineal injury should be repaired at the close of labor, but three to five days later. This had an important bearing on lacerations of the cervix, as this was the ideal time to restore such injuries. The huge edema, the bruising, and the uncouth distortion of the vaginal portion just after delivery rendered identification of the parts that should be brought together impossible, and attempt to accurately coapt, guesswork. Therefore, whenever possible, the cervix should be sewed on the fifth day. The frozen sections of the puerperal weeks showed that then, and not till then, shrinkage had occurred. Bleeding no longer obscured the difference between flayed surface and torn structure. Then only were the surroundings of the operation, in the way of illumination, table, time, and a rested personnel possible. This applied particularly to private practice.

The conditions under which the cervix should be repaired at the close of labor were : (1) Bleeding from a firmly contracted uterus, notwithstanding ergot, heat, holding, and tampon. Here there was a spurting artery. (2) When the cervix injuries were clean cuts, of known location, as after Dührssen incisions. (3) When, in the immediate repair of a moderate perineal injury, a tear of the cervix is found.

The conditions under which the cervix should be repaired several days after labor were: (1) Exhaustion of patient, or surroundings and conditions which precluded careful work. (2) Extensive injuries, except when these persistently bled or had been cut by the surgeon. (3) When accompanied by complicated or considerable injuries to the pelvic floor.

The author drew attention further to the alterations produced by granulation and contraction in these wounds when left alone, so that the scarred, swollen, everted, or cystic cervix months or years after injury gave uncertain indications for accurate restoration to the original condition.

GENERAL CONSIDERATIONS OF LACERATION OF THE CERVIX UTERI.

DR. J. M. BALDY of Philadelphia stated that as a matter of clinical fact, let the cervix uteri be torn deeply, and if the parts were preserved from infection, the greater part of the tear would heal spontaneously, and the rest of it would remain perfectly healthy, as much so as would the lobe of the ear which had been torn through by the weight and drag of our great-grandmother's earrings. The lips would remain uninfiltrated, of normal size and thickness, with no eversions and no erosion of the lining mucous membrane. In such a case there would be no untoward symptoms and no bad effects whatever.

There was a tendency amongst obstetricians to repair these lacerations primarily. The objections to such practice were manifold, and he admitted a prejudice against it. These objections were pointed out. Whatever might be ideal surgery under the exigencies of actual practice, the treatment for recent lacerations of the cervix remained, and he believed would remain, rigid local cleanliness, excepting where there was sufficient hemorrhage to demand a ligature. Where non-infection could be insured, and where the torn lips were not unnecessarily disturbed by the careless use of the nozzle of a syringe, spontaneous healing of these lacerations might be expected to a greater or less degree, and what tear remained, when nature was through with her work, would be of a healthy character, would give no future trouble, and would need no surgical interference.

The symptoms of chronic lacerations of the cervix uteri were essentially local in their production and remained so in their manifestations. He had no sympathy with the views which attributed reflex symptoms to these lesions. In uncomplicated cases, where there simply existed a laceration of the cervix uteri, with everted and eroded lips, producing a constant leucorrhea and a feeling of weight and uneasiness in the pelvis and about the rectum, these so-called reflex symptoms did not exist.

There was one belief prevalent which would warrant, nay, demand, a repair of every lacerated cervix — the belief that lacerations of the cervix produced carcinoma. In this belief he took no part, and no one had to his knowledge as yet produced a single scientific fact which would uphold such a theory.

In twenty years' work he had not seen a single case of cancer develop in a laceration of the cervix which he had refused to repair.

INTRAPELVIC HEMATOMA.

DR. J. WHITRIDGE WILLIAMS of Baltimore reported a case of intrapelvic hematoma following labor, and made some remarks on the treatment of incomplete rupture of the uterus.

PRESIDENT'S ADDRESS.

DR. EDWARD REYNOLDS of Boston in his presidential address said, among other things, that the society owed its pre-eminence along its chosen line less to the words than to the prolonged and daily labor of the eminent men who had composed it in the past, and must owe its future to the lifework of the equally able men who were to fill its membership in the coming years.[2]

*(To be continued.)*

## Recent Literature.

*Studies in Heteromorphosis.* By H. CHARLTON BASTIAN, with 815 illustrations. 8vo. pp. Williams & Norgate. 1903.

It is a sad task to call attention to this work, which, now that it is completed, has gained nothing in value beyond what belonged to the first part, of which we printed a notice in this JOURNAL upon its first publication. The author is unfortunate in making the ambitious attempt to overthrow the fundamental conceptions of biology, as to species, heredity, the genetic relations of forms, etc., by maintaining that by "heteromorphosis" one form of low life may give rise to another entirely different, as bacilli and eggs of rotifers to protozoans! He lacks the very most rudimentary conception of scientific proof, and the elementary ideas as to experimentation which we might expect of a schoolboy. It is only necessary to say that his typical experiment is to put stagnant water with vegetable matter in an open flower pot. Finding, at first, one species plentiful and days or weeks later another species plentiful, he has "proved" that the first has changed into the second. It is hardly necessary to add that the book is in no sense a scientific publication, and should be forgotten as speedily as possible.

C. S. M.

[2] For the full address see JOURNAL, Vol. cli, p. 1.

THE BOSTON

# Medical and Surgical Journal.

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## BOSTON'S CHRONIC SICK.

There is every evidence to show that the best sentiment of the public is coming to regard the person ill with chronic disease in the same general category as the person ill with an acute disease. That such a recognition should have been so slow in coming is certainly a matter of regret, but that the chronic sick in this city, as in others, are likely hereafter to have adequate hospital care with the appurtenances which go with a modern hospital is hardly to be questioned. In view of the vicissitudes which the Long Island Almshouse and Hospital of Boston has experienced during the last few years, in the attempt to establish a hospital in the best sense of the word, it is gratifying to record the fact that at the recent exercises of the graduation of nurses, the Hon. John B. Martin, in charge of the institution, affirmed that the hospital idea as there developed had come to stay. Mr. Martin no doubt expressed the wide public sentiment which is shared not only by physicians who are at all acquainted with the conditions, but also by the people at large who have a vital interest in the proper care of our pauper sick.

In this connection, the seventh annual report of the Pauper Institutions Trustees for the year ending Jan. 31, 1904, is of interest. During the term of service of this board of trustees, the development of the medical side of the hospital had been going on year by year until at the time of their retirement from office it had attained a high rank as a well-equipped and well-manned institution for the care of the chronic sick. The feeling has grown that this institution should be regarded rather from the point of view of a hospital than of a mere refuge for the infirm, and that its future development should take place along hospital lines. Reference to the report demonstrates in striking fashion the correctness of this point of view.

During the year there were 847 admissions to the institution. Of these, 568 or 77.2%, went direct to the hospital. If such figures are fairly constant, and we have no doubt that they are, the attempt to regard the institution as an infirmary, merely, evidently cannot be maintained. The further statistics that 1,200 cases were treated in the hospital during the year, of whom 253 were hospital patients on Jan. 31, 1903, and that among the entire number treated there were 232 deaths during the year, are again evidences of the condition of chronic invalidism which prevails. The hospital for tuberculosis, established recently, has proved far inadequate to the demands made upon it. It will accommodate 51 patients, but on Jan. 31, 1904, there were 82 in the institution, naturally necessitating their classification with other patients, a plan which is altogether to be regretted.

The report of the visiting staff calls attention to the general medical work which has been accomplished during the last year at the institution, and insists upon the necessity of regarding practically the entire institution community as coming in the category of the sick. The need of a pathological building, the desirability of the installation of an x-ray apparatus, and the usefulness of a receiving ward for the hospital, are touched upon in this statement. The retiring board of trustees is deserving of the gratitude both of the medical profession and the laity, in having clearly seen the necessities of the situation and carried out those plans which looked toward a completer hospital development. That the work so inaugurated will be allowed to languish is not to be seriously entertained. The city needs a hospital of the first rank at Long Island if it is to maintain its traditions and keep pace with the admirable work done in other cities.

The *London Times* of June 6 refers to certain conditions at the Infant Asylum at Wanstead, a charitable institution supported by the public, and providing for upwards of five hundred children of both sexes. Not long since, for certain reasons not stated, the staff of trained nurses was dismissed from the hospital and adequate provision for the proper isolation of infectious cases was not carried out. In consequence of these circumstances, the consulting medical staff very properly felt called upon to resign on the ground that those arrangements it regarded as necessary for the health and well-being of the patients were

not inaugurated, and that therefore its responsibility for the occurrence of disease could no longer be borne. We state these facts, as quoted, simply to illustrate the very great desirability of perfect co-operation between the public, as represented by the management of such institutions, and the physicians who are and should be held responsible for their medical interests.

Wide as the differences of opinion may legitimately be as to the ways and means of the best management of our public institutions, it is apparent in this, as in all other complicated undertakings, that sympathy between the various departments should be maintained at the very highest possible level. This is perfectly possible, as examples everywhere show, and certainly the efficiency of an institution must depend in greatest measure upon the completeness of such co-operation.

In the city of Glasgow on May 15 of this year, 1,694 persons were classified in hospitals as dependent or pauper sick. The problem in Glasgow is, no doubt, absolutely similar to that in other cities, and there is every evidence to show that it is being thoroughly studied from various points of view, and that its solution must in great part be worked out on the basis of the hospital idea in the broadest sense of that term.

## THE VALUE OF LEUCOCYTOSIS IN THE PELVIC AFFECTIONS OF WOMEN.

LEUCOCYTOSIS in the pelvic affections occurring in the female may be considered under three different aspects: First, as a diagnostic measure; secondly, as an indication or a contra-indication for surgical interference; and thirdly, as an indication in the prognosis. From his personal experience in the matter, Carmicheal in a recent and very able contribution to the subject (*Scottish Medical and Surgical Journal*, February, 1904) concludes that leucocytosis cannot be looked upon as an infallible sign of the presence of pus, and that it should only be taken into account along with other symptoms presented by the patient. In six cases of ovarian neoplasms, the leucocytosis varied and was not marked, appearing to be rather more directly in relation to the amount of inflammation present than to the malignant nature of the affection. In acute inflammatory lesions there was always a marked increase of the leucocytes with an increased temperature, but a leucocytosis is without value when no other symptoms are present.

A leucocytosis is of great importance in chronic processes. In lesions of the tubes the presence of a leucocytosis will give indications as to the presence of pus, the virulence of the bacteria, as well as the best operative procedure to adopt. If there is a high degree of leucocytosis with a marked tumefaction of the tube, palliative treatment, simple drainage or a vaginal operation is to be selected. When the leucocytosis is not marked and the tube not greatly enlarged the abdominal route is the one of choice.

In carcinoma of the cervix with extensive ulceration, a marked leucocytosis is often found, but under these circumstances the operative indications are governed by the local conditions.

After hemorrhage, for example, in cases of fibroids, a high leucocyte count may be found which would be rather a contra-indication for operation until the time when palliative treatment has reduced the number of leucocytes.

As to the prognosis, it is well known that a leucocytosis may be absent in cases of very acute appendicitis, and Carmicheal found it wanting in a case of puerperal septicemia. In infections, the absence of leucocytosis is serious, and if in a case of puerperal septicemia the general condition becomes worse, and there are indications that the organism no longer reacts against the infection, there is still time to operate in order to rid the patient of her focus of infection. When making a blood count one should never forget the normal causes of a leucocytosis, such as digestion, anesthesia, hemorrhage, purgation, etc., in order to avoid all possibility of error.

## INTERESTING IF TRUE.

THE proverbial inaccuracy of birth weights leads to a certain legitimate skepticism regarding the truth of the statement which we quote in the following paragraph. Just why there should be so wide margin of error in estimating the weight of the new-born child is not always easy to appreciate, but that it should be greater than it actually is, is no doubt in a measure due to the natural pride of the parents. To be the mother of the largest infant on record is no doubt a worthy ambition, and possibly Mrs. Tasta, to whom we refer, was imbued with this idea. However this may be, we give the fact for what it is worth.

Mrs. Madelina Tasta, of the Italian colony in New York, is reported to have celebrated the Fourth of July by giving birth to one of the largest infants on record, its alleged weight being nineteen pounds. If this report is even measur-

ably trustworthy, it is especially remarkable for a first child, as the young mother is stated to be only eighteen years old.

The largest child delivered alive mentioned by Lusk is one reported by Waller, the weight of which was fifteen pounds fifteen ounces. Ramsbotham speaks of a fetus weighing sixteen and a half pounds, and Cazeau of one which he delivered by turning which weighed eighteen pounds, while in the *British Medical Journal* of Feb. 1, 1879, the birth of one weighing twenty-one pounds is reported. Dr. Robert Harris, the American editor of "Playfair's Midwifery," states that probably the largest fetus on record was that of Mrs. Captain Bates, the Nova Scotia giantess, whose husband was, like her, over seven and a half feet tall. This child, born in Ohio, was their second, and was lost in its birth, as no forceps could be procured of sufficient size to grasp the head. It weighed twenty-three and three-quarters pounds, and was thirty inches in length. Their first infant weighed nineteen pounds at birth.

## MEDICAL NOTES.

Fourth of July Death List. — The *Chicago Tribune* announced on July 6 that the total number of deaths resulting from accidents on the Fourth of July was 52, and the number of persons more or less injured 3,049. Up to the time this report was made the death list this year was one less than that of 1903, and the number of injured 616 less. The result of tetanus cases, which are sure to occur in greater or less number, cannot yet be determined.

Tuberculosis at the Johns Hopkins Hospital. — It is announced that the Johns Hopkins University is about to undertake systematic work on the subject of tuberculosis. Aided by a gift of $20,000 from Mr. Henry Phipps of Pittsburg, a dispensary building is proposed, so arranged as to combine the treatment of patients with adequate rooms for investigation.

Dean of Medical School of University of Southern California. — Dr. Walter Lindley, the editor of the *Southern California Practitioner*, has recently been elected Dean of the Medical College of the University of Southern California. This Los Angeles school is now entering its twentieth session.

Physicians for Panama. — It is stated that about three hundred physicians are to be sent to the Isthmus of Panama to care for the health of the fifty thousand men who are to be engaged on the forthcoming work on the canal. For this work young and active men in robust health will be needed, and no doubt they may without difficulty be obtained.

Visit of French Physicians to London. — A number of representative French physicians are intending to pay a visit to London in October for the purpose of investigating methods of work and research in England. Arrangements for their proper reception are already being undertaken by the physicians of London. Such tours of friendly inspection among the medical men of various countries should most certainly be encouraged.

The New Vienna General Hospital. — According to the *Medical Record:* "On June 21, 1904, the Emperor of Austria laid the corner-stone of the new Allgemeines Krankenhaus, to take the place of the present famous building. The new hospital will in reality be a village of fifty buildings, and will contain every device and appointment known to medical science. It is the aim of the directors of this gigantic hospital to make it the finest, best and most completely equipped hospital in the world. It will be built upon one of the hills of Vienna, overlooking the present site, and the grounds will be much more beautiful than those of the present hospital.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, July 13, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 40, scarlatina 15, typhoid fever 17, measles 29, smallpox 0.

A Bit of Newspaper Medicine. — The proverbial ignorance of the laity on medical matters finds some excuse when such statements as the following are possible, quoted from a local daily newspaper:

J. J., who became paralyzed and insane from the effects of a blood clot on his brain, attempted to commit suicide by shooting. The ball fired by him penetrated the affected part, dissipated the blood clot, restored his sanity, and it is believed he will entirely recover from his paralysis.

Commendable Emergency Work. — At the recent destructive fire caused by lightning in Charlestown, Lieut. W. C. Rucker, Past Assistant Surgeon, U. S. N., in charge of the United States Marine Hospital in Chelsea, and his assistants were upon the scene with their equipment a very

few moments after the fire broke out. It is said that they arrived and were at work caring for the injured before the arrival of the fire apparatus.

NEW YORK.

PUBLIC BATHS. — The first of a series of permanent public baths, to be erected and maintained at the city's expense, was opened on July 1 in William H. Seward Park, on the lower east side. The building, which is of brick exterior, with a liberal use of marble for interior appointments, cost with its equipment about $110,000. It is Ionic in its style of architecture, and consists of three stories. The first floor is devoted to the baths, and, allowing twenty minutes for each bather, it is estimated that at least 2,500 persons can be accommodated daily. The second floor, a special feature of which is a large loggia, supplied with comfortable chairs, is reserved for the use of women, especially those with young children, and two matrons will attend to their wants. This bath is absolutely free, even as regards soap and towels, the expense of which is to be paid for out of the maintenance fund. Similar buildings are to be erected in the DeWitt Clinton, Thomas Jefferson, St. Gabriel, and other small parks.

JUNE MORTALITY. — The mortality in the city during the month of June represented an annual death rate of 20.98, as against 21.70 in May and 16.95 in the month of June, 1903. One factor in the increased mortality, as compared with that of last year, is the epidemic of cerebrospinal meningitis which has prevailed. As compared with May, the effect of warm weather is strikingly shown in the decrease in the number of deaths from pneumonia and organic heart diseases; while, on the other hand, there is naturally a considerable increase in the deaths from diarrheal diseases. Among the diseases which showed a reduced mortality were the following: The weekly average of deaths from diphtheria and croup decreased from 47.25 in May to 42.5 in June; the weekly average of deaths from scarlet fever, from 25 to 15.25; from measles, from 38.75 to 21.75; from influenza, from 7.5 to 1.5; from typhoid fever, from 10 to 7.75; from pneumonia, from 173.25 to 69; from broncho-pneumonia, from 101.25 to 59.25; from acute bronchitis, from 39 to 23.75; from pulmonary tuberculosis, from 178.5 to 152; from Bright's disease and nephritis, from 126 to 104; and from organic heart diseases, from 102 to 70.5. There was a slight increase in the mortality from cancer, while the weekly average of deaths from diarrheal diseases increased from 48 to 131.5, and from diarrheals under two years of age, from 38.5 to 119. In the week comprising the last six days of June and the first day of July there were no less than 316 deaths from diarrheal diseases, as compared with 100 in the preceding week and an average of 55 in the earlier weeks of June. During the month there was one death from smallpox, the first since March.

The epidemic of cerebrospinal meningitis has continued to show a gradual decline. The deaths reported from it have been as follows:

In the week ending June 4 — 63.
In the week ending June 11 — 54.
In the week ending June 18 — 53.
In the week ending June 25 — 48.
In the week ending July 2 — 39.

WORK OF SUMMER CORPS OF PHYSICIANS. — On July 5 the summer corps of physicians of the New York Board of Health, sixty in number, commenced their annual house-to-house visitation among the tenement population, for the purpose of preventing illness among the children and relieving it when found. On the same date the regular trips of the St. John's Guild floating hospital to New Dort, Staten Island, were commenced for the season. The rules require that while in the boat each infant and child, unless special circumstances contra-indicate, shall receive a bath. For the older children salt water shower baths are employed. The "Helen C. Juilliard," the newer of the two floating hospitals belonging to the Guild, and the only one which will probably be used this summer, has been thoroughly overhauled and painted, and before commencing its trips was subjected to a rigid inspection. It is equipped with 600 new life preservers and with adequate life boats, rafts and buoys, while for fire protection there are six fire extinguishers, a heavy Worthington steam fire pump, and eight lines of fire hose attached to standpipes. The tug which tows the boat is also equipped with a powerful fire pump, and the crew is skilled in fire drill. The "Juilliard" has in all a working staff of forty-eight.

## Obituary.

SAMUEL LEONARD ABBOT, M.D.

DOCTOR SAMUEL LEONARD ABBOT died July 1, at the age of eighty-six years. He graduated at Harvard college in 1838, in the class with James Russell Lowell and William Story, and from the Medical Department in 1841.

He was one of the oldest physicians of Boston,

and the last of that noteworthy group of practitioners connected with the Massachusetts General Hospital, a half century ago. He was the first physician to out-patients when the service was so small that a single physician could fill the position, and remained upon the visiting staff until disqualified by age. These duties of his public professional life he performed with uniform and conscientious devotion.

His private practice lay among the old families of the "west end." Rich and poor found in him a faithful and cheering counsellor, and there in quiet and shady Louisburg Square he continued to live and work until his death.

Dr. Abbot had that active interest in manifold directions which characterized the old-time member of our profession. In early days he was a zealous student of ornithology, and was long officially connected with the Boston Society of Natural History. He was a member of the American Academy of Arts and Sciences. For many years he was associate editor of the Boston Medical and Surgical Journal. He was the oldest living member of the Thursday Evening Club, composed of representatives of all professions in the widest modern acceptation of the term, of merchants, capitalists, etc. He was from childhood connected with the First Church in Boston, and long one of its administrators.

He has passed away after a long, useful and gentle life, this conscientious, amiable physician, respected and beloved by all who knew him.

## Miscellany.

### DEATHS IN BATTLE DURING LAST CENTURY.

The *British Medical Journal* makes the following statement of Professor Richet's estimate of the number of deaths in battle during the last century:

The genial and learned Professor of Physiology in the Faculty of Medicine in Paris, Prof. C. Richet, once wrote a novel and made a forecast of the probable condition of the world a hundred years hence. An ardent lover of peace on earth and an eloquent apostle and advocate of the doctrine of goodwill among men, Professor Richet has been "looking back" over the past century and reckoning the death toll due to wars during the enlightened nineteenth century. He estimates the grand total to be about 14,000,000, made up as follows: Napoleonic wars, 8,000,000; Crimean wars, 300,000; Italian war, 300,000; American Civil war, 500,000; Franco-German war, 800,000; Russo-Turkish war, 400,000; civil wars in South America, 500,000; various colonial expeditions in India, Mexico, Tonquin, South Africa, etc., 3,000,000. If to these who died in the "stricken field" we add the number of "broken" disabled soldiers, the widows and the children who suffered, we have indeed a huge budget of slaughter, a record of Christian activity that almost makes one despair. The new century seems to have started as if it intended to maintain the record.

### RECORD OF MORTALITY
For the Week ending Saturday, July 2, 1904.

| Cities. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Cerebro-Spinal Meningitis. | Typhoid Fever. |
| New York . . | 3,908,644 | 1,591 | 718 | 38.53 | 9.74 | 3.14 | 2.45 | .75 |
| Chicago . . . | 2,021,086 | 398 | 104 | 23.35 | 8.54 | 1.75 | — | 1.00 |
| Philadelphia | 1,407,968 | 533 | 180 | 32.83 | 7.69 | 2.06 | — | 2.06 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 221 | 92 | 36.65 | 6.79 | .90 | .90 | .90 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 140 | — | 38.56 | 7.85 | 1.43 | — | 7.85 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 74 | 22 | 25.66 | 5.40 | — | — | 2.70 |
| Boston . . . | 617,950 | 180 | 55 | 20.55 | 8.89 | — | — | 1.66 |
| Worcester . . | 136,925 | 32 | 5 | 9.37 | 3.12 | — | — | 3.12 |
| Fall River . . | 119,349 | 27 | 17 | 51.84 | 7.40 | — | 3.70 | — |
| Lowell . . . | 104,402 | 35 | 15 | 11.42 | 11.42 | — | — | — |
| Cambridge . | 100,998 | 19 | 7 | 5.26 | 5.26 | 5.26 | — | — |
| Lynn . . . . | 73,875 | 15 | — | 20.00 | — | 6.67 | — | 6.67 |
| Lawrence . . | 72,348 | — | — | — | — | — | — | — |
| Springfield . | 72,020 | 17 | 5 | 35.29 | — | — | — | — |
| Somerville . | 70,413 | 6 | — | 16.67 | — | — | — | — |
| New Bedford | 68,863 | 24 | 8 | 12.50 | 8.33 | — | — | — |
| Holyoke . . . | 50,538 | 23 | 11 | 34.78 | — | — | — | — |
| Brockton . . | 46,601 | 8 | 2 | 50.00 | — | — | 12.50 | — |
| Newton . . . | 39,310 | 6 | 1 | 16.67 | 16.67 | — | — | — |
| Haverhill . . | 39,061 | 17 | 1 | 11.76 | 5.88 | — | — | — |
| Malden . . . | 37,205 | 8 | 1 | 12.50 | — | — | — | — |
| Salem . . . . | 37,188 | 10 | 2 | 10.00 | — | — | — | — |
| Chelsea . . . | 36,499 | 9 | 2 | 33.33 | 11.11 | 11.11 | — | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | — | — | — | — | — | — | — |
| Everett . . . | 30,209 | 7 | 2 | 14.30 | — | — | — | — |
| North Adams | 29,201 | 3 | 2 | 33.33 | — | 33.33 | — | — |
| Quincy . . . | 26,798 | 5 | 1 | 40.00 | — | — | — | — |
| Gloucester . | 26,121 | 7 | 1 | — | — | — | — | — |
| Waltham . . | 25,797 | 6 | 1 | 16.67 | — | — | — | — |
| Brookline . . | 23,576 | 3 | — | 33.33 | — | — | — | 11.11 |
| Pittsfield . . | 22,870 | 9 | 3 | 22.22 | — | — | — | — |
| Medford . . | 21,956 | 2 | — | — | — | — | — | — |
| Chicopee . . | 21,692 | 6 | 4 | 33.33 | — | — | — | — |
| Northampton | 20,314 | 5 | 2 | — | — | — | — | — |
| Beverly . . . | 15,807 | 1 | 1 | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 1 | 0 | — | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 4 | 3 | — | — | — | — | — |
| Newburyport | 14,478 | 2 | 0 | — | — | — | — | — |
| Woburn . . . | 14,315 | — | — | — | — | — | — | — |
| Melrose . . . | 13,819 | — | — | — | — | — | — | — |
| Westfield . . | 13,809 | 6 | 2 | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 3 | 2 | — | — | — | — | — |
| Revere . . . | 13,609 | 3 | — | 33.33 | — | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 0 | — | — | — | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 1 | 1 | — | — | — | — | — |
| Weymouth . | 11,350 | 2 | 0 | — | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,469; under five years of age, 1,273; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,138; acute lung diseases 289, consumption 364, scarlet fever 20, whooping cough 14, cerebrospinal meningitis 43, smallpox 2, erysipelas 6, puerperal fever 11, measles 32, typhoid fever 48, diarrheal diseases 522, diphtheria and croup 76.

From whooping cough, New York 5, Chicago 2, Philadelphia 3, Baltimore 1, Boston 1, Worcester 1. From smallpox, New York 1, Philadelphia 1. From cerebrospinal meningitis, New York 39, Baltimore 2, Fall River 1, Brockton 1. From typhoid fever, New York 12, Chicago 4, Philadelphia 11, Baltimore 2, Pittsburg 11, Providence 2, Boston 3, Worcester 1, Lynn 1, Pittsfield 1. From erysipelas, New York 2, Philadelphia 3, Boston 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending June 18, the death-rate was 15.8. Deaths reported 4,029; acute diseases of the respiratory organs (London) 57, whooping cough 101, diphtheria 29, measles 186, smallpox 1, scarlet fever 25.

The death-rate ranged from 1.7 in Handsworth to 23.7 in Stockport; London 12.8, West Ham 10.7, Brighton 14.9, Southampton 6.5, Plymouth 14.2, Bristol 12.6, Leicester 11.6, Nottingham 15.5, Birkenhead 11.8, Liverpool 18.7, Bolton 12.5, Manchester 20.0, Salford 17.8, Bradford 14.8, Leeds 18.6, Hull 13.1, Sheffield 13.1, Cardiff 10.6, Rhondda 14.1, Wigan 14.1, Merthyr Tydfil 16.5, Walthamstow 7.5, Warrington 15.5.

## METEOROLOGICAL RECORD.

For the week ending July 2, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. 26 | 29.86 | 82 | 92 | 71 | 83 | 56 | 70 | W | W | 9 | 10 | C. | F. | .01 |
| M. 27 | 30.01 | 74 | 82 | 65 | 61 | 46 | 53 | N W | N | 10 | 8 | C. | C. | 0 |
| T. 28 | 30.16 | 64 | 70 | 59 | 52 | 62 | 57 | N E | S E | 4 | 9 | F. | O. | 0 |
| W. 29 | 29.97 | 61 | 65 | 57 | 82 | 97 | 90 | S E | N | 8 | 6 | R. | R. | .43 |
| T. 30 | 29.91 | 66 | 75 | 57 | 97 | 89 | 93 | E | S W | 6 | 18 | R. | O. | .23 |
| F. 1 | 29.88 | 74 | 80 | 69 | 95 | 88 | 92 | S W | S | 5 | 14 | R. | C. | .03 |
| S. 2 | 29.94 | 70 | 79 | 60 | 84 | 66 | 95 | S W | W | 10 | 10 | F. | O. | 0 |
| ☞ | 29.96 | | 78 | 63 | | | 79 | | | | | | | .70 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JULY 2, 1904.

J. MILLER, JR., assistant surgeon. Detached from the "Denver" and ordered to the "Kentucky."

F. A. ASSERSON, assistant surgeon. Detached from the "Kentucky" and ordered to the Navy Yard, New York, N. Y.

J. C. PRYOR, surgeon. Commissioned surgeon with rank of Lieutenant Commander, from March 3, 1903.

C. D. LANGHORNE, surgeon. Commissioned surgeon with rank of Lieutenant Commander, from June 9, 1903.

W. G. FARWELL, N. T. MCLEAN, C. T. GRAYSON, assistant surgeons. Commissioned Assistant Surgeons with rank of Lieutenant, junior grade, from June 28, 1904.

J. MILLER, JR., assistant surgeon. Orders to the "Kentucky," revoked; detached from the "Denver" and ordered to duty with the marine battalion on the Isthmus of Panama.

## OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING JULY 7, 1904.

PURVIANCE, GEORGE, assistant surgeon-general. Granted leave of absence for one month from July 1, 1904, on account of sickness. July 7, 1904.

KALLOCH, P. C., surgeon. Granted leave of absence for eight days from July 7. July 1, 1904.

MCINTOSH, W. P., surgeon. To assume temporary charge of the Portland, Me., quarantine station during the absence on leave of the medical officer in command. July 1, 1904.

CURRIE, D. H., assistant surgeon. To report to chairman of board of examiners, San Francisco, Cal., July 25, 1904, for examination to determine his fitness for promotion to the grade of passed assistant surgeon. July 1, 1904.

KORN, W. A., assistant surgeon. To report at Washington, D. C., for special temporary duty. July 5, 1904.

HOLT, J. M., assistant surgeon. To report to chairman of board of examiners, San Francisco, Cal., July 25, 1904, for examination to determine his fitness for promotion to the grade of passed assistant surgeon. July 1, 1904.

TROTTER, F. E., assistant surgeon. To report to chairman of board of examiners, San Francisco, Cal., July 25, 1904, for examination to determine his fitness for promotion to the grade of passed assistant surgeon. July 1, 1904.

MCLAUGHLIN, A. J., assistant surgeon. To proceed to Atlantic City, N. J., for the purpose of making a physical examination of certain keepers and surfmen of the Life Saving Service. July 7, 1904.

FOSTER, A. D., assistant surgeon. Granted leave of absence for seven days from July 8. July 6, 1904.

ROBERTSON, H. MCG., assistant surgeon. To proceed to Point Pleasant and Tuckerton, N. J., for the purpose of making a physical examination of certain keepers and surfmen of the Life Saving Service. July 7, 1904.

MCKEEN, F. H., assistant surgeon. Relieved from duty at New York (Stapleton) and directed to proceed to New Orleans, La., and report to the medical officer in command for duty and assignment to quarters. July 7, 1904.

SPANGLER, L. C., pharmacist. To report to chairman, board of examiners, Tampa Bay Quarantine, July 11, 1904, or as soon thereafter as may be determined by the chairman of the board, for examination to determine his fitness for promotion to the grade of pharmacist of the second class. July 1, 1904.

### BOARDS CONVENED.

Board convened to meet at Washington, D. C., July 6, 1904, for the physical examination of an applicant for appointment as Second Assistant Engineer in the Revenue Cutter Service. Detail for the board: Assistant Surgeon General G. T. Vaughan, chairman; Assistant Surgeon A. J. McLaughlin, recorder.

Board convened to meet at Tampa Bay Quarantine, July 11, 1904, or as soon thereafter as may be determined by the chairman of the board, for the examination of Pharmacist L. C. Spangler to determine his fitness for promotion to the grade of pharmacist of the second class. Detail for the board: Assistant Surgeon R. E. Ebersole, chairman; Acting Assistant Surgeon G. H. Altree, recorder.

Board convened to meet at San Francisco, Cal., July 25, 1904, for the examination of Assistant Surgeons to determine their fitness for promotion to the grade of Passed Assistant Surgeon. Detail for the board: Passed Assistant Surgeon W. G. Stimpson, chairman; Passed Assistant Surgeon Rupert Blue; Passed Assistant Surgeon H. S. Cumming, recorder.

## APPOINTMENT.

DR. WILLIAM R. PRYOR, Professor of Gynecology at the New York Polyclinic Hospital, has been appointed Attending Gynecologist to St. Vincent's Hospital.

## SOCIETY NOTICES.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION. — The Thirtieth Annual Session of the Mississippi Valley Medical Association will be held at Cincinnati, Ohio, October 11, 12, 13, 1904, under the presidency of Dr. Hugh T. Patrick, of Chicago. The headquarters and meeting places will be at the Grand Hotel. The annual orations will be delivered by Dr. William J. Mayo, of Rochester, Minn., in Surgery, and Dr. C. Travis Drennen, of Hot Springs, Ark., in Medicine. Request for places upon the program, or information in regard to the meeting, can be had by addressing the Secretary, Dr. Henry Enos Tuley, Louisville, Ky., or the Assistant Secretary, Dr. S. C. Stanton, Masonic Temple, Chicago, Ill.

AMERICAN ELECTRO-THERAPEUTIC ASSOCIATION. — The fourteenth annual meeting of the American Electro-Therapeutic Association will be held at the Inside Inn, St. Louis, Mo., September 13, 14, 15 and 16, 1904. The scientific sessions will be held only in the mornings, leaving the afternoons free in which to visit the fair.

## RECENT DEATH.

ADIN HUBBARD NEWTON, M.D., M.M.S.S., died in Everett, July 7, 1904, aged eighty-seven years.

## BOOKS AND PAMPHLETS RECEIVED.

Damiana (The Mexican Tea), Turnera Aphrodisiaca. By John Uri Lloyd. Reprint.

Kerato-Conus. By G. Griffin Lewis, M.D. Reprint.

Hereditary Ectopia Lentis, with Reports of Cases. By G. Griffin Lewis, M.D. Reprint.

Ueber Rectalernährung. Kritisches Sammelreferat von Dr. Felix Reach. Reprint. 1904.

University of Pennsylvania. Contributions from William Pepper Laboratory of Clinical Medicine. Reprints. Philadelphia. 1903.

Transactions of the American Roentgen Ray Society. Fourth Annual Meeting, Philadelphia, Pa., December 9 and 10, 1903. Pittsburg: Murdoch-Kerr Press. 1904.

The Summer Diarrhœas of Infants, their Etiology, Pathology and Treatment. By H. Illoway, M.D. New York: E. P. Pelton. 1904.

Practical Materia Medica for Nurses with an Appendix containing Poisons and their Antidotes, with Poison-emergencies; Mineral Waters; Weights and Measures; Dose-list; and a Glossary of the Terms used in Materia Medica and Therapeutics. By Emily A. M. Stoney. Second Edition, thoroughly revised. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

A Text-book of Diseases of the Nose and Throat. By D. Braden Kyle, M.D. Third Edition, revised and enlarged. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

## Original Articles.

### A CASE OF MORAL INSANITY WITH REPEATED HOMICIDES AND INCENDIARISM AND LATE DEVELOPMENT OF DELUSIONS.*

BY HENRY R. STEDMAN, M.D., BROOKLINE, MASS.

On Oct. 30, 1901, J. T., a professional nurse, about forty-five years of age, single, and born in this country, was arrested on the charge of murdering Mrs. M. G. at Cataumet by poisoning, on the 13th of the preceding August. There was sufficient ground for belief that she had also fatally poisoned, within the preceding six weeks, an entire family of three persons who were related to M. G. by marriage. The duration of the last illness of Mrs. M. G. was not over sixteen hours. The symptoms, which were similar in all the cases, were those of narcotic poisoning. M. G. went unexpectedly into a somnolent condition from which she could not be roused, and coma and death soon followed. The relatives who, as it was believed, met death at J. T.'s hands were Mr. and Mrs. A. P. D., her father-in-law and his wife, and Mrs. H. G., on all of whom she had been in constant attendance from the first.

Mrs. D. died on July 4, after an illness of eleven days. The illness was characterized by intermittent coma, often deep; in the intervals, drowsiness with occasional rousing up and partial consciousness; pupils contracted, but not firmly, with dulled sensibility to light; on one occasion improvement with rationality, succeeded by profound coma and death.

Mrs. H. G. who died July 31, was ill ten days or two weeks, with similar symptoms. She became dull and stupid, " moped around the house, and finally went to sleep and never woke up."

Mr. D. died Aug. 9, after an illness of seven hours in which somnolence predominated, and complete unconsciousness rapidly supervened.

They had all been in good health before the appearance of these symptoms. The nurse had for years been on an intimate footing with the family, who were attached to her and regarded her as one of themselves. Her services were offered at some suggestion of hers or theirs regarding trivial ailments, real or fancied. She gave enemata freely, and often administered medicines in that way.

These short and fatal illnesses, so much alike and of such an unusual nature, occurring as they did, one after another, in the space of a few weeks, finally aroused suspicions of foul play, which naturally centered in J. T. who had nursed and dosed the victims, and had only summoned the physician when they were at the point of death. That she was well aware of the sentiment against her there is no room for doubt, as she was not only pointedly questioned on the subject by several persons but was actually told by a relative of one of the deceased that she was suspected of causing the deaths. Notwithstanding this, we find her in her old home only a fortnight later in L. in attendance on Mrs. B., an old lady and friend, who is suddenly and unexpectedly taken ill soon after J. T.'s arrival, and dies within forty-eight hours of the first appearance of a train of symptoms closely resembling those in the case of Mrs. M. G. The analysis by Dr. E. S. Wood, professor of chemistry at the Harvard Medical School, of the organs of four of the bodies revealed the presence in each of more than sufficient morphine to cause death. In the liver of the other body, that of Mrs. D., he found very distinct traces of morphine. It was the only one not embalmed, and as it had been buried nearly four months the organs were in an advanced stage of decomposition.

One of these persons held a note of J. T.'s to the amount, it is reported, of several hundred dollars. Small sums of money belonging to three of the others were missed after their deaths, but there is no proof of the truth of these charges. There was no suspicion of theft from the third victim, and in the search for a motive in her case a threat of exposure was advanced by the relatives. While Mrs. B. was in the midst of her illness a detective called at the house, and in the room below the sick chamber questioned J. T. at length about the deaths of her last four patients, ostensibly with the view of fastening the guilt of murder upon another person. Throughout the entire interview she was calm and self-possessed, showing no trace of anxiety and talking freely and pleasantly. She made no attempt to implicate others. Not long after this she told one of her friends that a state detective had told her that she was suspected of the crimes and must prepare to defend herself.

She remained here about a month, entertaining her friends, — in the meantime writing the physician of one of her Cataumet victims, " I have been taking my vacation and am willing to come back any time for a case." On Sept. 29, and 30, 1901, she made two attempts to poison herself, probably with morphine, the last an apparently determined one. An emetic given after an hour and a half was followed by return of consciousness. She gave later, as her reason for these attempts, that she was jealous and desperate because a man of seventy years, a connection of Mrs. T., was very attentive to one whom he has since married. As a final attempt to induce him to break off this intimacy J. T. wrote him, from the local hospital where she was immediately sent, an absurd and abusive letter in which she accused him of being " the father of her unborn babe."

After leaving the hospital she made a visit to some friends in a neighboring state, of which she has lately written: " I never even thought of the investigation about the murder while at A. until I was arrested. I was having a fine time out there. I don't think I ever enjoyed myself as I did that fall. There was a jolly lot of people there, and I had the kind of time I like to have. I remember perfectly well the detective reading the warrant and saying, ' I have come to arrest you for the narcotic poisoning of Mrs. G.,' and

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even then I cannot think it made much impression on me. The funniest thing about it was that I was annoyed because the detective insisted on remaining in my room while I was getting ready, and I did not think it was very gentlemanly." She left the house, on her arrest, with perfect composure and without the slightest remonstrance. On the long trip to the jail she was at first thoughtful, but later talkative and in good spirits. She talked freely to the officers about herself, and seemed entirely willing, then and at the jail, before seeing her counsel, to admit her guilt, and showed little or no realization of her situation, a condition of mind which she maintained throughout her imprisonment and trial. She was indicted for the murder of three of her Cataumet patients, but her trial was upon only one count, that of the murder of Mrs. G.

On March 3, 1902, about four months after her arrest, the prosecution and defence effected an arrangement whereby Dr. Geo. F. Jelly, Dr. Quinby and the writer were called upon to conjointly examine and report upon the mental condition of the prisoner with reference to her responsibility. Thus the question was practically submitted to a commission at law, which allowed the examiners free interchange of opinions and impartial sifting of all obtainable evidence on both sides. In fact, it resolved itself into a medical consultation on the diagnosis of a case of alleged disease. A more practical and satisfactory method, and one more in keeping with the principles of scientific inquiry, could not have been chosen, and its adoption by the attorney-general in such an important case would seem to be a long step toward abolishing, in criminal cases at least, the opposite and customary practice which has done so much to discredit expert opinion.

The evidence upon which our opinion was chiefly based was in part furnished by the prosecution and in part collected by ourselves. Since the patient's commitment other facts antedating her arrest have been brought to light, and are here introduced for the sake of uniformity and completeness.

Her original name was Honora Kelly. In 1863, when about four years of age, she and a sister were placed in a foundling asylum by her father, an eccentric man who drank hard to the time of his death. She has two living sisters; one, a respectable and capable woman some years older who corresponds regularly with J. T., the other, a chronic dement in one of our state asylums. A third sister was adopted but turned out of doors when found to have an illegitimate child. She led a dissolute life and died recently.

When about six years of age Honora was apprenticed to Mrs. T. on indenture papers, and took the name by which she has since been known. She was given a good education, proving intelligent and quick to learn. Mrs. T. brought her up as a daughter and she was "made much of" by the family. Until J. T. was a woman she was under good moral and religious influences, home surroundings and discipline and had good associates, but her incorrigible propensities for deceit, falsehood and trouble making, never absent from the first, proved too much to contend against, and her mother finally refused to let her remain longer in the family. Her impossible tales and her lies, often senseless and doggedly persisted in, despite positive proof of the falsity, are well remembered in the neighborhood.

At twenty-eight she began her career as nurse by four years of training and service in two general hospitals. There she showed much capability in the technical part of her duties. "She knew how to take good care of her patient but did not like to work." Although not of attractive appearance, she had a pleasant manner, and was wonderfully clever in ingratiating herself with such patients and physicians as she wished to please, and remarkably skillful in escaping the consequences of wrong-doing and in implicating others. Her hospital life revealed her earlier tendencies, but aggravated in form and more serious in results by reason of the greater opportunity for their exercise. Among the nurses, also, she made friends. One of them states, nevertheless, that she was looked upon as "queer" and "peculiar" by her fellow-workers because of her unfounded and absurd suspicions, tale-bearing, slanderous gossip and consequent mischief-making, as well as her pleasure in inventing fabulous tales. In several well authenticated cases she attempted, by charges afterwards found to be false, to procure the removal of patients from the institutions, and succeeded in two instances. In connection with one of these cases she wrote one of the patient's friends, who had met her only casually, a peculiar letter, stating that as he had made inquiry about her family (which he had not done), that she was quite willing to tell him that her brother was in an insane asylum. She then went fully into her family history. On the other hand, she is known to have prolonged the illness of favorite patients whom she wished to keep in the hospital, by reporting symptoms that did not exist and falsifying temperature records. In other cases she reported false temperatures for no obvious reason. During her term of service at one of the hospitals many articles were missed: sums of money, stationery, aprons, uniforms, etc., and she was suspected of stealing them, but her friends spoke so well of her and she was so adroit that the suspicion went no further, in spite of the evidence against her. In administering medicines she was extremely reckless and frequently gave larger doses than had been prescribed. Even at that time she was often heard to say that there was no use in keeping old people alive (a favorite sentiment with her since). She was also fond of asking about poisonous drugs and their antidotes.

In view of the long wake of sudden and mysterious deaths of patients, which has followed this woman throughout her career as a nurse, the following incident of her hospital life is at least worthy of passing notice. Miss D., a nurse, who had a slight illness, was put under her charge by day and was soon seized with sudden and extreme collapse. By much effort she was brought out of danger in the course of the night. When J. T. came on duty the next day the same symptoms reappeared. Another nurse was put in charge and the patient recovered. Some time afterward J. T. asked a head-nurse if she had heard that Miss D.'s condition had been due to poison.

She was at that time, and has often since been, suspected of the opium habit, because of her strange conduct. This is of course possible, but careful inquiry, as well as long observation of her at times when such a practice if previously indulged in to a great extent would have been revealed in the characteristic symptoms which follow sudden deprivation of the drug, have failed to show any such addiction. More-

over, her general conduct has been the same or more marked in situations where opium-taking was impossible. No tendency to sexual immorality or to drinking habits was ever noticed in her so far as we can learn.

She was discharged from both hospitals, in one instance just as she was about to graduate from the training school.

On leaving the hospital she took up private nursing in which she was for many years very successful, inspiring certain families, not a few of them of high social position, with confidence in her skill and affection for herself, in spite of caution from physicians who knew her record. She was "greatly liked and trusted" by one family who unsuspectingly employed her after the death of one of their number at her hands. Experienced and able physicians recommended her for a time on account of her capability. Her own friends who know her better speak of her jealous and vindictive nature and bad temper. Her conduct was considered "strange" by not a few — just in what way they cannot specify. As to her propensities for falsehood one person reports: "She had an extraordinary facility for inventing lies and remembering the lies that she told others." Another: "She is a constitutional and clever liar, but I did not find it out until two years ago." Her passion for trouble-making for its own sake, by carrying tales true and false and insidiously fomenting enmities, for no apparent reason, though far less readily and generally realized than when she was at the hospital, came gradually to light. She borrowed money from patients or their relatives which she never repaid and, although she earned a good living, had many debts, which, however, gave her little concern. Occasionally, small sums of money and articles of clothing disappeared where she was employed, but she was rarely suspected and never detected in theft nor, to our knowledge, directly accused of it. Accepting her guilt in this respect as proven, however, the fact that, except in a few instances, they were all petty thefts, and that in many cases nothing whatever was missing, plainly shows that money gain was not a controlling motive for her homicides. She undoubtedly prolonged some cases for profit, but on the other hand cut short many that might have proved equally lucrative, by poisoning the patient. She set four fires, but gave the alarm and helped vigorously to put them out. Two were set in the same house in order to frighten a nervous patient and retard her improvement. The others occurred in cottages of her friends.

Her general conduct toward the end of her career as nurse is suggestive of increasing demoralization. Her stories grew more sensational and preposterous. She caused, for example, some consternation by an utterly baseless report of a severe epidemic of typhoid in a neighboring seminary. She repeatedly maligned physicians who had employed her to other physicians and to patients, and even criticised the method of treatment in the presence of physician and patient. In spite of this, she retained to the last a number of friends who thoroughly believed in her.

We have also been able to satisfy ourselves that to crown this career of crime and disordered conduct J. T. committed 20 homicides, 12 of which she admitted at the time of our examination. While in jail she made a list of 31 of her victims, giving names and addresses or other means of identifying them. Her statements regarding the 20 homicides are abundantly verified in 4 by the character of the symptoms and by autopsy; 12 are sufficiently proven by careful accounts of the train of symptoms magnanimously and freely given the writer by the attending physician in each case, which were in every instance but one characteristic of narcotic poisoning, and which they now agree to have been the cause of death; and 4 have been fully, and we believe faithfully, described by immediate relatives. Of the 11 deaths reported by her, above this number, 4 are yet to be investigated, but seem suspiciously like the others in causation; in 2 the whereabouts of the family are now unknown; while in 5 there is too much uncertainty as to the precise cause of death to warrant including them among her victims. Space will not admit of further description of these cases than has already been given. The manifestations were strikingly similar. All but one of the cases — in which strychnia was plainly the cause of death — showed all or most of the following symptoms: drowsiness, full, slow pulse, contraction of pupils, stertorous breathing, cyanosis and slow respiration. A not infrequent feature was the subsidence of the coma for one or more intervals, and the patient's return to full or partial consciousness until finally put to death. A number of her victims were patients of one of her chief benefactors and includes one of his connections.

Among her effects a much-worn textbook on poisons was found which fell open at the chapter on opium.

At our first interview at the jail, she seemed for a time somewhat serious and distrustful, but soon became at ease and talked freely and volubly. She appeared quite indifferent to her situation and seemed to regard our visits chiefly as pleasant breaks in her monotonous life. Her talk was more or less rambling and rather irrelevant. Her utter mendacity and disposition to speak slurringly of even her best friends and to make accusations against them, almost without exception — to praise one minute and blame the next — was very marked. We therefore soon found that we should be obliged to depend largely for our opinion upon facts obtained from others, accepting as true only such of her statements as were corroborated by reliable evidence.

She told many tales which we knew to be sheer inventions, among them, a story of her parentage, her alleged father having in reality lived in China for two years before her birth; another, of her horror of the dead which was so great that she sometimes fell senseless at the sight of dead bodies, even those that had died a natural death, the fact being that she had often laid out bodies with her own hands as a matter of course. Her attempts as suicide she narrated with glee, but admitted that the last was a serious one, and for the most part adhered to her story that jealousy had prompted them. She also stoutly denied that she had ever stolen anything or been dishonest in money matters, although admitting that she had failed to repay loans of money and that she had always been slack and "mixed up" in money affairs. At first she denied also that she was guilty of the homicides with which she was charged, but finally, and by no means unwillingly, confessed (although advised not to incriminate herself) that she had poisoned twelve patients and had made two unsuccessful attempts to poison others. She also admitted that she had set four fires, two of them at the residence of a patient under her charge. She told of the deaths with calmness, adding eulogistic remarks. The poisonous agent employed was, according to her story, always morphia, occasionally combined with a fatal dose of atropia. She could not remember the details in all cases because, as she remarked, "poisoning had become a habit of her life."

The facts: first, that her favorite method of ad-

ministration of the drug was in Hunyadi water or by enemata because the drug could in these ways be given without the knowledge of the patient; second, that when possible she did not summon the physician until the victim was moribund; and finally, that she sometimes so combined drugs in kind and proportion that their resulting effect was an unusual and perplexing set of symptoms, made it most difficult and in some instances impossible for the physician to ascertain the true nature of the patient's illness. A request for an autopsy by the physician, moreover, invariably met with refusal through J. T.'s vigorous opposition to the suggestion. This accounts in large measure for her long immunity from detection, and it seems probable that if she had not, in her increasing mental demoralization, so far abandoned herself to her craving for poison-giving as to put to death with the same drug or drugs four patients in one family within forty days, many more victims might have been added to the list.

In planning and carrying out her homicidal acts she was, she asserted, always calm and clear-headed. After administering the poison she always experienced great relief and went to bed and slept soundly. In one case she took to bed with her the child of her victim after administering the fatal dose [a fact], and in another she lay on the bed with the patient whom she had just poisoned " and had a long sleep." When it was too late to undo her work " she would work like a Trojan to save the patient," according to her statement, although in one case, at least, she took this opportunity to repeat the dose and make sure of her victim. In two instances she claimed to have been seized with compunction, and left the case after sending for another nurse. One of the patients was saved in consequence. For much of the time during the interviews she manifested a lack of seriousness and often a levity which was in marked contrast to what was to be expected of one who had been brought to confess so many heinous crimes. She understood clearly that she had done wrong, but did not manifest the slightest sign of remorse for her crimes, not, as it seemed to us, through any spirit of bravado but for the reason that she did not comprehend the enormity of her acts; she professed total indifference as to the outcome of her trial except that she preferred the prison to the asylum. Electrocution apparently had no terrors for her. "When I try," she said, " to picture it, I say to myself, ' I have poisoned M,, my dear friend; I have poisoned Mrs. G.; I have poisoned Mr. D. and Mrs. D.' This does not convey anything to me, and when I try to sense the condition of the children and all the consequences I cannot realize what an awful thing it is. Why don't I feel sorry and grieve over it? I cannot sense it at all."

The question as to what prompted her acts was the signal for the shameless recital of a story of sexual excitement occurring in the presence of a dying person, as the motive — a statement which was all the more startling by reason of the absence of sexual immorality from her history, so far as could be ascertained. For a time we were of the belief that irresistible sexual impulse might be the real explanation of at least some of her acts, but on further examination, her representations as to the nature of this impulse and the conditions attending it were found to be so conflicting and so at variance with any known form of sexual perversion that feigning was suspected, and at the last interview, she admitted, as stated in our report, that she did not know why she killed these people, and that it was not from desire to experience sexual excitement. It was finally apparent that the story was a pretense throughout, concocted, and most unnecessarily as it happened, in order to prove her insanity and irresponsibility by reason of irresistible sexual impulse. There seemed to be a nearer approach to the truth in the statement that for at least the year past she had been tempted to do all sorts of criminal acts, and during the preceding summer especially, she had " let herself go." Among others she had strong impulses to set fires and could get no relief from her feeling of uneasiness but by yielding to the temptation. It is a fact that when once they were started, however, she worked her hardest to put them out. She finally said, in regard to her homicides, " I seem to have a sort of paralysis of thought and reason. Something comes over me, I don't know what it is. I have an uncontrollable desire to give poison without regard to the consequences. I have no objection against telling my feelings, but don't know my own mind. I don't know why I do these things." The last statement carried an air of truth with it in the manner of its telling and seemed to accord well with her general mental condition.

So far from having delusions of enmity or persecution, she spoke of most of her victims as her friends, and denied any hostility on either her side or theirs. In fact, all our efforts failed to reveal anything of the nature of delusion or hallucination in her mental condition at any of the interviews. Her behavior also was the opposite extreme of that of most patients with concealed delusions, whose reticence and distrust are marked features.

The main points in the summary of our opinion as to the prisoner's mental condition, which concluded our report to the attorney-general and counsel for the defence, were in substance as follows:

" 1. The prisoner, J. T., comes of a family in which intemperance and mental weakness and disorder are prominent disease features.

" 2. Her utter lack of moral sense has been evident from childhood in her incorrigible proclivity to falsehood, dishonesty, mischief-making, general unreliability and probable theft. The good moral, mental and religious training which she received in her youth resulted in no modification of her character, and were practically thrown away on her in that respect.

" 3. Her moral insensibility is further apparent in the absence of sense of fear before, during or after the commission of her crimes, and of remorse, sorrow or genuine affection at any time. This defect is even more forcibly shown by the fact that her chief victims were her especial friends.

" 4. Her lack of any appreciation of her situation, her levity under such circumstances, and her inability to realize the enormity of her deeds are strong evidences of mental weakness.

" 5. That an irresistible propensity propelled her to crimes of arson and murder is shown by the great frequency and variety of such acts and her continuance in them, regardless of consequences.

" 6. There is an absence of any apparent motive for her criminal acts in some cases, and inadequacy of motive in many of the others. This is shown in the total lack of evidence of pecuniary gain or satisfaction in revenge as a rule, except minor thefts and transient enmity. These would

be powerless with sane criminals as incentives to habitual homicide.

"7. The prisoner's disease-history and present mental state correspond with a well-recognized form of mental disease of a moral type due to congenital degeneration, in which there may be little or no intellectual disturbance that is apparent to the ordinary observer.

"Therefore, we are of the opinion that she was insane and irresponsible at the time of the homicides with which she is charged, and is so now; that, her disease being constitutonal, she will never recover, and that if ever at large again she would be a constant menace to the community."

The salient features of the case which indicated more especially irresponsibility were: lack of moral understanding, of natural feelings and of the ordinary motives for conduct including criminal acts, also the general absence in her of sufficient self-control to restrain her from crime, and her disregard of consequences as shown, for example, in continuing to poison patients in full knowledge that her guilt in other recent cases was suspected; by her desire to confess her guilt at the outset; her indifference to her fate, etc. These facts seemed to us to evidence her inability, both to help doing what she did and to be affected by punishment, conditions which are the best tests of accountability.[1]

The results of the anthropometrical measurements and physical examination of the patient by Dr. H. W. Miller, pathologist of the Taunton Insane Hospital, are as follows:

*Physical examination.* — Height, 5 ft. 3 in.; weight, 166½ lbs.

A well developed and well nourished woman. Hair black, streaked with gray. Complexion somewhat sallow.

*Craniometric examination.* — Circumference of head, 51.8 cm.; antero-posterior diameter, 17.8 cm.; greatest transverse diameter, 13.6 cm.; cephalic index, 77.6 cm. (slightly dolichocephalic); naso-occipital arc, 31.5 cm.; bregmato-lambdoid arc, 11.8 cm.; binauricular arc, 31.5 cm.; binauricular diameter, 11.8 cm.; facial length, 11.7 cm.; mid-frontal diameter, 13.5 cm.; breadth between pupils, 6.6 cm.; length of ears, right, 6.4 cm.; length of ears, left, 6.5 cm.

These measurements are all well within physiological variations.

Ears, detail well defined without stigmata.

Eyes, brown, palpebral fissure of normal width. No limitation of normal field.

Palate, low and broad but symmetrical.

Nose, no deviation or anomaly of the nose.

Teeth, false set in upper jaw, those in lower jaw regular.

No facial asymmetry.

Extremities: Symmetrical. Forearms, 40.2 cm. from elbow to tip of middle finger. Middle finger, 10 cm. on both hands, last phalanx of thumb 3 cm. on both thumbs. The little finger on each hand is flush with the last joint of the third finger. Finger nails normal.

No general body anomalies.

Special senses: Hearing acute; smell and taste normal; sight unimpaired; color sense keen.

General sensory condition: Examination of tactile, pain, pressure, and muscle sense offers no abnormality.

No errors of motility.

No trophic disturbances.

General feeling of well-being.

Reflexes: Show nothing of significance. Knee jerks sharp, normal plantar flexion, pupils equal, regular, react promptly, directly, and consensually.

A few tremors of tongue and extended fingers were present at time of examination but were transient.

Respiratory and circulatory systems reveal nothing of note.

Abdominal organs healthy.

Menstruation irregular for two years (every two weeks). Previous to that every fourth week.

Whatever view may be taken of this remarkable case, there can be no question that the moral monster thus far depicted is a striking illustration of so-called moral insanity, a condition described in most works by recognized authorities, from Pritchard to Kræpelin and Wernicke, as a probable form of mental disease or defect. Its existence as a definite morbid condition has been repeatedly questioned, and its name criticised as inadequate and incorrect. "Moral insanity," however, has so far held its own that all alienists of to-day recognize that the term means a certain condition or kind of mental abnomality which is *sui generis*. It fits no other form of mental unsoundness. The progress of psychiatry has seen so many nosological terms discarded that it is remarkable that "moral insanity" should remain and flourish, thus demonstrating its practical utility as a term and its real value as a morbid mental condition. "Moral imbecility," a more accurate designation in some respects and in use by certain authors, apparently has not been found sufficiently descriptive of every grade of moral lunatic to secure general adoption. The true understanding of moral insanity has been greatly obscured by confounding it with purely symptomatic conditions, syndromes and stages of other forms of insanity; for example, the moral obliquity unaccompanied by apparent intellectual perversion which sometimes occurs as a distinct stage of dementia precox, or as an equivalent of the "maniacal" phase of manic-depressive insanity, or as the prodromal stage of general paresis.

Moral insanity belongs to the group known as insanities of degeneration, and is better termed degenerative insanity of the moral type. It should be exclusively reserved to designate a congenital, primary, constitutional and permenant mental condition affecting the moral nature and unassociated with *evident* intellectual impairment. These patients have good memory and understanding, ability to reason and con-

[1] The ability to discriminate between right and wrong as the sole test of responsibility fails in this case for the same conclusive reasons that have rendered it valueless in a great many others, and have caused it to be rejected by all alienists and most jurists of to-day. It takes no cognizance of the power of personal restraint and inhibition. An insane person, as all psychiatrists know, may know right from wrong in the abstract, may understand that a certain act is unlawful and wicked, but may be unable to control himself through weakened will power (the result of hereditary defect or disease), or when goaded to desperation by persistent delusions and hallucinations. "In fact, the cases of insane criminals in whom there is no knowledge of right and wrong or who do not know the nature and quality of the acts they commit are very few indeed."— (McPherson.) It was one of the highest legal authorities of England, Lord Chief Justice Cockburn, who declared twenty years ago that the power of self-control when destroyed or suspended by disease was an essential element of responsibility.

trive, much cleverness and cunning, and a general appearance of rationality, coexistent with very deficient control, absence of moral sense and human sentiments and feelings, perverted and brutal instincts, and propensities for criminal acts of various kinds which may be perpetrated deliberately and cleverly planned, yet committed with little or no motive and regardless of the consequences to themselves and others. This latter point is important as indicative of a perversion of the fundamental instinct of self-preservation (Kellogg). In their general conduct, also, these individuals are rarely governed by the same motives that govern sane people, whether criminals or not, and it is often difficult to see what the motive is. As Esquirol truly says, "crime is a means for the criminal and the end for the lunatic." They commit crime for crime's sake. In J. T. most of the classic manifestations of the disease are typically and faithfully reproduced. That none of the physical stigmata of degeneration should be present is noteworthy but not exceptional, as Lombroso,[2] for example, finds anomalies of the cranium and physiognomy absent in 58% and 64% of moral lunatics, respectively. Of that distinctive and negative feature of the disease, the almost complete absence of intellectual impairment, Hack Tuke[3] goes so far as to say, "It is perfectly certain that it may be practically impossible to detect the intellectual flaw, and yet a physician may be driven to decide that a person is insane," and it is a recognized fact that, while a few of this class fall short of the average individual in intelligence, many are fully up to it and a limited number even surpass it.[4] Others urge, and our experience inclines us to agree, that careful investigation will always reveal intellectual involvement in genuine cases, sooner or later, and such patients certainly share some traits in common with the imbecile; witness their imperative and characteristic propensity, which seems to be a necessity from which they cannot escape, for telling purposeless lies and, like children, inventing fabulous tales. This is marked in J. T., but still more in this line of mental defect is her innate and irresistible bent for trouble and mischief-making which she finally carried to such an extent as to deliberately alienate her friends and benefactors among physicians — a weak-minded senselessness of conduct which showed fatal disregard of her own interests. If her friends were blind to her glaring faults and dangerous propensities it is hardly to be wondered at that they should fail to recognize that underlying "intellectual defect [in moral insanity] which," to quote Westphall, "is of a peculiar kind, is often concealed under a mask of perverted moral sense and requires time and patience on the part of the physician for its detection." J. T.'s fundamental intellectual weakness is further and strongly emphasized in her hospital history, as will be seen.

[2] "L'Homme Criminel." (Tr. from the Italian.) 1895. Vol. ii, p. 8.
[3] Dict. Psychol. Med., p. 814.
[4] McPherson, Mental Affections, p. 310.

But in what respect this case and others of its class differ from mere criminality is, of course, the main question. We can, at the start, readily eliminate the occasional criminal, the criminal by passion, the habitual, professional criminal; but to differentiate between the morally insane and the instinctive criminal, especially in the light of Lombroso's exposition of their analogy, is a difficult matter. It is this question that is and always will be a battle ground for the criminologist, the alienist, and the jurist, in spite of Lombroso's conclusion that both views are right and that they are one and the same thing. To our mind the very term implies a mental flaw, for what is instinctive criminality but perverted instinct, the very nature of which has made these persons lifelong enemies to society, and has rendered impossible a natural manner of feeling and acting, to the extent that in spite of good education and environment, habitually wrong conduct and actual crime become right to all intents and purposes and the ruling principle of life? It seems to us to resolve itself into a question of degree, and if Lombroso and his school should gauge instinctive criminality by the proportionate extent in each of these individuals of ordinary crime and culpability on the one hand and of mental defect and perversion on the other, wide differences would certainly appear which would compel them to classify many as indubitable criminal lunatics, and others as mere criminals, leaving an intermediate or borderland class whose condition cannot be satisfactorily differentiated. This is very evident in the enumeration by the great criminologist of many and marked symptoms which he admits that subjects of moral insanity share with those whom he acknowledges and classifies as insane criminals.

No absolute rule can be laid down by which we can differentiate between moral insanity and moral depravity, and there is no other disease in which the study of *ensemble* of its manifestations is so important. One may single out separate acts or sets of acts of a subject of moral insanity, and see in them only the manifestations of ordinary criminality. It is only when these are viewed in their entirety and in relation to the heredity, environment, education, social status, mental and physical organization and disease-history of the individual himself that we can decide how far his acts are under his control, and whether or not he is insane and irresponsible. It would be as questionable to label and treat as insane certain of the least pronounced subjects of this class as it would be wrong, both ethically and scientifically, to stamp as merely culpable criminals and to send to prison the extreme and typical ones like J. T. The former, whose condition approaches more nearly the borderland of sanity, are for that reason more susceptible to punishment and other incentives to right conduct. They bear prison life well and are none the worse for the discipline. The well marked, distinctly pathological cases, however, are for the most part turbulent, crafty and

unmanageable in the extreme, cannot be affected by punishment, greatly interfere with the discipline of others and are the despair of prison officials. Because of their defective control and susceptibility to criminal impulses, the associations and punitive measures of the prison also tend to make them deteriorate faster and to grow more intractable. The ordinary hospital for the insane is equally unsuitable for them, as they unsettle and excite their fellow patients and interfere with their management and improvement. Besides, association with criminals adds another terror to insanity. The special asylum for the criminal insane is, therefore, the only proper place for them, and it is still another argument for their insanity and irresponsibility that every criminologist advocates such confinement for them with this, the worst, class of the insane. There is, unfortunately, no special provision in Massachusetts for the care of female criminal insane, as their number is so small.

On June 3, 1902, J. T. was tried and found not guilty by reason of insanity, and thereupon committed to a state insane hospital for life. Her attitude at the trial was more that of an interested and appreciative spectator than of a prisoner on trial for her life.

Through many visits to the patient during the past two years and free access to the records of the Taunton Insane Hospital where she is confined, we have been able to follow her case which has undergone a striking development, as will be seen.

On her admission she talked freely about herself to the hospital physicians and, although she showed her inborn tendency to deceit and falsification in many ways, the fact that she had no longer anything to gain by misleading others with regard to her mental condition gives a certain weight to the most consistently maintained of her statements. She reluctantly acknowledged, as she does to-day, that she poisoned 31 patients. She would not say that she was not insane but wished to know what her insanity consisted of. "I don't appear like these other patients. I can read a book intelligently, I don't have bad thoughts, so I don't see where moral degeneracy comes in." When asked if she had noticed any change in disposition in recent years she said, "No; I feel absolutely the same as I always was. I might say I feel hilarious, but that may express it too strongly." As to the feeling of fear, she replied, "As far as I have any knowledge of that feeling, I never showed it. I cannot recall any time that I was frightened. I used to be the wonder of my mother. I have never felt it throughout this affair." She has certainly never been affected except pleasantly by sudden explosions or threats of patients on the wards from the first.

During the first year of her life at the hospital she was, as a rule, sociable, quiet, cheerful, amiable and spasmodically helpful, and spent much of her time in reading. The change from the seclusion of the jail to the more active life of a large hospital ward interested her, and the air of discipline was effective in temporarily repressing her tendencies. In this period she grew fat, was in excellent physical condition, and wrote her sister: "Just think, I've been here a year and find myself fond of the people and warmly attached to the place in some ways. Yes, we are well cared for, kindly and considerately." She soon developed a fondness for the company of the patients, especially the most demented, in preference to that of the nurses.

The following statement by Dr. J. P. Brown, the Medical Superintendent, is the hospital record of April 22, 1903, about a year from the time of her commitment. It practically represents the opinion of the entire medical staff as to her condition at that time:

"My study and observation of J. T. since she has been in the hospital gives me the opinion that her mental disease should be classed as moral or affective insanity. She seems to me to be wholly devoid of moral sense, or a clear apprehension of what is right or wrong as to her relations to other people or to society. In all my conversations with her respecting the homicides, which she freely admits, she has expressed no remorse, regret or sorrow for any of them, but rather a sense of pride and satisfaction that the number was so large as to give her distinction above all other poisoners whose histories are known.

"This lack of pity and sorrow for others in trouble or distress has been evident whenever any difficulty has occurred on the ward between patients, or between a nurse and patients. At such times she has manifested a good deal of glee, and laughed like a silly child, but never has expressed any sympathy or pity for the patient or person in distress or trouble. Trouble or pain for others seems to excite in her merriment and joy instead of sorrow.

"In her association with other patients she has exhibited a special fondness for the demented, and especially for one who has openly practiced self abuse; and once she got into bed with her after the patient had been put to bed for the night.

"In speaking of the homicides, she says that at the time she committed them she was not conscious of committing any crime or doing any wrong for which she should justly be punished; that the thought of doing wrong did not enter her mind, and gave her no concern whatever; and at the present time she apparently has no comprehension that the decree of the court in committing her to the hospital was right and just, and must be obeyed; and she asks for her freedom as though it could be granted on the same basis as that of any other patient.

"Recently, during the past three or four months, she has seemed more moody and emotional, either depressed or exhilarated at short intervals, and has exhibited less self-control, and with it she gives one the impression that her mind is weakening, and that she has less mental grasp of past and present events, and of her relation to her surroundings. Of this she seems to be painfully conscious herself. She has been observed to be laughing immoderately to herself, and when it is noticed by others she blushes as though she would conceal it, and seems confused.

"This weakening of her mind as time goes on is what is to be expected, and will probably continue. In every case of moral or affective insanity there must be more or less impairment of what are called the intellectual faculties in distinction from the moral, especially reason, and judgment to decide ethical questions presented to the mind, otherwise the moral obliquity and perversion would be controlled, and the criminal act averted.

"From my examination and observation of her since she has been under my care, and my knowledge of her previous history as made known to the court before her sentence, I am of the opinion that she is

insane and irresponsible, and that her mental disease, resulting as it probably does from ancestral vice and degeneracy, which her family history so far as known clearly indicates, is incurable."

Even at this time an undercurrent of suspicious thought came to the surface in doubts of the intentions of people toward her. She even wrote her sister in Chicago, "Sometimes it strikes me you are one of the gang. If you have fooled me also I shall say d—n. Oh d—n anyway."

Her complete indifference to the character of her surroundings, her frivolous talk, contradictory sentiments, frequent, causeless laughter, open pleasure at the trouble of others, glee at situations of obvious personal discomfort to herself, and general and utter lack of more than occasional seriousness at her situation, present and future, or actions in the past, show most plainly a dominant tone of mental weakness such as is only to be found in the imbecile. This is well shown by extracts from her letters: "I've had a real good time in the sewing-room for the past two days. I never can say that I like to do a thing until I get some fun out of it, and I really had quite a lot of fun. I suppose it has been here [in me] ever since I have been here, but I haven't seen it. . . . Truly, I had a great, good time at the Barnstable jail after the first ten days, even then I did not have a bad time." June 28, 1903, referring to an incident when on a visit to a friend: "It has left me rolling on the floor [with laughter]. I begin to feel like rolling on the floor now. I like to feel that way. I am having a big time, big" [in the sewing room]. March 8: "Don't ever ask me in your letters what I mean by what I write, I don't know myself — I'm talking through my hat. Nellie told me once that you said I made you dizzy when I got to talking and laughing. I laugh now, Mary. I nearly bust myself laughing this past week. I don't like the locality I live in either." July 8, 1903, after greatly disturbing the ward at night with a violent fit of screaming for no obvious cause: "I meditate and praise and pray all the time, and shall be ready at the end to take vows and become Mother Honora of the Seven Wounds." In one of her thoughtful moods she writes, "I do grieve to be in this state, I do, when I have thought force enough to think it out. When I am discontented I ask myself what I want and I don't know. A change of any kind seems torture to me even to think of and why I want to live this way I don't know. . . . Never mind, Mary, the fact remains that I have had a bully time in life in spite of everything." "I never feel that I am having a real good time when I'm behaving." Oct. 4: "I am still furnishing material for the drama of the 'unpopular lady.' I do wish I could behave myself for it all tires me so now, but I shan't probably till my last breath."

By December, 1903, she had become generally antagonistic toward all about her, as well as highly suspicious and irritable. She wrote voluminous tirades against the hospital and its management, treatment of patients, etc., making wholesale and absurd accusations and denunciations, some of an entirely delusional nature. She writes her sister, for example: "Do you know, the supervisor put some poison in my tea. A patient saw her and told me and I didn't touch it. The lady heard the supervisor say she had fixed J. T. this time." Apropos of special diet offered her she writes, "No, I thank you, Dr. Brown, I will stick to bean soup and keep safe above ground and out of Dr. Miller's [the pathologist's] hands. Some steak strikes some people right. This steak is sure death." Again, in a letter to her former counsel, she speaks of him as one of the "gang" who is managing her case, all the physicians and nurses of the hospital being included. She continued to write in this strain although told that such letters would no longer be forwarded. Dr. Brown also reports the following statement made to him by the paitent: "I don't wish to associate with the low and vulgar people that are employed in the sewing room. They talked about me before the other patients in a low and vulgar manner." She then described a revolting scene, impossible on its face, as enacted by the two employees in charge, self-respecting, modest women, and gave a circumstantial account of talk and actions on their part of the vilest kind, in a manner highly suggestive of delusions of persecution and hallucinations of hearing. At this time, also, she is reported to have grown very neglectful of her personal appearance, even having to be told to wash her face. She had become very abusive to the nurses, defying their authority and inciting patients to do the same, going so far as to shout to a melancholic whom the nurse was trying to feed, not to eat the food as it was poison. Her physical condition had fallen off greatly. She had lost fifty pounds in weight in a few months, in consequence of her refusal of food because of false belief in regard to it. Owing to her weak condition she was removed to the infirmary. There she became more disturbed, as well as destructive and dirty in habits, enraged and somewhat violent, threatening to kill her nurses, etc. By February, 1904, she was greatly emaciated, having lost over eighty pounds, or about half her normal weight, and was so weak that forced feeding with the tube was resorted to for several days, since which time she has eaten voluntarily, but just enough to avoid being fed again. The artificial feeding was only resorted to after persistent persuasion and every possible measure to induce her to eat had been tried, including special articles of diet from the superintendent's table. A thorough physical examination revealed no evidence of bodily disease.

On a recent visit, March, 1904, she was found by the writer in good spirits, talking volubly and aimlessly at the nurses. She began at once on a tirade against the hospital, its officers and all its belongings. She insisted that everything was "rotten," that the meat was "embalmed" beef, etc., etc. She persisted in these complaints after being told that we had just eaten the dinner provided for her which we found nutritious and palatable. Everything was filthy, she said, even the brick walls which must be "saturated with the filth of years"; the water supply (which is taken from an artesian well) was "polluted with sewage"; the vegetables were "rank poison." She spoke rather anxiously about a general feeling of numbness, and asked what was the cause of it. She was entirely inaccessible to explanation, argument, or even positive proof as to the impossibility of her statements. Occasionally she would burst out unexpectedly with peculiar and piercing shrieks of laughter which would seem impossible to one in her weak condition.

Many of her indiscriminate and senseless charges seemed to be rather the expression of an insane malignity toward everyone than the outcome of genuine belief that they were true. But we were, at the same time, convinced beyond a doubt that she was also suffering from strong and genuine delusions of persecution by poisoning, because her belief in this regard so consistently influenced her conduct that her refusal of food had practically reduced her to a skeleton, and repeated forcible feedings had no effect in changing her convictions. Her persecutory ideas vary in strength from time to time, but the delusions of suspicion from which they spring remain unshaken.



FIG. 1.



FIG 2.



FIG. 3.



FIG. 4.

FIGS. 1 AND 2. Appearance during first year at the hospital.
FIGS. 3 AND 4. Appearance during second year at the hospital, after a period of refusal of food due to delusions of poisoning.

The following letters evidently coming from the heart, are characteristic of delusional insanity:

"March 15, 1904.

*Dear* ——: I am the victim of nerve paralysis, the result of food. I have to eat or I am fed with a tube with nerve-paralyzing food that I choose from the tray. Oh, I think that you and —— were criminals to put me through this. It was an awful thing to do to any human being and I have my opinion of everybody who takes a hand in it. I think it has been a most noble (?) piece of work. I think as the nerves of my body get more benumbed my brain becomes clearer to the outrageous course that has been taken with me. I suppose the next thing, something will be given to put me out of the way altogether. That would be a mercy to this J—— T——."

"Taunton Lunatic Hospital,
July 4, 1904.

Doctor Stedman: I wish to inform you that I am alive in spite of the deleterious food which has been served to me. Many efforts have been made to poison me in this institution of that I am very sure. I am thin and very hungry all the time. Every nerve is calling for food. Why can't I have help? I ate a pint of ice cream and four oranges Saturday and Sunday. That was all. J——T——.

Norah Kelley."

It is worthy of note that, as would be expected in an insanity of the hereditary-degeneration group, the mental deterioration takes in this case the form of delusion rather than dementia.

In this after-history we find, brought into bold relief, the inherent, underlying defect of weak-mindedness which was noted, but only obscurely seen, earlier, for want of opportunity for proper observation, and also the outgrowth therefrom of pronounced intellectual change in the shape of positive delusions. These, together with the other and characteristic manifestations, afford the strongest confirmation of the patient's insanity, intellectual and moral.

The development of a delusional state in the course of moral insanity is, apparently, not uncommon, and affords another and strong argument for the contention that intellectual involvement in some form is an essential feature of the disease, or, in other words, that there is no such thing as a mental disorder affecting the moral sphere alone. Delusions are reported as occurring late in the disease, if at all, suggesting a secondary condition or stage. Comparatively few descriptions of moral insanity include this feature, perhaps because the few cases that reach the hospital for the insane either are not closely observed late in the disorder or, if followed up, have not been recorded, and thus the picture of the entire disease-process as revealed in a certain proportion of cases has been left unfinished. Another and, to our mind, weighty reason is that most of the morally insane are sent to prisons where they rarely come under the observation of alienists. When their insanity has fully and unmistakably developed they are perhaps transferred to institutions for the chronic or criminal insane, where they pass for cases of chronic delusional insanity or dementia. That this view is not overdrawn is plain, even from Lombroso's [6] accounts of the history of a number of prisoners of this class with reference to their intelligence, in some of whom delusions of suspicion and persecution are noted and in others a decided paranoiac tendency is evident. Schüle [7] says of them, "they may develop neuroses, somnambulism, periodical insanity, hypochondria. Dagonet [8] even finds acute delirious mania and hallucinations in the course of the disease. Arnaud [9] concludes a recent and instructive chapter on moral insanity with an account of a typical case with a late manifestation of "delusions of persecution more or less systematized and hypochondriacal ideas." In the opinion of the distinguished and practical psychiatrist, Hack Tuke, [10] "there can be no doubt that in a number of cases of seeming moral insanity there develop *in course of time* definite delusions, especially of suspicion." According to Folsom, [11] "it is the rule that their doubts, imaginations and suspicions deepen into active insane delusions, their mental impairment advances to noticeable dementia, their moral deterioration goes on to such a degree of depravity that everybody wonders why they had not been seen to be insane long ago, and they are secluded in an asylum or elsewhere."

Further research in this direction can hardly fail to enlarge our knowledge of this intricate disorder and its affiliation with paranoia.

The striking parallelism between this and the once famous case of Christiana Edmunds, who was pronounced to be insane by Maudsley and several other distinguished alienists, is sufficient excuse for referring to it here. The extract is taken from an account of the case [12] quoted by Blandford and cited as typical of moral insanity:

"Christiana Edmunds is an example of a person utterly devoid of moral sense or moral feeling in matters relating to herself, though theoretically she doubtless knew that murder was a wrong thing. That she knew perfectly well what she was doing, in purchasing poison and disseminating it broadcast through the town by means of poisoned chocolate creams and that she knew she was therein doing wrong were equally beyond dispute. Her whole conduct before the crime, and her perfectly rational conversation in jail, clearly proved she could have taught a schoolroom of children in the Ten Commandments, and explain to them clearly that it was a wicked act to break any of them, and a most wicked act to break the Sixth Commandment. But no one could have talked with her in jail without being convinced that in her own case she had no real feeling of the wicked nature of her acts, and that she would have poisoned a whole city-full of people without hesitation, compunction, or remorse. Indeed, it may be doubted whether in her later experiments she was really so much influenced by the inadequate motive, which no doubt instigated them at the beginning, as by a morbid pleasure

[6] Op. Cit., vol. ii pp. 20–26.

[7] Geist: Krankheit (1886).
[8] La Folie Morale, 1878.
[9] Ballet: Pathologie Mentale (1903), p. 652.
[10] Dict. Psychol. Med., p. 814.
[11] Mental Diseases, Boston, 1886, p. 144.
[12] Blandford: Insanity and its Treatment. 3d ed. p. 228.

in poisoning for its own sake, and in the sensation which her secret crimes excited. The terrible story of insanity in her family furnished the real explanation of her state of mind; she had the heritage of the insane temperament."

Dr. Orange, the Superintendent of Broadmoor, under whose care Christiana Edmunds has been ever since her trial, says, "that she has been regarded as of unsound mind by all the medical officers of the asylum who have been here during the last five years. She is at present fairly tranquil, and her conduct is much better than formerly; but I do not regard her as being sane, or fit to be trusted to keep out of mischief. She formerly had periods of depression alternating with periods of subacute mania, but latterly her condition has been more equable."

## THE ETIOLOGY AND MODERN METHODS OF TREATMENT OF CHRONIC URETHRITIS.*

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FROM time immemorial the treatment of chronic urethritis, or gleet, has been accompanied with discouragement to the patient and chagrin to the doctor. Over and over again, a patient who has been subjected to dilatation by sounds, to balsams internally, and to the various injections then in vogue, and who is apparently cured, returns again with a profuse purulent discharge which has appeared without any fresh venereal exposure, and demands an explanation from his medical adviser. If this occurs often he becomes dissatisfied with his physician and seeks another, and thus begins his weary pilgrimage from doctor to doctor, and from one quack nostrum to another, until at last the chronic inflammation subsides by itself, or is neglected entirely, and each alcoholic or venereal relapse is dried by capsules of sandal-wood oil, copaiba, or astringent injections.

Phillipe Ricord, whose world-wide reputation and large clinical experience caused him to view rather darkly the future of these patients, used to say to his classes: "Gentlemen, if I am to go to — well, the bad place, I know what my punishment will be: I shall have a lot of fellows with the gleet standing around me, with their lamentations, their importunities, and their prayers to me, to make them well." If such has been, and to some extent is, the future of cases of chronic urethritis, it is necessary for us to study well the conditions which make this possible, and to consider together the means which may be used to avert so unscientific and so unsatisfactory a result.

Chronic urethritis is divided broadly into two classes — the specific or gonorrheal, and simple or non-specific, due to a variety of causes. As from gonorrhea may come not only chronicity of itself, but many other complications which affect the future health of the individual, as well as life itself, it may be interesting to view briefly its history and clinical symptoms.

The early history of gonorrhea is masked in obscurity. Here and there in the writings of the ancients appear doubtful references to an issue or discharge, certain passages in Leviticus suggesting its existence at the time of Moses, certain others its occurrence among the Greeks and Romans; and again, references by Pliny and Galen, by Avicenna and Valescus of Tarentum, show that some local disease was observed. For convenience of description the history of gonorrhea may be divided into three periods: the first extends to 1494, when syphilis made its appearance, the second from this time to 1836, and the third from that date to the present. During the first period up to the fourteenth century the descriptions are vague and uncertain. You will recall that, shortly after Columbus returned from his second voyage to America, a new and hitherto unrecognized disease appeared in the army of Charles the Fifth, who was then besieging Naples, and that it raged with great fury. This, then, was the advent of syphilis which since has spread over the civilized world.

With the attention which this new ailment required, it is not strange that gonorrhea received but scant attention for many years in the current medical writings, but later on, as the nature of syphilis was better understood, there began an increasing discussion in which the medical profession was ranged on diametrically opposite sides. The question which was debated so actively and often so bitterly was whether both of these diseases had a common origin, or were separate and distinct. In short, the medical men up to the time of the eighteenth century were either unalists or dualists, neither side gaining much ground until a misfortune occurred which placed the unalists masters of the situation for the time. One hundred and thirty-six years ago, in May, 1767, on a certain Friday afternoon, the eminent English surgeon, John Hunter, inoculated a portion of gonorrheal pus from a urethra by incision into the glans and prepuce of a patient, — as rumor has it, himself, — and after the usual incubation period, distinct symptoms of constitutional syphilis made their appearance, and victory perched on the banners of those who claimed the two diseases were identical. In the light of our present knowledge we know that Hunter inoculated himself with the pus from a urethral chancre or gonorrheal pus in a syphilitic. But medical progress was by this experiment put back for more than sixty years, until 1836, when Ricord by a careful study of six hundred and thirty-six cases of gonorrhea so conclusively proved the case that no question of identity has recurred up to the present day. But Ricord, brilliant as he was, conversant as his experience made him with this disease, was greatly in error in the light of our present knowledge as to the causation of it. He denied vigorously that it was a specific disease due to a virus, but claimed it was a catarrhal condition brought about by a

* Read before the Middlesex East Section, April, 1903.

variety of causes. From this time up to 1879, little progress was made toward a knowledge of the etiology of this disease. At this time Neisser discovered a diplococcus which was constantly present in gonorrheal pus, and to this he gave the name of the gonococcus. It is to this discovery that the advances which have been made in treatment are due, and to it is due the fact that many acute cases which might otherwise have become chronic have been cured in a few weeks.

Leaving then the history of this disease and approaching the more practical portion of the subject in which you are more interested, I desire to call to your attention a few of the anatomical points concerned, which explain the tendency of the disease to assume a chronic course.

The urethra in the male is about eight inches in length and is divided into three parts, the penile or spongy, occupying about six inches, dilated at its internal end into the bulbous portion, the membranous, about one-half an inch, and the prostatic, one and a quarter inches. The shape varies in each portion, the meatus being a vertical slit, and directly behind this is a dilatation, the fossa navicularis, narrowing again until we approach the bulb, where we have again a dilatation amounting to almost a pocket, and this again followed by a sharp constriction in the membranous portion. The prostatic urethra again enlarges, and we have, therefore, throughout the whole urethra alternate dilatations and contractions. This, then, is one element which physiologically prevents the free drainage or flushing out of gonorrheal pus or other secretions.

As accessories to the urethra we have various glandular structures which often become infected. In the central portion are the glands of Littre, compound racemose glands and follicles, and in the fossa navicularis one large one on the upper surface about an inch from the meatus called the lacuna magna. Opening into the bulbous portion are the two ducts of Cowper's glands. The glands themselves are between the folds of the triangular ligament in the compressor urethræ muscle, and the ducts are from an inch to an inch and a half in length.

In the prostatic portion we have, in the middle line, the veru montanum, and on each side are the prostatic sinuses, and in these are the orifices of the prostatic glands. Nearly at the top of the veru montanum is the utriculus masculinum, and in this are the openings of the ejaculatory ducts. Contained in the folds of the triangular ligament is the compressor urethræ or cut-off muscle, the great anatomical dividing line between the anterior and posterior urethra. Connected also by the ejaculatory ducts are the seminal vesicles.

From this necessarily brief résumé of the essential points in the anatomy of this region we see at once that we have in these various glands avenues through which infection may pass to other accessory organs or in which the gonococci may remain for indefinite intervals, unaffected by antiseptic or astringent injections, an ever present menace to the health and comfort of the individual.

In acute gonorrheal urethritis, the pus containing the specific poison having been deposited at or within the meatus, there is an interval of from three to five days before symptoms begin to appear. At the end of this time a sensation of itching occurs at the meatus, a moderate degree of scalding during urination, soon followed by a purulent discharge. If this discharge be examined early the gonococci will often be found outside the pus cell, but soon become intra-cellular as the discharge increases. The gonococci penetrate very rapidly through the epithelial layers of the urethra, entering even the submucous tissues. By a process of phagocytosis the leucocytes seize upon the gonococci and a free discharge of pus results, removing many from the passage. At the same time a desquamation of the superficial epithelial cells occurs, and these, with the extra-cellular diplococci, are expelled with the flow of pus. In this manner the inflammation rapidly spreads along the anterior urethra, involving on its way the glands and follicles until it reaches the compressor urethræ muscle, and here it meets its first anatomical barrier, and if, as is sometimes the case, it does not progress beyond it, it remains an anterior urethritis. In the majority of cases, however, it does so progress and involves successively the membranous and prostatic urethra and produces the various complications so well known to you, — prostatitis, cystitis, seminal vesiculitis and epididymitis. As the disease continues the discharge increases, rapidly at first, and then slowly subsides, becoming less purulent and more mucous until it is a purely mucous secretion similar to a catarrhal discharge in any other region, and it is this form which most commonly persists and forms the chronic urethritis with which this paper deals especially. Examined microscopically at this time the discharge is found to consist of mucus, more or less fibrin, leucocytes, and perhaps an occasional intra-cellular organism.

The exact time at which a subacute urethritis becomes a chronic one is not easy to define in precise terms, for much depends upon the treatment adopted at the onset and upon the question of a primary infection. It is perfectly obvious that a urethra narrowed by strictures or abnormal from repeated attacks of gonorrhea does not heal as rapidly as one which was normal at the onset of the disease.

Assuming, however, that the average duration of properly treated cases of gonorrhea is about six weeks, exclusive of the modern methods of treatment by irrigations of permanganate of potash or the silver salts which are still, many of them, unavailable in the ordinary case as treated in private practice, we may say that a chronic case is one in which there is still a persistence of a mucous or muco-purulent discharge at the expiration of ten to twelve weeks.

So far we have discussed only specific urethritis, but we also have the non-specific forms which are

more common than is often stated. These are produced by a variety of causes, chief among them being uric acid excess, febrile attacks, trauma, syphilitis, tuberculosis and alcoholic excesses, with also a probable form of bacterial infection by other organisms than the gonococci. In this form the secretion contains no gonococci, the symptoms are less acute, the complications are fewer and the discharge is less purulent, often being simply mucous or watery. The reaction to treatment is not at all satisfactory, and the tendency is to assume a chronic course which persists until the cause, often constitutional, is removed.

Assuming, then, that a patient presents himself for treatment with a history of urethral discharge from one to two years' duration, what should we do in the light of modern science to ascertain the source of this discharge, and having ascertained this important fact, what treatment should we adopt to cure it?

To insure uniformity and thoroughness in the examination and as a result of several years' clinical work in this special line I have compiled a record blank which incorporates most of the

NAME ..... Age ... Married, Single. Occupation .....

DATE ..... 190 ADDRESS .....

**RECORD FOR CHRONIC URETHRAL DISCHARGES.**

**PREVIOUS HISTORY.**

| | Attacks. | Duration. | Complications. | Previous treatment. |
|---|---|---|---|---|
| GONORRHŒA. | | | | |
| | | | | |
| OTHER VENEREAL DISEASES. | Venereal Excesses | | | |

**PRESENT HISTORY.**

DURATION. .....

DISCHARGE. Amount ..... Character ..... Location .....
When present. ..... Sticking of Meatus .....

MICTURITION. Frequency. Day. Night. Pain. Before. During. After. Blood. Before. During. After. Size of Stream ..... Freedom .....

DEFECATION. Pain Urethral Discharge Emissions Sexual Power

PENIS. Prepuce, Long. Short.

URETHRA. Discharge: Persistent Muco-purulent. Mucous Watery Microscopical Exam: .....
Meatus: Size ..... Color .....
Strictures: Location. Calibre. Sensitiveness. Bleeding. Character.
Tender Spots: .....
Endoscopical Exam: .....

TESTES AND EPIDIDYMES.

CORDS AND GROINS.

PROSTATE. Size and Shape ..... Consistency ..... Tenderness .....

SEMINAL VESICLES.

FIRST URINE. Clear or Turbid; Shreds: Light or heavy, Large or small, Long or short, Dust like, Comma like, Thread like. Microscopical Exam. Acetic acid:
CHEMICAL EXAMINATION: Color, Specific gravity, Reaction, Albumen, Sugar, Blood, Sediment

SECOND URINE. Clear or Turbid; Shreds: Light or heavy, Large or small, Long or Short, Dust like, Comma like, Thread like. Microscopical Exam. Acetic acid:

SPECIAL URETHRAL EXAMINATION.
1. Anterior Irrigation
2. First Urine
3. Second Urine
4. Urine, or solution, after massage
Microscopical Examination of expressed material

*Diagnosis,* .....
*Treatment:* .....

essential points. Having heard the history, the patient should remove sufficient clothing to allow free access to the genitals, and these should be carefully inspected. The general size of the penis, with reference to the probable urethral calibre, the length or absence of the prepuce, any abnormality of the testes, epididymes, cords, or groins should be noted. If discharge is present, the meatus should be wiped off with a moist piece of gauze and with a sterile platinum wire a small portion of this secretion should be transferred to a slide and examined microscopically. The presence or absence of gonorrheal organisms is of the greatest consequence in determining our treatment, as well as the relative proportion of leucocytes, mucus, fibrin or epithelium.

While this examination gives us much valuable information concerning the character of the discharge it does not aid us materially in determining its source, and it is for this purpose that our next steps are taken. It was formerly a routine procedure to ask the patient to urinate into two glasses and by comparison of these to form some idea as to whether the anterior or posterior urethra was chiefly affected. Useful as this is in acute cases where there is a profuse discharge, it is utterly valueless in chronic cases with scant discharge, for there is not enough in the posterior urethra to flow back into the bladder, but it remains in the urethra and is washed out by the first stream of urine. Therefore, the first glass contains all the material from the whole urethra. A more accurate method is to thoroughly wash out the anterior urethra with 4% boric acid solution. This fluid containing the discharge anterior to the compressor urethræ muscle, is saved for comparison.

The patient should now urinate in two glasses. If both portions are clear we may conclude that the source of the discharge is in the anterior urethra. If the first contains shreds and the second none it points to the posterior urethra, while if both are cloudy or contain many shreds, it indicates that there is an inflammation of the bladder itself or considerable discharge from the prostatic urethra flowing back into it. If the bladder is empty it should be filled with boric acid solution and the prostate and seminal vesicles massaged; the urine or solution will then contain the material from these sources. This four-glass test gives us, then, a fairly accurate idea of the source of the greater part of the chronic discharge.

Having made this routine examination and having washed out from the urethra the various pathological elements, of what do we find them to consist? Where the discharge is fairly profuse we have a turbidity of the urine which does not clear upon adding acetic acid, which differentiates it from phosphaturia, a not uncommon condition in chronic urethritis. Where the discharge is scanty it appears in our glasses in the form of floating particles varying in size and consistency, and to these has been given the name "clap shreds." From the shape of these, little is to be learned, although it has been the custom to assume that those of a hook or comma shape had their origin in the prostatic urethra.

Microscopically these shreds are found to con-

sist of mucus, fibrin, epithelium, pus, or of combinations of all these. Without the microscope we receive some aid in determining these facts by the behavior of the shreds in the freshly passed urine, the heaviest which sink quickly are chiefly composed of pus, and the lightest, which float for some time, are mucus. The epithelial shreds occupy an intermediate position in this respect. Beside the symptom of discharge, which is constantly apparent to the patient, we have other and graver symptoms in these chronic urethral catarrhs to which only a passing allusion can be made. When the inflammation invades the prostatic portion we have many and serious disturbances of the sexual functions. These are due to extension to the prostate and result in a lessened sexual desire, deficient erection, premature ejaculation and often nocturnal emissions. With these we are apt to have various neurasthenic symptoms and radiating pains in various directions. Relapses occur again and again, especially in this region, giving rise to symptoms of cystitis of the neck of the bladder, frequent and painful micturition, with often the appearance of considerable blood at the end of urination. These attacks subside under sandal-wood oil and diuretics only to recur again and again until vigorous and continuous local treatment has been instituted for their relief.

Of what then does our treatment of these stubborn urethral cases consist?

The theory of treating a chronic urethritis is beautifully simple, and consists in destroying and removing the gonococci and curing the resulting catarrhal inflammation. But when we remember the organisms are often situated in the submucous tissues and in the remote recesses of branching or racemose glands, and that the resulting inflammation is of a plastic nature which interferes with the normal resiliency and circulation of the urethra, we see why it is that gleet, not properly and thoroughly treated, pursues so stubborn and intractable a course. The chief advances which have been made by modern medicine in this direction have been, first, in giving us practical antiseptics which destroy the organisms without injuring the tissues and, second, in providing us with instruments by which we may remove the products of plastic exudation, and, third, in showing the importance of direct local treatment applied to the prostate and seminal vesicles.

To destroy the gonococci we have the choice of several silver salts, the latest of which is argyrol which contains 30% of silver vitteline, protargol, about 8-10% and permanganate of potassium. If the discharge contains gonococci, before proceeding further we should attempt to destroy them. For this purpose we may use 10% argyrol solution to be held in the urethra for five minutes each day, applied by the physician, and a 4% solution to be used by the patient three times a day to be held five minutes each sitting. We may use practically the same strength of protargol. At the present time argyrol seems more satisfactory, as it is practically non-irritating in any strength and contains the largest percentage of the silver salt. We may use irrigation of permanganate of potash by the gravity method brought into popularity by Janet and Valentine, by which the whole urethral tract is flushed out without the use of a catheter, the force of gravity obtained by elevating the solution about six to nine feet being used to overcome the cut-off muscle. By a little practice this is quite easy to do and greatly aids us in treatment. The patient should lie on a table and the anterior urethra should first be thoroughly irrigated. The tip is then pressed firmly into the meatus and the solution gradually allowed to overcome the resistance of the compressor urethræ and to fill the bladder. In some cases this is quite difficult to do at first, but by having the patient attempt to urinate or by instructing him to breath deeply, the fluid soon enters the bladder. It is superior to irrigation with a catheter because in acute cases no foreign body is introduced into the urethra, and in both acute or chronic cases full dilatation is obtained which effectually washes out all inflammatory products.



Irrigator.

Messrs. Leach & Green have constructed for me an irrigating stand which does not require fastening to the wall, but may be placed where-

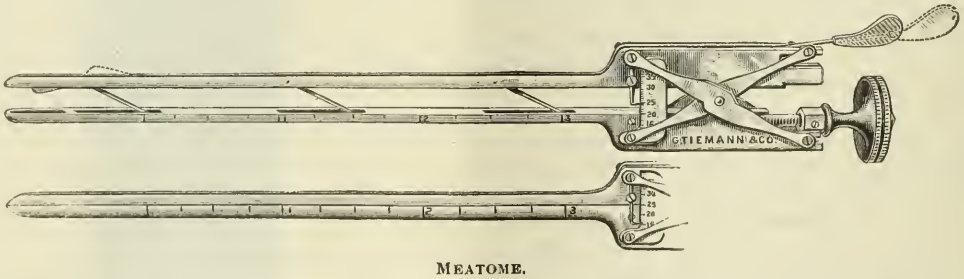
ever it is needed. A glass receptacle containing 2,000 cc. is raised by a pulley to the height required, the maximum being seven and a half feet, which gives sufficient force for almost any case. In hospital and private work I have found this very convenient and useful. Where this method cannot be carried out for various reasons, we obtain good results by ordering one grain tablets of the permanganate of potash to be dissolved in a half tumblerful of hot water, making a solution of about 1-2000 to be used for home treatment. These treatments at home only relieve the parts which the injection reaches and rarely penetrate to the deep urethra. Having by these various means lessened the discharge, or at least made it free from gonorrheal organisms, we are now prepared to examine the urethra for localized areas of inflammation. For this purpose the patient first urinates, and then with the largest bougie-a-boule which the meatus will admit, the urethra should be examined and careful record made of any tender spots for later endoscopic treatment. Should a stricture be present which will not admit a full-sized bougie the next smaller should be selected until we find one which will pass. If 10 Fr. will not pass it is useless to try further,, but a soft bougie should be used. Note should be made of any bleeding following these manipulations and of the location, calibre, sensitiveness and character of all strictures.

Whether or not any stricture is found and whatever the cause of the chronic discharge, ruling out of course the sources too far away from the urethra to be affected by it, the cardinal point in treatment is the thorough dilatation of the urethra from the fossa navicularis to the prostate. The object of this is two-fold, to remove from the follicles their contents, and by pressure upon the urethral walls to stimulate circulation and thus tend to absorb the plastic exudation or peri-urethritis. To accomplish this in most cases there is nothing better than the urethral sound, of proper curve and tapering gradually from the point until the full size is reached. As the average urethra is about 30 Fr. and the meatus 24 Fr. it is often impossible to pass a sound of sufficient size to dilate the deeper portion without cutting the meatus. Where this is undesirable we may use the Kollmann dilator which is invaluable in cases of gleet where no stricture is present. This consists of four blades which are opened by turning a screw in the handle which registers upon a dial the size reached. The part of the instrument which remains in the meatus is about 22 Fr., and is not affected by the dilatation of the blades which open lower down. The instrument is covered by rubber which protects the urethra. It produces far greater dilatation than can be obtained in any other way as it is quite possible to dilate the prostatic portion to 35 or 40 Fr. without marked discomfort to the patient and with great improvement in the local condition.

In the treatment of stricture it is not the equal of the older method by the sound, for between the blades are spaces where the pressure is not as firm, and we do not get, therefore, a uniform dilatation. With the use of any instrument, however, we not infrequently find at the outset a tight meatus, and before further treatment can be instituted, this must be cut. Before cutting a meatus indiscriminately its physiological use should be borne in mind. Normally of smaller size than the urethra it regulates the size of the urinary stream. If too large an opening is made this function is destroyed and great discomfort to the patient results, for the urine cannot be expelled with sufficient force to direct it away from the clothing. Beside this an atrophy of the normal urethral glands takes place in the navicular fossa. We should therefore use care in dividing the meatus to maintain as far as possible its relative size.

A simple method of doing meatomy is to first thoroughly cocainize with 10% solution using a small cotton swab which is placed in the meatus and allowed to remain while the instruments are being prepared. A small, blunt-pointed tenotome is best for this purpose, and the incision should always be made on the floor of the urethra. After incising to the size we think right, it should be measured by the bougie-a-boule, and if it is not large enough the knife should be reinserted and the cut enlarged until the proper calibre is obtained.

A 1-3000 adrenalin solution greatly diminishes any troublesome bleeding, and sounds should be passed daily for three or five days to prevent rapid closing. With the assistance of Dr. R. B. Rees, I have recently devised a new meatome for this purpose and also for cutting strictures in the penile urethra.




MEATOME.

The accompanying cut illustrating the instrument is three-fourths actual size, and shows all the details so clearly that a lengthy description of the different parts seems unnecessary; the motion of the blades is perfectly parallel, and dilatation is easily and accurately accomplished by means of the thumb-screw at the end of the

handle propelling a rod dovetailed in the lower branch; the brackets which are jointed to this moving rod cause the blades to separate, the extent of dilatation is indicated in the metric gauge on the scale appearing on both sides of the instrument, the scale is fastened to the lower branch, the indicator to the upper one. The concealed knife may be withdrawn after dilatation to any desired distance by means of the small handle extending beyond the instrument. The shaft of the instrument is graduated in inches commencing at the point where the knife appears from its concealed position. Cross-bars adjusted to both sides of the handle stiffen the instrument so that it is rigid from end to end at any degree of dilatation. As a stricture is cut upon the upper surface of the urethra, and the meatus upon the floor, the scales are reversed for ease in reading in the two positions.

The instrument has been beautifully made by Tiemann & Co., to whom I am indebted for valuable suggestions. In using the urethratome it should be introduced into the urethra, the desired degree of dilatation obtained and the stricture or meatus quickly divided by withdrawing the small buried knife. By this means a uniform result is quickly obtained and a single clean incision, which is a great advantage over the several " nicking " cuts unavoidable by any other accurate method.

After dividing the meatus when necessary we should dilate the urethra once or twice a week and irrigate the anterior and posterior urethra with 1–3000 permanganate of potassium or 1-4000 silver nitrate solution in order to flush out material expressed from the follicles, using the gravity method. One can use a large hand syringe with a special rubber tip and a nipple shield to prevent the fluid escaping into the face of the operator. An addition to our appliances for this purpose is the irrigator tip devised by Dr. R. B. Rees, which consists of a glass Pg. 19 shield which perfectly protects the operator while irrigating these gonorrheal patients.

Having assured ourself of the thorough dilatation of the urethra we should next examine the prostate and vesicles and massage them, saving the secretion for microscopical examination, and after the massage irrigating the bladder and urethra as after dilatation. To properly apply this massage the patient should lean forward resting the hands on a stool, and with the index finger the prostate and vesicles should be gently stroked toward the median line. These sittings should last from three to five minutes, and should be repeated once or twice weekly, and always with the bladder filled with urine or boracic solution. After massage the fluid containing the expressed material has an opalescent appearance. When the prostate is chiefly involved one of the most valuable aids to treatment which we have is the deep instillation of nitrate of silver solutions of varying strengths, beginning with five grains to the ounce and increasing to ten or fifteen grains. With an Ultzmann syringe lubricated with glycerine a few drops are placed just behind the compressor muscle and this applies itself to the whole prostatic urethra. The patient experiences an intense desire to urinate which continues for an hour or two.

Occasionally a few drops of blood follow but this is of no especial significance.

To treat localized erosions we may avail ourselves of the urethroscope, and the best instrument for the purpose is an electrical one made by the Rochester Electro-Surgical Company. The urethral mucous membrane is inspected while the tube is being withdrawn, and any localized area of inflammation touched with a strong solution of nitrate of silver. This method is of most value in the cases which have resisted other forms of treatment and in which the only symptom present may be a slight sticking together of the lips of the meatus. Where there is an atonic condition of the urethral lining the psychrophor of Winternitz, may be used. This is a hollow sound into which a current of alternating very hot and cold water may be introduced, which is often followed by benefit. The patient may use with advantage during these treatments various solutions by a syringe, some of the best being permanganate of zinc in the strength of 1½ gr. to the ounce, sulpho carbolate of zinc, 2 to 5 gr. to the ounce, and permanganate of potash as already mentioned, as well as many other astringents in the formulæ familiar to us all. When the discharge is profuse internal medication should be used and the oil of sandal wood is most satisfactory in its action. As this oil varies very widely in quality, only the purest should be prescribed. Intervals in the treatment should be observed in order to avoid over treatment and keeping up a mechanical irritation which tends to prolong a catarrhal condition.

Confronting us always in these cases is the vital question, When is a patient well, and no longer capable of infecting any one else? Briefly, when there is no longer a discharge, when the shreds contain neither pus, gonococci or a large amount of epithelium, and when, furthermore, after producing a discharge by nitrate of silver or corrosive solution no organisms are present. Also, when after alcoholic or sexual excesses no discharge appears we may be reasonably sure that the patient is well.

In conclusion I desire to say again that while we have in chronic gonorrheal urethritis a most stubborn, intractable and sometimes incurable ailment, still, these methods of treatment which I have described to you seem to me to be progressing in the right direction, and to give hopeful promise of future benefit.

When in gonorrhea we have a disease which is responsible for 75% of the blindness of the world and for one eighth of all the pelvic ailments of women, and when from consequences near and remote a person may be a permanent cripple in one or many joints, may be impotent, or may finally die from kidney disease following stricture, it seems reasonable that such a disease in its acute or chronic manifestations is worthy of the most careful study of every thoughtful physician.

# Clinical Department.

## MASSACHUSETTS GENERAL HOSPITAL.

CLINICAL MEETING OF THE STAFF, TREADWELL LIBRARY, FRIDAY EVENING, APRIL 15, 1904.

DR. F. B. HARRINGTON in the chair.

### ULCERATION OF PRIMARY BRONCHUS; PERFORATION INTO PULMONARY ARTERY.

BY W. W. GANNETT, M.D.

The case of which I am about to speak is one of ulceration of the primary bronchus with perforation into the pulmonary artery. This man was a sailor, thirty-seven years of age, and single. Had been sailor in early life and after that a painter. There was a history of gonorrhea, but no syphilis. For three years previous to entering the hospital he had had a continuous cough, but no expectoration. Two days before coming into the hospital he had expectorated a large amount of blood, a quart or more. From that time the expectoration was very much like that of a case of tuberculosis. On the second day of his entrance, about eight o'clock A.M., he suddenly coughed up about a quart of blood, and immediately became unconscious. Saline solution was immediately administered. From eight o'clock in the morning until the next evening he coughed no blood. Twenty-four hours after this a large amount of blood gushed out, and he fell dead.

The interesting point in this case was the extensive hemorrhage at first, and the long interval between that and the next one. During life the origin of the hemorrhage was very doubtful. In some respects it resembled an ordinary tuberculosis, but it was very unique. It was not like death from aneurism, because in this the hemorrhage is usually continuous until the death of the individual.

Post-mortem: There is very marked thinning of the wall of one of the primary bronchi, while at one point there can be seen a very distinct opening in the bronchus, connecting with the pulmonary artery. We thought at the time this might be the results of tuberculosis or of syphilis. There was evidence of syphilis in the testes and slight cicatrix on the tongue which suggested a syphilitic lesion.

We can easily see how the hemorrhage occurred. The bronchial wall being exceedingly thin, the efforts at coughing caused a breaking of the thin wall of ulceration. He then went for three days without hemorrhage, bleeding very little during the first twenty-four hours of stay in the hospital. The interval gave an opportunity for a thrombus to form. It seems to me that when the second hemorrhage occurred, the thrombus which had formed was dislodged, and the blood came out with a gush.

### A CASE OF INTUSSUSCEPTION. INTERSTITIAL COLITIS, SIMULATING CANCER OF THE RECTUM.

BY J. W. ELLIOTT, M.D.

CASE I. This patient does not speak a word of English, so the history is very unreliable. We could not make a diagnosis at first. He was perfectly well up to a few weeks ago, and when he entered the hospital his bowels were moving every day. He began then to have ten or twelve movements a day. There was pain, but not radiating. At times the pain stopped. He vomited constantly during this period, retained very little food, but lost very little weight. He was feeling wretched, and looked as though he would not stand an operation. Later the diarrhea ceased and there was considerable distension. We were able to give him a good movement at one time, then the next time could not. The most noticeable thing about him was a hard tumor just above the umbilicus, with coils of contracting intestine visible all about. At first everybody thought it was obstruction due to cancer. At the time of the operation, just before I made the incision, this lump was very much larger and down to one side. At the operation, this hard lump proved to be the whole length of the descending colon, and very much swollen, as large as my wrist. I did not feel sure of the diagnosis until I opened the colon, and out popped the invagination. Of course, the intestine was gangrenous and swollen, and there was nothing to do but to amputate it. My plan was to make an artificial anus just above the transverse colon, but when I pulled up the transverse colon, I found it would produce so much tension that it seemed unsafe, so I finally pulled the whole thing out. The opening was enormous. I put a Mixter tube in the transverse colon and stitched the gaping end into the wound. He was in poor condition, and his abdominal wound was closed with through and through stitches, which was all right, but the Mixter tube would not stay in more than a few days. There was soon a fecal fistula opening into the wound with the intestines bulging out. By stitching that together and to the colon above, we finally got a good result. The mortality is something like 90% in these cases, so I think we were very fortunate. The Mixter tube was very disappointing to me. It is supposed to carry the feces away, but it does not do it.

CASE II. This case had constipation and dyspepsia for the last twelve years, but last few months had a subacute difficulty, constipation and diarrhea alternating. She came in for a tumor of the rectum. There was a hard mass there that felt like a cancer. Pus and blood were coming constantly, and I had no doubt it was cancer. I intended to resect the rectum and part of the sigmoid flexure, but when I opened the abdomen I found the whole gut, from the anus up to the splenic flexure, was one solid tube of large calibre, and so fixed that I could hardly move it. Resecting was out of the question, so I simply made an artificial anus on the other side. The mass had such a strange appearance when we came to look at it that I doubted whether it was cancer after all. We had it scraped and examined, and the report came back negative — simple inflammatory tissue. The whole descending colon down to the rectum was chronically inflamed, — interstitial colitis.

I submit that this is the proper treatment for such an inflamed condition of the lower bowel. Sidetrack the feces, and wash through. The patient is now very much better. There has been no sloughing, and the pain is all gone. Of course, everybody does this operation for tuberculosis of the rectum, but I do not know of its being done for a chronic inflammatory condition of the bowel.

### A CASE OF CHRONIC LEUKEMIA. A CASE OF SUBACUTE ARTICULAR RHEUMATISM. A CASE OF METHEMOGLOBINEMIA. A CASE OF EMPHYSEMA. CHRONIC PLETHORA. AN UNUSUAL CASE OF SCLERODERMA.

BY E. G. CUTLER, M.D.

CASE I. The first case I wish to show is a case of chronic leukemia. The patient felt well until March

29, then noticed lumps coming in the neck. Lost in weight, color and strength. Hemoglobin 50%, whites 711,900, reds 3,020,000. Differential count of 500 white blood corpuscles showed 500 lymphocytes. April 1 whites numbered 712,000. On April 9 reds were 2,400,000, whites 592,600. The glands in the neck can still be felt, but are by no means as large as when first came in. Glands enlarged under the arms. The abdomen was considerably distended and glands were felt, which seem to be behind the intestines. The spleen is somewhat enlarged. This all answers the description which one sees of lymphatic leukemia. Dr. Cabot suggested that we try the x-rays on him.

Case II. A case of subacute articular rheumatism with subcutaneous nodules. They are composed of fibrous tissue, and usually grow from the size of small shot up to the size of a pea. They are said to occur in other diseases besides rheumatism. The books all say these come about the joints, but I have seen four cases where they came on the forehead. Microscopically they are seen to be composed of round and spindle-shaped cells.

Case III. She has had severe headaches coming on in paroxysms for three or four years and has been given headache medicines. When she came in here her lips were very blue. We tested the blood and found that instead of having either blue or red blood, that she had brown blood. Spectroscopic examination shows bands characteristic of methemoglobin.

Case IV. A case of emphysema, with tremendous cyanosis. He has a red blood count of 8,432,000. He had severe headaches, which medicine did not seem to help at all. We bled him about a pint, and he has been better ever since.

Case V. I have two other cases of chronic plethora in which there is polycythemia as well. One is eighteen years old, and is here for the first time. You will notice the red face. There has been some retinal hemorrhage. Reds 8,120,000. Hemoglobin 80%. Whites 10,000. She was bled on March 10, when she showed an increase of reds. After bleeding there was a decrease of reds to 5,000,000. On the 19th they were 3,000,000, rising later to 4,040,000. She is more comfortable than she had been. Very soon after this we bled again, and the count went down to 3,608,000. She is not so dizzy and has no headache now. She looks a great deal better, although the color is still very high. Blood pressure is 130. (Riva-Rocci, — narrow cuff.)

Case VI. The next patient has been here twice before for plethora. She is so full of blood that there is pigmentation in the hands. Those parts of the body which are exposed soon became pigmented. At first the reds were 8,844,600. Hemoglobin 20%. About a month later the count was over 9,000,000, then went down to 8,426,000, and up again to over 9,000,000. We then bled her and it came down to 8,872,000, and a week afterwards lower still. But the headaches returned and the reds again went up to 9,000,000, when we bled her once more and they came down. She thinks there is no question but that the bleeding was beneficial to her.

Case VII. A progressive generalized scleroderma marked by hypertrophy and atrophy of the cutaneous pigment and atrophic condition of the skin. There is immobility of the joints, etc. In Dr. White's opinion, it is a condition of the cutaneous tissues quite different from anything of the ordinary type. The disease has been coming on for a considerable time. Three and a half years ago she became blue, and gradually the skin became dark.

## FOUR CASES OF FINNEY'S OPERATION ON THE STOMACH.

BY JAMES G. MUMFORD, M.D.

I have to report four cases of gastro-duodenostomy, performed by Dr. Finney's method, which, members are aware, is designed to give a very large, free opening for stomach drainage into the duodenum in cases of pyloric stenosis, — cases which are not malignant and in which active ulcerations are not present. These four cases are all dissimilar and, as the results are good, they give us further light on the possibilities of this operation which, I am coming to believe, with Dr. Finney, is capable of extensive application, is extremely useful in suitable conditions, is attended with a low mortality, and is not especially difficult of performance.

Case I. The first case, Mrs. McG., is reported three and a half months after operation. I referred to the patient briefly at our February meeting. She is a married woman, forty-six years old, who was sent to me at the hospital in December last by Dr. Frederic Winslow.

She has a history of many years of dyspepsia. About one year ago she began to have pain in the epigastrium, coming on about fifteen minutes after eating. The pain lasted two or three hours, unless relieved by vomiting. For ten weeks she had vomiting almost daily, and for three weeks had been nourished by enemata. She had lost about twenty pounds and was greatly emaciated. The symptoms were unrelieved by lavage or other palliative treatment. Analysis of the gastric contents showed much undigested food and free HCl.; the stomach was but slightly dilated.

I performed Finney's operation on January 1 last. There were numerous adhesions found about the pylorus, which was fixed high and sharply kinked. The patient had an uneventful convalescence; solid food was taken on the sixth day and she was about on foot at the end of three weeks. She is now free from pain, has an excellent appetite and, as she herself tells you, feels perfectly well.

Case II. Shown two months after operation.

Dora S. Patient of Dr. J. M. Jackson, age forty-five, nine children. Has had dyspepsia for many years. Her chief symptoms were pain in the epigastrium after all food, with increasing vomiting since last August. She was temporarily relieved by treatment, but without lavage uncontrollable vomiting persisted. She had pain after eating. At the time of her entering the hospital, Feb. 20, she was vomiting practically all food, and was alarmingly weak and emaciated.

Gastric contents: Undigested food, absence of HCl.

Operation Feb. 23. The stomach was found slightly dilated, with adhesions about the pylorus, the lumen of which was much thickened, admitting the tip of the little finger only. There were three scars on the anterior aspect of the stomach. The patient rallied well with little vomiting, and on the sixth day was eating solid food with care.

The convalescence has been rather slow, but the symptoms have steadily improved, and the nurses now report that the patient has an enormous appetite and an unimpaired digestion.

Case III. Shown three weeks after operation.

She is of a type quite different from the first two. A young girl in fair condition, but with an enormously dilated stomach.

Emma L. H. Eighteen years old; was a patient of Dr. J. M. Jackson, who had observed her for several

years. She is a vigorous, well-grown girl. About five years ago she began to have nausea and distress after food. This was relieved occasionally by vomiting. She never noticed old food in the vomitus. She had much careful treatment, which relieved her for the time, but her symptoms would recur. The stomach gradually became dilated, reaching nearly to the pubes; though after several weeks of treatment it descended only two inches below the umbilicus. There was no ptosis. Operation was advised on the principle of an operation for chronic appendicitis, — to avoid future trouble.

On March 25 the abdomen was opened; a thin-walled, dilated stomach was discovered, with a high pylorus, adherent and slightly kinked. An extensive Finney operation was done. The convalescence has been absolutely uninterrupted. Within a week the patient ate solid food and now indulges a vigorous appetite, without subsequent discomfort. By percussion, we now show the lower margin of the stomach to be two inches above the umbilicus.

CASE IV. Shown ten days after operation.

Mrs. S. Age, forty-four; a patient of Dr. C. E. Williams, of Roxbury, was much the most difficult and interesting of these four cases. She had had gastric symptoms for nearly ten years, — symptoms characterized by distress after taking food. For about one year she had severe cramp-like pains in the epigastrium immediately after all food; was constantly hungry, but her pain was increased by food; she had much nausea but no vomiting. Had lost fifteen pounds, was always thirsty, but water distressed her, and she was in a miserable, emaciated condition.

The patient was brought to me six weeks ago. Physical examination showed the pelvic organs to be not abnormal, the abdomen boat-shaped, retracted and tender in the epigastrium. Somewhat distended below the navel, with a movable right kidney, easily palpable. By percussion it was estimated that the stomach was prolapsed, the lesser curvature being about two inches above the navel. It contained forty ounces; at first there was absence of HCl., but under treatment acid was found later. Careful dieting, lavage, HCl. and salts gave relief for a short time, but the symptoms returned and the patient grew despondent.

She was sent to the hospital, where I opened the abdomen on April 5. The stomach was found prolapsed, but an interesting point was an hour-glass constriction in that organ about four inches from the pylorus. The cardia was thin, pale, distended. The pyloric extremity was thick and injected. There was very little pyloric obstruction. There was a single stone in a flabby, empty gall bladder, which was non-adherent and showed no evidence of inflammation. The hour-glass stomach was treated by an extension of the Finney principle, — so far as I know, the first time this principle has been applied to hour-glass stomach. By this method very free drainage was established.

The stone was removed from the gall bladder and cholecystostomy established through a stab wound on the right. The patient has done well, and is now eating solid food without discomfort.

There are a few points in connection with Finney's operation which are interesting, and after my limited experience with four cases, I am encouraged to believe that this procedure is to prove a very valuable addition to our resources.

The drainage established is very free; the route of drainage does not depart from the normal course.

The convalescence is very comfortable; far less stormy than after gastro-enterostomy; very little vomiting, nausea or pain.

In the last case I hope we have demonstrated that the symptoms of ptosis of the stomach may sometimes be relieved or cured by this operation. Certainly we have shown that in hour-glass stomach it is applicable, if not ideal.[1]

## REMARKS ON THE RESUME OF DR. F. B. HARRINGTON'S SERVICE FOR THE YEAR 1902.

BY E. A. CODMAN, M.D.

This is the third report[2] of this kind which has been shown at these meetings, representing a total number of 667 cases, the results of which have been traced. I want to say a few words about the advantages which might be obtained by having similar reports made of the services of each surgeon. In the first place, it is a very valuable training for the individual who examines the cases and makes out the report. I think that I have gained as much valuable surgical experience in making out these reports of Dr. Harrington's service as I have gained in the actual operating on a portion of these cases, so that I feel more than repaid for the little work which such a system requires. No matter how favorable impressions of certain operations may be, when a careful examination of the patient is made a year later, many disagreeable symptoms may often be found. A knowledge of these symptoms does a great deal to help in future operations in similar cases.

We all must acknowledge that good surgical judgment is obtained rather by personal experience than by the examination of statistics; but in looking up the after results of one's cases, we are not dealing with statistics, but merely adding to our personal experience in a way in which we would not do unless we made a special point of it.

The advantages of such a review of the cases to Dr. Harrington is also apparent. I have written to these cases to return during the first two weeks of Dr. Harrington's service of the following year, so that if any case presents itself which shows an interesting or instructive result, I could call Dr. Harrington's attention to it, and in a very few minutes in the morning he has been able to run over the cases which present themselves, thus his personal experience is also enlarged in a most instructive way.

As these reports accumulate year after year, the figures add up surprisingly, so that in case Dr. Harrington wishes to look up any one of the classes of cases in these tables, he may turn to these leaflets and get a good bird's-eye view of the results. Perhaps he may wish to compare his results with the report of some operator whose paper he is reading. For instance, in the past three years in Dr. Harrington's service, there have been 42 hernias, 14 fibroids and 127 cases of appendicitis. By turning to the remarks on

[1] Since reporting the above four cases I have had one other quite similar in symptoms and physical condition to Case 2. It is at this writing four days since the operation; the patient is eating soft food freely and in spite of a cardiac lesion, promises to make a speedy convalescence.

[2] Report published in JOURNAL, June 9, 1904.

the cases, Dr. Harrington could find what the result of about one half of these cases has been a year after the operation. It enables him, too, to reflect on what cases are in general unsatisfactory; for instance, in the gynecological cases in which the cases have been distinctly less favorable than any other class. In order to improve results, it is first necessary to know whether they are bad or not, and the account of the gynecological cases given at discharge in the annual report would be very much more favorable than the account by the patient a year later. Then as to the value of these reports in general, to those of you who take the trouble to read them. I think from these reports the general practitioner can obtain a fairer idea of the results of the hospital cases than he can from the papers which are written by individual surgeons in classes of cases in which they are more interested, and naturally have taken more pains than on the general run of cases.

If I should put the statements in this report as questions, I doubt if many of this audience would be able to give very satisfactory answers of what the results were. For instance, of the results of the thirty-one interval cases of appendicitis which have been reported in these three years, How many had received no improvement from the operation? The answer is, four. Of the eighteen cases of cancer of the breast, How many show recurrence at the end of a year? The answer is five, although two were not positively cases of recurrence.

The report is also valuable as showing the variety and general character of the class of cases which the surgeon is called upon to treat, and as representing one ninth of the hospital work. When we consider that we have in these three reports 667 after results, and that this number might have been multiplied by 9 if the assistant surgeon in each service had made a similar report, the aggregate number of 6,003 might be of *some* value statistically, although not of great value, as the classification of the results would have to depend on the judgment of the individual who looked them up and marked them as, "perfect," " good," and " no improvement," etc.

If some arrangement could be made by which the house officers should see these late results, it would be very instructive for them, for I feel sure the house officer in graduating from this institution gets a very much more favorable idea of the results of surgical operations than he is really justified in having.

VULVO-VAGINITIS IN CHILDREN. A METHOD FOR OBTAINING SPUTA FOR BACTERIOLOGICAL EXAMINATION IN INFANTS AND YOUNG CHILDREN. MOUTH TEMPERATURE AND RECTAL TEMPERATURE.

BY C. W. TOWNSEND, M.D.

Unfortunately, vulvo-vaginitis is a very common disease in all children's clinics, and of serious import, owing to the presence in nearly all the cases of the gonococcus. The treatment is often difficult and generally unsatisfactory. I have used lately, however, in the children's clinic a 4% solution of argyrol injected slowly through a small catheter into the vagina, to the extent of one ounce, and held there for ten minutes, the child lying on her back. In several cases the improvement was very prompt, and there was little or no discomfort to the child, as is the case with larger douches of boric acid or corrosive sublimate.

A child under five or six years of age coughs up sputa into its mouth, but swallows instead of spitting it out. Hence the diagnosis of many cases is often difficult. Especially is this the case with cases of delayed resolution in bronchopneumonia, many of these having an evening rise of temperature, so that the tuberculin test cannot be used.

Holt has recommended the passage of a stomach tube and the examination of the mucus that adheres to it; others have used emetics and examined the vomited mucus.

A method recently described by Findlay, and used for some time in the French hospitals, I have found very simple and very satisfactory. It consists in sweeping the finger covered with gauze over the glottis and epiglottis. This causes reflex coughing, and the expelled mucus is caught in the meshes of the gauze.

A small point, but it is generally taught to students and nurses, that the temperature is 1° higher in the rectum than in the mouth. With tested thermometers, taking the temperature in these two places simultaneously in twelve cases I have obtained the following results: In four cases the rectum was higher by 0.2, 0.2, 0.3 and 0.6°; in five cases the temperature was exactly the same in the two cavities; while in three cases the mouth was higher by 0.1, 0.2 and 0.2°.

Two photographs taken by Mr. Dodd of cases in the children's clinic were also shown.

(*a*) A case of rachitis in a child two and a half years with double coda vara, showing the customary attitude of the child in repose, with both legs lying straight up beside the trunk, the soles being applied to the sides of the face.

(*b*) A case of congenital syphilis, showing marked prominences on the tibial.

## Reports of Societies.

### BOSTON SOCIETY OF PSYCHIATRY AND NEUROLOGY.

W. E. PAUL, M.D., SECRETARY.

Meeting of April 21, 1904, the President, Dr. G. Alden Blumer, in the chair.

Dr. J. W. Courtney presented a case of

BILATERAL FACIAL ATROPHY.

I was not present at the last meeting when Dr. B. T. Burley[1] showed his case of bilateral idiopathic facial atrophy, but by the merest chance I came across a case of the same sort a few days ago, and have brought it here to-night to show to you. This little girl, who is now about twelve years of age, was normal in every way up to the age of three. The photograph I am about to pass round, which was taken about that time,

[1] Bost. Med. and Surg. Journ., April 14, 1904.

certainly shows no evidence of facial abnormality. Shortly after the age of three the child's face began to take on a pinched and shrivelled look, and the parents feared that the child was going into consumption. They consulted many doctors without avail, marveling themselves all the while that the supposed emaciation should remain confined to the face, as in fact it did. For three years the wasting of the face went on and then appeared to come to a standstill, leaving the child about as you see her to-night.

You will observe that her body is fairly well nourished and that its nutrition is in striking contrast with that of the face, which looks pinched, sunken and senile. On examination the atrophy is seen to be bilateral, and more or less symmetrical, and to involve mainly the skin and subcutaneous tissue, apparently sparing the muscles. There is, furthermore, no demonstrable implication of the jaw or of the tongue, although several of the teeth have come out without obvious cause.

As I am going to report this case *in extenso* later, I shall say no more about it at the present time, but simply have the patient walk about for your inspection.

DR. P. C. KNAPP: If we can judge from this case which Dr. Courtney kindly permitted me to examine the other day, and from the pictures which Dr. Burley has shown, and which other observers have published, there does not seem to be any very marked involvement of the bones in bilateral facial atrophy. In unilateral atrophy, however, the bones seem to be rather frequently involved. I saw a young man of seventeen about twelve years ago, referred to me by Dr. J. T. Bowen, who had unilateral atrophy of two years' duration. The entire half of the face, the cranium and the ear were smaller on the left side. There was a band of whitish, smooth, sclerotic skin starting at the root of the nose and extending upwards, close to the median line on the left side of the forehead, 4 cm. in width and about 12 cm. in length, extending into the hairy scalp to within 3 or 4 cm. of the vertex. The bone was wasted distinctly under this atrophied skin. In another case also the forehead was involved, contrary to the rule stated by Dr. Burley. In this case, and still more in the cases with great atrophy of the bones, it seems doubtful whether paraffin injections would be of much service.

DR. H. R. STEDMAN read a paper entitled

A CASE OF MORAL INSANITY WITH REPEATED HOMICIDES AND INCENDIARISM AND LATE DEVELOPMENT OF DELUSIONS.

DR. C. P. BANCROFT: Dr. Stedman's very interesting report of this somewhat celebrated case arouses anew the old question as to whether a true moral insanity can exist. Is it possible for the moral faculties alone to be affected while the intellect remains unimpaired? Personally I have never seen a case of what seemed to me pure moral insanity. Those cases under my observation that seemed to suggest possible involvement of the moral faculties without intellectual impairment have, on further and closer study, disclosed weakening of the higher intelligence. It has always seemed to me that the old metaphysical division of the mind into faculties must have been a determining factor in the original diagnosis of "moral insanity." The partitioning of the mind into faculties tends to mislead the diagnostician when attempting to reconcile them with pathological processes.

The mental faculties have no very definite demarcation, the one from the other, undoubtedly have no specific brain area in which they are organized and owe their existence to the purely arbitrary conclusions of the metaphysician. Cases do occur in which apparent impairment of one faculty precedes a later involvement of other faculties and demonstrate the solidarity of mind. A case in question under my own personal experience occurs to me. A young woman of fair heredity, with advantages of good early training and environment, at about the age of puberty developed the most perverse and unaccountable sexual appetite. At the age of twenty she so degraded her family that the benefit of the doubt was given her, and she was pronounced insane. For a year she remained under my care, not evincing the slightest sign of intellectual disturbance and stoutly asserted that if she desired to lead an immoral life it was her own affair and that neither I nor her relatives had any legal right to deprive her of her liberty. I began to feel that my further detention of her in the hospital would be untenable and was on the point of ordering her discharge when she broke down into an attack of acute mania. These attacks have occurred ever since with regularity about once a year, and more or less mental impairment began to declare itself. This was undoubtedly a dementing psychosis from the beginning. Moral impairment was the one early symptom manifest, followed by marked psychic explosions later. Nevertheless, could a more minute analysis of this individual's mind have been made in the earlier stages of the psychosis, I believe that a beginning general impairment of the intellect could have been detected, such as weakening of the will, the judgment and the feelings.

I have often thought the term "moral imbecility" more justifiable than "moral insanity." Certainly, cases do occur in which the moral nature seems to be so dwarfed and rudimentary from early childhood as to lead one to infer that its development is impossible. Jesse Pomeroy appears to have been a notable illustration of such a condition. Rarely does it occur that a person, whose mental development has been normal, has an attack of moral insanity without intellectual impairment. The very interesting case of J. T., while for a long period manifesting only moral perversity, certainly at the present time discloses marked intellectual disturbance. Her case appears to be a dementing psychosis, the primary symptoms of which were morbid impulsions, moral obtundity followed at the present time by delusions, hallucinations and intellectual impairment. The latest manifestations complete the picture of what at first seemed a most obscure case. They demonstrate anew the solidarity of mind and the unwisdom of making a too early diagnosis of "moral insanity."

DR. EDWARD COWLES: Dr. Stedman's report of this important case has been made especially interesting by his careful study of the subject. There are undoubtedly many cases in which intellectual capacity even to a high degree exists in association with more or less complete deficiency of the moral sense that characterizes the class of persons called degenerates. We see all degrees of this deficiency in youth and adolescence. In many cases it can be recognized as simply an indication of backward or unequal development, and may be outgrown; in other cases there is arrest in this regard, causing permanent defect. The term "moral imbecility," as implying the absence of qualities of character never possessed, seems to me to be a proper one to describe such a general characteristic. This term being more generic in its meaning is better than "moral insanity," which seems to imply a definite form of mental disease, while the moral defect to which it refers is only one of the general variations from the normal mental balance in most cases. I recall a number of young cases that quite outgrew this defect as they came to adult life; several of these were pronounced hospital cases that practically recovered,

or were greatly improved under several years of the restraint and discipline in the period of adolescence.

A great deal depends upon the circumstances under which such young persons grow up, and upon their accidental experiences which may be the starting-points of peculiar forms of excitement that create an inclination to repeat them, through curiosity or liking. It would be interesting to know how it would have turned out with this young woman if she had never had the experiences of a nurse and become familiar with the effects of drugs and seeing the unusual manifestations of conditions of sickness and death. These things that suggest unanswerable questionings in some minds might have excited unnaturally an abnormal mind. On the same principle she might have developed a propensity for stealing, or excesses in sexual misconduct under the influences of a favoring environment and experiences. It appears to me that her history shows fundamental inherent defects consistent with considerable intellectual capacity; that the criminal acts being at first carefully concealed and later more frequently and recklessly committed, mark the regular course of a mental disease from its beginning to its latest development in a pronounced form of insanity.

Dr. Walter Channing said that he regarded Dr. Stedman's paper as a very valuable contribution to medico-legal literature. There was no question in his mind that J. T. was insane and that in the true sense of the word she was a degenerate, even though no physical stigmata of degeneracy had been discovered. The mental stigmata as detailed in the evidence in the report just presented were even more important. By what name the disease of which she was the subject should be called is a matter of some difficulty to determine. He regretted that Dr. Stedman had revived the use of the term "moral insanity," which had formerly been a sort of waste basket in our courts for all sorts of doubtful mental diseases to be emptied into. He himself never made use of it in testifying, and hoped that it would not again be introduced into our courts. The form of disease described seemed to him to be closely allied to one of the earlier stages of paranoia, but what Dr. Stedman calls moral insanity and paranoia have much in common. He was strengthened in this opinion by the history of the woman's case since she had been in the hospital, which had undoubtedly developed into real paranoia. This disease often is very slow in its progress, passing through various stages, and it might be that the latest one had now arrived. He did not agree with Dr. Folsom that alienists are multiplying names for the various forms of insanity, nor the danger of including too much within the limits of what could be called mental disease. Many of the old names under earlier systems of classifications had been dropped and others better adapted to our present knowledge of mental disease adopted. There has therefore been really a diminution rather than an increase.

It must be remembered that sanity was an impossible thing to define; as Hirsch had said, it consists substantially in the well-proportioned development of mental attributes, but there might be great variation within pretty wide limits and still indicate no insane condition. Knowledge of insanity was acquired from experience. An opinion might be given with almost unerring conviction, and yet the form of insanity be very difficult to specify with exactness. Far too much importance was attributed to names which might be misleading. The point was to determine if there was an undoubted departure from the normal. He would say in conclusion that he should be sorry that Dr. Stedman had been employed as an expert in this case, if he was to be the means of reviving in court practice the expression "moral insanity."

Dr. G. L. Walton: The applicability of the term degenerate in this connection only serves to emphasize the importance of a substitute for this word in referring to mild deviations from the average normal type. Whether this case should be classed as insanity during the period under consideration is an open question, notwithstanding the fact that mental unbalance of another type has evidently appeared during confinement in the asylum.

With regard to the general question of crime and insanity it is true that the fear of public opinion should not prevent the diagnosis of insanity in the criminal when this diagnosis is clear, but there is danger that in relieving criminals of legal responsibility, arguments may be made to serve which would be given little weight as bearing on the question of depriving an ordinary individual of his liberty. If a criminal has shown himself capable of properly registering impressions, and of formulating appropriate lines of conduct based upon those impressions, and of carrying out those lines of conduct, due allowance being made for his education, surroundings and social station, the mere fact that he does not carry out such lines of conduct, and that he expresses no remorse for this failure, is not necessarily evidence of insanity. Very strong evidence should be added, it seems to me, of mental defect other than moral, before he should be deemed legally irresponsible.

Without claiming ability to formulate a plan for the management of the many morally oblique and criminally reckless individuals who are working havoc in society and causing pecuniary loss and shame to their relatives and friends, I may venture to suggest that in applying too fine an analysis to their mental processes we are in danger of losing sight of the interests of the community and of granting certificates of immunity on a scale whose liberality is bound eventually to bring about a reaction on the part of the public, whose rights we are in danger ourselves of ignoring in our pursuit of the absolute in science.

Dr. C. A. Drew: I feel a deep appreciation of the privilege of having heard Dr. Stedman's paper. The case is certainly not an ordinary one. The moral imbecile is a fairly common character at the State Asylum for Insane Criminals. But it seems to me that J. T. was, or is, at least, more than a moral imbecile. The moral imbecile as we see him is apt to remain merely a moral imbecile to the end of the chapter. Hallucinations do not seem to be a necessary part of his symptom complex, and what irrational ideas he has are, as a rule, hardly fixed enough to be called delusions. The great majority of these cases of ours could be classed more fittingly as "deviates," if you will accept Dr. Walton's term, which I think fits the moral imbecile better than the word degenerate. But J. T. seems to be a degenerate. It seems to me as if the mental deterioration has been too rapid and the mental states too quickly alternating to call the case paranoia, if we use that term as synonymous with primary delusional insanity. It looks to me as if the case was one of the rapidly dementing psychoses, although moral imbecility with perverted impulses and instincts might have explained most of the early symptoms.

Dr. P. C. Knapp: Although it is doubtful whether we can regard "moral insanity" any more than mania and melancholia as a distinct disease, the term is certainly useful as applied to a certain fairly definite symptom group. Various cases come each year under my observation presenting the symptoms usually classed under this heading. There is almost invariably

some intellectual failure, but at first sight the patient appears to be bright and intelligent, and sometimes he has a precocious smartness. Careful observation, however, usually reveals considerable intellectual defect.

Dr. Stedman's report, based on so long study and observation, leaves no doubt as to the insanity of this case, which has now been fully confirmed by the subsequent course. The fact that this patient had a copy of Krafft-Ebing's "Psychopathia Sexualis" has been brought forward as a proof of her feigning, but the diagnosis, as I understand, was not based upon the existence of any sexual perversion, and the alleged form of sexual perversion described by the patient is not mentioned in Krafft-Ebing.

DR. ARTHUR V. GOSS: I can add nothing to the masterly analysis of this case as presented by Dr. Stedman. When she was admitted to the Taunton Insane Hospital the medical staff was, if anything, inclined to the opinion that she was responsible for her acts. They all studied her case independently and almost without consultation, with the result that each and all were convinced of her mental unsoundness before the development, or at least the appearance, of delusions. At present she is suffering from delusions of persecution and poisoning with hallucinations of hearing.

DR. H. W. MILLER: I agree in the main with the reader's conclusions. The diagnosis depends upon the question as to whether one is willing to accept the entity of a disease which involves only the feelings and affections without involvement of the other intellectual faculties. This condition has been called moral insanity. In this case in spite of the absence of anatomical stigmata of degeneration I believe that there existed a congenital defect, and that her untruthfulness, dishonesty and criminal acts are an outcome of this defect. I do not think that there has been any psychosis grafted on the above condition. Owing to her general unreliability I think we are justified in doubting the presence of hallucinations, though it certainly looks as though she has delusions.

During her hospital residence she has shown nothing inconsistent with the diagnosis of moral insanity; I have been for some time firmly convinced of her insanity.

DR. E. STANLEY ABBOT: It may be of some interest to those present to know that J. T. nursed in two families with which I am intimately acquainted, and that she was the nurse in attendance during the last illness of each. In one family she had previously nursed two or three times. The impression she made upon both families, which has not been changed by the subsequent developments in her career, is of one having some of the best of nurse-like qualities. She did not upset the households into which she went; she got on well with the servants in the house; she was thoughtful and attentive to the patient in many ways; she was ready to sacrifice her own comfort and convenience to that of the patient; she was wisely sympathetic, and she showed intelligence and good sense. Such was the judgment of persons of education and discrimination.

If she could behave continuously so well as to leave such an impression on such persons, I cannot help thinking that she was able to control her conduct in relation to the persons whom she poisoned. She killed them to gratify a feeling of pleasure, as men drink or yield to other minor indulgences to gratify their pleasures, but she was under no internal compulsion. Believing as I do that it is of the essence of insanity that the insane person cannot help thinking, feeling or acting as he does, I must regard J. T. not as insane, but as criminal, and the symptoms that she now presents are due to a psychosis superimposed on a constitutional defect.

I should agree with Dr. Cowles that moral imbecility is a better term for such a condition as she appears to have than moral insanity, and moral deficiency is better still, since the word imbecility suggests intellectual deficiency, which may not be present in moral defectives. Not having heard the first portion of Dr. Stedman's paper, I may have lost some data which would make me see the case in a different light, but from what I did hear and from my own slight knowledge of the patient, I should regard her as an intelligent moral deficient.

DR. STEDMAN in closing said that the discussion showed that moral insanity had well borne out its reputation as the "red rag" of psychiatry. He enumerated a number of the foremost modern authorities on mental diseases, who not only classify moral insanity as one of them, but who devote special chapters to its consideration. It was rather striking, too, that not only the name but the conception of the disease or defect had, unlike so many mental conditions which were once thought to be entities, undergone little or no change. Its study is much simplified by separating secondary or symptomatic moral insanity, of which the adolescent case cited by Dr. Bancroft is evidently an example, from the true primary and congenital form represented in J. T. Whether we label the condition a disease or a defect seems of less consequence when we consider the hereditary, congenital origin of degeneration-insanity in general and the fact that there are many points at which imbecility proper and paranoia, which has been called a "partial imbecility," approach each other.

It is common knowledge that the habit of wrong doing may be acquired to such an extent that crimes excite no feeling. This applies, however, to the insane as well as to the sane criminal. But the instant, instinctive readiness with which the first step in crime is taken, the great rapidity with which the propensity becomes firmly established and the extremes of crime and bestiality reached are identifying marks of degeneration-insanity of this order.

[The view that we are dealing in J. T.'s case with a dementing psychosis is hardly tenable, as her mind has lost in all this time little of its acuteness. On the other hand she has developed the intellectual perversion without appreciable loss of mental *power*, that is: dementia, which is only found among insanities of degeneration. As to the danger of too much liberality in granting certificates of insanity in criminal cases we should say that before becoming anxious about a remote contingency, to our mind far from probable, it would be well to turn people's attention more often to the fact that many so-called criminals are regularly convicted only to be found insane in a short time and transferred to the asylum, for want of preliminary expert examination of their mental condition. It is such methods as this which help to substantiate McPherson's belief that the law has hitherto certainly erred on the side of severity and has hanged ninety-nine irresponsible persons for one responsible person who has escaped on the plea of insanity.]

THE Missouri State Medical Association, according to the *Medical Record*, has decided to publish its transactions in the form of a monthly medical journal and the initial number of the *Journal of the Missouri State Medical Association* appeared on July 1. Dr. C. M. Nicholson is editor, assisted by six collaborators.

## AMERICAN GYNECOLOGICAL SOCIETY.

Twenty-ninth Annual Meeting, held in Boston, Mass., May 24, 25 and 26, 1904.

(Continued from No. 2, p. 50.)

Second Day. — (Continued.)

### Symposium on Injuries to the Perineum. The preventive treatment of pelvic floor lacerations.

Dr. J. Clifton Edgar of New York read the first paper. The most important part of the management of the second stage of labor was the prevention of pelvic floor lacerations; lacerations of the fourchette in primiparæ, and superficial tears about the vulvar orifice in both primipara and multipara, often occurred, were often unavoidable, and usually readily healed with simple asepsis. Deep lacerations were avoidable in normal, ordinary cases of labor.

The factors which tended directly or indirectly to produce pelvic floor lacerations were numerous, but for convenience he arranged these in three major classes. These were concisely stated as (1) too rapid expulsion of the fetus, so that tearing instead of stretching resulted. (2) Relative disproportion in size between the presenting part and the parturient outlet. (3) A faulty mechanism of labor, whereby the larger circumference of the head and shoulders than necessary passed through the parturient outlet.

From an extended clinical experience, he could speak most enthusiastically of the preliminary digital stretching of the vulvar outlet in primiparæ, and especially in elderly primiparæ, as a prophylactic measure in perineal protection. The author then discussed episiotomy, head delivery, and cleidotomy. Regarding shoulder delivery, the author firmly believed, from years of careful clinical observation, that the posterior shoulder was responsible for many instances of deep, pelvic floor laceration. Furthermore, that moderate ruptures caused by the passage of the head were often increased and rendered serious by the subsequent passage of the posterior shoulder.

He had been most successful in the following method of shoulder delivery, and either the lateral or dorsal posture of the patient could be used at will. This method was not new:

(1) The delivery of the shoulders was delayed, if possible, until nearly complete rotation of the bisacromial diameter had taken place. (2) The fetal head was taken in the hand and gently raised or pushed, so as to bring the anterior shoulder well up behind the symphysis, thus giving the cervico-acromial diameter of the fetus at the outlet instead of the bisacromial. (3) The posterior shoulder was now allowed to pass out spontaneously, and whenever possible, manual extraction should be avoided, as this increased the risk of perineal rupture. (4) During the detention of the anterior shoulder behind the symphysis, the fetal hand of the opposite arm lying across the fetal chest would usually soon appear in the vulva. He had found that delivery might be safely assisted by slowly flexing this forearm and arm out through the vulva and thus delivering the posterior shoulder by slight traction on the posterior arm. (5) Should the foregoing be impracticable, and delay in the expulsion of the posterior shoulder occur, he had found gentle traction upon the head, the fingers encircling the neck, to be preferable to traction with a finger in the axilla. (6) Should there be delay in the delivery of the anterior shoulder, after expulsion of the posterior, it was best remedied by making traction directly downwards, with the hands placed on the sides of the head, taking care not to make too great pressure on the perineum. As a last resort, traction might be made by a finger in the axilla.

### Immediate Repair of Lacerations of the Perineum, with Special Reference to Placing the Sutures before the Lacerations Occur.

Dr. Lapthorne Smith of Montreal spoke of the importance of closing up even small tears of the perineum, so as not to leave raw surfaces for septic absorption. It was important to close large tears so as to retain the function of the pelvic muscles. The best time to put in these stitches was just before the head pressed on the perineum, while the patient was anesthetized, and before the parts had lost their relative positions. With the left finger in the vagina and the thumb in the rectum, a large perineum needle on a handle was passed just under the vagina, threaded with silkworm gut; the two or three stitches hung loosely in a Pean forceps until the placenta had been delivered, when they were quickly tied, bringing the parts exactly together as they were before the tear.

*(To be continued.)*

## Recent Literature.

*Graves' Disease, With and Without Exophthalmic Goitre.* By William Hanna Thomson, M.D. LL.D. 8vo. pp., vi, 143. New York: William Wood & Co. 1904.

In the volume before us the author maintains the thesis that Graves' disease is a toxemia of gastro-intestinal origin, with well-defined symptoms, among which neither exophthalmos nor goitre is to be regarded as of chief importance, the implication of the thyroid, when it occurs, being secondary to the toxemia. This thesis is based upon a study of seventy-three personal cases, forty-four with goitre and twenty-nine without; four of these cases, two in each class, terminated fatally. The most striking symptoms are tachycardia, palpitation, nervousness, tremor, headaches, characteristic digestive disturbances, insomnia, and the fact that all these symptoms are worse in the morning. The disease is chronic, occurring in families and sometimes associated with migraine. Death is apt to be sudden from syncope. Noteworthy success has been attained by treating the gastro-intestinal disorder chiefly by a long-continued milk diet. Thyroidectomy is denounced. It is apparent that these opinions as to the nature of Graves' disease are radically different from those that have obtained in recent years, since our enlarged knowledge as to the functions of the thyroid led to the belief that Graves' disease was of thyroid and not of vasomotor origin. That cases of Graves' disease occur without exophthalmos or goitre must be admitted, and gastro-intestinal disturbances are common in all types of the disease. Whether the author's views will ultimately be accepted is uncertain, but they are based on a wide experience of the disease, and the present volume is one that must be considered in future study of the subject.

THE BOSTON

# Medical and Surgical Journal.

THURSDAY, JULY 21, 1904.

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## WAS JANE TOPPAN RESPONSIBLE?

IN another part of this issue we publish the detailed report from Dr. H. R. Stedman's pen of the medical history of Jane Toppan. Dr. Stedman, it will be remembered, was one of three experts, the others being Dr. H. M. Quinby and Dr. George F. Jelly, appointed by the Court to investigate the mental condition of the nurse, Jane Toppan, who had been indicted on the charge of murder. The extraordinary character of the crimes charged against her, and the widespread publicity given to the events which finally led to her arrest, combined to render the case one of the most widely discussed of recent years. It is, therefore, a matter of great interest that an authoritative statement of her life and the development of her disease has finally been given.

It was natural that difference of opinion should have existed regarding the question of her criminality and responsibility. In such cases the subtle and uncertain distinctions between sanity and insanity, and between moral responsibility and deliberate crime, are peculiarly difficult to determine. No greater burden could well be placed upon an expert's shoulders than this. The decision reached by the gentlemen called in the case was that the prisoner was not responsible for her acts, by reason of insanity, and she was thereafter committed to the Taunton Insane Hospital by order of the Court, where she has since remained under the conditions described in Dr. Stedman's paper.

Commenting on the case editorially at the time of the trial in 1902, we said: "The medical expert's question of mental unsoundness settled, there still remains the personal equation and the question of accountability. We shall await with great interest the forthcoming analysis of the evidence in this case and the expert statement, which we are promised, of the medical opinions formed and of the facts upon which those opinions are based. In the meantime, we shall not attempt to express our opinion on the question of Jane Toppan's responsibility."

The events of her hospital life, as since developed, can leave no doubt of her mental unsoundness, and we think also none of her lack of accountability as judged by ordinary standards. The evidences of mental decay have been increasingly apparent, and there can be no question that her proper classification is among the insane. In view of the present condition and its development, the existence of mental unsoundness extending over a long period of years is altogether probable, and undoubtedly fully justifies the expert opinion delivered at the time of her trial.

It must, however, be distinctly remembered that the difficulties of discovering the means used by her were such that detection of her implication in the deaths of her victims was almost impossible. Her method of administering deadly drugs was such that the patient was usually wholly unaware of what he or she was taking. In the second place, a physician was usually not summoned until the patient was moribund; and, finally, her method of combining drugs in such a way that their action gave rise to unusual and perplexing groups of symptoms, rendered it at times impossible to determine the real nature of the illness. Attempts to determine the cause of death by post-mortem examinations were uniformly opposed by the nurse. This combination of circumstances certainly is sufficient to explain her long immunity from detection, and under the circumstances we are forced to the conclusion that her earlier detection, enjoying as she did the confidence of those with whom she was associated, was well nigh impossible. Only the final act of her career, which led to the death of four patients in one family, was sufficiently extraordinary to lead to the investigation which resulted in her arrest.

The case will soon pass into history, but not, we trust, without having taught its unique lesson.

## THE VISIT OF PROFESSOR HOFFA.

IN spite of our anti-imperialistic contemporaries we must admit there are certain advantages which come to the inhabitants of a well-advertised world power. Now that Secretary Hay is supposed by some Continental observers

to hold the destinies of the Pacific and the future of the Orient in his portfolio, and is publicly honored by the French Government for his efforts to preserve the peace of the world, it is natural that gifted foreigners should wish to examine at close range the conditions of a country which, though not old, in its influence, as our poet tells us, " was never young." Many of our readers may recall one of Mr. Lowell's brilliant essays, "A Certain Condescension in Foreigners," satirizing a common attitude of the visitors of that time. Those who come among us now " taking notes " bring a different spirit, though fortunately they still are critical, giving us often the benefit of their " impressions " to temper our growing tendency toward self-content, which comes with and is the peril of prosperity, as complacency is the *arcus senilis* of national character. It is of the greatest advantage to see ourselves as others see us when the " others " are unusual and remarkable men. The English Commissioners who have studied us, the French literary critics who have lectured to us, have all brought gifts without giving us reason to fear them, and their example has been followed within the last few years by several most distinguished Germans, who have brought to us their example of thorough skill and brilliant achievement.

Professor Hoffa, our most recent visitor, came with a commission from the Berlin Government to examine our municipal ambulance systems and report upon them. He timed his visit, however, so as to present a paper at the meeting of the American Orthopedic Association at Atlantic City. His experiences in the treatment of congenital dislocation of the hip has been followed by an unusually high percentage of success, as might be expected from the fact that he was one of the early investigators in the subject, and has devoted to it much study, unusual skill, thorough training and a broad, intelligent spirit of eclecticism rather than that of a partisan of a special method. Manipulative reduction he practices in the less difficult cases, but when this is impracticable he advises opening the capsule, deepening the acetabulum, when shallow or filled with fibrous tissue, and a careful replacement of the head. The necessary dissection is neither extensive nor destructive and the method leaves nothing to chance.

The treatment of paralytic deformities by tendon and muscle transference has been brought in Germany to a valuable state of efficiency, and Dr. Hoffa gave, while here, a demonstration at the Children's Hospital of his admirable operative skill in the employment of this method.

Unfortunately the harvest of congenitally dislocated hips had been so thoroughly garnered in this community that no case could be found for his ministrations. In New York, Philadelphia and Chicago, however, he was able to demonstrate his method of operative reduction.

Let us hope that our country will continue to " expand " if thereby we can attract to ourselves such agreeable and valuable visitors.

## PLAGUE IN THE TRANSVAAL.

A report has recently been published giving certain details of a recent outbreak of plague in the Transvaal, to which the *British Medical Journal* alludes in an abstract of the report and also editorially. It appears that in 1903 pneumonia gave origin to a scare regarding plague, but it was afterwards determined that at least the great majority of cases was due to a septicemia induced by streptococci or pneumococci. A later outbreak of plague, however, has led to the assumption that certain of these cases of so-called pneumonia were in reality plague.

On March 18 of this year it was announced that certain Asiatics living in the " Coolie " location were apparently ill with pneumonia. The following day five corpses and twelve sick persons were found in one house. In three of these cases, together with pneumonic consolidation, microscopic examination disclosed organisms of the morphology of plague bacillus, and the same organism was also found in the sputum of a Coolie suffering from pneumonia. A cordon about this locality was thereafter made and a house to house inspection within the insanitary area instituted. Twenty-six deaths were shortly recorded, all presenting symptoms of pneumonia and all showing the presence of plague bacilli. The plague staff was enlarged, additions were made to the numbers of rat catchers, and drastic measures were forthwith adopted. In the first place the plague committee transferred the entire population in the " Coolie " location to a segregation camp, numbering 3,100 persons. Twenty-four days after this transfer but one death had occurred. The area of infection was surrounded by a galvanized wire fence, animals found in it were killed, and the entire place burnt to the ground. Various general measures were taken regarding suspects, disinfection and medical examinations with most gratifying results.

The origin of this epidemic has not been

definitely discovered.. The final explosive outbreak is held to have been due to the fact that plague was masked by the coincident presence of pneumonia in many cases. The brief history of this epidemic and its vigorous suppression serves as an interesting commentary on the admirable methods now available for checking a disease which, under unfavorable conditions, quickly becomes a menace of great moment. Such incidents as that narrated leave no doubt that plague, like many other infectious diseases, may under ordinary conditions be suppressed.

Commenting on the event editorially, the *British Medical Journal* expresses the conviction that the public health departments of the Transvaal and Johannesburg fully appreciate that the danger of a recurrence cannot be by any means neglected. It seems that the infection was imported into the Transvaal by rats in forage, and even if domestic rats and other domestic animals are not still infected, the risk of further importation cannot be ignored.

## MEDICAL NOTES.

REGISTRATION OF DENTISTS. — The Massachusetts Board of Registration in Dentistry has passed fifty-five out of one hundred and three candidates desirous of practising in this state.

CHAIR OF HYGIENE, BERLIN. — It is announced that Prof. Georg Gaffky of the University of Geissen has accepted Professor Koch's chair in hygiene at the University of Berlin, Professor Koch having resigned the directorship of the Berlin Hygienic Institute. Gaffky was Koch's earliest assistant, and it is said to have been Koch's wish that he should succeed him as director of the well-known hygienic institute. His work has been largely experimental in connection with various bacteriological problems.

TUBERCULOSIS DISPENSARY, WESTERN RESERVE MEDICAL SCHOOL. — It is proposed to establish a dispensary for the special treatment of tuberculosis in connection with the medical school of Western Reserve University. One of the chief functions of the dispensary is prophylactic. Those infected with the disease will be registered; houses occupied by consumptives located; education of the people in matters of hygiene prescribed; visits to the school made; and instructions to those having the disease instituted.

HONORARY DEGREES FOR MEDICAL MEN. — The *Medical Press* makes the following statement: "The honorary degree of D.Sc. will be conferred upon the following members of the profession at the meeting of the British Medical Association at Oxford on July 27: Dr. T. C. Allbutt, F.R.S.; Mr. Andrew Clark, F.R.C.S.; Dr. Thomas D. Griffiths, President of the British Medical Association; Mr. Jonathan Hutchinson, F.R.S.; Sir William MacEwen, M.D., F.R.S.; Sir Patrick Manson, K.C.M.G., M.D., F.R.S.; Sir John W. Moore, M.D.; Dr. William Osler, F.R.S.; Dr. Thomas G. Roddick, M.P. (Canada), a former President of the British Medical Association.

BELLEVUE HOSPITAL'S FAMOUS WARD 32. — According to the *New York Medical Journal* in the last nine years there have been 51,000 alcoholic patients at Bellevue Hospital, not counting the repeaters. Of this number, 66% were between thirty and forty-nine years of age. A series of 125 cases has been studied, showing that as a rule male drunkards live longer than female. Seventy-five per cent of all chronic alcoholics have fatty degeneration of the liver. Many have brown atrophy of the heart. The kidneys are never normal. Fifty per cent of the drunkards have gastritis. By the coating of the tongue and the character of the tremor the length of a spree can be accurately determined. The drunkard often "sees things," but rarely has his sense of smell impaired. Patients who drink absinthe are particularly liable to convulsions.

### BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, July 20, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 31, scarlatina 9, typhoid fever 9, measles 41, smallpox 0.

GRADUATES IN MEDICINE, HARVARD MEDICAL SCHOOL. — At the recent commencement exercises of Harvard University, 130 students received the degree of M.D.

### NEW YORK.

TRAINING SCHOOL OF BETH ISRAEL HOSPITAL. — The graduation exercises of the first class, twelve in number, to complete the course at the training school for nurses connected with Beth Israel Hospital, were held on July 12. This Jewish hospital, which is situated in the crowded tenement district of the lower East Side and was begun fifteen years ago in a very humble way, now has a capacity of one hundred and thirty beds, and has recently acquired property adjoining the hospital building on which to establish a nurses' home.

Inspection of Milk. — The Health Department inspection of milk is properly very rigid at this season of the year. Out of 869 shops selling milk which were visited by the inspectors during the thirty days ending July 8, 365 were found where there were connecting rooms used for living purposes. One hundred were found where the milk on sale was at a higher temperature than the law permits, but where there were no connecting rooms, while ninety-six cases were found of violations of the law as regards both temperature and connecting rooms. Altogether, in 64½% of the shops visited the ordinances were found to be violated in one way or another.

Vacation Schools and Playgrounds. — The ten weeks' summer session provided by the Department of Education opened on July 11. This year there are thirty-nine vacation schools and eighty-four playgrounds operated by the department. Nature study is taught as a general subject by forty practical experts, and one thousand teachers are employed in instructing the children in manual branches of various useful kinds, gymnastics and kindergarten. In some of the playgrounds the planting and care of vegetable and flower gardens will be taught. Altogether, the vacation school system would seem to be productive of great good, mental and moral, as well as physical, to the children of the poor. A new departure this year is the utilization of eleven schoolhouses with flat roofs, on which free band concerts are given each night for the general public.

Commission to Investigate Pneumonia. — In consequence of representations made by Dr. Darlington, President of the Board of Health, in regard to the unusual prevalence, for this season of the year, of pneumonia, the Board of Estimate and Apportionment, at a meeting held July 15, made an appropriation of $10,000 to defray the expenses of an expert commission to investigate the subject and devise means for the checking of the disease. The selection of the members of the commission is left with Dr. Darlington, and they will be appointed within a short time.

## Obituary.

### ISRAEL THORNDIKE DANA, M.D.

Israel Thorndike Dana was born in Marblehead, Mass., June 6, 1827. He died in Portland, Me., April 13, 1904. He was the youngest of fourteen children of Rev. Samuel Dana. His mother was Henrietta, daughter of Dr. Richard P. Bridge.

After receiving the degree of M.D. from the Harvard Medical School in 1850, he spent two years in post-graduate study in Paris and Dublin. Following the advice of Dr. Pearson of Salem, in June, 1852, Dr. Dana began practice in Portland. His service to this community at the time of his death antedated that of any other physician.

He was one of the founders of the Portland Dispensary. In 1856, together with Dr. William C. Robinson and Dr. Simon Fitch, he established the Portland School for Medical Instruction. From 1860 to 1862 he was professor of Materia Medica at Bowdoin College; and from 1862 to 1897, excepting an interval between 1870 and 1880, he was professor of the Practice of Medicine at Bowdoin College. Dr. Dana was an active force in the founding of the Maine General Hospital. He served for twenty years as one of the visiting physicians, and afterwards as a consulting physician who was actually consulted. In 1868, he was president of the Maine Medical Association. He was one of the first members of the Harvard Medical Alumni Association to hold the office of vice-president. Dr. Dana was a charter member of the Association of American Physicians, and a few years before his death was made one of the honorary members.

Possessed of the talent which these places of honor and usefulness imply, Dr. Dana's advice as a consultant was widely sought. His specialty, if he had one, was internal medicine, his professional interest directing itself particularly to diseases of the heart and lungs. A keenly-observant colleague says: "The Doctor Dana of thirty years ago was an alert and accurate diagnostician, — a model of what a resourceful physician ought to be."

Of Dr. Dana's ten children, three died in infancy. The vigorous and useful lives of three others, after reaching maturity, were brought to a sudden close. One of them, William Lawrence Dana, was a surgeon who well deserved paternal pride for what he was, and for what he seemed about to be.

Dr. Dana's father, his father's father, and two of his father's brothers were Congregational clergymen. Inheritance, training and habit put into his life a large endowment of orthodox religion. It has been remarked that his own leadership in medicine received the same sort of tacit recognition which, in old New England times, it was customary to pay the parson. Dr. Dana was a fine example of a certain type of Puritan dignity, mellowed in him, perhaps, by the two years of life among people of Celtic race. At times his suavity of manner was fortitude in action. A presuming person or an unethical transgressor found him an unsafe mark. His rebuke came at the effective moment. His voice was still urbane, but the words were like bullets, and the aim was true. Representing, as it does, a life of consistent service, of distinction acquired and held by faithful endeavor, the name of Israel Thorndike Dana will long be held in honor by his children, his patients, his colleagues and his friends.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 9, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Cerebro-Spinal Meningitis. | Diarrheal Diseases. |
| New York . . | 3,908,644 | 1,641 | 790 | 42.29 | 8.77 | 1.76 | 2.07 | 26.81 |
| Chicago . . . | 2,021,086 | 395 | 84 | 28.60 | 8.35 | 1.00 | — | 7.85 |
| Philadelphia | 1,407,968 | 444 | 192 | 38.06 | 4.50 | 1.12 | — | 23.87 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 250 | 125 | 44.80 | 1.20 | 1.20 | — | 28.80 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 134 | — | 44.77 | 4.48 | 1.49 | .75 | 21.64 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 74 | 35 | 40.53 | 1.35 | 2.70 | — | 25.67 |
| Boston . . . | 617,950 | 172 | 43 | 20.93 | 7.56 | 2.90 | .58 | 2.90 |
| Worcester . . | 136,925 | 26 | 10 | 15.38 | — | — | — | 7.69 |
| Fall River . . | 119,349 | — | — | — | — | — | — | — |
| Lowell . . . | 104,402 | 28 | 9 | 28.57 | 3.57 | — | — | 25.00 |
| Cambridge . | 100,998 | 8 | 2 | 25.00 | — | — | — | — |
| Lynn . . . . | 73,875 | 17 | 3 | 11.16 | — | — | — | — |
| Lawrence . . | 72,348 | 25 | 6 | 36.00 | 12.00 | — | — | 20.00 |
| Springfield . | 72,020 | 13 | 5 | 15.40 | — | — | — | — |
| Somerville . | 70,413 | 10 | 2 | 10.00 | 20.00 | 10.00 | — | — |
| New Bedford | 68,863 | 17 | 5 | 23.53 | 11.76 | — | — | 11.76 |
| Holyoke . . . | 50,538 | 19 | 7 | 52.63 | 5.26 | — | — | 31.57 |
| Brockton . . | 46,601 | 8 | 4 | 12.50 | — | — | 12.50 | — |
| Newton . . . | 39,310 | 9 | 1 | — | — | — | — | — |
| Haverhill . . | 39,061 | 5 | — | 20.00 | — | — | — | — |
| Malden . . . | 37,205 | 11 | 2 | 9.09 | — | — | — | — |
| Salem . . . . | 37,188 | 13 | 1 | 7.70 | — | — | — | — |
| Chelsea . . . | 36,499 | 9 | 0 | 11.11 | 11.11 | — | 11.11 | — |
| Fitchburg . . | 36,335 | 4 | 1 | 25.00 | — | — | — | — |
| Taunton . . . | 34,577 | 8 | 3 | 12 50 | — | — | — | — |
| Everett . . . | 30,209 | 3 | 1 | 33.33 | — | — | 33.33 | — |
| North Adams | 29,201 | 2 | — | — | — | — | — | — |
| Quincy . . . | 26,798 | 6 | — | 50.00 | 16.67 | — | 16.67 | 16.67 |
| Gloucester . | 26,121 | 4 | 1 | — | — | — | — | — |
| Waltham . . | 25,797 | 6 | 1 | 33.33 | — | 16.67 | — | — |
| Brookline . . | 23,576 | 7 | — | 28.60 | — | — | — | — |
| Pittsfield . . | 22,870 | 5 | 2 | 20.00 | — | — | — | 20.00 |
| Medford . . | 21,956 | 7 | — | 14.30 | — | — | — | — |
| Chicopee . . | 21,692 | 6 | 3 | 50.00 | 16.67 | — | — | 50.00 |
| Northampton | 20,314 | 4 | 1 | 25.00 | — | — | — | — |
| Beverly . . . | 15,807 | 6 | 1 | 16.67 | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 8 | 2 | 12.50 | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 6 | 1 | 33.33 | — | 16.67 | — | 16.67 |
| Newburyport | 14,478 | 4 | 1 | — | — | — | — | — |
| Woburn . . . | 14,315 | 5 | 2 | 20.00 | 20.00 | — | — | — |
| Melrose . . . | 13,819 | 2 | 1 | — | — | — | — | — |
| Westfield . . | 13,809 | 4 | 1 | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 3 | 1 | — | — | — | — | — |
| Revere . . . | 13,609 | 2 | — | — | — | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 1 | 0 | — | — | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 3 | 1 | — | — | — | — | — |
| Weymouth . | 11,350 | 0 | — | — | — | — | — | — |
| Plymouth . . | 11,139 | 4 | 2 | 25.00 | — | — | — | — |

Deaths reported, 3,438; under five years of age, 1,352; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,283; acute lung diseases 233, consumption 358, scarlet fever 20, whooping cough 9, cerebrospinal meningitis 40, smallpox —, erysipelas 1, puerperal fever 15, measles 20, typhoid fever 39, diarrheal diseases 730, diphtheria and croup 52.

From whooping cough, New York 6, Chicago 2, Philadelphia 1. From measles, New York 15, Chicago 1, Philadelphia 1, Pittsburg 1, Boston 1, Plymouth 1. From cerebrospinal meningitis, New York 34, Pittsburg, 1 Boston 1, Brockton 1, Chelsea 1, Everett 1, Quincy 1. From typhoid fever, New York 9, Chicago 4, Philadelphia 7, Baltimore 1, Pittsburg 16, Boston 2. From erysipelas, New York 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending June 25, the death-rate was 13.2. Deaths reported 3,867; acute diseases of the respiratory organs (London) 64, whooping cough 84, diphtheria 48, measles 180, smallpox 4, scarlet fever 27.

The death-rate ranged from 4.7 in Willesden to 22.3 in Birkenhead; London 12.8, West Ham 10.5, Brighton 17.3, Southampton 10.2, Plymouth 11.4, Bristol 13.2, Leicester 10.7, Nottingham 13.6, Liverpool 17.8, Bolton 9.5, Manchester 17.3, Salford 16.9, Bradford 14.6, Leeds 12.4, Hull 13.8, Sheffield 11.2, Cardiff 10.4, Rhondda 13.6, Wigan 13.3, Merthyr Tydfil 15.8, Handsworth 13.1, Stockport 18.3.

## METEOROLOGICAL RECORD.

For the week ending July 9, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. 3 | 30.18 | 64 | 72 | 56 | 64 | 54 | 59 | N W | N W | 13 | 14 | C. | C. | 0 |
| M. 4 | 30.20 | 68 | 79 | 57 | 53 | 80 | 66 | S W | S | 6 | 15 | O. | C. | 0 |
| T. 5 | 29.98 | 76 | 86 | 67 | 80 | 86 | 83 | S W | S | 13 | 6 | O. | O. | .39 |
| W 6 | 30.02 | 72 | 77 | 68 | 76 | 91 | 84 | N | S | 6 | 8 | O. | F. | .03 |
| T. 7 | 30.07 | 69 | 74 | 64 | 85 | 90 | 88 | E | E | 5 | 5 | O. | O. | 0 |
| F. 8 | 30.12 | 70 | 76 | 63 | 87 | 71 | 79 | S E | S E | 2 | 9 | O. | O. | 0 |
| S. 9 | 30.11 | 68 | 63 | 74 | 72 | 85 | 78 | S E | S E | 3 | 7 | C. | F. | 0 |
| ☞ | 30.10 | | 75 | 64 | | | 77 | | | | | | | .42 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JULY 16, 1904.

H. D. WILSON, passed assistant surgeon. Detached from the "Vicksburg" and ordered home to wait orders.

G. L. ANGENY, passed assistant surgeon. Orders of March 16, modified; ordered to duty at the naval station, Culebra, W. I., with additional duty with the Marine Detachment at that place.

T. C. CRAIG, surgeon. Retired, relieved from duty as member of a committee for fixing a standard for diphtheria antitoxin, under orders of June 30, 1902.

J. M. STEELE, surgeon. Detached from the naval station, Port Royal, S. C., and ordered home to wait orders.

W. P. KEENE, acting assistant surgeon. Detached from duty on board the second torpedo flotilla and ordered to the naval station, Port Royal, S. C.

R. A. CAMPBELL, acting assistant surgeon. Ordered to duty on board the second torpedo flotilla.

L. W. BISHOP, assistant surgeon. Ordered to the navy yard, New York, N. Y.

J. H. BACKUS, assistant surgeon. Detached from the "Annapolis" and ordered home to wait orders.

## RECENT DEATH.

OTIS HENRY JOHNSON, M.D., M.M.S.S., died in Haverhill, July 16, 1904, aged sixty-three years.

## BOOKS AND PAMPHLETS RECEIVED.

A Manual of Surgical Diagnosis. By James Berry, B.S., F.R.C.S. Philadelphia: P. Blakiston's Son & Co. 1904.

A Text-book of Human Physiology. By Albert P. Brubaker, A.M., M.D. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1904.

Les Fractures de l'Humérus et du Fémur par le Dr. Théodore Kocker. Traduit de l'Allemand par le Dr. Ls. Senn. Genève: Henry Kündig; Paris: Félix Alcan. 1904.

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# Original Articles.

## CONGENITAL DISLOCATION OF THE HIP.

### I.

### REPORT OF THE ORTHOPEDIC STAFF OF THE BOSTON CHILDREN'S HOSPITAL BASED UPON OBSERVATIONS ON 144 CASES.

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Congenital dislocation of the hip has, until recently, been generally regarded as an incurable deformity which the wise surgeon would let alone. We have, however, been taught in the last decade that reduction of this dislocation in suitable cases is a safe procedure with a reasonable chance of success. It has been demonstrated that the necessary operation requires skill, but not skill beyond the reach of those who have followed the teachings of others and turned their attention to the details of the subject. This can fairly be regarded as an advance in surgical science. Reduction of the dislocated head, however, does not necessarily establish a permanent cure. The percentage of relapses after successful reduction has been found, even in the hands of the most skilled operators, to be unsatisfactorily high.

The following paper is based upon the experience collected at the Boston Children's Hospital and is in the nature of a report with conclusions drawn from 144 cases, 128 being treated at the hospital, treated in a variety of ways. The record of the hospital is an unusual one, as the study of the treatment of this affection has been a continued one in this institution from the time of the first attempts in this country in treating this deformity until the present when the reduction has become an accepted procedure in surgical practice. The staff of the hospital has had the benefit of consultations with that pioneer investigator, Dr. Buckminster Brown of Boston, and also with Dr. Abner Post who was the first to attempt manipulative reduction of a congenitally dislocated hip under an anesthetic, with Professor Hoffa of Berlin and Professor Lorenz of Vienna, both of whom performed operations according to their different methods. The first attempt at treatment of this affection by operative incision in this country was made at the Children's Hospital by Dr. Burrell, and the first case treated in this country by the manipulative method, now known as the Lorenz method, was at the hospital by Dr. Dane. The pathological anatomy of the affection has been studied by Professor Councilman and Dr. Nichols, Dr. Soutter and Dr. Robinson, with reports upon the pathological specimens obtained at the hospital in an epidemic of scarlet fever and diphtheria. Valuable specimens have been placed at the disposition of the staff by the courtesy of Professor Dwight and Dr. W. F. Whitney of the Harvard Medical School, and experiments upon cadavers in regard to the strength of capsular and muscular tissues have been made by members of the Orthopedic Department of the hospital. For the sake of brevity no attempt is made in this report to present the literature of the subject which has, however, been carefully studied.

The conclusions drawn from the experience gained is summarized in the following statement:

#### TREATMENT BY RECUMBENT TRACTION.

This method, recommended by the French and English surgeons of the middle of the last century and thoroughly applied by Dr. Buckminster Brown in a single case remaining under treatment for several years, was employed at the Children's Hospital in a few cases and in others at their homes. In one of these the treatment was applied with constant care for two years. In two cases strong recumbent traction was applied for several months continuously. In all the cases the treatment proved to be unsatisfactory. Although the limbs were drawn down to the level of the acetabulum and to the plane of its proper position, the shortened muscles being gradually stretched, all attempts at securing the head in its proper position by manipulation, mechanical devices of massage, proved failures. The benefit to be derived from the method is not commensurate with the outlay of time and discomfort demanded, and no permanent advantage was evident.

#### TREATMENT BY AMBULATORY TRACTION.

This method may be regarded only as possibly of use in preventing temporary shortening of the leg. The apparatus employed was a Thomas knee splint furnished with a traction foot windlass and allowing locomotion with perineal support. This apparatus was worn in one case for a year with no perceptible benefit.

#### EXCISION.

Excision at the hip has not been performed at the Children's Hospital for congenital dislocation of the hip. In two instances the head of the femur was sawn to alter its shape and correct a deformed condition so that it could be placed into the distorted acetabulum. In both of these cases a relapse occurred.

#### REDUCTION BY INCISION.

After it became evident that no cure of this deformity could be expected from traction or by the method of operative manipulation proposed by Dr. Post, attention was turned to the operative method practiced at that time by Hoffa, which was based on the supposition that no adequate acetabulum existed, and that it was necessary to create by the curette a socket to retain the replaced head. This operation, performed at the hospital first by Dr. Burrell, was repeated in several cases. One case was operated upon by Professor Hoffa when visiting Boston. No benefit followed these earlier operations. Various incisions were tried and various methods of deepening the acetabulum by drills, gouges,

surgical engines, etc., employed. The defects of the earlier operations done before 1890 lay partly in the inadequate methods used in stretching the adductor and hamstring muscles. After it had been learned that these muscles could be stretched without difficulty, and that in most cases a satisfactory acetabulum existed, the operation of reduction by incision became much less difficult and was performed in a number of cases. In the greater number of cases of treatment by incision the anterior incision was used, separating the gluteus medius from the tensor vaginæ femoris, exposing the capsule which is opened and later freed from its femoral attachments. After the upper part of the capsule was opened a director was passed into the acetabulum, the capsular construction divided and the portion of the capsule covering the acetabulum carefully preserved and placed around the femoral neck. The curette was used to deepen the acetabulum in only a few cases.

The immediate result of this operation was satisfactory in a large number of cases. There was but little shock, sepsis was prevented and as a rule the wound healed without difficulty. In fully half the cases healing by first intention took place. Although the wound was necessarily deep, in no case was serious sepsis encountered. Attempts were made to stitch the capsule around the head to form an artificial cotyloid ligament. This appeared to be successfully done in several instances. In one of the pathological specimens, from a child who died of whooping cough six months after operation by manipulative reduction of one hip with failure and successful incision in the other, it appeared that no satisfactory reduction would have been possible, without incision and division of the capsular neck. Incision presents, however, certain disadvantages. In the older cases the incision is a deep one and requires some time for healing, with great care in asepsis. As the operative measure only attacks the capsule, it is necessary that the shortened adductor and hamstring muscles should be well lengthened before incision. This is easily done in the lighter cases; but in the lighter cases reduction by incision, with the results of present experience, does not seem necessary in ordinary cases. In the severest cases the operation is not an easy one. Deepening the acetabulum by means of a curette or a Doyens instrument for the purpose is not indicated in the younger cases. It appears to have a value in adolescent cases with distorted acetabula, when the head of the femur does not fit into the socket. In the series presented one death from shock followed the operation — a double operation in an infant one and a half years old; an instance of faulty judgment in operating on both hips at once in so young a child.

### TENOTOMY, MYOTOMY AND FASCIOTOMY.

Experiments upon cadavera demonstrated that in the reduction resistant structures outside of the capsule are within the easy reach of the surgeon without danger to the patient, requiring comparatively small incisions followed by traction when traction and manipulation alone are not sufficient to overcome them. The strongest group of muscles are the adductors, but these, being straight fibered muscles with but little intra-muscular septa, can be stretched sufficiently in old cases except the long tendon of the adductor magnus attached to the tubercle of the internal condyle. As this can be easily divided the chief resistance in stretching the adductor group where resistance is encountered can in this way be overcome. The hamstring muscles are accessible without difficulty to division if this is needed, and the shortened ileo tibial band and tensor vaginæ femoris; the most resistant portions of the fascia lata can be lengthened safely by a free subcutaneous incision. It would appear, therefore, that in the difficult cases it might be desirable to divide the operation into two sittings; one to overcome all resisting tissues except the capsule, and the second to open this and to effect the reduction.

### STITCHING THE CAPSULE.

Various methods were employed in stitching the freed capsule around the reduced head. Handled needles, such as are used in the operation for hernia, were found the most serviceable for the purpose. Catgut was used in all cases.

### FEMORAL TWIST AND OSTEOTOMY.

Femoral twists are to be found in almost all cases of congenital dislocation of the hip, as has been pointed out by Nichols. That it exists to a slight degree in normal limbs has been shown by Mikulickz and by Soutter; it constitutes, when present to an extent above 60°, a complication which may prevent a complete functional cure. Osteotomy for the correction of this complication was performed in six cases, this being done at the time of the reduction in three cases and three afterwards. Subtrochanteric osteotomy was performed in four, and in the others the operation was done at the lower end of the femur. In three instances the upper fragment was held in place by means of a steel wire sharpened like a drill and drilled through skin and bone, the ends being secured in a plaster of Paris bandage. In osteotomy at the time of the operation of reduction, fixation of the upper fragment is difficult, and it appears wiser when osteotomy is necessary that it should be deferred until the head has been well secured by cicatrization of the torn tissues in its reduced position. In performing osteotomy various instruments were used; section of the bone by a Gigli saw passed with the aid of a long straight needle to the inner and under side of the lower end of the femur between the nerves, vessels and the bone, appeared to be the most satisfactory way. It must be admitted, however, that until the ultimate functional results after reduction have been more thoroughly studied and the limit of possible correct gait with a twisted femur is better understood, it is impossible to determine the value of osteotomy in this deformity.

RESULTS.

The results of the improved method of operation by incision have proved satisfactory in an increasing number of cases as greater skill was acquired. In the earlier cases the ultimate results were unsatisfactory, but in several of the later cases perfect results with perfect motion and no limp were attained. In only one of the cases, where deepening of the acetabulum by means of a curette was done, did ankylosis follow, and in this the cartilage of the head of the femur was also injured at the time of operation. It is thought that a greater number of cures after incision would have been gained if better methods in after-treatment had been employed. Improved methods of fixation after operation have been developed in the last few years, but during this period the attention of the surgeons has been turned chiefly to development of methods of treatment without incision. It seems probable that in the future treatment by incision will be made more use of than in the past year, in the treatment of the more complicated cases.

TREATMENT OF THE IRREDUCIBLE CASES BY DISSECTION OF THE LAX CAPSULE.

This method was employed in one case, not included in the table, a girl of sixteen, and without marked benefit. The patient recovered from the operation with the limb a little lengthened but without marked improvement in gait.

SUBCUTANEOUS OSTEOTOMY WITHOUT REDUCTION.

This method has not yet been employed at the Children's Hospital.

MANIPULATIVE REDUCTION.

The manipulations employed in reduction of a congenitally dislocated hip have changed since the method was first attempted at the hospital with the Bigelow manipulation for traumatic dislocation by Dr. A. Post (at that time connected with the Children's Hospital) at the City Hospital, and the present procedure may be regarded as an entirely different one. The details of the Paci Lorenz method have been so frequently described that a further account is unnecessary, but as the anatomical relations of the parts are not as generally known, a mention of these may be of interest.

In manipulation reduction it is necessary that the dislocated head (which lies above and slightly behind the vertical plane of the acetabula) be pulled downward; as it nears the rim above the socket it is deflected, if it is not already behind the acetabulum, and must be brought forward in order to enter the socket; when it has been brought down to, though behind the level of, the middle of the acetabulum, it is not difficult, as the posterior acetabular bony rim presents in children a gap (owing to incomplete ossification), to twist the femur and push the head from its posterior position forward into the socket, provided that all contracted tissues are sufficiently stretched.

In order to diminish the resistance of the shortened tissues, viz., adductor, hamstring, psoas, and iliacus muscles, and fascia lata, the reduction is best done with the thigh flexed and abducted.

To prevent the folding in of the lower and anterior wall of the capsule as the head enters the socket, this portion of the capsule must be kept on the stretch as the head is pushed downward and forward. This manipulation is ineffectual unless the shortened muscles are stretched, and also all obstructing portions of the capsule, ligaments, and fascia lata are sufficiently stretched.

This, in manual reduction, is done by using the femur as a lever, the knee and leg as a handle, and the head as a dilating and stretching force.

It is manifest that considerable skill is required, not only to stretch contracted tissues and replace the head without folding the capsule, but also to avoid any unnecessary injury to the tissues, nerves, arteries, or bone, for the surgeon has in his hands an implement of great force.

The objection to the method of reduction by manual manipulation is that not only is there danger of injury, if skill is not employed, but even with the employment of the best skill, in certain cases the pressing of the distorted capsule into the acetabulum in front of the reduced head may take place.

This was clearly shown in a pathological specimen already described in the orthopedic section of the Warren Museum. When the capsular neck is smaller than the head and where this constriction is too resistant to be dilated, folding of the capsule into the socket necessarily follows.

In a case of congenital dislocation of the shoulder, at the Children's Hospital operated on by Dr. Brackett, it was found on cutting down to the joint that it was impossible to prevent some folding in of the capsule on reduction, and it was necessary to open the capsule and remove the fold to secure perfect apposition of the bones of the joint. In how many instances of congenital dislocation of the hip this difficulty is likely to occur, it is impossible to say at present. It was in the belief that this was a frequent complication that reduction by incision was performed at the Children's Hospital in a large number of cases; in a few it appeared from the narrowness of the capsular constriction that no complete reduction was probable without incision; in many, however, it appeared that the capsular constriction was neither so small nor so resistant as to preclude successful reduction by manipulation.

In a specimen of double congenital dislocation in a six-months' fetus in the possession of the Warren Museum, and dissected by Dr. S. Robinson, of the Anatomical Department of the Harvard Medical School, it appears that no capsular constriction is present in the early stage of the deformity. It is probable that the older and more severe the deformity the greater the capsular constriction.

It is claimed that where a folding of the capsule in front of the reduced head is present it will be

gradually worn away by the pressure of the head in the acetabulum in locomotion. Such an assumption, however, is not based upon pathological evidence. Strong, ligamentous tissues, instead of diminishing in thickness, often increase under pressure. It would seem more probable to assume that the folding in of the capsule in front of the reduced head is one of the causes of relapse, which diminish the percentage of cures in the treatment of congenital dislocation of the hip.

The frequency of relapses has been attributed to shallowness of the acetabulum, but both pathological specimens and the experience of those who have cut down on congenitally dislocated hip joints justifies the statement that shallow acetabula are by no means so common as to justify such a higher percentage of relapse. Some other cause must be sought to explain this failure. Imperfect reduction, twists of the femur and defects of the acetabulum are all mentioned, as well as the folding of the capsule in front of the head of the femur in reduction. These, however, are hardly satisfactory explanations in relapsed cases where the head has been definitely reduced into a deep socket, both after reduction by manual manipulation and also after incision where the capsule was definitely not folded in front of the head.

If the six-months' fetus with this deformity is examined it will be found that the head is connected with the socket by a stretched and loose capsule, which permits the position of the head to lie above and behind the acetabulum, or to be placed in any position permitted by the length of the relapsed capsule. The muscular and ligamentous obstructions will be found to be slight, and the acetabulum not much more shallow than that found in fetal conditions of the same age. There is, however, in the fetus afflicted with this deformity, a noticeable absence of the cotyloid ligament. Even in a four or six months' fetus it will be seen that it is the cotyloid ligament which holds the head of the femur in its proper position, and checks a dislocation. It has been claimed that the shallowness of the acetabulum in a congenitally dislocated hip joint is the usual cause of the relapse after successful reduction. An examination of pathological specimens, however, of this deformity and the experience of those who have operated upon the joints by means of open incision with a careful exploration of the acetabulum, justified an assertion that a shallowness of the acetabulum to an extent preventing the retention of the replaced head in the socket is much more rare than would account for the frequency of relapse after successful reduction. If the depth of the acetabulum in a normal child of five is examined, it will be seen that unless a proper cotyloid ligament exists holding the head in its place, dislocation would invariably occur on any extensive motion of the hip. The condition is not unlike that of the shoulder joint of an adult, where a dislocation is prevented not so much by the depth of the glenoid cavity as by the strength of the surrounding tissues. It would appear, therefore, that for successful treatment of cases of congenital dislocation of the hip after reduction, it is necessary that the capsule should fit closely and not loosely around the head.

After reduction, a suitable position for the limb, avoiding improper stretching of the capsule, would be with the center of the head of the femur in contact with the center of the acetabulum, but in the first month following reduction, it is desirable that there be no possibility of pressing the head of the femur against the part of the socket least capable of resisting pressure until the cartilaginous rim which crowns the edge of the socket has been given strength enough at the weakest part of the acetabulum to retain the reduced head. For this reason, it is desirable for a time, until muscular balance has been established, that the muscles which would adduct and press the head of the femur up be placed at a disadvantage, and it is for this reason that the so-called frog position is of service shortly after reduction; but as it is desirable that the portion of the capsule, which should be strong and compact, should not be stretched and thereby weakened, it is essential that as soon as feasible the limb be put into position as near the normal as is possible, in order that no contraction of the capsule or torn ligaments be established which will not permit the necessary free rotation of the trochanter when the limb is placed in its normal position. If these contracted tissues are strong a transposition results if the upper and forward portion of the capsule is lax. The position of the limb after reduction, therefore, must be a matter of judgment as well as the length of time it is maintained. The question is still further complicated by the twist of the femur and the alteration in the femoral neck, which is present in a large number of cases, a complication already referred to.

Investigation has shown that a considerable twist may exist in the femur within the range of normal function, but where an extreme twist is present the danger of abnormality may be said to be reached. It can be expected that the shape of the bone will, by growth, be altered, if complete reduction has been established.

It would appear, therefore, that besides a shallow acetabulum, an infolded capsule and a twisted neck, that a relapse may result from a relaxed capsule which may come from an after treatment with a faulty position, or the too long continuance in such a position as would develop a lax capsule with a faulty contraction of the ileo-femoral tissues. This might occur even if the frequent cause of relapse, a loosely fitting or imperfect plaster cast, is not present.

It is manifestly desirable that the position of the limb (with, if necessary, a change of position) be inspected frequently and that x-ray examinations be made at suitable intervals, in order to correct any tendency to transposition or to relapse. This appears more safe than to trust, without removal of the plaster and examination to the changes which may develop in the socket from use of the limb.

An attempt at the hospital has been made to substitute a removable appliance for a plaster bandage for fixation of a limb after the post-operation plaster of paris bandage has been worn for two months. This will enable the surgeon to inspect the limb with care more frequently than when a plaster bandage is worn. An appliance devised by Dr. J. Adams is on trial for this purpose.

MECHANICAL OPERATIVE STRETCHING.

In all cases of congenital hip reduction the fixation of the pelvis during manipulation is of importance. This is difficult in the older and more resistant cases, and for this reason in the severe cases some form of mechanical stretching is of assistance.

Precision in the use of the applied force is desirable. Where this can be furnished by a proper mechanism it is manifestly of great assistance. There are manifest disadvantages to the surgeon in the employment of any mechanism, but when this can be done greater efficient force can be exerted than can be expected from the hands of a surgeon, even if aided by a number of assistants.

Various mechanical devices have been used at the Children's Hospital. The latest, devised by Mr. Bartlett of Boston, is the most effective. It has been used not only in cases beyond the usual age limit, but also in younger cases of five and six, as there seemed to be less danger of injury to tissues, less ecchymosis when it was applied, than when manual manipulation was used; it is of much use in double cases. As is seen by the table, with its use children come under the class in which treatment is possible at a much older age than has hitherto appeared possible; the danger of fracture is removed, if the mechanism is used intelligently. A full description of this appliance with an explanation of its method of use will be found in the *Journal of Medical Sciences*, December, 1903.

AFTER TREATMENT.

The length of time necessary for after treatment is necessarily a matter of judgment in each case. Where the capsule is well contracted about the head and is firm, it is manifestly necessary that no longer time is needed for fixation than is required for the thorough healing of torn tissues, if a sufficiently deep socket is present. Where too lax capsule is present, or an abnormally twisted femur, it is a question of an operation shortening the capsule, an osteotomy or the retention of the limb for a year in a fixed bandage with the resulting atrophy of tissues. Practice will, it is thought, tend to the shortening rather than the lengthening of the time of after treatment by fixed bandages with operative intervention to meet the above mentioned complications.

Massage and exercises naturally suggest themselves as of use after the removal of fixed bandages to hasten the usefulness of the limb and promote the proper rotation of the limb from the abducted to the normal position, but the natural activity of the child can be expected in time to develop the normal functions of the limb provided the reduction is complete. This has been relied upon in a majority of the cases here reported; the value of systematic massage and regulated gymnastics were demonstrated in two cases, in which they were thoroughly carried out.

ADULT CASES.

A number of adult cases, eleven in all, not included in the table of this report, have applied for treatment, and thereby an opportunity given for observation of the ultimate results of neglected cases. The age ranged from sixty to sixteen. The one of sixty applied for treatment on account of calosities of the foot from an equinus position. She had enjoyed perfect health during life, had been the mother without difficulty of four children. She had several times been obliged to use crutches for periods of from six months to two years, but had recovered so that locomotion necessary to an active life was not difficult, with the occasional use of a cane. She was a large woman of active, uncomplaining temperament.

Cases of feeble strength, even if of slight figure, frequently suffer considerable temporary disability accompanied by muscular pains, considered rheumatic, which may be so severe as to require rest in bed for some time; while some cases of equal size may possess sufficient muscular strength to enable them to walk freely and without difficulty, and with little rocking in their gait. The latter is the exception, however, and the deformity, even in single cases, constitutes a disability of greater or less severity, preventing the active occupations.

In one case, a feeble girl of nineteen with double dislocation, locomotion was impossible without crutches.

Palliative treatment in these cases is of some assistance; massage, the temporary use of crutches, and in cases with severe lordosis the use of a spinal corset is of help. Operative treatment, cutting down upon the joint, deepening the acetabulum, osteotomy, may be of benefit in some of the adult cases, but was not considered in the cases here mentioned.

Forcible manipulation appeared to be of assistance in one case, though it was uncertain how much of the benefit resulted from a mental stimulus and how much to a positive improvement.

As a rule, the condition after treatment, if only partially successful, was better than the usual condition in neglected cases, if the latter are examined in adult life. In childhood, however, the deformity occasions so little disability or discomfort that suitable treatment is often regarded as unnecessary.

In the cases here presented there were but 20 males in the 144 cases. In two the deformity occurred in another member of the family, in one in an older, and in the other in a younger, sister. Of those cut down upon, in one, the head of the

femur was entirely absent; a twist of the femur appeared to be present in a large proportion of the cases; flattening of the head and lowering of the axis of neck occurred in all the older cases, ten or older. Fifteen of the series presented double dislocation.

### RESULTS.

The results presented indicate a gratifying continued improvement in treatment from the period when all attempts were fruitless even among younger children. At present, even at an increased age, the percentage of cures is considerable.

It appears to be safe to claim that for all cases, single and double, under ten years of age, either by manipulation by the use of mechanical force, or by reduction by means of incision, a complete reduction is possible, and that relapse can be prevented in more than 60% of the cases. For this, however, careful attention should be paid to after treatment with attention to the following details. It is believed by the writers that a higher percentage and at a higher age limit can be expected, if all methods, including the operative in the more difficult cases, are employed. *First*, that the position of the limb should be such that the development of a firm cotyloid ligament be favored. *Second*, that the position of the limb should be such that the capsule should not be unduly stretched in its forward portion. *Third*, that the position of the limb should be frequently inspected and x-ray examinations be made at frequent intervals.

Double cases are found to present more than twice the difficulty of single ones, and may require repeated operations to secure equally good results on both sides. Although operation by incision without and with curettage of the acetabulum in the complicated cases will be used, in all probability, more commonly than at present in the cases when the simpler methods have failed. The method by forcible manipulation is, in the opinion of the writers, the one to be employed in the usual cases.

From the experience gained at the Children's Hospital it appears also to the writers of this report that stretching the tissues by an efficient machine gives in resistant cases an unquestioned advantage, and permits better reduction, with less risks and in older patients, than if operative manipulation alone is employed.

There is a certain analogy between the treatment of congenital dislocation of the hip and that of club foot. In the simpler cases, manipulation under an anesthetic is sufficient. In the more resistant cases, correction is helped by mechanical aids; in the oldest and complicated cases, incision and osteotomy are often needed to perfect the cure.

The present condition of the treatment of congenital dislocation of the hip may seem to illustrate that the world advances by impossibilities achieved. Twenty years ago, cure of this deformity was considered impossible. This in many cases is now easily accomplished.

### CASES OF CONGENITAL DISLOCATION OF THE HIP OPERATED ON AT THE CHILDREN'S HOSPITAL FROM 1884 TO 1896.

*By mechanical appliances without operation:*

| | Date | Age | Sex | Hip | Remarks |
|---|---|---|---|---|---|
| 1. | Feb. 25, 1884 | 3 | f | not men'd | |
| 2. | Sept. 20, 1887, | 6 | f | left | |
| 3. | Nov. 3, 1888, | $2\frac{6}{12}$ | f | double | |
| 4. | Aug. 26, 1889, | 9 | f | right | |
| 5. | Sept. 25, 1890, | 9 | m | left | |
| 6. | July 29, 1895, | $3\frac{6}{12}$ | m | right | *Died*, scarlet fever |
| 7. | Oct. 26, 1895, | 6 | f | right | |
| | | | Total, 7 | | |

*By incision and curettage* (Hoffa's early operation):

| | Date | Age | Sex | Hip | Remarks |
|---|---|---|---|---|---|
| 1. | Apr. 18, 1891, | 11 | f | left | |
| 2. | Sept. 16, 1891, | 14 | f | left | operated upon by Dr. Hoffa |
| 3. | Feb. 13, 1892, | $2\frac{6}{12}$ | f | left | |
| 4. | Apr. 13, 1892 | $2\frac{10}{12}$ | f | left | *Died*, Intest. Hem. |
| 5. | Nov. 9, 1892, | $2\frac{11}{12}$ | f | double | |
| 6. | July 12, 1893 | 4 | f | double | |
| 7. | May 7, 1894, | 3 | f | left | |
| 8. | Oct. 24, 1893, | $2\frac{5}{12}$ | f | left | |
| 9. | May 4, 1893, | 3 | f | double | *Died*, diphtheria |
| 10. | Nov. 13, 1893, | 8 | f | double | *Died*, diphtheria |
| 11. | Sept. 10, 1895, | 2 | f | left | |
| 12. | Oct. 2, 1895, | ? | f | left | |
| | | | Total, 12 | | |

*By manipulation under anesthetic* (Post):

| | Date | Age | Sex | Hip | Remarks |
|---|---|---|---|---|---|
| 1. | Sept. 12, 1884, | 2 | f | right | *Died*, scarlet fever |
| 2. | Jan. 26, 1889, | 9 | f | left | |
| | | | Total, 2 | | |

Total of all cases from 1884 to 1896, 21, unsuccessful.

At this period the Hospital suffered severely from an epidemic of scarlet fever and, before the introduction of antitoxin, of diphtheria.

### CASES OF CONGENITAL DISLOCATION OF THE HIP, OPERATED ON AT THE CHILDREN'S HOSPITAL FROM 1896 TO 1902.

| | Date | Age | Sex | Hip | Remarks |
|---|---|---|---|---|---|
| *By incision* (open): | | | | | |
| 1. | Mar. 27, 1896, | 3 | f | left | unknown |
| 2. | Nov. 5, 1896, | 7 | f | right | success |
| 3. | Jan. 4, 1897, | 8 | f | double | unsuccessful |
| 4. | June 29, 1897, | 8 | m | unknown | unknown |
| 5. | July 7, 1897, | $3\frac{6}{12}$ | f | double | " |
| 6. | Oct. 13, 1897, | 3 | f | unknown | " |
| 7. | Dec. 10, 1897, | $1\frac{5}{12}$ | f | double | *Died*, Dec. 12, '97. |
| 8. | Dec. 14, 1897, | 5 | f | left | unknown |
| 9. | Apr. 5, 1898, | 5 | f | unknown | " |
| 10. | May 31, 1898, | 6 | f | " | " |
| 11. | May 2, 1898, | 5 | f | left | " |
| 12. | May 15, 1898, | 3 | m | left | " |
| 13. | Oct. 25, 1898, | $3\frac{10}{12}$ | f | unknown | " |
| 14. | Feb. 8, 1899, | 9 | f | left | unsuccessful |
| 15. | July 15, 1899, | $3\frac{6}{12}$ | f | left | " |
| 16. | Sept. 5, 1899, | 3 | f | left | unknown |
| 17. | Sept. 19, 1899, | $2\frac{6}{12}$ | f | double | right, success; left, unsuccessful |
| 18. | Oct. 9, 1899, | 9 | m | left | unsuccessful |
| 19. | Dec. 5, 1899, | $3\frac{6}{12}$ | f | right | success |
| 20. | Dec. 7, 1899, | 2 | f | left | " |
| 21. | Dec. 29, 1899, | 4 | f | left | " |
| 22. | Apr. 3, 1900, | 4 | f | right | " |
| 23. | June 2, 1900, | 2 | f | right | success |
| 24. | Jan. 1, 1901, | $1\frac{10}{12}$ | f | left | unknown |
| 25. | Jan. 22, 1901, | 2 | f | double | right, unsuccessful; left, success |
| 26. | Apr. 26, 1901, | 5 | f | right | unknown |
| 27. | Apr. 29, 1901, | 12 | f | right | " |
| 28. | July 25, 1901, | 4 | m | left | success |
| 29. | Aug. 15, 1901, | 3 | f | left | " |
| 30. | Dec. 3, 1901, | $4\frac{6}{12}$ | f | unknown | unknown |
| 31. | Nov. 26, 1901, | 3 | f | double | success |
| 32. | Dec. 13, 1901, | 2 | f | left | unknown |

Total 34 { Success 11; Unsuccessful 6; Result unknown 17

*By manipulation:*

| | Date | Age | Sex | Hip | Remarks |
|---|---|---|---|---|---|
| 1. | Mar. 30, 1896, | 3 | f | left | unknown |
| 2. | May 21, 1896, | 3 | f | unknown | unknown |
| 3. | Oct. 29, 1896, | 7 | | right | unsuccessful |
| 4. | Apr. 29, 1897, | 2 | f | double | unknown |
| 5. | June 21, 1897, | 12 | f | right | unsuccessful |
| 6. | Oct. 27, 1897, | 6 | f | left | unknown |
| 7. | Nov. 22, 1897, | 2 | f | left | " |
| 8. | Nov. 24, 1897, | 5 | f | double | unsuccessful |
| 9. | Apr. 20, 1898, | 5 | f | right | unknown |
| 10. | July 5, 1898, | 8 | m. | left | success |
| 11. | Jan. 27, 1899, | 2 | f | right | unknown |
| 12. | Aug. 18, 1899, | 3 | f | left | " |
| 13. | Sept. 26, 1899, | 2 | f | left | " |
| 14. | Sept. 26, 1899, | 9 | f | left | unsuccessful |
| 15. | Mar. 15, 1900, | 4 | f | right | " |

*By manipulation.*

| Date | Age | Sex | Hip | Remarks |
|---|---|---|---|---|
| 16. May 10, 1900 | 2 | f | right | unsuccessful |
| 17. Apr. 9, 1901, | 12 | f | right | " |
| 18. Apr. 26, 1901, | 5 | f | left | unknown |
| 19. May 13, 1901 | 6 | f | left | " |
| 20. May 17, 1901, | 9 | m | right | " |

Total 20: Successful 1; Unsuccessful 7; Result unknown 12

Total of all cases from 1896–1902, 54: Success 12; Unsuccessful 13; Result unknown 29

## CASES OF CONGENITAL DISLOCATION OF THE HIP OPERATED ON AT THE CHILDREN'S HOSPITAL IN 1902.

| Date | Age | Sex | Hip | Remarks |
|---|---|---|---|---|
| *By open incision:* | | | | |
| 1. Jan. 30, 1902, | $4\frac{6}{12}$ | m | left | unsuccessful |
| 2. Feb. 4, 1902, | 7 | f | right | * " |

Total 2: Success 0; Unsuccessful 2

| Date | Age | Sex | Hip | Remarks |
|---|---|---|---|---|
| *By manipulation:* | | | | |
| 1. June 17, 1902, | 7 | f | left | *success |
| 2. July 10, 1902, | 4 | m | right | * " |
| 3. July 29, 1902, | 6 | f | right | transposition |
| 4. Aug. 15, 1902, | 7 | f | left | * " |
| 5. Aug. 15, 1902, | $3\frac{5}{12}$ | f | right | *success |
| 6. Aug. 19, 1902, | $2\frac{11}{12}$ | f | left | * " |
| 7. Oct. 4, 1902, | 5 | f | left | transposition |
| 8. Oct. 7, 1902, | $2\frac{6}{12}$ | f | left | *success |
| 9. Nov. 20, 1902, | 3 | f | left | *transposition |
| *Cases operated upon by Professor Lorenz:* | | | | |
| 10. Dec. 22, 1902, | 3 | f | left | *transposition |
| 11. Dec. 22, 1902 | 7 | f | right | * " |
| 12. Dec. 22, 1902, | 4 | f | double | *relapse |
| 13. Dec. 23, 1902, | $3\frac{6}{12}$ | f | left | *ant. transposition |
| 14. Dec. 23, 1902, | $9\frac{6}{12}$ | m | left | *unsuccessful |
| 15. Dec. 23, 1902, | 3 | f | left | *success |
| 16. Dec. 26, 1902, | 9 | f | double | *unsuccessful |
| 17. Dec. 26, 1902 | 5 | f | left | *success |
| 18. Dec. 26, 1902, | 3 | f | right | *relapse |
| 19. Dec. 26, 1902 | $1\frac{11}{12}$ | f | right | *success |
| 20. Dec. 27, 1902, | $2\frac{6}{12}$ | m | double | *relapse |

Total 20: Success 8; Unsuccessful 2; Relapse 3; Amt. transposition 7

Total of all cases operated on in 1902: Total 22: Success 8; Unsuccessful 4; Relapse 3; Amt. transposition 7

## CASES OF CONGENITAL DISLOCATION OF THE HIP OPERATED ON AT THE CHILDREN'S HOSPITAL IN 1903.

| Date | Age | Sex | Hip | Remarks |
|---|---|---|---|---|
| *By mechanical stretching and manipulation:* | | | | |
| 1. Mar. 12, 1903, | 2 | f | right | *transposition |
| 2. Mar. 24, 1903, | 12 | f | right | *success |
| 3. Mar. 28, 1903, | $4\frac{6}{12}$ | f | left | * " |
| 4. Apr. 4, 1903, | 6 | f | right | * " |
| 5. May 4, 1903, | 8 | f | left | * " |
| 6. May 30, 1903, | 8 | m | right | *transposition |
| 7. June 4, 1903, | 9 | f | left | * " |
| 8. June 9, 1903, | 4 | m | right | *ant. transposition |
| 9. June 18, 1903, | 9 | f | left | *success |
| 10. June 27, 1903, | 9 | f | right | *transposition |
| 11. July 9, 1903, | 4 | f | double | *success |
| 12. July 24, 1903, | 9 | m | left | * " |
| 13. July 28, 1903, | 13 | m | right | unsuccessful |
| 14. Aug. 22, 1903, | 12 | f | left | * " |
| 15. Sept. 3, 1903, | 5 | f | right | success |
| 16. Sept. 10, 1903, | 12 | f | left | unsuccessful |
| 17. Sept. 19, 1903, | 5 | f | double | success |
| 18. Oct. 6, 1903, | 6 | f | left | * " |
| 19. Oct. 6, 1903, | 4 | m | left | " |
| 20 Nov. 7, 1903, | 8 | m | left | " |
| 21. Nov. 13, 1903, | 13 | f | left | * " |
| 22. Nov. 14, 1903, | 4 | f | right | *success |
| 23. Dec. 31, 1903, | 10 | f | double | * " |
| 24. Jan. 5, 1904, | 6 | f | double | * " |

Total 24: Success 16; Unsuccessful 3; Transposition 5

*By manipulation:*

| Date | Age | Sex | Hip | Remarks |
|---|---|---|---|---|
| 1. Jan. 6, 1903, | 6 | m | right | *success |
| 2. Jan. 13, 1903, | 5 | f | right | * " |
| 3. Feb. 26, 1903, | $5\frac{7}{12}$ | f | left | transposition |
| 4. Mar. 17, 1903, | 2 | f | left | *success |
| 5. Sept. 3, 1903, | 4 | f | double | * " |
| 6. Sept. 26, 1903, | 2 | f | left | success |
| 7. Oct. 27, 1903, | 2 | f | right | " |
| 8. Oct. 29, 1903, | $1\frac{1}{2}$ | f | left | * " |

Total 8: Success 6; Unsuccessful 1; Transposition 1

*By open incision:*

| Date | Age | Sex | Hip | Remarks |
|---|---|---|---|---|
| 1. July 23, 1903, | 13 | m | right | unsuccessful |

Total 1: Unsuccessful 1

Total of all cases operated on in 1903: Total 33: Success 22; Unsuccessful 5; Transposition 6

*Note.* — The ultimate condition was verified by a skiagram in those marked with an *.

## II.

### ADDENDUM.

BY E. H. BRADFORD, M.D.

Recognizing the difficulty of determining with definiteness an absolute cure in many of the treated cases of congenital dislocation of the hip, the staff of the hospital collected a number of children who had been treated in the previous two years and demonstrated their conditions with their skiagraphic record at a special meeting of the Boston Society of Medical Improvement, which was held at the Children's Hospital and to which the leading physicians and surgeons of the city were invited. A committee of three was appointed by the president of the Society for Medical Improvement to examine personally the cases shown and report upon their condition. It was stipulated that the committee appointed should be made up of surgeons not connected with the Children's Hospital. The committee was composed of Dr. D. W. Cheever, Emeritus Professor of Surgery, Harvard Medical School; Dr. C. B. Porter, Professor of Clinical Surgery, Harvard Medical School; Dr. C. F. Painter, Professor of Orthopedic Surgery, Tufts Medical School and Orthopedic Surgeon to the Carney Hospital, who submit the accompanying report.

To prevent undue publicity the names of the children operated upon are not given in the published hospital report; these were, however, furnished to the members of the committee and the results of their examination are given in the accompanying committee's report. This report differs from the hospital report in two cases which were regarded by the committee as having slipped into an anterior position since their examination at the hospital.

In a majority of cases in the hospital table a sufficient time had elapsed since the removal of the plaster to justify an opinion as to the probability of a permanent cure, but in some of those examined by the committee the plaster bandage had been removed only a short time.

It is desirable to examine the effect of growth upon cases of congenital hip for some years after successful treatment and after the so-called functional cure with anterior transposition of the head, and it is proposed to re-examine in a year from the present date as many as possible of the cases included in the hospital tables.

Accompanying this paper is presented the photograph of a patient photographed when four

years of age and later when twenty-six. No treatment was attempted and the case may be considered as showing the effect of growth upon the figure. The patient was able to walk about freely and with but little side sway, and suffered little inconvenience except that occasioned by the shortness of stature. The patient was slight in figure. Another photograph submitted indicates a similar untreated case, nineteen years of age, resulting in great disability, the patient being unable to walk without crutches. One of the cases operated upon by Professor Lorenz (No. 11 of the table), and reported as resulting in a transposition, was anesthetized six months later and the limb put in an improved position. It is believed that an anatomical reduction and a permanent cure has resulted, from a statement which has been received in writing; but as the case had not been personally examined at the time of writing the report, the rule was followed adopted for all cases; viz., that the statement in the hospital records is to be published unless corrected by later examination.

It has been thought inexpedient to publish all the skiagrams of the cases in this report, some sixty in number, but illustrative skiagrams are presented to indicate the standard of results as classified by the committee.

## III.

### REPORT OF THE COMMITTEE OF THE BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

BY DAVID W. CHEEVER, M.D.; C. B. PORTER, M.D.; CHARLES F. PAINTER, M.D., BOSTON.

THE committee appointed at a special meeting of the Boston Society for Medical Improvement held Jan. 7, 1904, to consider the report of the staff of the Children's Hospital upon the cases of congenital dislocation of the hip treated at that institution, submit the following statement:

The cases, the subject of this report, are those operated upon during the eighteen months just preceding the date of this meeting, which have been operated on long enough to justify the removal of retentive dressings, and which were present for the examination of the committee.

These cases were examined individually and separately by at least two members of your committee, and subsequently the evidence of reduction as afforded by x-ray examinations was submitted for separate study. The examination of the x-rays was made independently of the results of the clinical examinations previously recorded, so as to render the report, as far as possible, an unbiased one.

Twenty-two cases were submitted to us for examination. Of these, one was not seen by any of the committee, and it is their opinion that the x-ray evidence was not sufficient to establish a diagnosis of the position of the femoral head. We thus have 21 cases. Ten were apparently reduced, the head being felt in the normal position, and the function of the limb, as evidenced by passive motion, being good; 9 cases were not reduced, the head of the bone being beneath the anterior superior spine and external to the femoral vessels. In these the passive motion was not as good. Two were still posterior dislocations upon the dorsum of the ilium. The active motion of the 21 cases is not reported, because it did not seem proper at this time to enter into that feature of the results.

In studying these cases your committee has laid most stress upon the results of the physical examination and comparatively little upon the x-ray findings. In some cases the x-rays submitted were taken through the plaster dressings, with the legs in the "frog" position, in which they were left after the attempted reduction. Obviously, this was not to be the position when function was restored, and it might readily be that when this abnormal position was overcome the head would no longer seem to be in the acetabulum. In the one case clinically examined by only one of the committee, his physical examination placed the case among the "reduced" list, whereas the interpretation of the x-ray would seem to negative this opinion. The case is classified, however, among the "reduced" ones.

RESULTS AS REPORTED BY THE COMMITTEE OF THE SOCIETY FOR MEDICAL IMPROVEMENT.

| Patients' Initials. | In the opinion of the Committee. | According to the Hospital Record. |
|---|---|---|
| R. F., Not Seen | X-Ray, negative | Unreduced |
| E. R. | Reduced | Reduced |
| G. C. | Ant Post. | Ant. Post. |
| R. N | Reduced | Reduced |
| A. T | " | " |
| A. C. | " | " |
| A. L. | " | " |
| H. H. | " | " |
| E. C. | " | " |
| A. H. | " | " |
| H. B. | " | " |
| M. O. | " | " |
| M. G. | Ant. Post. | Ant. Post. |
| M. L. | " | " |
| C. D. | " | Reduced |
| M. R. | " | Ant. Post. |
| H. S. | " | " |
| B. S. | " | Reduced |
| S. R. | Dislocated | Dislocat |
| A. H. | " | " |

## A METEOROLOGICAL STUDY OF TH WINTER OF 1903–04.*

BY CARROLL E. EDSON, A.M., M.D., DENVER, COL.

THE winter of 1903–04 was an interesting one from the standpoint of its weather, and some of its meteorological data teach a lesson of sufficient value, I believe, to present to the society.

The collation and comparison of meteorologic statistics involve frequently a kind and amount of labor for which many persons have no inclination, but the results of such study may be tabulated or reduced to graphic form so as to make easy the lesson hidden in the reports of the Weather Bureau.

I have been led to write this paper for two reasons:

*First.* — The winter has been sufficiently pro-

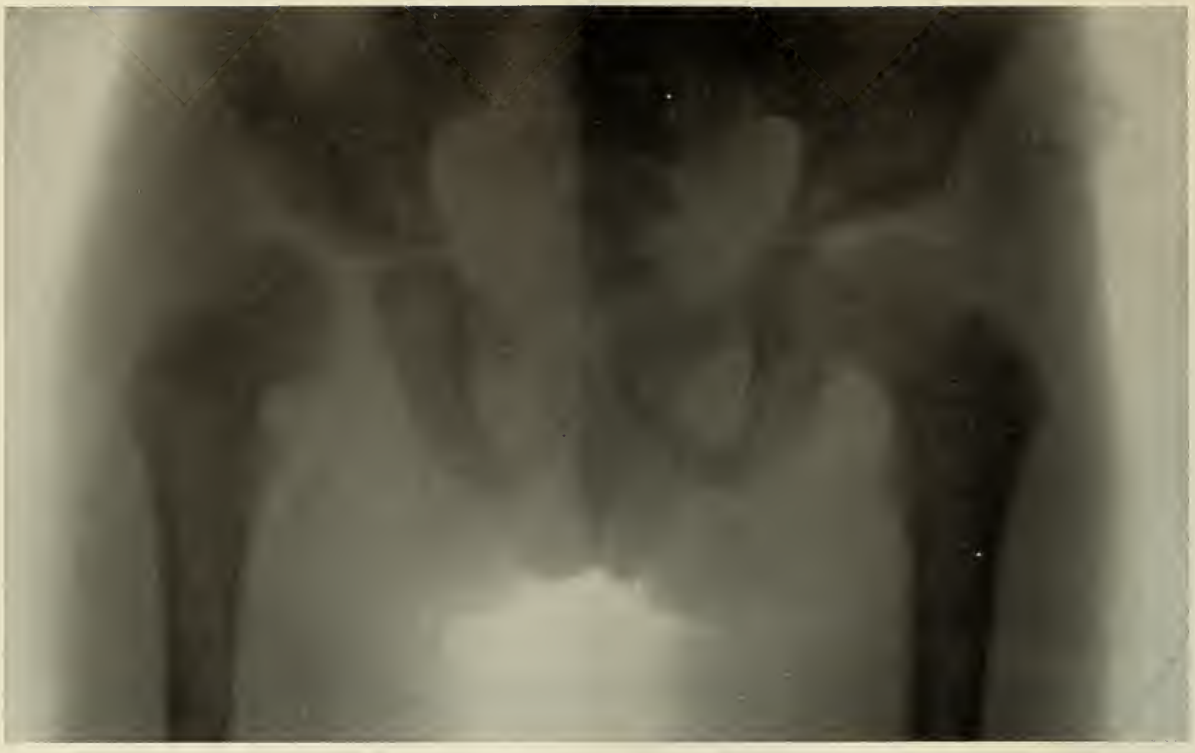
* Read at the meeting of The American Climatological Association, Philadelphia, June 2–4, 1904.



S. 6½ years old. Congenital dislocation left hip. One year after reduction by operative mechanical stretching and manipulation.



S. Showing strength of reduced hip by the Trendelenburg test. Motion and gait of reduced hip normal.



**S.** Skiagram one year after reduction.



**T.** Child of five. Skiagram taken two years after reduction by incision. Right congenital dislocation of hip. Motion and gait normal.



**F.** Double congenital dislocation, child of three. Skiagram taken three months after reduction by incision.



**F.** Same case. Skiagram taken six months later, showing anterior transposition of heads of femur.



**D.** Double congenital dislocation of hip. Child age four. Untreated.



**D.** Same patient age 28. Untreated case. Patient able to walk actively with little limp.





**H.** Untreated case double congenital dislocation. Unable to walk without crutches.

nounced in some of its characteristics, especially in the East, to attract the attention of those, even, whose work does not ordinarily lead to study of meteorologic conditions. To compare the recorded statistics of such a winter with the data of the mean weather conditions as meteorologically expressed, emphasizes better than any other way what must be read into these reports as published in climatic works, in order to obtain the clear picture of the actual weather of a given place. To learn what the actual figures of such a winter as the past are, gives the student a live measure for his general use.

*Second.* — The comparative study of the weather in various parts of the country during this winter teaches a lesson of great therapeutic value, to which I wish to call your attention.

I have selected for this study only the period of the winter — from Nov. 1, 1903, to April 1, 1904 — a period of five months or 152 days, and have taken the six cities of Boston, New York, Philadelphia, Buffalo, Chicago and Denver.

The nearness to each other of New York and Philadelphia makes their meteorologic conditions very similar, but the detailed data show some interesting differences.

Table B gives the average daily excess or deficiency of temperature over the mean of thirty-three years.

Table B. — Average Daily Excess (+) or Deficiency (—) of Temperature Over Mean of 33 Years.

| | Boston. | New York. | Philadelphia. | Buffalo. | Chicago. | Denver. |
|---|---|---|---|---|---|---|
| Nov. | —1.0 | —2.4 | —2.3 | —1.0 | —2.4 | +1.8 |
| Dec. | —2.0 | —4.0 | —3.8 | —4.0 | —8.9 | +3.9 |
| Jan. | —5.8 | —6.2 | —6.1 | —6.0 | —6.0 | +1.8 |
| Feb. | —5.5 | —6.0 | —5.8 | —7.0 | —8.5 | +8.3 |
| Mar. | +0.2 | —1.2 | —0.2 | +1.0 | +0.7 | +3.6 |

It will be seen that Boston had a daily average lower temperature than normal of from 1° to 5.8°, save in March, when it was a small fraction, 0.2°, over the mean. New York was below, all the time, from 1.2° to 6.2° daily; Philadelphia, from 0.2° to 6.1° colder; Buffalo, from 1° to 7°, save in March, when it was 1° above the average. Chicago, also, was a fraction above the mean in March, but showed, till then, a daily average deficiency of from 2.4° to 8.9°. Denver, on the other hand, experienced a winter steadily warmer than usual by a daily average of from 1.8° to 8.3°.

The table (C) which follows shows the mean maximum and mean minimum temperatures and the actual highest and lowest. A study of these tables shows the general range of the thermometer.

Table A. — Mean Temperatures.

| | Boston. | | New York. | | Philadelphia. | | Buffalo. | | Chicago. | | Denver. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Av. of 33 yrs.* | *1903–4* | *33 yrs.* | *1903–4* | *33 yrs.* | *1903–4* | *33 yrs.* | *1903–4* | *33 yrs.* | *1903–4* | *33 yrs.* | *1903–4* |
| November | 40 | 41 | 44 | 42 | 45 | 42.4 | 39 | 37.6 | 38 | 36.4 | 39.5 | 41.2 |
| December | 31 | 28.9 | 34 | 30 | 36 | 31.7 | 29 | 25.5 | 29 | 20.1 | 32 | 36.3 |
| January | 27 | 21.6 | 30 | 24 | 32 | 25.8 | 25 | 19.2 | 24 | 17.8 | 29 | 31 |
| February | 28 | 22.6 | 31 | 25 | 33 | 27.4 | 24 | 16.9 | 26 | 17.2 | 32 | 40.2 |
| March | 34 | 34.6 | 38 | 36 | 40 | 39.4 | 31 | 32.4 | 34 | 35.2 | 39 | 42.5 |

My statistics are taken from the monthly reports of the United States Weather Bureau and are, therefore, comparable, being taken accurately under similar conditions of observation and time. So far, therefore, as material is concerned, I have nothing new to offer, but wish simply to point out what is already contained in apparently uninteresting columns of figures. As far as possible, I have reduced my findings to a graphic form, as being time-saving and most demonstrative of the relative conditions in the several cities. The tables on which these diagrams are based and which accompany the paper, I will refrain from reading.

*Temperature.* — The mean temperature of the several months and the mean temperature of the corresponding month for the period of the last thirty-three years, are shown in Table A.

It will be seen that the winter set in early in Boston, New York, Philadelphia, Buffalo and Chicago, continued late, and was colder than usual. Calculating the number of days in each month on which the temperature was above or below the mean of the months, I found that the low mean of the months was not the result of a few excessively cold days, as sometimes occurs, but that the whole winter, in the East, was steadily colder than usual. In Denver, it was, throughout, warmer.

Going a little into detail, Table D gives the number of days on which the maximum temperature was at freezing or below 32°.

The maximum temperatures are the most important to the physician, as the minimum tem-

Table C. — Mean Maximum and Mean Minimum Temperatures.

| | Boston. | | New York. | | Philadelphia. | | Buffalo. | | Chicago. | | Denver. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Max.* | *Min.* | *Max.* | *Min.* | *Max.* | *Min.* | *Max.* | *Min.* | *Max.* | *Min.* | *Max.* | *Min.* |
| November | 47 | 33 | 48 | 35 | 49.8 | 35.2 | 42.8 | 32.4 | 42.9 | 30 | 54.6 | 27.6 |
| December | 36.6 | 21.3 | 36 | 24 | 38.2 | 25.3 | 31.1 | 19.7 | 27.5 | 12.6 | 49.4 | 23.2 |
| January | 29 | 14.1 | 30 | 18 | 32.4 | 19.5 | 26 | 12.4 | 24.4 | 11 | 43.3 | 18.8 |
| February | 31.3 | 13.8 | 33 | 17 | 35.2 | 19.2 | 24.2 | 9.4 | 24.4 | 9.9 | 53.8 | 26.6 |
| March | 41.9 | 27.2 | 43 | 30 | 46.5 | 32.3 | 39.1 | 25.7 | 41.9 | 28.1 | 56 | 29 |

Actual Highest and Lowest.

| | Boston. | | New York. | | Philadelphia. | | Buffalo. | | Chicago. | | Denver. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *H.* | *L.* | *H.* | *L.* | *H.* | *L.* | *H.* | *L.* | *H.* | *L.* | *H.* | *L.* |
| November | 74 | 15 | 70 | 17 | 72 | 18 | 63 | 14 | 63 | 12 | 74 | 3 |
| December | 55 | 2 | 52 | 7 | 53 | 10 | 52 | 3 | 40 | —13 | 63 | 3 |
| January | 46 | —6 | 55 | —4 | 56 | —2 | 54 | —4 | 39 | —15 | 64 | — 2 |
| February | 49 | —1 | 53 | 1 | 57 | 5 | 50 | —8 | 53 | —6 | 73 | 12 |
| March | 70 | 8 | 64 | 17 | 68 | 17 | 60 | 10 | 65 | 13 | 71 | 4 |

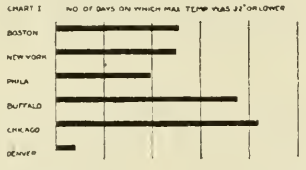
peratures occur at night, when his patient is in bed and but little affected by them, while the maximum temperature determines, to a considerable degree, the length and comfort of the invalid's out-door stay.

TABLE D. — NUMBER OF DAYS WITH MAXIMUM TEMPERATURE 32° OR LOWER.

| | BOSTON. | NEW YORK. | PHILADELPHIA. | BUFFALO. | CHICAGO. | DENVER. |
|---|---|---|---|---|---|---|
| Nov. | 5 | 5 | 4 | 9 | 10 | 2 |
| Dec. | 11 | 9 | 7 | 16 | 21 | 2 |
| Jan. | 18 | 17 | 15 | 20 | 24 | 4 |
| Feb. | 17 | 17 | 11 | 20 | 20 | 0 |
| Mar. | 4 | 2 | 2 | 9 | 7 | 0 |
| Tot'l, | 55 | 50 | 39 | 74 | 82 | 8 |

From the table it will be seen that, of the 152 days studied, Boston had 55 more than one third below freezing all day; New York had 50, or nearly one third of them all, below freezing; Philadelphia 39, about one fourth; Buffalo 74, or nearly one half; Chicago 82, over one half; and Denver but 8, or only one nineteenth.

This relative number of cold days is most clearly appreciated in Chart I.




Of the days when the maximum temperature was 20° or lower, Boston had 9; New York 9; Philadelphia 6; Buffalo 26; Chicago 30; Denver none.

Boston had two days below 10° all day; Buffalo 7; Chicago 7.

Buffalo had one day with a maximum of zero, and Chicago one day with a maximum below zero.

These few days of very low temperature, while showing an unusual freedom from "cold waves," emphasize the conclusion stated above, — that the great deficiency in the mean temperature was due to continuous, steady cold all winter, and not to intermittent spells of excessive cold. There is an importance in this for the out-door life of an invalid. With a low mean temperature, he may still be out much of the time, if the mean is the result of a few excessive cold periods, for, during such cold days, the temporary housing necessitated is of comparatively little harm, while if the low mean is the result of a continuous cold, it may cause a sensitive patient to lose a large portion of his needed out-door stay.

Chart II, showing the mean temperature by months, with the comparative range of the mean maximum and mean minimum readings, discloses the fact that during January the mean minimum temperature in Denver was above the mean of Buffalo and Chicago, and in February higher than the mean maximum of those cities. In other words, in February it was warmer in the coldest part of the night in Denver than it was in the warmest part of the day in Buffalo or Chicago.

*Relative Humidity.* — Closely associated with the temperature of the air in affecting the comfort is the humidity, the discomfort of both extremes, heat or cold, being increased by a high relative humidity.

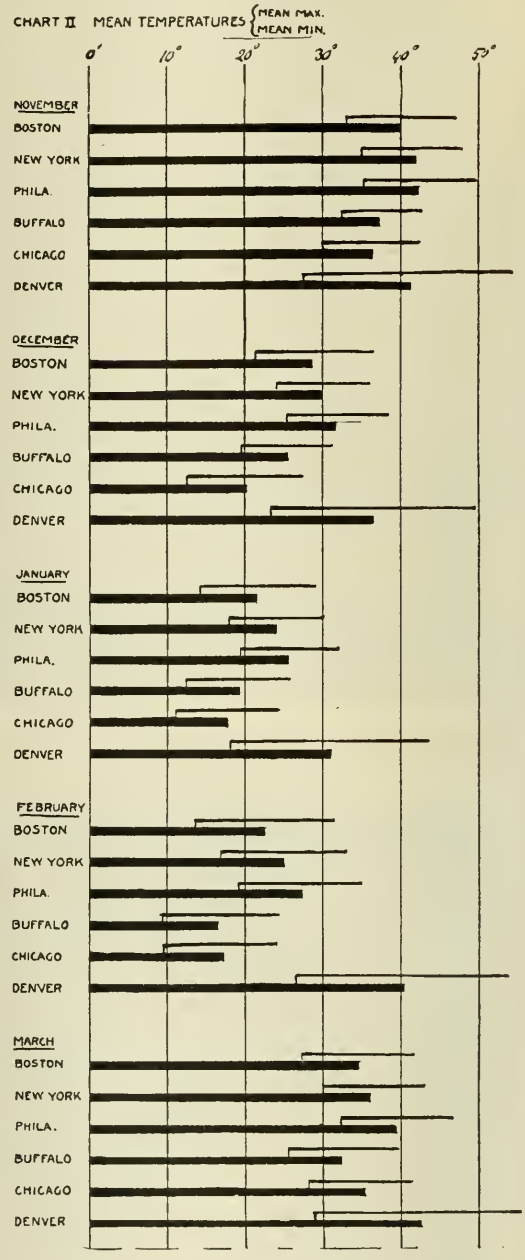



Table E gives the mean relative humidity in the several cities, at morning and night.

Starting with the humidity of the early morning, before the air is warmed by the sun, the relative higher or lower figures at night give some index as to the degree of rawness during the day. If the amount of moisture, actual, remains the same, as the air warms the relative humidity will fall. Accordingly, if the relative humidity rises as the day goes on (and the air is warmed) and is higher at night, there has been an actual increase

in the amount of moisture or else a fall in the temperature during the day. In either case, cold and chilly rawness has been a feature of the day.

Studying Table E with this in view, it will be seen that there is a comparatively small drop in the relative humidity at night in most of the lines, and that often there is an actual rise. The extremely high humidity in both Chicago and Buffalo, and the frequent higher night humidity in the latter city, are to be noted. Boston showed an average higher humidity in the morning over the evening of 4°, New York of 8°, save in January, when the humidity was higher at night by 2.9°; Philadelphia of 7°, Chicago of 8°, Denver of 11°; while Buffalo has the damp, chilly record of being higher at night in December, January and February — the cold months — by an average of 1.7°; and in November and March a morning higher humidity of 3.7°, or averaging for the whole winter a higher morning humidity of only 0.4°.

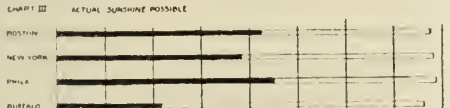
Table E. — Mean Relative Humidity.

| | Boston. | | New York. | | Philadelphia. | | Buffalo. | | Chicago. | | Denver. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. | A.M. | P.M. |
| November | 68 | 61 | 70.5 | 60.6 | 69.3 | 60.1 | 74.5 | 68.2 | 77 | 65 | 69 | 55 |
| December | 72 | 66 | 72.2 | 63.5 | 68.1 | 62.2 | 75 | 76.2 | 88 | 80 | 62 | 60 |
| January | 78 | 76 | 69.8 | 72.7 | 75 | 70.4 | 76.4 | 78.1 | 90 | 80 | 69 | 58 |
| February | 72 | 68 | 63 | 59.6 | 69.6 | 63.2 | 69.9 | 72.3 | 87 | 79 | 59 | 43 |
| March | 68 | 67 | 74.7 | 64.1 | 74.4 | 64.7 | 76.6 | 75.6 | 83 | 80 | 66 | 52 |

*Sunshine.* — The total number of hours of actual sunshine and the percentage of the total possible are given in Table F for the winter and by months; and the percentage for the whole period is shown in Chart III.

Table F. — Sunshine, Nov., 1903, to April, 1904.

| | Boston. | New York. | Philadelphia | Buffalo. | Chicago. | Denver. |
|---|---|---|---|---|---|---|
| Actual hours | 869 | 766 | 906 | 439 | 733 | 1,034 |
| Possible hours | 1,554 | 1,564 | 1,575 | 1,530 | 1,554 | 1,575 |
| Per cent obtained, | 55.3 | 48.9 | 57.4 | 28.6 | 47.1 | 65.6 |
| **Sunshine Per Cent Obtained by Months.** | | | | | | |
| Nov. | 61.0 | 58.9 | 68.0 | 40 | 56.2 | 64 |
| Dec. | 58.9 | 50.0 | 60.6 | 20 | 47.0 | 77 |
| Jan. | 51.1 | 43.6 | 53.4 | 32 | 43.0 | 67 |
| Feb. | 53.2 | 57.0 | 61.4 | 20 | 46.7 | 68 |
| Mar. | 53.1 | 37.7 | 46.3 | 33 | 43.7 | 56 |




Not only the total percentage of sunshine, but its distribution, is of importance in studying the relative availability of out-door life. For the effect of sunshine and cloud is not only that upon the temperature and moisture, but a positive one upon the mental well-being of a patient.

The study of the proportion of sunshine and cloud for the last winter is interesting.

Table G shows the number of wholly cloudy, partly cloudy and clear days in each month, and the total number of days on which 0.01 of an inch of precipitation fell.

Of the 152 days studied, Boston had 55 wholly cloudy days; New York 58; Philadelphia 58; Buffalo 112; Chicago 66; and Denver 14.

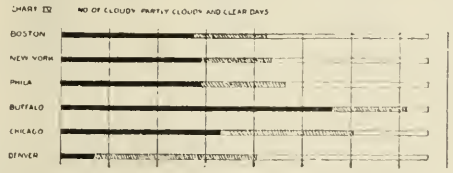
Of fully clear days, Boston had 67; New York 65; Philadelphia 59; Buffalo only 9; Chicago 31; and Denver 71.

Table G. — Number of Cloudy, Partly Cloudy and Clear Days.

| | Boston. | New York. | Philadelphia. | Buffalo. | Chicago. | Denver. |
|---|---|---|---|---|---|---|
| *Clear.* | | | | | | |
| Nov. | 15 | 17 | 12 | 3 | 10 | 15 |
| Dec. | 16 | 10 | 16 | 0 | 6 | 22 |
| Jan. | 12 | 14 | 12 | 1 | 7 | 15 |
| Feb. | 12 | 14 | 10 | 2 | 5 | 12 |
| Mar. | 12 | 10 | 9 | 3 | 3 | 7 |
| Tot'l, | 67 | 65 | 59 | 9 | 31 | 71 |
| *Partly Cloudy.* | | | | | | |
| Nov. | 3 | 5 | 12 | 7 | 11 | 12 |
| Dec. | 3 | 10 | 5 | 4 | 14 | 8 |
| Jan. | 6 | 3 | 4 | 6 | 9 | 13 |
| Feb. | 5 | 6 | 7 | 5 | 10 | 16 |
| Mar. | 13 | 5 | 7 | 9 | 11 | 18 |
| Tot'l, | 30 | 29 | 35 | 31 | 55 | 67 |
| *Cloudy.* | | | | | | |
| Nov. | 12 | 8 | 6 | 20 | 9 | 3 |
| Dec. | 12 | 11 | 10 | 27 | 11 | 1 |
| Jan. | 13 | 14 | 15 | 24 | 15 | 3 |
| Feb. | 12 | 9 | 12 | 22 | 14 | 1 |
| Mar. | 6 | 16 | 15 | 19 | 17 | 6 |
| Tot'l, | 55 | 58 | 58 | 112 | 66 | 14 |
| Total no. of days with 0.01 precip. | 60 | 50 | 46 | 106 | 61 | 18 |

For continued pall of cloud, Buffalo holds the record; out of 152 days, only 9 sunny days.

Chart IV shows the relative number of days of cloudy, partly cloudy and clear weather.
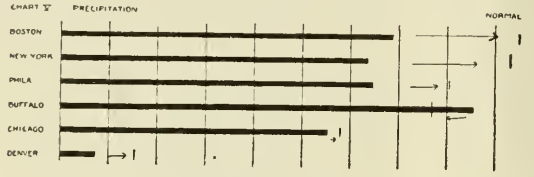



The depressing effect of continued cloudy weather, without any sunshine, is very great, and in winter, especially, long absence of sunshine greatly hinders out-door life. A study, therefore, of the distribution and duration of the wholly cloudy days becomes of some interest.

I have reckoned the number of times there was a period of total cloudiness of three consecutive days, and find that Boston had 2 periods of four days, 4 of three days and, in addition, 9 periods of two days; New York had 2 periods of five days, 1 of four days, 1 of three days and 10 of two days; Philadelphia had 1 period of five days, 2 of four, 4 of three and also 7 of two days; Buffalo had the unenviable record of 1 period of twelve consecutive wholly cloudy days,

1 of eleven, 1 of eight, 3 of seven, 2 of six, 3 of five, 2 of four, 4 of three and also 3 of two days; Chicago had 2 of six days, 1 of five, 1 of four, 3 of three and 8 of two days; Denver had no period of two days, even, of consecutive total cloudiness.

None of the periods above stated are included in any other, and they are all apart from partly cloudy days, being each of them a series of consecutive totally cloudy days.

*Precipitation.* — The past winter has been one of marked snowfall throughout the East, the general impression being of an unusual amount. On studying the records, however, it will be found that the precipitation was in general below the mean of the last thirty-four years. Table H gives the precipitation by months, and in small figures in a parallel column the mean for that month.




side by side, each feature compared with the other, if we are to obtain a true picture of the conditions actually present. To read the totals of any column alone will almost necessarily give a wrong idea, even of that factor, but there must be juxtaposition and constant reference; the sunshine, the temperature, the precipitation, must be read together, if they are to mean anything, and give a clear picture of the actual conditions.

*Wind.* — The total wind movement each month is shown in Table K, and in the small column the highest velocity during any five-minute record.

It will be more easily appreciated by reducing the total wind movement to a proportion in smaller figures, which gives Boston 84, New York 115, Philadelphia 79, Buffalo 128, Chicago 127, Denver 66, as shown in Chart VI.

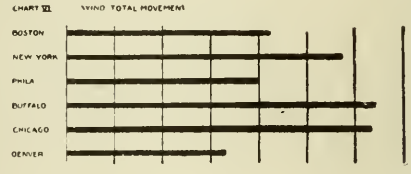



TABLE H. — PRECIPITATION IN INCHES.

| | BOSTON. | | NEW YORK. | | PHILADELPHIA. | | BUFFALO. | | CHICAGO. | | DENVER. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Av. of 33 yrs.* | *1903–4* | *Av. of 33 yrs.* | *1903–4* | *Av. of 33 yrs.* | *1903–4* | *Av. of 33 yrs.* | *1903–4* | *Av. of 33 yrs.* | *1903–4* | *Av. of 33 yrs.* | *1903–4* |
| November | 4.23 | 1.48 | 3.00 | 0.90 | 3.19 | 1.03 | 3.44 | 1.36 | 2.59 | 0.34 | .54 | .07 |
| December | 3.28 | 2.57 | 3.37 | 2.81 | 2.86 | 3.29 | 3.39 | 3.07 | 2.11 | 2.28 | .65 | .23 |
| January | 3.81 | 4.80 | 3.80 | 3.38 | 3.28 | 3.14 | 3.21 | 4.77 | 2.05 | 2.25 | .48 | .04 |
| February | 3.51 | 2.49 | 3.84 | 2.18 | 3.39 | 2.21 | 2.99 | 4.32 | 2.30 | 1.71 | .50 | .17 |
| March | 4.21 | 2.43 | 4.05 | 3.44 | 3.46 | 3.24 | 2.07 | 3.51 | 2.59 | 4.57 | .91 | .94 |
| Total | 19.04 | 13.77 | 18.06 | 12.71 | 16.28 | 12.91 | 15.10 | 17.03 | 11.64 | 11.15 | 3.08 | 1.45 |

TABLE K. — WIND.

Total miles per month and highest recorded velocity for 5 minutes.

| | BOSTON. | | NEW YORK. | | PHILADELPHIA. | | BUFFALO. | | CHICAGO. | | DENVER. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Total.* | *H.* | *Total.* | *H.* | *Total.* | *H.* | *Total.* | *H.* | *Total.* | *H.* | *Total.* | *H.* |
| November | 7,108 | 33 | 9,881 | 59 | 7,298 | 29 | 11,614 | 62 | 12,200 | 69 | 5,698 | 45 |
| December | 9,555 | 46 | 12,449 | 62 | 9,043 | 46 | 15,621 | 65 | 13,240 | 52 | 6,712 | 54 |
| January | 8,583 | 37 | 11,522 | 54 | 8,570 | 36 | 12,468 | 58 | 12,614 | 54 | 6,891 | 40 |
| February | 8,558 | 40 | 12,393 | 62 | 8,312 | 35 | 12,550 | 66 | 12,998 | 48 | 6,615 | 51 |
| March | 8,617 | 39 | 11,519 | 65 | 6,681 | 31 | 11,970 | 60 | 12,761 | 52 | 7,360 | 52 |
| Total | 42,421 | | 57,764 | | 39,904 | | 64,223 | | 63,813 | | 33,276 | |
| Av. mo. movement | 8,484 | | 11,553 | | 7,981 | | 12,845 | | 12,763 | | 6,655 | |

It will be seen that Buffalo alone had more than the usual precipitation. Chart V makes the comparison easy, the small perpendicular lines addressed by an arrow indicating the point of mean precipitation beyond that of this winter.

That a less precipitation than usual should give rise to a general impression of an excess is due to the fact that, owing to the cold weather, the low temperature, the precipitation was as snow rather than rain, and, owing to the persistent low temperature, this snow did not melt as usual from time to time in periods of thaw, but remained on the ground as snow and ice, encumbering the streets and making progress difficult. A slight difference in the mean temperature would have made a great difference in the impression of the winter.

No better instance could be selected to show the importance of studying meteorological data

In reading the tables, too, it must be remembered that the air is lighter at Denver than in any of the seaboard or low level cities.

The winter just passed may be described, then, as regards Boston, New York, Philadelphia, Buffalo and Chicago, as setting in earlier than usual, lasting longer and being somewhat colder than the mean, this coldness, however, being due not to the depressing effect of cold waves so much as to a continuous, steady cold, without much let-up. For this reason the precipitation though less than usual, save in Buffalo, was more noticeable, coming as snow and remaining frozen on the ground. The cloudiness, especially in Buffalo, was extreme.

In Denver, on the other hand, the winter was one of unusual mildness, small precipitation, very even temperature and abundant sunny clear days.

The therapeutic lesson to which I wish to call attention by the foregoing meteorologic study is that of the importance and advantage of selecting the climate in the care of pulmonary tuberculosis.

The present position of appreciation of the importance of fresh air, sunshine and nutrition in the treatment of phthisis has been slowly attained. The progress from drugs and palliation to the insistence on control of the simple, hygienic living, has been by stages. As in all lines of human thought, so in therapy, the tendency has been to see but one point at a time, — to lay stress on one factor to the neglect of others. In the general advance of our knowledge of phthisis and its care, one stage was marked by the great emphasis laid on climate, and we heard only of the climatic treatment, as distinct from the medical, as if climate was in itself an entity and a specific force.

A frequent result of this narrowness and separation of ideas was that patients were sent away for a "change of climate" to a supposedly "proper climate" away from home and allowed to shift for themselves, neglecting all details of control and hygienic living, placing such matters in the intelligent care of the climate. Much evil resulted from this course, as might have been expected. Many and marvelous cures were often made. Of the untold failures, many might have been avoided.

Gradually, as the appreciation of the need for close oversight and control of the patient became more keen, it was found that the discipline of a sanatorium was of great help. Patients were noted to recover their health at home with their own native "weather," without the aid of "climate," once more investing climate with an air of specific entity.

Then we heard for a while of "the sanatorium treatment" as distinct from the medicinal or the climatic, — another stage in our advance, but still marked by the old "one idea" tendency. The advantage which this sanatorium control brought about by its close oversight of all the details of life, food, outdoor exercise and so on, was seen in the cures resulting in many "closed institutions." Our present better knowledge of the disease and its proper management by control of all details of hygienic living out of doors is due, in part, to such study as was more possible in an institution.

As a result, there has been lately considerable remark by various writers that "climatic stations" are of no great importance; that food, sunlight and fresh air are all that are needed. "Out of doors is all — anywhere is good enough." Again the old tendency to see but one thing at a time! But is it true?

Granted that the important factors, as we now know them, in the care of pulmonary tuberculosis are, after control of the patient and his living, food, fresh air, sunshine, an outdoor life — are these latter helps the same everywhere? By no means, and even the brief comparison of the winter just made must prove that some places offer more opportunity to the invalid to live comfortably out of doors than do others.

Leaving, for the present, wholly out of question any especial advantage of high elevation upon the patient or his disease,— taking only the elements of the weather as just discussed,— is there no choice? If the patient is to have the closest control, the most nutritious food in the greatest abundance, the most carefully regulated exercise and a constant life in the open air, ought he not to be given the greatest opportunity to lead that life? Fresh air is fresh air; sunlight is sunlight. The air in Buffalo, for instance, was probably just as fresh as in Denver and the same sun illumed it, but was that fresh air as available to the patient? In the one city, out of 152 days, 112 totally cloudy; in the other, 18.

Or could a patient, ordered to keep quiet, spend as many hours out of doors with a mean temperature of 18° in Chicago, as in Denver, where the mean minimum was much of the time higher than the maximum in Chicago?

Climate is not a thing in itself; it is only the conditions of sun and rain and heat and cold and wind prevailing in any place. It is not a treatment for anything, but in a disease in which our weapons are discipline, food and outdoor life, a study of meteorologic conditions will enable us to place the patient where he can obtain the best opportunity for living that outdoor life most constantly and most comfortably.

It is not necessary to press individual comparison further. I have said enough to show that a study of such tables as I have given in this paper will prove that all weather is not the same, that all fresh air is not equally good, and that a location like that of Denver does offer, by the conditions of its climate, its lack of storm, its absence of cloud, its warmer sunshine, definite advantages for the outdoor life so essential to the welfare of the tubercular invalid.

## IMPLANTATIONS OF SILVER FILIGREE FOR CURE OF LARGE VENTRAL HERNIA. REPORT OF TWO CASES.*

BY H. B. PERRY, M.D., NORTHAMPTON, MASS.

There is no operation of reconstruction that the surgeon is called upon to perform that taxes more the resources at hand or promises less as far as restoration of function is concerned than large, ventral hernia of long standing, whether post-operative, congenital or acquired. The principle involved in the two cases I have the honor to detail to this society is an old one, although the technique is of a later period than when silver wire was first used as a buried suture.

In the evolution of suture materials silver wire has always been in evidence. Shede was the first to use it as a buried suture. His method was to include all the structures except the skin as a preventive of subsequent hernia A new impetus was given the silver wire suture when

* Read before The Massachusetts Medical Society, June 7, 1904

Credé published his discovery of the antiseptic properties of silver. In this country A. M. Phelps of New York was one of the first to use silver wire sutures in closing abdominal wounds, as well as its use in radical cure of hernia. The plan followed by him was to use a single strand, crossing and recrossing, to insure strength and solidity. The cases done by him were not, in the main, successful, owing, no doubt, partly, to faulty asepsis, partly to the impossibility of using a single strand of wire without more or less strangulation of the tissues and, consequently, tissue necrosis. His use of silver wire began in 1892. From this time until 1900, when O. Witzel of Bonn published a report of a series of cases of hernia, giving results of the use of buried silver wire, very little progress was made, and the advance made since then is largely due to improved asepsis. Witzel's plan was to form a weave or network over the hernial opening with a single strand of wire. About the same time that Witzel reported his cases, R. Gopel of Leipsic reported a series of cases wherein a previously prepared silver filigree pad was sewed over the opening in the abdominal wall. This was the first account of the implantation of a silver filigree pad being used to cure large, ventral hernia. His deduction from his cases and claims of superiority for this particular method over that of Witzel's are as follows:

First: The tissues bordering the hernial opening are less exposed to injury and constriction.

Second: The time for operation is reduced.

Third: The meshes with the ready-made wire pad are of equal and regular dimensions, and diastasis, even of small size, less frequently met with.

Fourth: The amount of silver wire left is reduced to a minimum.

In November, 1902, Dr. Willy Myer of New York reported, in the "*Annals of Surgery*," three cases. In two of his cases previous attempts at repair had been made and were failures. The third case, owing to a large amount of adipose, seemed hopeless, except some means out of the usual line were attempted. His reports of the three cases were eminently satisfactory. The technique, as described by him, is the one employed in the cases to be reported.

It will not be necessary for me to consume time by giving in detail all of the steps of the operation, but to say that it is identical as though autoplastic repair were to be done, up to the point of closing the hernial opening. From that time the plan of procedure is as follows: The omentum should, if possible, be stitched to the margin of the hernial ring. The sac is cut away, except that sufficient is left to close over without much tension. This is done with a continuous silk suture. The fat is then excavated sufficiently wide to admit the silver wire pad and permit stitching its border to the muscles and fascia. This is done with a continuous silver wire suture of sufficient length to have its starting and finishing points together, thus reducing the rough points left to the minimum. This completed, the skin and fat is closed over all by interrupted silkworm-gut sutures. The silver pad should be of sufficient size to overlap the margins of the opening from one half to one inch. This plan is permissible only and indicated only in the classes of cases where autoplastic repair is impossible with any assurance of success, for any or all of the following reasons:

First, the large size of the hernial opening; second, long existing hernia; third, atrophy through pressure and fatty degeneration of the adjacent muscular and fibrous tissues; fourth, and most frequently, previous unsuccessful attempts at autoplastic repair; and fifth, in fatty abdominal walls.

The following cases are illustrative of two distinct types, the first a post-operative hernia having had an attempt at repair, the second an acquired umbilical hernia of many years' standing.

CASE I. Mrs. A., age fifty-two, occupation housekeeper in a factory boarding-house. In 1890 this woman was operated upon and a large ovarian cyst removed. A year later, as a consequence of vomiting violently after ether to reduce a Colles' fracture, a hernia in the ventral scar developed. A year after that an operation for the cure of the hernia was done, which was unsuccessful, inasmuch as in six months the hernia returned as bad as before. This woman felt after the first trial that a cure was impossible and began a truss and abdominal band existence. In 1896 matters grew worse, and until 1903 she had been a constant sufferer and from 1900 she had never had a day free from pain, many times requiring large doses of morphine to be comfortable. In January, 1903, she was a woman five feet two inches in height, weighed one hundred and ninety pounds, with a fat, pendulous abdomen. The hernia was very large, containing intestine and omentum, and was not reducible. On Jan. 16, 1903, she was operated upon and a silver filigree pad, four by six inches, was stitched snugly to the muscles and fascia, around an opening two inches and a half wide and four inches in its longest dimension. In this case we could not utilize the omentum by fastening it to the margin of the hernial ring, because at this and at previous operations it had been very largely removed. The skin was sutured over the pad by interrupted silkworm gut. In ten days the wound had healed entirely, she was allowed out of bed in three weeks and went home in four.

CASE II. Mrs. B., age forty-three, occupation housewife, had had a hernia for a long time, could not remember when it began, but for the last six years it had given constantly increasing discomfort and pain, until, the 1st of March, 1903, life had become unbearable and the patient sought and accepted anything that offered any chance of relief. This case was first seen the 12th of March, 1903. She was then a woman five feet in height and weighed about two hundred pounds, with a large deposit of adipose over the abdomen. The hernia was a little to the left of the umbilicus and contained mostly omentum and was not reducible. Her operation was done March 20, 1903. The hernial opening was two by two and a half inches, the largest diameter in the direction of the long axis of the body. In this case the omentum was stitched to the margins of the openings with a continuous silk suture, and a silver filigree wire pad, three inches by

four inches, stitched to the muscles and fascia with a continuous silver wire suture. The skin was closed by interrupted silkworm gut with the usual dressings. This patient was out of bed in three weeks and was allowed home in four.

In each case there were indications for this operation; namely, each of long standing, with atrophy and thinning of the muscles and fascia, large hernial openings and, in Case I, previous attempts at repair. These cases have been seen recently and are well. Case I, eighteen months after operation, is, with the assistance of a green Polish girl, caring for a large family. Case II, fifteen months after operation, is doing the housework for herself and husband with comfort, which she had been unable to do for several years before. A close examination of each case shows a firm, solid abdominal wall without suggestion of diastasis. These women claim to experience no discomfort or consciousness of a foreign body in the abdominal wall, and are both enjoying life thoroughly. The question naturally arises, Will they ever experience any trouble, and, if so, why, after more than a year of freedom? The operation is not difficult, and, with strict asepsis, should be successful.

I venture to suggest this operation as a remedial agent worthy of the trial in that class of cases where tissues already existing in the patient cannot be utilized to cure the defect.

## Clinical Department.

### A CASE OF MALIGNANT ENDOCARDITIS WITH RECOVERY.

BY CHARLES F. WITHINGTON, M.D., BOSTON,
*Visiting Physician, Boston City Hospital.*

The following case, interesting from the etiology and as bearing upon the disputed question whether cases of this very grave disease ever recover, seems deserving of record.

The patient, a male, single, aged twenty-six, entered the City Hospital April 19, 1904. He had been usually healthy, but had had an attack of gonorrhea, his first, about March 8 of this year. Two weeks later he came down with measles, and two days after he began to sit up. Following this disease, he was taken with sudden and severe pain in the region of the heart, with dyspnea, lasting severely for four hours. There were chills and irregular fever with sweating and cough, which have persisted during the intervening time till his admission to the hospital. Four days before entrance he had pain in his left leg, which rapidly swelled and turned purple; sweating increased.

The physical examination on entrance showed a well-developed, but very sick-looking man. Temperature, 102–103; pulse, 160–170; orthopnea. The heart area as shown by percussion was 3 cm. to right and 16 cm. to left of the median line; a thrill, presystolic in time, was felt below the nipple; gallop rhythm; no murmur was heard at the apex, but a short systolic was heard in the fourth space to the left of the sternum. There were limited areas of consolidation in both backs, toward the bases, not involving the whole of either lower lobe. There was marked phlebitis of the left leg throughout its whole extent. The left calf measured three inches more than its fellow, and the thigh was only a little less swollen. Marked tenderness over the popliteal and femoral veins. Leucocytosis, 16,200.

During the next few days the heart action grew less tumultuous, the murmur became more distinct. Pulmonic second increased; no pericardial friction. The fever ran from 103 to 101, but showed a tendency to lowering of the curve. On April 25, six days after entrance, and about thirty-eight days after the onset of the gonorrhea, blood was taken from the vein at the elbow with antiseptic precautions and was reported by the pathologist of the hospital to show in the culture gonococci. This confirmed the opinion already held that the endocardial trouble was of gonorrheal origin. Soon after this the fever curve reached normal, and after April 28 the temperature never again rose much above the normal line. The phlebitis was distinctly less on April 30.

May 8 he began to sit in a wheel chair. The systolic murmur is still present, as before, but there are no cardiac symptoms, and the heart area is less than before. There is no dyspnea. On May 19 the limits of heart dullness were 2.5 cm. to right and 11 to left of the median line. A white count on May 28 showed 9,400 leucocytes.

In early June the patient was practically well, walking about and having no symptoms. The murmur is still heard, loudest in the second left interspace, less distinctly at the apex. The areas of consolidation in the back, which were considered to be pulmonary infarcts or embolic pneumonia, were nearly resolved.

Of course, the rôle of gonorrhea in the production of some cases of ulcerative endocarditis is now established by numerous post-mortem observations, but I believe few cases have occurred in which pathologists have been able to demonstrate this organism *intra vitam* in the blood current.

## Medical Progress.

### RECENT PROGRESS IN NEUROLOGY.

BY PHILIP COOMBS KNAPP, A.M., M.D., BOSTON.

#### PLANTAR REFLEX.

Barnes[1] has examined the plantar reflex in about 2,500 cases, fifty per cent of whom were suffering from organic nervous disease and twenty per cent from "functional" nervous disease. He concludes that in adults an extensor response (Babinski's sign) never occurs in health; it is always indicative of organic disease. The pyramidal system need not be so injured as to show post-mortem lesions. An extensor response may be produced in any condition which greatly raises intracranial pressure, even if that condition does not cause a demonstrable lesion of the pyramidal system. For instance, an extensor response may occur in hydrocephalus, meningitis, cerebral tumor, etc.; in such cases the extensor reponse usually occurs only in comatose or semi-comatose states. It also occurs in convulsive conditions of organic origin; *e. g.*, in epilepsy, uremia, infantile convulsions, strychnine poisoning, etc. It never occurs in hysteria and allied conditions, unless some organic disease is also present. A flexor

[1] Review of Neurology and Psychiatry, May, 1904.

response is the normal plantar reflex of the adult; it may occur also in pyramidal disease: (*a*) In acute conditions if only a small amount of the pyramidal influx is removed by an organic cause; or (*b*) in chronic cases, even when a large amount of the pyramidal influx is removed. Under certain conditions it is sometimes possible to obtain an extensor response when the leg is extended, but when the thigh is flexed and rotated outwards and the knee bent, we may obtain a flexor response from the same foot; this may be termed the position of pyramidal equilibrium. The position of pyramidal equilibrium may occur when about five to ten per cent of the pyramidal fibers are thrown out of action in acute cases, but in very chronic cases it may be present when nearly half the fibers are destroyed. There is a contant tendency in the adult for an extensor response to give way to a flexor response; the more chronic the case, and the less severe the pyramidal lesion, the more rapidly will a flexor response be re-established, even though the limb remain severely paralyzed and contracted. The infantile response of children under the age of two years is dependent upon the immaturity of the pyramidal tracts; it resembles the response of pyramidal equilibrium rather than that of a full spasticity. The extensor response comes on simultaneously with the incidence of pyramidal disease. The reflex is not abolished by total transverse section of the cord, and appears to be less affected than any other reflex by "nerve shock." The plantar reflex may be absent in health when the foot is cold or damp; it is also frequently absent in hysteria, multiple neuritis, infantile paralysis affecting the leg and in severe tabes.

Byron Bramwell [2] reports four cases of hemiplegia in which there was an extensor response on the paralyzed side, but, on stimulating the sole of the non-paralyzed foot, he obtained a cross reflex in the paralyzed foot which was a normal flexor response. In such cases he thinks that the reflex impulse must pass from the opposite anterior horn of the spinal cord without forming a connection with the reflex arc in the gray matter of the paralyzed side. It is more probable, however, that the reflex impulse from the sound side stimulates the motor element of the normal flexor reflex arc, which has been damaged by disease, and causes it once more to perform its functions.

### TRIGEMINAL NEURALGIA.

Verger [3] recognizes two types of trigeminal neuralgia, one of average intensity with a region of continuous pain, the other essentially paroxysmal, with excessively painful paroxysms separated by intervals of comparative calm, the true *tic douloureux*. The intensity and the resistance of the painful symptoms to treatment are the chief features of the second type. For this type the aid of surgery has been more and more invoked, until, at present, there is a tendency to resort to the most extreme surgical measures, removal of the Gasserian ganglion, which often proves fatal. Verger maintains, however, that there are neuralgias of central origin, where the cause is to be found in some lesion of the ganglion or the nerve roots, and neuralgias of peripheral origin, where the lesion is in the extremities of the nerve. The latter are cured by peripheral operations, and in such cases there may be an interstitial neuritis and lesions of the vasa nervorum. In these cases there may be secondary lesions in the ganglion from ascending neuritis. If this distinction can be made clinically, it is obviously of great importance in distinguishing the cases where a simple peripheral operation may prove curative from those where the more dangerous Gasserian operation is to be considered. Verger classifies his cases, twenty-three in number, by their behavior to injections of a two per cent cocaine solution in the painful spot. If the injection suppresses the neuralgic crises for the moment, the cause is probably in the periphery; if it does not modify the crises, the cause is higher up in the roots or ganglion. In the first group of cases, eight in number, the principal symptoms were the existence of a continuous pain between the neuralgic paroxysms in a zone more limited than the territory of distribution of the corresponding nerve; the possibility of exciting a crisis by chewing, sneezing, coughing, etc., and by exciting the painful zone; the constant existence of pain provoked by deep pressure on this zone; and the frequent occurrence of pain provoked at Valleix's points. There were frequently disturbances of sensibility to pricking and absence of spasmodic secretory symptoms. The pupillary reactions were normal. In ten cases cocaine had no effect. The characteristics of these cases were a long evolution, by degrees, with spontaneous periods of calm, which may be prolonged; the intermittent manifestation of the pains in the form of short paroxysms, appearing and disappearing suddenly and separated by completely painless intervals; the habitual absence of a true painful zone, the pain darting centrifugally from a definite point; chewing, swallowing and talking or taking too hot or too cold drinks habitually provoke the pain; the paroxysms cannot be provoked by peripheral irritation; there are no Valleix's points or defective sensibility of the face; there are tonic or clonic spasmodic phenomena in the course of the paroxysms. Furthermore, the pupils do not react to the paroxysm or to provoked pain, and there are paroxysmal secretory and vasomotor disturbances. In two cases of neuralgia due to lesions involving the roots the pain was continuous, with sensations of pulling, twisting and burning, with exacerbations coming on in crises at intervals of one or more days; there were marked disturbances of sensibility in the face and mucous membranes; external irritation had little influence in producing pain, and the pain involved the entire half of the face. In addition, there are often other focal symptoms, such as paralysis of the muscles of mastication. He reports three other atypical cases, chiefly

[2] Review of Neurology and Psychiatry, December 1903.
[3] Revue de Médecine, January, February, 1904.

hysterical, as examples of a neuralgia *sine materia*, a neurasthenic or hysterical topoalgia. In these cases the pain involves a larger and less definite area, it comes on independently of external irritation, its onset, evolution and disappearance are sensibly influenced by psychical causes, and it is often attended by the stigmata of hysteria. In these cases the pain often disappears permanently or for a long period after a single injection of cocaine. In many cases the diagnosis of the seat of the trouble can be made from the symptoms given above, but in doubtful cases it should be confirmed by the injection of cocaine *loco dolenti*. In regard to treatment the cases of peripheral origin are often materially benefited by the cocaine injections; if not, an operation affords a definite prospect of permanent cure. In cases of cerebral origin, Verger believes that Trousseau's old method of progressive doses of opium is most likely to cure. He condemns the progressive operations on the nerve beginning at the periphery and dividing further and further back, and he is very skeptical as to the advisability of removing the Gasserian ganglion. He finds a mortality of one case out of three and an absolute cure in one case out of five after such an operation.

### BERI-BERI.

From a study of cases of beri-beri in the Kwala Lumpor jail in the Malay Peninsula, Wright [4] believes that it is an infectious disease due to a specific organism, as yet unknown, which exists in close, sunless and somewhat damp places, and gains entrance to the body by way of the mouth, giving rise to a local lesion in the stomach and small intestines; that it there produces a poison which enters the circulation and causes more or less extensive disease in certain neurones. He classifies the disease under three heads: The acute pernicious form, in which the organism produces inflammation or marked congestion of the mucous membrane of the stomach and duodenum, with other signs of infection, and a toxine sufficient to cause death in a short time; and acute and sub-acute forms, in which there is a lesser lesion of the stomach and a lesser effect upon the nervous system. These cases continue in a state of partial paralysis for a time and then recover, or they remain in a state of partial paralysis for months or years, and ultimately die of cardiac exhaustion or of some intercurrent disease. This second class of cases he terms beri-beric residual paralysis, which is different from the specific acute infection. He found that beri-beri had been epidemic and endemic in the jail for several years, and he placed monkeys in some of the cells which he believed were infected. A part of these were attacked by the disease, and the changes in the nervous system were studied. The earliest change was a fine granulation of the motor cells of the bulb and cord in the acute pernicious form. In the cases of residual paralysis the cells showed a complete chromatolysis, with a flattening of the nucleus and atrophy of the nerve fibers. In the long-standing cases the cell becomes vacuolated, its membrane ruptures, the cell is irregularly stained and the processes are lost or broken. The nucleolus is extruded. This stage is accompanied by distinct atrophy of many fibers, and, of course, by complete paralysis. He concludes that the organism is not one that affects or develops on food commonly used by man, and no special food is a factor in the production of the disease. The organism is, however, probably swallowed with food accidentally contaminated by it. It multiplies in the stomach and upper part of the small intestine, causes a local congestion or inflammation and elaborates a toxine, which, being absorbed, acts with varying force bilaterally and symmetrically on certain vital and ordinary neurones to give rise to the collection of symptoms known as beri-beri. The period of incubation is short. Rice cannot be seriously considered to have any influence in the causation.

[4] Brain, xxvi, 488, Part civ, 1903.

### ARTERIOSCLEROSIS OF THE SPINAL CORD.

Pic and Bonnamour [5] have studied the special symptoms attendant upon arteriosclerosis in old people in twenty-eight cases. There is a morbid type, constituted essentially by weakness of the legs, exaggeration of the knee-jerks and a gait with short steps, which they term the spastic paresis of the atheromatous. This paresis comes on slowly and progressively, either independently, leading to a progressive contracture, or at the same time with various cerebral troubles, spasmodic laughing or crying and senile dementia. At the autopsy, beside a general atheroma, which is well marked in the arteries of the spinal cord, they find a sclerosis of the cord which is not systemic or diffuse and is most marked in the pyramidal tracts and the posterior columns. It is probable that this change in the spinal cord, which is the cause of the spastic paresis, is of vascular origin, like the lesions in the brain, which frequently accompany it. Instead of being general and diffuse, this sclerosis may be localized and give rise to conditions like those of the systemic scleroses.

### THE ASSOCIATION OF IDEAS IN APHASIA.

Pierre Marie and Vaschide [6] have studied the association of ideas in nine patients with aphasia, who had previously been the objects of careful research in studying the clinical aspects of aphasia. They employed many of the well-known mental tests of psychology, with the intent to excite in them the association of ideas by fixing their attention upon a word or a fact and studying the association thus produced. The experiments were arranged so that the subject should respond by a single reaction or by all possible reactions. The result of their researches show that aphasics, whatever be the form of the trouble, have an exceedingly poor association of ideas. They find no image in the conscious sphere of their intelligence. The word, the sensory excitation or the act seem to have no

[5] Revue de Médecine, January, February, 1901.
[6] Revue Neurologique, 30 July, 1903.

power of association. By continuing the excitations almost nothing it awakened, and the images of their thought are clouded by these new excitements. The mental effort to associate an image or to seize it, either by contiguity or by any resemblance, is extremely poor in its results. There is a mental inertia. The subjects seem distracted, and affirm that the thought is as poor as can possibly be conceived. They can think of nothing, and the word, which in the normal man provokes many images, finds no concomitant in their thought, even after several minutes. Beside the verbal and visual association they tried to produce associations of ideas by representing some action. They obtained similar results with this difference, that the subjects, instead of associating the absent elements of the act or the elements which must take place in the evolution of the act, executed it automatically without being able to dissociate the elements. The patients were almost wholly unable to draw any advantage from assonances, consonances, contiguities, resemblances, etc., — in a word, from any of the elements which normal subjects use to facilitate association. In one case of traumatic aphasia, however, the association of ideas, although poor, was very nearly normal. In two cases of dysarthria they did not find any great loss of association, the patients behaving more nearly like normal individuals.

### JACKSONIAN EPILEPSY.

Boué [7] has attempted to define the topographical value of the attack of Jacksonian epilepsy. He has studied fifty-seven cases where the attack began in the arm. From an analysis of these cases he finds that the attack does not indicate the precise location of the lesion in the brain, but that in ninety-two per cent it indicates approximately a lesion in the Rolandic or para-Rolandic region. The symptoms of the attack cannot give us any more definite idea of the localization. The cerebral lesions which produced partial epilepsy which began in the arm were divided as follows: (1) Motor zone: middle third, fifteen cases; lower third, five cases; upper third, three cases; the whole extent, five cases; ascending frontal (middle third), twelve cases; ascending parietal (middle third), two cases. (2) Frontal lobe: first frontal (posterior part), seven cases; second frontal (posterior part), one case; first and second frontal (posterior part), two cases; anterior part of the frontal lobe, two cases; lower part of the frontal lobe, one case. (3) Centrum ovale, two cases. Drivet [8] has continued the study, applying it to the cases beginning in the face and leg, fifty-seven cases in all. Of the cases beginning in the leg twenty-six were in the motor zone and nine outside. Of those outside the motor zone the lesion was in the temporal lobe in three cases, in the corpus callosum and optic thalamus in one, and in the cerebellum in two. In the cases beginning in the leg the lesion was in the motor zone in eighteen and outside it in four. He comes to the same conclusions as Boué, that in seventy-eight per cent of the cases the lesion is in the Rolandic area and in fourteen per cent in the para-Rolandic region, ninety-two per cent in all. The lesion in the Rolandic region is most often situated on the level with the center for the part convulsed or paralyzed, but it may be above or below. The study of the symptoms can furnish strong possibilities for localization, the most important symptoms being the aura and paralysis. The existence of aphasia may aid the local diagnosis, yet none of these signs is of absolute value.

[7] These de Bordeaux, Ref. in Revue Neurologique, 30 June, 1903
[8] Ibid., 15 Nov., 1903.

### EPILEPSY.

Turner [9] has studied the prognosis and curability of epilepsy in three hundred and sixty-six cases which had been under constant observation and treatment for at least two years. These cases were divided into three series according as they have responded successfully or otherwise to treatment, — the arrested, improved and confirmed cases. A family history of epilepsy is found more frequently among those who have become confirmed epileptics, but a hereditary history of epilepsy does not necessarily militate against the prospects of arrest or improvement of the disease in any given case. The age at the onset of the disease has a special bearing upon the prognosis. The most unsatisfactory cases are those in which the disease commences before the age of ten. They show the smallest percentage of recoveries and the largest of confirmed cases. If the disease arises between fifteen and twenty an almost equal percentage of arrested and confirmed cases may be expected. The greatest percentage of confirmed cases is found amongst those in which the disease begins between twenty-five and thirty-five, from which time onwards there is a steady increase in the expectations of arrest and diminution in the number which become confirmed. The duration of the disease influences prognosis to this extent, that the arrest or improvement is much more likely during the first five years than during the second five, but cases may be arrested even after twenty or thirty years. The greatest percentage of confirmed and the lowest percentage of arrested cases occur in patients with daily or weekly fits, while the smallest percentage of confirmed and highest percentage of arrested cases have only one or two fits a year. The character of the seizures is of influence, in that the major attacks are more tractable than the combined major and minor attacks, and the minor attacks occurring alone are least tractable. Marriage and pregnancy have little influence upon the fits, but the puerperium and lactation seem to favor their occurrence. The common incidence of epileptic fits is a regular periodicity. The fits may increase or decrease in number in a definite period of time, and a case of the increasing type may, by treatment, be converted into one of the decreasing variety. Long remissions induced either by treatment or spontaneously, lasting for several

[9] Lancet, 13 June, 1903.

years, are not unusual. They are of favorable prognostic value, but are not synonymous with a cure. A period of arrest for at least nine years has been fixed as the basis upon which a cure of epilepsy may be established. Adopting this definition, the writer regards 10.2 per cent of epileptics as curable. There are some cases which may be regarded as belonging to a curable type of the disease. These present little or no mental impairment, even though the fits may have existed for a long period. In the cases in which arrest took place cessation of the fits occurred during the first year of continuous treatment in over fifty per cent.

In a subsequent communication Turner [10] studies the influence of the mental condition in the prognosis of the disease, basing his conclusions upon the study of one hundred and sixty-one cases in the Epileptic Colony at Chalfont St. Peter. These cases were divided into four classes: (*a*) Intellectually normal 13.6 per cent. (*b*) With impaired memory 31.6 per cent. (*c*) Feeble-minded 25.4 per cent. (*d*) Demented 29.1 per cent. Sex has little influence upon the mental condition, although men are more often affected than women, yet the highest degree of dementia is somewhat more common in women. A family predisposition to epilepsy and insanity favors the development of some degree of mental impairment. The duration of the disease has some influence upon the mental condition; mental impairment is less common when the fits have lasted less than five years, just as mental integrity is less common when the attacks have continued for ten or more years; but mental health has been observed in cases lasting over twenty years, and mental deficiency in cases lasting less than five. The earlier the onset of the disease, the less the probability of an unimpaired mental state. The profoundest degrees of dementia are seen most commonly when the major and minor attacks co-exist. The *petit mal* seizures occurring alone are found with the lower grades of mental impairment. When the *grand mal* occurs alone, mental health is as common as mental deficiency. The more frequent the seizures, the more the degree of mental impairment. Fits recurring in series are accompanied by the high grade of dementia. The characteristic physiognomy of the disease is more common with the higher grades of dementia, but it may be observed in patients without any mental failure. The mental condition between the attacks seen in most cases of epilepsy is regarded as one expression of the disease of which the fits constitute another. The former, therefore, is not directly dependent upon the fits, and the frequency and character of the attacks, in association with the degree of mental failure, indicate the severity and intensity of the disease. The epileptic temperament, which is distinct from the mental impairment, is also described. Epileptics are usually sociable and possessed by a religious fervor, which often contrasts strongly with their actions, these being mostly perverted, passionate or even immoral. On the whole, they are self-opinionated and possess a conceit and assurance out of all proportion to their achievements. Their mental perspective is blurred and disproportionate. Their want of initiative is characteristic. Some are good workers, but most require supervision and direction. Many of them are lethargic and lazy, yet also hasty, pugnacious, contentious and difficult to live with. During a temporary increase in the frequency of the fits there is often a temporary dulling of the memory and finer mental faculties which should not be mistaken for beginning dementia. There is also often temporary irritability, lethargy, impairment of memory, and often a delusional state for a day or two before the onset of a fit.

[10] Lancet, 9 April, 1904.

## Reports of Societies.

### AMERICAN GYNECOLOGICAL SOCIETY.

TWENTY-NINTH ANNUAL MEETING, HELD IN BOSTON, MASS., MAY 24, 25 AND 26, 1904.

(Concluded from No. 3, p. 79.)

SECOND DAY. — (Continued.)

#### IMMEDIATE REPAIR OF INJURIES OF THE PELVIC FLOOR.

DR. HENRY C. COE of New York said that he had selected this topic in order to emphasize the fact that by careful attention to puerperal lesions at the time of their occurrence the patient could be spared much future trouble. He assumed that it was the usual practice of modern accoucheurs to repair injuries to the pelvic floor at once, but it was one thing to suture visible tears and another to repair deeper lesions. Even when perfect union of the lacerations was obtained, the occurrence of prolapsus, cystocele and rectocele, months afterward, proved that there had been some fault in the technique. The fact of the separation of the fascia and levatores ani muscles must be recognized as well as the superficial tear, especially after difficult instrumental deliveries. An illustrative case from the writer's practice was cited. The tendency of the accoucheur after a tedious instrumental case, in which both physician and patient were exhausted, was to spend as little time as possible in repairing lesions of the soft parts, trusting to aseptic technique to insure perfect healing. The writer was firmly of the opinion that it paid to do the work thoroughly at the time, unless the patient's condition was such as to render delay advisable. He had had such good results from immediate operations that the intermediate did not appeal to him.

In conclusion, he alluded to the fact that the modern accoucheur must be a surgeon as well as an obstetrician. It was expected of him to leave the patient in as good condition as he found her, otherwise he properly laid himself open to criticism.

#### UNIFORMITY IN PELVIC AND CRANIAL MEASUREMENTS.

DR. A. F. A. KING of Washington, D. C., read a paper on this subject, in which he reached the following conclusions: "(1) That at present the measurements of the normal and pelvic fetal head are indefinite and unsettled, and must continue to be so so long as they are determined by our present methods of mensuration. (2) The chief purpose in obtaining the

normal dimensions of these structures being for teaching and learning the normal mechanism of labor, it is proposed to adopt an ideal or hypothetical head and pelvis, upon the dimensions of which all authorities may agree. (3) In the adoption of such ideal structures, it is unnecessary and undesirable to define any measurement with exact precision — no fraction smaller than one fourth of an inch or than half a centimeter (in the metric system) being required. (4) Race variation forms no real obstacle to the proposed plan, and other apparent difficulties can be overcome. Finally, should the proposition meet with approval, it is suggested that this society take the initiative in bringing the matter in proper form before some forthcoming international medical congress for general adoption."

Accordingly, a committee was appointed by the president to consider the matter of uniformity in pelvic and cranial measurements, and report at the next annual meeting.

### SYMPOSIUM ON NON-OPERATIVE LOCAL TREATMENT IN GYNECOLOGY.

DR. WILLIS E. FORD of Utica, N. Y., in reading the first paper, said that no one would deny that greater good had come from surgical treatment of diseases peculiar to women than was ever dreamed of by the early gynecologists who did not operate. No comparison of results could be made. He did not think it was true, however, that the specialty ought to become purely surgical. Pathology learned by pelvic and abdominal surgery ought to be clearer and better than was ever discovered post-mortem. It was fair to assume that men who did this work had a better idea of the natural history, progress and dangers of these diseases than those who did not operate; and that, therefore, the early treatment ought to be in the hands of men who were also doing surgical work. The nervous habit could not be cured by surgical procedure. What was commonly called neurasthenia was not a disease, but an established habit, possible only to those who had from birth an unstable or weak nervous constitution. Before the mental symptoms began was the time to prevent neurasthenics from becoming permanent invalids. That the nervous habit could not be cured by surgery had been proven by the fact that the removal of diseased ovaries and such like operations on epileptic women had not cured the epilepsy or neurasthenia. The argument, therefore, was that in those ailments that tended to disturb the emotions, especially those of the reproductive organs of men or women, the serious thing was not the pain experienced, but the permanent invalidism which was brought about by the protracted local sensations that in time disturbed the mental equilibrium and brought about the invalid habit. These local irritations ought to be treated by skilled gynecologists, and not allowed to develop either the mental or physical ailments which were so common a result. These arguments were enough to make the profession revive its interest in non-operative procedures. Recent displacements, especially in young people, and acute infections were mentioned as demanding non-surgical care early, if one wished to avoid the more serious ailments, and especially the most serious of all, the mental disorder called neurasthenia.

### THE VALUE OF NON-OPERATIVE LOCAL TREATMENT IN PELVIC DISORDERS.

DR. WALTER P. MANTON of Detroit, Mich., said that the ignorance of proper methods, together with the fascinations of operative measures, had brought the local treatment of pelvic disease into disrepute. Three of the factors, which among others at the present time were largely responsible for the neglect of medical gynecology, were: (1) The average physician's lack of knowledge in the accurate diagnosis and local treatment of pelvic disease, (2) the allurements and fascinations of surgery, and (3) competition in the field of practice.

While it was true that no amount of instruction could impart a *tactus eruditus*, still any one could acquire a knowledge of the primary principles underlying the correct interpretation of gynecic ailments, if opportunity was offered for the practical examination of patients under competent direction. In ignoring the benefits to be derived from medicine, he was convinced that surgery had gone too far and that it had overshot the mark, but that the present tendency to operative measures in all conditions affecting the pelvic organs could not be ascribed so much to the good which surgery, rightly directed, was capable of accomplishing as to other elements which had entered into the case, was also evident. In the best of hands the results from local treatment in pelvic diseases were frequently slow in manifesting themselves, and discouragements were often met with, but in suitable cases persistent effort would ultimately attain the desired end.

The objects of local treatment were the relief of pain and irritation, often of a reflex nature; the allaying of congestion and inflammation; the absorption of the products of inflammation, and the reposition of displaced organs. In the regulation of the uterine functions, in congestions and mild inflammations of that organ and surrounding parts, and in displacements of the uterus, with and without adhesions, the application of proper local treatment was of signal value; while in prolapse of the tubes and ovaries, even in the presence of extensive adhesions, but without ascertainable morbid changes in the organs themselves, vaginal tamponade offered the simplest and most efficient means of reposition and cure.

### TREATMENT PREPARATORY TO OPERATION.

DR. HENRY C. COE of New York introduced his remarks with the statement that while his early training had led him to believe that such treatment was practically indispensable in cases of so-called "cellulitis," subsequent experience had convinced him that this notion was not in accordance with pathology or common sense. He had expressed skepticism in this subject as long ago as 1886, when he read a paper on the "Exaggerated Importance of Minor Pelvic Inflammation," and subsequent experience had only served to confirm his opinion that old pelvic exudates and adhesions were not *per se* a contra-indication to operations on the uterus. Modern aseptic technique was a sufficient safeguard against danger from this source.

The reader contrasted the old practice of keeping a patient in a hospital for several months, with the preparatory treatment between each minor operation, with the present plan of performing combined operation at one séance, and sending out in three or four weeks. He questioned the actual value of the hot vaginal douche, local applications to the vaginal fornix, treatment of the ectropic cervix, etc., previous to trachelorrhaphy, since the diseased tissue would all be removed at once by amputation. At the same time he admitted the remarkable results often observed as regards the absorption of extensive pelvic exudates. Acute and subacute inflammations in and around the adnexa formed the real contra-indication to operation, and doubtless surgeons were not always

as careful as those of the former, more conservative generation in selecting their cases. Competition and the rush of modern life were responsible for some ill-advised operations, minor as well as major.

In regard to major operations the author thought that (excluding pus cases) general preparatory treatment of the patient was rather more important than local. He believed, however, that the admirable results obtained by the pioneers in the treatment of vesico-vaginal fistulæ were due to careful preparatory treatment, such as the division of cicatrices, stretching of the vagina, etc. Fortunately, we were seldom called upon to handle such complicated cases as those described by Sims, Emmet and Bozeman. With all our improvements in technique, we had not yet outgrown all the wisdom of our old teachers.

THE VALUE OF POST-OPERATIVE LOCAL TREATMENT.

Dr. J. Riddle Goffe of New York said the experience of all observers was that local treatment relieved congestion, pain and discomfort; inaugurated, hastened and accomplished the absorption of edema, plastic exudate, adhesions and pseudo-hypertrophy. If it would relieve these conditions, how much more certainly would it prevent them? It had been found serviceable in preventing the deposit of plastic exudate and the reformation of adhesions in cases in which these were present at the time of operation. It was especially valuable in cases subjected to vaginal section for the relief of sterility. The author reported several instructive cases to substantiate the points made in his paper.

THE IMPLANTATION OF THE HUMAN OVUM IN THE UTERUS.

Dr. Chas. Sedgwick Minot of Boston discussed this subject by request. He stated that the human ovum produced upon its exterior, during its earliest stages of development, a thick layer of cells, the trophoblast. The function of the trophoblast was to corrode away a portion of the mucous membrane of the uterus, making a cavity in which the ovum lodged itself. The trophoblast thereupon underwent a hypertrophic degeneration, such as to produce a series of irregular spaces, which persisted and became the intervillous spaces of the placenta. Papillary outgrowths of the chorionic mesoderm meanwhile penetrated the trophoblast, initiating the formation of the chorionic villi. The trophoblastic cells over each mesodermic outgrowth persisted in two layers, the inner cellular and the outer syncytial. These two layers represented the first stage of the villus ectoderm. Similar observations had been made upon primates, and were compared with those upon the human subject. He compared briefly the method of implantation in man with that in other animals, to show that the trophoblast was of general occurrence, and that by destroying uterine tissues it inaugurated the formation of the true chorionic placenta.

BATHING DURING THE MENSTRUAL PERIOD.

Dr. J. Clifton Edgar of New York said that in the consideration of this subject several questions suggested themselves, namely, first, the advisability of bathing of any description during the menstrual period, and if at all, to what extent. Second, the use of the bath in dysmenorrhea. Third, the use of Nauheim or other chemical baths or hydriatic procedures. Fourth, the risk of infection of the endometrium in intramenstrual tub bathing. Fifth, the influence of modern athletics on women, lessening the risk, if any, of intramenstrual bathing. These questions were submitted to the members of the society, from whom he had received one hundred and twenty-two acknowledgments.

From the replies received and the literature on the subject, he drew the following conclusions: "(1) All forms of bathing during the menstrual period are largely a matter of habit, and usually can be acquired by cautious and gentle progression, but not for every woman does this hold good; and surf bathing, where the body surface remains chilled for some time, should always be excepted. (2) A daily tepid sponge bath (85° to 92° F.) during the menstrual period is not only a harmless proceeding, but is demanded by the rules of hygiene. (3) In the majority of if not all women, tepid (85° to 92° F.) sponge bathing after the establishment of the menstrual flow, namely, second or third day, is a perfectly safe practice. (4) Furthermore, in most women the habit of using the tepid shower or tub bath after the first day or two of the flow can with safety be acquired."

THE STREPTOCOCCUS IN GYNECOLOGICAL SURGERY.

Dr. Hunter Robb of Cleveland, Ohio, stated that in order to arrive at some definite conclusions with reference to the Streptococcus pyogenes as a cause of death in his work, he had made an analysis of all his cases in which this organism had been found during the past six years. It was shown from observations that quite a large number of his patients died, and several were unimproved. It was also noticed that in the great majority of cases in which this organism was met with, there was a previous history of infection following labor, or an induced criminal abortion. In the past six years he had had 137 cases of abortion (including a few cases of labor) in which it was necessary to carry out some form of treatment. Of this number 104, or 75.9%, recovered; 17, or 12.4%, were improved; 1, or .8%, was unimproved, and 15, or 10.9%, died. In 16 of the 137 cases the streptococcus was found. The total number of all his cases in which the streptococcus was found was 40, consequently those in which this organism was found following an abortion or labor formed 40% of the total number of streptococcus cases from every source. Of these 16 patients (streptococcus cases) following abortion or labor, 4, or 25%, recovered; 3, or 18.75%, were improved; 9, or 56.25%, died. In the whole 40 cases from every source, in which the streptococcus was found, the results were as follows: Recovered, 20, or 50%; improved, 6, or 15%; deaths, 14, or 35%.

The streptococcus was found in the following combinations, given in order of frequency: (1) Streptococcus alone; (2) Streptococcus and Staphylococcus pyogenes aureus; (3) Streptococcus, Staphylococcus aureus, and Bacillus coli communis. In all these cases, except 3 in which they were obtained from the vagina, the organisms were obtained from the uterus, the adnexa, the cul de sac, or from several of these situations. In other words, they were proved to be present in places which were admittedly not their normal habitat.

In the past five years he had 724 abdominal sections, with a total number of 32 deaths, or 4.43%. In 7, or 21.9%, of them, the Streptococcus pyogenes was demonstrated. In all there were 19 cases of abdominal operations in which the Streptococcus was found. Of this number, 12 recovered, or 63.2%; and 7 died, a mortality of 36.8%.

THE NATURE OF THE INDICATIONS FOR OPERATION FOR FIBROID TUMORS OF THE UTERUS.

Dr. Chas. P. Noble of Philadelphia presented a table of the degenerations and complications in a series of 1,188 cases of fibroid tumors operated upon

by Martin, Noble, Cullingworth, Frederick, Scharlieb, and in a series reported by Hunner and MacDonald. Especial attention was called to the relative frequency of adeno-carcinoma of the uterus as compared with epithelioma of the cervix. The deduction drawn from this fact was that fibroid tumors were a direct predisposing cause of cancer of the cervix. A careful consideration of the facts presented in the table, said the author, should convince any one with an open mind that the classical teachings concerning fibroid tumors were erroneous. This teaching was that fibroid tumors of the uterus were benign growths, which usually produced but few symptoms, and which after the menopause underwent retrogressive changes, becoming smaller or disappearing; that the chief danger of fibroid tumors consisted in the fact that at times they caused hemorrhage from the uterus, and that rarely they caused trouble because of their size or because of pressure on adjacent viscera. An analysis of the 1,188 cases showed that because of the degenerations in the tumors, about 16% of the women would have died without operation; about 18% would have died from the complications present. In addition, it was well known that a certain percentage would have died from intercurrent diseases brought about by the chronic anemia present in many of these cases, and by injurious pressure from the tumors upon the alimentary canal and urinary organs. In brief, at least one third of the women having fibroid tumors, as shown by the author's table, would have died had they not been submitted to operation.

THE TREATMENT OF GONORRHEA.

DR. HENRY T. BYFORD of Chicago said there was dissatisfaction with prevalent methods of treating this disease. The desideratum was a local remedy that would rapidly destroy or remove the germs without injuring the protective epithelium, and a method of application that could be used by the patient which would not carry the germs to a deeper portion of the genito-urinary tract. He advocated prolonged irrigations with hot water as a basis, and spoke of frequent injections of hot water as a substitute for prolonged irrigations. He detailed his experience with urethritis in the male, and referred to hydrogen dioxide and unirritating germicidal solutions as substitutes for plain water injections, and gave their application to gonorrhea in the female.

The advantages of this treatment, when used early, were summarized by him as follows: "(1) It prevents the spread of the disease to adjacent parts. (2) It does not injure the epithelial covering, and it tends to limit the infection to the superficial areas. (3) It removes more germs and pus cells than either astringents or disinfectants can destroy. It acts in the same way as constant irrigation, both in aborting and arresting the progress of the infection. (4) It can be used more frequently than astringents or strong germicides, so that the parts can practically be kept free from pus and germs all the time, while the method of using germicides or astringents three or four times daily allows the germs and pus to accumulate and spread between injections. (5) In the male, and possibly in the female, peroxide injections may be substituted when the time and facilities for the hot water treatment cannot be had. When the discharge has become scanty and the injections cannot readily be used so frequently, a non-irritating solution of a silver salt can follow each hot water or peroxide treatment. (6) It may be used in connection with alphozone injections for the dissolving of germs and culture material not eliminated by the douches. (7) It does no harm. It can be combined with the internal or local medication when it becomes impossible to carry it out with the necessary time-consuming detail. It exemplifies the superiority of asepsis to antisepsis."

DR. PHILANDER A. HARRIS of Paterson, N. J., exhibited and described a new uterine obstetrical dilator.

OFFICERS.

The following officers were elected: President, Dr. E. C. Dudley, Chicago, Ill.; vice-presidents, Dr. Henry D. Fry, Washington, D. C., and Dr. Henry C. Coe, New York; secretary, Dr. J. Riddle Goffe, New York; treasurer, Dr. J. M. Baldy, Philadelphia.

Niagara Falls, N. Y., was selected as the place for holding the next annual meeting, in May, 1905.

## Recent Literature.

*Lectures on Diseases of the Nervous System.* Second series. Subjective Sensations of Sight and Sound, Abiotrophy and other lectures. By SIR WILLIAM R. GOWERS, M.D., F.R.C.P., F.R.S. 12 mo. pp. 250. With 18 illustrations. Philadelphia: P. Blakiston's Son & Co. 1904.

These lectures have been published in various medical journals during the last ten years, and now appear in this convenient form. Of the ten lectures thus collected, the first two, the Bowman lecture for 1895 on subjective visual sensations and the Bradshaw lecture for 1896 on subjective sensations of sound, are the most important. The first lecture deals with the various spectra attendant upon migraine and the epileptic attack, and gives many curious studies of such spectra made by victims of migraine. The second lecture deals chiefly with tinnitus. The title of the third lecture is a neologism coined by the writer to express degeneration or decay in consequence of a defect of vital endurance. The other lectures are on myopathy, metallic poisoning, syphilis of the nervous system, syringal hemorrhage into the spinal cord, myasthenia and the use of drugs. As may readily be inferred they are all suggestive, and will prove profitable to every student of neurology.

*Gynecology*, being Vol. IV of The Practical Medicine Series of Year Books. Edited by EMILIUS C. DUDLEY, A.M., M.D., Professor of Gynecology, Northwestern University Medical School; Gynecologist to St. Luke's and Wesley Hospitals, Chicago; and WILLIAM HEALY, A.B., M.D., Instructor in Gynecology, Northwestern University Medical School. March, 1904. Chicago: The Year Book Publishers.

This little book of 216 pages contains well-edited abstracts from the current gynecological literature for the year 1903, and also several new illustrations by the talented senior editor, depicting some of his most recent methods of operating. This fourth volume maintains the high standard of the preceding numbers, and is to be highly recommended to the practitioner who is keeping abreast with the latest gynecological thought.

THE BOSTON

# Medical and Surgical Journal.

THURSDAY, JULY 28, 1904.

*A Journal of Medicine, Surgery and Allied Sciences, published a Boston, weekly, by the undersigned.*

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## POSTGRADUATE TEACHING.

There can be no question that the undergraduate departments of our larger medical schools are becoming year by year of relatively less importance. As medical schools have become more and more affiliated, both in fact and method, with universities, it has naturally followed that the teaching should more closely conform to the university type. One of the essential means of the development of universities in this country during the past decade has been the insistence placed upon the necessity of postgraduate work, both for the good of the community and the reputation of the institution concerned. We have therefore seen large postgraduate departments growing up side by side with the work of the academic course, at times, as some have thought, to the detriment of the latter. In any case what the university needs to develop is advanced work, and this certainly may only be attained through the offering of courses of instruction in special fields which go far beyond what should be required of the undergraduate student.

The same principle finds application in medical teaching. Each year demonstrates conclusively the absolute impossibility of covering the field of knowledge, except in the most superficial way, in the four years devoted to the undergraduate medical curriculum. In this short space of time the most that may be attained is a knowledge of the fundamental branches, with a certain amount of practical hospital experience, in the more general branches of medicine. Special work along any line is precluded, if the student is to devote anything like the necessary attention to the fundamental branches. The result very naturally is that those students who desire to deepen their knowledge in any particular line, and this forms an increasingly large contingent of our medical graduates, must either take certain specialized courses or else work out for themselves laboriously the desired information. It has therefore been a very natural result that so-called postgraduate courses should be instituted, which, together with summer courses coming essentially in the same category, constitute a mass of instruction wholly without and often beyond the limits of an ordinary medical curriculum. This tendency, now well marked, has certainly come to stay, and without any question will show definite development in the course of the years to come.

An occasion of much interest was the dinner and addresses given in New York in the earlier part of this year in honor of Dr. D. B. St. John Roosa, and in commemoration of the twenty-one years since the inauguration of postgraduate medical instruction in this country. This dinner was presided over by Dr. Osler in his usual happy vein, and the various speakers, chosen from different lines of professional work, each added his testimony to the value of postgraduate teaching as such, with particular reference to the work which has been done by the New York Postgraduate School, with which Dr. Roosa has for many years been identified. This school, as is no doubt generally known, is designed to offer instruction to practitioners of medicine in all the diversified fields of practice, and in this capacity it has ministered to the needs of a large number of physicians from all parts of this country and also from abroad. It is this sort of work, under somewhat different auspices, which our large educational institutions are now everywhere doing in connection with the more elementary work of the undergraduate student. That the two types of work, which as a matter of fact differ in degree rather than in kind, should be carried on under the auspices of a single institution seems in many ways eminently desirable, and we have no doubt that however useful distinctly postgraduate schools may continue to be, their absolute need is in great measure being obviated by the extension of instruction in university medical schools. Equipment of the most complete sort is naturally essential to advanced work, and this the university with its various correlated departments may best supply.

When we consider for a moment the importance of maintaining even average intelligence in all the branches of medicine, the necessity of the postgraduate department is forthwith apparent.

Doctors removed from the immediate stimulus of large medical centers simply must have opportunity for special instruction if they are to continue to do any sort of justice to the patients who come under their care. This opportunity is being offered now as never before, and unquestionably, as the courses are made more attractive and the deficiencies of knowledge are more and more forced upon the attention of conscientious physicians, there will be a still greater influx of men to take the courses offered. As a means, therefore, of keeping active, practising physicians in touch with medical progress, and as an absolutely essential method of educating young men in special lines of work, there is every evidence that the permanency of the postgraduate system is assured. It behooves our large institutions to give renewed attention to the matter, and to establish courses and methods of instruction which will redound not only to the advantage of the graduate student, but also to the dignity and authority of the individual institution. It is also to be expected that postgraduate work will tend to give opportunity to teachers of distinguished ability among our younger medical men. Such men also the profession at large needs, for the really good teacher now, as always, is a rare product.

## ACUTE LEUKEMIA.

UNTIL recently leukemia was considered as a chronic affection, undergoing its evolution within at least one year or two, but lately cases of this disease reported in France and Germany tend to show that leukemia may develop, with considerable rapidity, in one or two months, and cases of the acute form of the disease are becoming so numerous that it may be questioned whether in reality it is not quite as common, or even more so, than the chronic type. In 1899 Gilbert and Weil published a paper in the *Archives de Medecine Experimentale*, in which they give an excellent description of the acute form. The début is sudden, while the fever appears and oscillates in a most irregular manner. The objective symptoms are most variable, according to the form of the acute process. In some cases attention is attracted by an enormous hypertrophy of the spleen and lymph-nodes, while in others there are profuse hemorrhages without any lymphatic reaction. By the enlargement of the spleen and lymph-nodes the diagnosis of leukemia can be made immediately, but in the latter class, if a blood examination is not made, the diagnosis will waver towards infectious purpura or severe forms of scurvy.

In acute leukemia with lymphatic hypertrophy the clinical picture is quite different from that presented by the hemorrhagic type of the disease. Simple inspection of the patient will reveal large tumors seated in the sides of the neck and in the axilla. The abdomen is voluminous, and palpation will discover an enormous spleen and enlarged liver. By auscultation a compression of the bronchial tubes from enlarged mediastinal lymph-nodes is apparent.

In the hemorrhagic forms, as, for example, in the case reported by Jeanselme and Weil at the Société Médicale des Hôpitaux, on Feb. 19, 1904, the lymph-nodes were not much enlarged and the spleen was not greatly hypertrophied. It would appear that in this case, at least, there was an attenuation of the lymphadenic process.

On the other hand, very accentuated hemorrhages of every description may be met with. There may be epistaxis or gastrorrhagia; extensive subcutaneous and submucous extravasations may attain such a degree as to form true hematomata. The patient expectorates large quantities of blood, while the gums are often bloody as in scurvy. In the case recorded by Jeanselme and Weil, the disease appeared to follow upon a pseudo-membraneous angina, for which reason a diagnosis of hemorrhagic purpura was at first made. This is frequently the error committed when a blood examination is neglected.

By an examination of the blood a mistaken diagnosis may be avoided, because it at once shows that both forms of acute leukemia, which appear so unlike, the one where enlarged lymph-nodes are apparent, the other giving rise to hemorrhages, are only modalities of the same affection, namely, acute leukemia. The blood of acute leukemia consequently presents certain characters of the highest importance, the dominating one being lymphocytosis. In order that this lymphocytosis may be of value, it is not necessary that it be absolute, that is to say, that the total number of lymphocytes must be very greatly increased. Thus Jeanselme and Weil found 1,453,000 red cells and 4,400 lymphocytes. But in such a case the proportion of lymphocytes in relation to the polynuclears is greatly increased and may attain 80%, while normally the proportion is just the reverse. What characterizes leukemia is the lymphocytosis, while the decrease in number of the red cells is of secondary importance as far as diagnosis is concerned.

## PREVENTION OF TUBERCULOSIS IN ILLINOIS.

It is always a satisfaction to note the increasing attention being given by boards of health, as well as by individuals, to the subject of the prophylaxis of tuberculosis. Not long since we commented on certain pamphlets relating to this and certain other matters of public hygiene sent out by the Oregon State Board of Health, so worded as to be intelligible to the laity, for whom they were, in fact, primarily intended. Within a few days there has come into our hands a pamphlet of similar sort entitled, "The Cause and Prevention of Consumption," sent out by the State Board of Health of Illinois. This pamphlet again is intended for the information of the public, and incidentally gives certain facts relating to the disease which are of wide general interest. During the past two years this board of health has been conducting careful researches on the prevalence of tuberculosis in Illinois, from which it has been learned that in that state consumption was responsible for more deaths than typhoid fever, scarlet fever, diphtheria, all forms of bronchitis, influenza, whooping cough, measles and smallpox combined. In 1903 seven thousand persons died from the disease, of whom forty-five hundred were between the ages of twenty and fifty. This fact means an estimated loss to the state each year of about thirty-six million dollars. The investigation also led to the conclusion that the disease is curable within the state, and it, therefore, urges the establishment of hospitals for tuberculosis which has hitherto not been granted by the legislature. In the pamphlet, which it is hoped may ultimately be in the hands of every citizen in the state, the early symptoms of the disease are narrated at some length, with the expectation that popular knowledge in this regard may lead to an earlier medical examination and consequent early treatment. The usual rules which the consumptive should observe regarding himself and also regarding his neighbors are laid down under prominent headings in unmistakable language. As we have repeatedly said in the past, we have no question that this method of disseminating knowledge, properly supervised, will ultimately lead to excellent results. Popularizing a disease, as it were, naturally detracts in great measure from its terrors, and if all classes in the community could be made to feel that incipient tuberculosis, while serious, is by no means fatal, we have no doubt that the campaigns of extermination would rapidly progress. Toward this end the various circulars, to which we have, from time to time, called attention, are certainly tending.

## MEDICAL NOTES.

Guarding against the Mosquito. — It is reported that 100,000 yards of wire gauze are required by the Panama Canal Commission to guard against the inroads of mosquitoes during the work on the canal. It is said that 20,000 yards will be required for the hospitals and 75,000 yards for screening the houses along the canal. Steel wire galvanized screens are recommended.

Deaths in Railway Accidents. — As stated by the Interstate Commerce Commission the railways of the United States for the fiscal year ending June 30, 1903, carried 694,891,353 passengers. The casualties for the year numbered 86,393, including 9,840 killed and 76,553 injured.

Chicago's Death-Rate. — According to the Bulletin of the Chicago Health Department, Chicago's decreasing death-rate, which has been almost 29% since 1893 from the average of the previous ten years, is due almost wholly to the sanitary education of the public. The bulletin affirms that the Chicago public is better educated in sanitary matters than that of any other community, through its various local clubs, social settlements and kindred organizations. This statement is interesting, and we are not in a position to criticise it.

Imperial Cancer Research Fund. — The third meeting of the General Committee of this Cancer Research Fund was held July 8, in London, with the Prince of Wales presiding. The King's sympathy and interest in the work of this organization is such that he has approved the addition of the word, imperial, to the official title. It will, therefore, hereafter be known as the Imperial Cancer Research Fund. The annual report states the character of the work done since the previous official communication. This has consisted in experimental work on the nature and processes of growth of cancer through researches on the lower animals. Among other results of importance is the demonstration of the existence of cancer in wild animals. Cancer has, therefore, been discovered to pervade the whole vertebrate kingdom, presenting constant fundamental characteristics, and it is concluded that

it is not permissible to seek for the causative factors of cancer outside of the life processes of the cell. Investigation bearing upon the diagnosis and treatment of cancer has also been carried out experimentally with as yet incomplete results. The following statistical investigation is also being prosecuted: Hospital statistics; occurrence of cancer in native races of the colonies and out-lying parts of the British Empire; statistics of assurance societes; recorded death-rate in Ireland and Great Britain, and the bearing of the foregoing upon the reputed increase of cancer. The report closes with the statement that there is nothing in the statistical investigation pointing to an actual increase in the number of deaths due to cancer. Little is said of the protozoön origin of the disease. Both the *Lancet* and the *British Medical Journal* of July 16 devote considerable space to a consideration of the foregoing report.

### BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, July 27, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 44, scarlatina 5, typhoid fever 13, measles 30, smallpox 0.

THE GRADUATING CLASS OF HARVARD UNIVERSITY. — It is announced that of this year's graduating class of Harvard University 20 expect to pursue the study of medicine, 121 law, 128 business, 68 each, teaching and scientific pursuits, and the remainder various less popular employments. The contrast between medicine and law, two somewhat collateral professions, is particularly striking. No doubt law promises a more rapid and varied rise to fame.

### NEW YORK.

A CENTENARIAN. — Mrs. Hannah Brown of Brooklyn, N. Y., died at the age of one hundred and one years, on July 22, two days after passing her one hundred and first birthday. She was born at Smithtown, Long Island, where her mother lived to be one hundred years old.

BEQUESTS TO HOSPITALS. — By the will of the late Sylvester S. Batton of Newark, N. J., $25,000 is left to charities. Among the bequests are the following: $5,000 each to St. Barnabas Hospital and the Home for Aged Women of Newark, and $5,000 to the Babies' Hospital of the New York Post-Graduate Medical School.

## Obituary.

### EDWARD W. LAMBERT, M.D.

DR. EDWARD W. LAMBERT, chief medical officer of the Equitable Life Assurance Company, died July 17 in New York. Dr. Lambert was born in Boston in 1831, and for the greater part of his active professional life has been associated with life insurance work. He was graduated from Yale in 1854 and from the College of Physicians and Surgeons in New York in 1857. He later prosecuted his medical studies in Bellevue Hospital, and has since been identified with the city of New York. At the time of his death he was one of the physicians to St. Luke's Hospital and to several smaller hospitals. He leaves a large family, three of his sons being physicians in New York.

## Miscellany.

### THE JAPANESE AS CHEMISTS.

PROBABLY no Eastern nation is more strongly represented than are the Japanese in the English annals of science, and more particularly in literature on chemistry. They possess an undoubtedly strong faculty for original research, and they combine this faculty with a sharp-sightedness as to the possibilities of practical application of the fruits of research. The Japanese chemist, in fact, unites the power of originality of the English chemist and the practical intuition of the German. At the University of Tokyo practical study is very much favored, and splendid facilities for work are provided in the laboratories and workshops. There are several distinguished Japanese chemists who are Fellows of the English Chemical Society and who were elected to the fellowship on account of the excellence of their contributions to original science. Many elaborate papers involving long and patient laboratory investigation are printed in full in the transactions of the society. The Japanese chemists discuss with a freedom which astonishes the Western chemist all the modern abstruse theories bearing upon the atomic theory, the constitution of matter, the theory of dissociation, and so forth. They write powerful dissertations on the views advanced by such esteemed thinkers as Ostwald, Arrhenius, Van't Hoff, Kelvin, Thomson, Lodge, Crookes, Ramsay and others, and have offered valuable criticisms on the methods of systematizing and compiling atomic weights adopted by Western chemists. Chemistry, of course, is a powerful weapon in war, and there can be little doubt that amongst other things which have so far contributed to Japanese successes is a sound knowledge of explosives, their composition, action and behavior under a variety of conditions. When there is no longer any need for the implements of battle, and may that soon be, we may be pretty sure that the same subtle insight which is so marked a feature of the Japanese intellect will turn with equal success to the application of science to peaceful pursuits. — *Lancet.*

## CANCER RESEARCH IN LIVERPOOL.

A CANCER research fund has been established in Liverpool by the munificence of a donor who gave $50,000 as a memorial to his deceased wife. This is administered by a committee, consisting of Professor Carter, Dr. Barr, Prof. Rushton Parker, Prof. F. F. Paul, Prof. R. Boyce and Prof. C. L. Sherrington. A room to serve as a ward laboratory was established for research at the Liverpool Royal Infirmary, where also a number of beds were set aside for the clinical observation of cancer. The council of the University of Liverpool also granted the use of five large rooms in its laboratories for the prosecution of the inquiry. Dr. A. S. Grünbaum was appointed director of the research. He has just issued an interim report, which covers a period somewhat less than a year. Experiments were made with the cytolytic milk of a cow, and when it yielded no more milk, with its serum. Of two cases of cancer of the breast so treated, one was apparently arrested. Three cases of uterine cancer are being treated with horse serum. They all show signs of improvement. Another branch of the inquiry is directed toward the discovery of the cause of cancer. Dr. Grünbaum thinks that combination of causes, and perhaps not always the same combination, is necessary. If once a strain of human cancer can be secured, he says, we shall be appreciably nearer the goal. In the work both the developmental and parasitic hypotheses are kept in view. The recent evidence of the London observations in favor of a germinal theory raises the hope that a comparatively simple physiological cure may be possible, for experimental embryologists can, by simple means, alter the development of germinal cells. To promote interest in the inquiry, 2,000 circulars were sent out to doctors in the north of England and 1,000 to veterinary surgeons. But the responses have not been encouraging. A large number of tumors have been received from various hospitals for examination. Several, mostly malignant, from the horse, cow, sheep, dog, pig, cat, mouse and trout, have also been received — *Journal of the American Medical Association.*

## Correspondence.

### THE HARVARD MEDICAL SCHOOL FROM A LAYMAN'S STANDPOINT.

BOSTON, July 15, 1904.

MR. EDITOR: The following conversation was overheard in an electric car on Huntington Avenue in the early summer.

"Oi say, mishter! Oi want to ask you phwat that building is. There, that one."

"That, madam, is a school-house."

"No, no! I know that, me children goes there to school. Phwat is the building beyant?"

"That is the Harvard Medical School."

"But he is on Boylston Street."

"Yes, but is going to move here."

"Och! poor thing! and must he move just loike us poor critters, because he can't pay his rint?" W.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 16, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Cerebro-spinal Meningitis. | Diarrheal Diseases. |
| New York . . | 3,908,644 | 1,548 | 745 | 43.67 | 8.00 | 2.65 | 1.48 | 28.29 |
| Chicago . . . | 2,021,086 | 416 | 115 | 27.87 | 6.00 | 1.44 | — | 12.73 |
| Philadelphia | 1,407,968 | 483 | 186 | 37.05 | 8.07 | 1.45 | — | 19.45 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 249 | 109 | 41.76 | 2.00 | .40 | .80 | 28.51 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 161 | — | 41.61 | 6.83 | 4.34 | — | 23.08 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 62 | 26 | 33.87 | .16 | — | — | 24.19 |
| Boston . . . | 617,950 | 142 | 35 | 23.93 | 11.26 | 2.11 | .70 | 5.60 |
| Worcester . . | 136,925 | 32 | 10 | 12.50 | 12.50 | — | 9.37 | .31 |
| Fall River . . | 119,349 | 55 | 23 | 52.72 | 5.45 | — | — | 34.54 |
| Lowell . . . | 104,402 | 47 | 25 | 36.15 | 10.63 | — | — | 23.39 |
| Cambridge . | 100,998 | 21 | 7 | 33.33 | 14.28 | — | — | 19.01 |
| Lynn . . . . | 73,875 | 21 | 4 | 23.81 | 14.28 | — | 4.76 | 9.52 |
| Lawrence . . | 72,348 | 23 | 10 | 47.82 | 8.70 | — | — | 43.48 |
| Springfield . | 72,020 | 17 | 7 | 17.61 | 5.88 | — | — | 11.76 |
| Somerville . | 70,413 | 13 | — | 7.70 | — | — | — | — |
| New Bedford | 68,863 | 21 | 11 | 23.81 | 9.52 | — | — | 19.05 |
| Holyoke . . . | 50,538 | 25 | 14 | 60.00 | 4.00 | 4.00 | — | 36.00 |
| Brockton . . | 46,601 | 6 | 1 | 66.67 | — | — | — | 16.67 |
| Newton . . . | 39,310 | 7 | — | — | — | — | — | — |
| Haverhill . . | 39,061 | 8 | 3 | 12.50 | — | — | — | 12.50 |
| Malden . . . | 37,205 | 5 | 1 | 40.00 | 20.00 | — | — | — |
| Salem . . . . | 37,188 | 9 | 4 | 11.11 | 22.22 | 11.11 | — | — |
| Chelsea . . . | 36,499 | 10 | 0 | 20.00 | 10.00 | — | — | — |
| Fitchburg . . | 36,335 | 8 | 2 | 25.00 | — | — | — | — |
| Taunton . . . | 34,577 | 2 | 0 | — | — | — | — | — |
| Everett . . . | 30,209 | 7 | 1 | 14.30 | — | — | — | — |
| North Adams | 29,201 | 8 | 4 | 25.00 | — | — | — | — |
| Quincy . . . | 26,798 | 6 | — | — | — | — | — | — |
| Gloucester . | 26,121 | 5 | — | — | 20.00 | — | — | — |
| Waltham . . | 25,797 | 5 | — | 20.00 | — | — | — | — |
| Brookline . . | 23,576 | 2 | — | 50.00 | — | — | — | — |
| Pittsfield . . | 22,870 | — | — | — | — | — | — | — |
| Medford . . | 21,956 | 6 | — | — | 16.67 | — | — | — |
| Chicopee . . | 21,692 | 9 | 3 | 44.44 | — | — | — | 22.22 |
| Northampton | 20,314 | 11 | 1 | 9.09 | — | — | — | — |
| Beverly . . . | 15,807 | — | — | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 3 | 0 | — | — | — | — | — |
| Adams . . . | 14,745 | 5 | 4 | 60.00 | — | — | — | 60.00 |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | — | — | — | — | — | — | — |
| Newburyport | 14,478 | 10 | 0 | — | — | — | — | — |
| Woburn . . . | 14,315 | 2 | 2 | — | — | — | — | — |
| Melrose . . . | 13,819 | 2 | 2 | 50.00 | — | — | — | — |
| Westfield . . | 13,809 | 4 | 2 | 50.00 | — | 25.00 | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 2 | 0 | — | — | — | — | — |
| Revere . . . | 13,609 | 3 | — | 33.33 | — | — | 33.33 | — |
| Framingham | 12,974 | 9 | 2 | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 2 | — | — | — | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 4 | 1 | 25.00 | — | — | — | — |
| Weymouth . | 11,350 | 1 | 0 | — | — | — | — | — |
| Plymouth . . | 11,139 | 2 | — | — | — | — | — | — |

Deaths reported, 3,506; under five years of age, 1,363; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup. diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,325; acute lung diseases 252, consumption 344, scarlet fever 14, whooping cough 10, cerebrospinal meningitis 31, smallpox —, erysipelas 6, puerperal fever 9, measles 20, typhoid fever 38, diarrheal diseases 785, diphtheria and croup 68.

From whooping cough, New York 5, Chicago 3, Boston 1, Holyoke 1. From measles, New York 13, Chicago 2, Pittsburg 1, Lowell 3, North Adams 1. From cerebrospinal meningitis, New York 23, Baltimore 2, Boston 1, Worcester 3, Lynn 1, Revere 1. From typhoid fever, New York 10, Chicago 4, Philadelphia 10, Baltimore 1, Pittsburg 10, Boston 1, Somerville 1, Everett 1. From erysipelas, New York 2, Chicago, Philadelphia, Baltimore and Boston 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending July 2, the death-rate was 13.5. Deaths reported 3,953; acute diseases of the respiratory organs (London) 60, whooping cough 102, diphtheria 44, measles 180, smallpox 6, scarlet fever 25.

The death-rate ranged from 5.1 in Tottenham to 22.8 in Hanley; London 12.9, West Ham 11.8, Brighton 11.5, Southampton 8.8, Plymouth 13.7, Bristol 11.2, Leicester 13.0, Nottingham 15.7, Liverpool 17.7, Bolton 14.5, Manchester 19.0, Salford 14.8, Bradford 13.7, Leeds 16.0, Hull 18.1, Sheffield 12.8, Cardiff 10.1, Rhondda 15.8, Wigan 21.6, Merthyr Tydfil 9.3, Willesden 12.6, Birkenhead 16.3.

## METEOROLOGICAL RECORD.

For the week ending July 16, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S.. 10 | 29.97 | 66 | 69 | 62 | 89 | 97 | 93 | E | E | 6 | 4 | O. | O. | T. |
| M.. 11 | 29.80 | 74 | 84 | 64 | 86 | 87 | 86 | W | S | 6 | 9 | F. | C. | 0 |
| T.. 12 | 29.66 | 76 | 83 | 70 | 84 | 86 | 85 | S W | S | 10 | 13 | O. | C. | 0 |
| W.. 13 | 29.78 | 70 | 79 | 61 | 85 | 59 | 72 | W | N | 10 | 14 | R. | C. | .07 |
| T.. 14 | 30.08 | 69 | 80 | 58 | 64 | 77 | 70 | N W | S W | 10 | 5 | C. | F. | 0 |
| F.. 15 | 30.06 | 74 | 83 | 64 | 63 | 59 | 61 | W | S W | 8 | 16 | O. | O. | T |
| S.. 16 | 29.93 | 78 | 88 | 68 | 75 | 87 | 81 | S W | S | 14 | 12 | F. | F. | .11 |
| ☞ | 29.90 | | 81 | 64 | | | 78 | | | | | | | .18 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JULY 23, 1904.

C. M. DEVALIN, passed assistant surgeon. Detached from the "Albany" and ordered home to wait orders.

W. N. MCDONELL, acting assistant surgeon. Detached from the "Glacier" and ordered to the "Marcellus."

P. F. MCMURDO, acting assistant surgeon. Detached from the "Gloucester" and ordered to the Navy Yard, League Island, Pa.

W. H. BLACK, acting assistant surgeon. Detached from the Navy Yard, N. Y., Aug. 12, and ordered to the Naval Station, New Orleans, La.

E. S. BOGERT, Jr., surgeon. Orders of July 15 modified, ordered to continue duty at the Naval Academy.

L. W. CURTIS, surgeon. Detached from the "Buffalo" and ordered home to wait orders.

E. G. PARKER, passed assistant surgeon. Detached from the "Wheeling" and ordered to the "Buffalo."

R. L. SUTTON, assistant surgeon. Detached from duty with the Marine Battalion on the Isthmus of Panama and ordered to the Naval Hospital, New York, N. Y., for treatment.

C. C. GRIEVE, assistant surgeon. Detached from the Naval Station, Cavite, P. I., and ordered to the Naval Station, Guam, L. I.

D. C. CATHER, assistant surgeon. Appointed assistant surgeon, with rank of lieutenant, jr. grade, from July 9, 1904.

## OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING JULY 14, 1904.

STONER, J. B., surgeon. To proceed to Ocean City, Md.; Chincoteague and Wachapreague, Va., for the physical examination of certain keepers and surfmen of the Life Saving Service. July 9, 1904.

GUITERAS, G. M., surgeon. Granted leave of absence for seven days from July 14. July 11, 1904.

GRUBBS, S. B., passed assistant surgeon. To proceed to Moss Point, Miss., for special temporary duty. July 12, 1904.

BILLINGS, W. C., passed assistant surgeon. Department letter of March 28, 1904, granting Passed Assistant Surgeon Billings leave of absence for two months and three days, amended to read one month and twenty-eight days. July 8, 1904.

KORN, W. A., assistant surgeon. Relieved from duty at Philadelphia, Pa., and directed to proceed to Perth Amboy, N. J., for duty. July 12, 1904.

AMESSE, J. W., assistant surgeon. Department letter of March 26, 1904, granting Assistant Surgeon Amesse leave of absence for two months and fifteen days, amended to read two months and eleven days from May 1. July 9, 1904.

GLOVER, M. W., assistant surgeon. Granted leave of absence, on account of sickness, for seven days. July 13, 1904.

BAHRENBURG, L. P. H., assistant surgeon. Relieved from duty at Chicago, Ill., and temporary duty at Evansville, Ind., and directed to proceed to Delaware Breakwater Quarantine, and report to the medical officer in command for duty and assignment to quarters. July 9, 1904.

STIMSON, A. M., assistant surgeon. Upon being relieved at New Orleans, La., by Assistant Surgeon E. M. Steger, to proceed to Washington, D. C., and report to the director of the Hygienic Laboratory for duty. July 12, 1904.

WARD, W. K., assistant surgeon. Upon being relieved at Reedy Island Quarantine by Assistant Surgeon G. L. Collins, to proceed to Washington, D. C., and report at the Bureau for instructions preliminary to assignment to duty in the office of the United States consul at Bridgeton, Barbadoes, British West Indies. July 12, 1904.

ROBERTS, NORMAN, assistant surgeon. Relieved at New Orleans, La., and directed to proceed to Evansville, Ind., and assume temporary charge, relieving Assistant Surgeon L. P. H. Bahrenburg. July 9, 1904.

COLLINS, G. L., assistant surgeon. Relieved from duty at Ellis Island, N. Y., and directed to proceed to Reedy Island Quarantine and report to the medical officer in command for duty and assignment to quarters, relieving Assistant Surgeon W. K. Ward. July 12, 1904.

STEGER, E. M., assistant surgeon. Relieved from duty at Ellis Island, N. Y., and directed to proceed to New Orleans, La., and report to medical officer in command for duty in connection with the examination of aliens, relieving Assistant Surgeon A. M. Stimson. July 12, 1904.

BROWN, B. J., JR., acting assistant surgeon. Granted leave of absence for twenty-one days from July 8. July 9, 1904.

CLEAVES, F. H., acting assistant surgeon. Granted leave of absence for twenty-three days from July 8. July 7, 1904.

GOLDSBOROUGH, B. W., acting assistant surgeon. Granted leave of absence for three days from July 13. July 9, 1904.

GREGORY, G. A., acting assistant surgeon. Granted leave of absence for seven days from July 5. July 9, 1904.

KEATLEY, H. W., acting assistant surgeon. Granted leave of absence for two days from July 8, 1904, under paragraph 210 of the regulations.

SAVAGE, W. L., acting assistant surgeon. Granted leave of absence for thirty days from Aug. 1. July 8, 1904.

STEVENSON, J. W., acting assistant surgeon. Granted leave of absence for ten days from July 11. July 13, 1904.

TAPPAN, J. W., acting assistant surgeon. Granted leave of absence for thirty days from July 11. July 6, 1904.

WELDON, W. A., acting assistant surgeon. Granted leave of absence for thirty days from July 8. July 13, 1904.

ALLEN, G. C., pharmacist. Granted leave of absence for thirty days from July 13. July 12, 1904.

### BOARDS CONVENED.

Board convened to meet at Washington, D. C., July 11, 1904, for the physical examination of an officer of the Revenue Cutter Service. Detail for the Board: Assistant Surgeon-General G. T. Vaughan, chairman; Assistant Surgeon A. J. McLaughlin, recorder.

Board convened to meet at the Marine Hospital, Baltimore, Md., July 12, 1904, for the physical examination of an officer of the Revenue Cutter Service. Detail for the Board: Assistant Surgeon C. W. Wille, chairman; Acting Assistant Surgeon J. G. Evans, recorder.

## SOCIETY NOTICES.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS. — The American Association of Obstetricians and Gynecologists will hold its seventeenth annual meeting at the Hotel Monticello, St. Louis, Tuesday, Wednesday, Thursday and Friday, Sept. 13, 14, 15 and 16, 1904.

AMERICAN NEUROLOGICAL ASSOCIATION. — The American Neurological Association meets at St. Louis at the Planters Hotel, instead of in the World's Fair Grounds as orginally planned. The sessions will last from 9 A.M. to 1 P.M. daily. A general invitation to attend is extended to the medical profession.

## RECENT DEATHS.

DAVID J. FITZGERALD, M.D., a prominent physician of northern New York, died at his home at Glens Falls, on July 17, of cerebral apoplexy. He was a native of Ireland, and forty-six years of age. He came to this country when young, and was graduated from the Fort Edward Collegiate Institute in 1876. In 1884 he was graduated from the Albany Medical College, after which he studied for a time at the New York Post-Graduate Medical School and Hospital.

GEORGE V. WENNER, M.D., of Milford, N. J., died, on July 19, from an overdose of cocaine. It is stated that for some time he had been experimenting on his own person with the drug, with a view to discovering the best means of antagonizing its toxic effects, and that he left a number of records of his observations. Dr. Wenner was forty years of age, and a graduate of the Medico-Chirurgical College of Philadelphia.

# Original Articles.

## OPERATIONS UPON BENIGN DISEASES OF THE STOMACH AT THE BOSTON CITY HOSPITAL AND MASSACHUSETTS GENERAL HOSPITAL 1898–1903 INCLUSIVE.*

BY F. B. LUND, M.D., E. P. JOSLIN, M.D., AND F. T. MURPHY, M.D., BOSTON.

I. Introduction.
II. Operations for Chronic Gastric Ulcer, Pyloric Obstruction and Acute Gastric Dilatation.
Summary and Conclusions Followed by Reports of Cases.
III. Operations for Perforation of Gastric Ulcer.
Summary Followed by Reports of Cases.
IV. Operations for Gastric Hemorrhage.
Summary Followed by Reports of Cases
V. General Conclusions.[1]

### I. Introduction.

The object of this paper is to review the surgery of benign diseases of the stomach at the two large hospitals in Boston during the last six years. Not long ago the medical aspect of ulcer of the stomach[2] at one of the hospitals was critically studied by a physician and surgeon, and it seemed fitting that the surgical side of the question should be as impartially treated. The above paper showed that the immediate success attending medical treatment of ulcer of the stomach in Boston was far below that usually given in the literature. Fifty-five per cent of the patients were discharged well from the hospital in contradistinction to Leube's 74% cured.[3] The ultimate results were still worse, and demonstrated that 56% of the ulcer patients were either dead, or had had stomach trouble referable to the ulcer since their discharge from the hospital. It is with patients similar to this 56% of medically unsuccessful cases that this paper deals. While the results are not as favorable as have been elsewhere reported, they represent the facts. Furthermore, they show the condition of the patient some time after the operation and not the immediate result alone. In the opinion of the writers the next six years will show remarkable improvement in this branch of surgery.[4]

* Read in part at a meeting of the Surgical Section, Suffolk District Medical Society, January 6, 1904.

[1] At a meeting of the Surgical Section of the Suffolk Branch of the Massachusetts Medical Society, held last winter, the question of operation in benignant gastric disease was discussed, and at its conclusion the suggestion was made that the results of the operations at the two large hospitals in Boston be combined and published. The writers are indebted to the chairman, Dr. F. B. Harrington, and the secretary, Dr. E. A. Codman, for permission to use the statistics of the Massachusetts General Hospital, which had been partially compiled for them by one of the writers, and to the Surgical Staff of the Boston City Hospital for permission to record their cases.

The writers further wish to express their appreciation of the kindness of Dr. Arthur T. Cabot, who read the manuscript before it was sent to the printer.

[2] Gastric Ulcer at the Massachusetts General Hospital, 1888–98. Greenough and Joslin. Amer. Jour. Med. Sci., August, 1899.

[3] Centralbl. f. Chirurgie, 1897, No. 28, p. 66.

[4] Should it meet with the approval of the surgeons at the Boston City Hospital and the Massachusetts General Hospital, it is the intention of the writers to record yearly the condition of all patients operated upon for benignant gastric disease since Jan. 1, 1898.

ANALYSIS OF THE STRICTURES OF THE PYLORUS.
PYLORIC OBSTRUCTION.

| | | |
|---|---|---|
| Number of cases | 21 | |
| Number of recoveries | 16 | 76.2% |
| Mortality | 5 | 23.8% |
| Present condition: well | 9 | 42.9% |

On analyzing the fatal cases, we find that there were two fatal cases of pyloroplasty for stricture of the pylorus, Cases 3 and 17. We find that Case 3 had been exhausted by five years of vomiting and hemorrhage, and had had three terms of medical treatment during that time. She was in very poor condition for operation, and died on the fourth day, without recovering from shock.

Case 17 was of similar character, being that of a woman who had had daily vomiting and suffered daily stomach washings for a year, and had lost 40% in weight. She almost succumbed to shock on the table, and died on the fifth day of pneumonia.

As to permanent results of the pyloroplasties for stricture, Cases 8, 5 and 7 are classed as cured.

Case 8, a man who was in truly desperate condition at hour of operation, was well and at work four years after operation.

Case 5 was well four years after operation, and had worked steadily since.

Case 7 had vomiting and lived on soft solids for three years after operation, but in March, 1904, reported well.

As relieved are classed Cases 1, 2 and 4.

In Case 1 the relief only lasted a few months. In this case a further operation (gastro-enterostomy) ought to be considered.

In Case 2 relief after operation remained till two years later, when she died after removal of a ureteral calculus.

Case 4 was at work four years after operation, but obliged to live on soft solids.

Case 18 was not relieved.

In considering these cases in which relief was only temporary or did not occur, we must remember that the method of Heineke-Mickulicz, owing to the danger of recontraction, has been replaced by the gastro-duodenostomy of Finney, which affords a much larger opening and one much less likely to recontract. In these cases not relieved further operative procedure ought to be considered, as no other treatment affords any prospect of relief.

Of the gastro-enterostomies for pyloric stricture, ten in number, six are classed as cured, Cases 20, 37, 43, 10, 25 and 38.

Case 20, emaciated to the last degree at time of operation, was in good health, and had gained forty-nine pounds three years after operation.

Case 37 was well and at work five months after operation.

Case 43 was well six week after operation.

Case 10 was well at discharge from hospital.

Case 25 reported well three years after operation.

Case 38 reported well eighteen months after operation.

Of the gastro-enterostomies for pyloric stricture, there were three deaths, — Cases 13, 29 and 36.

Case 13 was operated upon twelve weeks after swallowing carbolic acid. Here probably faulty method was the cause of death, as no shock followed operation, but persistent vomiting. Anterior operation with the Murphy button was done. It is a question whether the opening was not made too high in the stomach. Case 29 was exhausted and emaciated. He had had seven weeks treatment in medical wards, and died. Died probably of shock after a quick anterior button operation. Case 36 died of inhalation pneumonia.

As not relieved are classed Cases 24, 26, 32.

Case 24 had a sponge removed six months after discharge, and pain and vomiting continued two years after operation (error in technique).

Case 26 "no better" two years after operation.

Case 32 died one month after discharge, and autopsy showed contraction of opening.

ANALYSIS OF THE CHRONIC ULCERS.

| | | |
|---|---|---|
| Number of cases | 21 | |
| Number of recoveries | 16 | 76.2% |
| Number of deaths | 5 | 23.8% |
| Present condition: well | 7 | 33.3% |

Review of the operations for chronic ulcer, 21 in number, shows that excision of the ulcer was done three times with no deaths; pylorectomy twice, both cases proving fatal; gastro-enterostomy 15 times, with 3 deaths; gastro-duodenostomy twice, with no deaths.

The fatal cases of gastro-enterostomy were Cases 16, 30 and 41.

Case 16 died on the fourteenth day of circular vomiting, constriction of the descending loop by the opening in the meso-colon, which was thickened by old adhesions and was not sutured to the stomach wall. This was an error in technique.

Case 30, a chronic alcoholic, died of delirium tremens.

Case 41. In this case the omentum adherent in the pelvis had to be tied off. A large portion tied with a coarse silk ligature became adherent to the line of union between the stomach and intestine and caused circular vomiting. An error in technique.

Of the pylorectomies, Case 12 died of shock after a difficult operation which was performed under the impression that the case was one of carcinoma. A gastro-enterostomy would have been, probably, a safer procedure.

In Case 19 a pylorectomy was also done, owing to supposed malignancy. Here, also, a gastro-enterostomy might have been preferable.

As cured of the excisions are classed Cases 9 and 11.

Case 9 was well three or four months after operation.

Case 11 required a year for convalescence, but worked after that steadily till the present, three years after operation, when he is well.

Case 22 is unrelieved, though a second operation showed the gastro-enterostomy to be patent.

Case 23 is no better than before operation.

Case 35 is classed as not relieved, his pain and distress having returned five months after operation.

Of the gastro-enterostomies, five are classed as cured, — Cases 21, 28, 34, 39 and 42.

Case 21 was in fine condition two years after operation.

Case 28 was well fourteen months after operation.

Case 34 was well six months after operation.

Case 39 in excellent condition four months after operation.

Case 42 in excellent condition two months after operation.

As relieved are classed three cases, — 14, 15 and 31.

Case 14 after relief for some time died of carcinoma, probably originating in the old ulcer, sixteen months after operation.

Case 15 had more or less vomiting for two years, but improved and was able to do her work. In February, 1904, three years and four months after operation, there was return of vomiting and bloody stools.

Case 31 (a case of perforation prevented by adhesion to anterior abdominal wall) had an abscess of the lung three months after operation, and died six months later.

As "not relieved" are classed Cases 40 and 33.

Case 40, a case of gastric tetany, from chronic ulcer, had successively a gastro-pexy, gastro-enterostomy, entero-enterostomy and gastro-duodenostomy (Finney) performed, and five months later was vomiting and still in hospital in poor condition.

Case 33 was better for four months, but later had return of vomiting and distress, and six months after operation was in poor condition.

Of gastro-duodenostomies, Case 27 is classed as relieved, which was her condition on leaving the hospital. No subsequent report.

Case 6, an acute dilatation of the stomach, was fatal, and is classed alone.

REMARKS AND CONCLUSIONS.

On review of these cases of the surgery of benign disease of the stomach, we find that we have in all of them been dealing with conditions which have been obstinate and irremediable by medical treatment. In stricture of the pylorus we have been dealing with a mechanical condition curable only by mechanical, that is, operative procedures. The final results fall into the classes given above, — a class who were cured, that is, restored to perfect health for a long period, those who were temporarily relieved, a small number who were not relieved, and the fatal cases.

In estimating the advantages which operation offers at the present time, we must take into consideration several facts. First, that these cases have been the early cases, operated upon during

the developmental period of gastric surgery in a conservative community. The technique has been in many instances faulty, owing largely to the inexperience of the operators, which was unavoidable. Lack of belief in the favorable results of surgical intervention has influenced the medical consultants to delay too long in calling in surgical consultation, and the surgeon himself has in many instances felt it so necessary to assure himself of the absolute necessity of undertaking an operation of such supposed magnitude that he too has lost valuable time and wasted the strength of his patients.

During the period that these operations have been done, the surgery of the stomach has progressed under the leadership of men who have devoted themselves to its study and practice, notably, Robson, Moynihan, Mayo, Mickulicz and Finney, until gastro-enterostomy and gastro-duodenostomy have become simple and safe procedures in the hands of those who are interested sufficiently in this subject to keep abreast of the modern technique. A knowledge of the pathological appearances *in vivo*, sufficient to enable the surgeon to decide accurately at the time of operation what measures to adopt, is also the reward of special attention and study of gastric surgery.

Medical clinicians who have interested themselves in the stomach are learning to differentiate those cases which are amenable to surgical treatment while there is yet time and opportunity for surgical aid; in other words, are alive to the advantages offered by surgery in suitable cases. Under these improved conditions the prospects for those patients suffering from stricture of the pylorus and chronic ulcer of the stomach are daily becoming brighter. Distrust and jealousy on the parts of both medical men and surgeons of each other's methods and results have in the past done much to limit the field of surgery, and miscalled conservatism, which conserves everything but the health of the patient, has also contributed to the bad results. Only by early consultation, courtesy, confidence and good faith on the part of physician and surgeon can this undesirable state of things be avoided. Its avoidance in the future will mean much to those afflicted with benign disease of the stomach.

Modern surgical technique, and, in particular, posterior gastro-enterostomy by the method of Moynihan, and the gastro-duodenostomy of Finney, have shortened the convalescence and improved the final results in gastric surgery enormously.

The judicious application of these procedures in the cases narrated in this paper might have lessened the mortality, increased the class of cures and diminished the number of those not relieved, besides shortening the immediate surgical convalescence of many.

II. Operations for Chronic Gastric Ulcer, Pyloric Obstruction and Acute Dilatation of the Stomach.

| NAME AND DATE | SEX | AGE | SYMPTOMS AND DESCRIPTION | CONDITION FOUND OPERATION | RESULT | REMARKS |
|---|---|---|---|---|---|---|
| J. Q. July, 1898. 1 | F. | 53 | Gastric trouble for 5 years. Pain. Vomiting, without blood, of large quantities of old food. Stomach holds 3 quarts. | Stenosis of pylorus from thickened wall and adhesions. Pyloroplasty. | Disch. much rel'd. | Comfortable for some months after operation, then vomiting returned. "A living skeleton." |
| M. R. Aug., 1898. 2 | F. | 39 | Gastric symptoms for 13 years. Vomiting, without blood, pain after eating. Peristaltic waves seen in epigastrium. | Pylorus stenosed, so that it will admit only a lead pencil. Gall bladder full of stones. Pyloroplasty. Gall bladder drained. | Well. | Second operation Dec. 23, 1899. Adhesions around pylorus divided. Well till Feb. 2, 1901, when she died after removal of calculus from ureter. |
| M. C. Sept., 1898. 3 | M. | 43 | Burning pain in epigastrium and vomiting for 5 years. Loss of 45 pounds in weight. In bed at various periods, 5 to 6 weeks at a time. Three times in hospital for medical treatment. Hematemesis at various times. Stomach capacity, 5 pints. Free HCl. Had been relieved by treatment on medical side, but relapsed. | Stomach dilated and pylorus thickened. Pyloric opening size of lead pencil and not dilatable. Heineke-Mickulicz pyloroplasty. | Died. Sept. 15, in 4 days. | Shock followed operation and active stimulation employed. No vomiting. Gradual loss of strength, and death on fourth day. |
| N. H. Jan., 1899. 4 | F. | 28 | Probable gastric ulcer 14 years previous. Since then chronic indigestion. Symptoms more acute for 3 months. Vomiting of old food, epigastric pain p. c. | Stenosis of pylorus and hour-glass stomach. Pyloroplasty and gastroplasty. | Disch. much rel'd. | Well for about a year. Since has had three attacks of pain and vomiting of 3 to 4 weeks' duration. Is now at work, but lives on soft solids. |

| Name, etc. | Sex | Age | Symptoms, etc. | Condition, etc. | Results | Remarks |
|---|---|---|---|---|---|---|
| C. D. G. Feb., 1899. 5 | M. † | 48 | Swallowed muriatic acid 10 months past. Since then classical symptoms of pyloric obstruction. | Stenosis of pylorus. Pyloroplasty. | Disch. much rel'd. | Digestion good. Worked steadily since discharge. |
| H. C. Feb., 1899. 6 | F. | 19 | Indefinite history of injury 14 months before by striking the epigastrium against a curbstone. Since then much distress with gas and after eating special food. Distress had been irregular. No vomiting of blood. The history suggested a neurotic tendency. Abdominal examination negative. Vomitus contained lactic acid but no free HCl. For 3 weeks irregular attacks of vomiting and epigastric pain. Feb. 15 a sudden collapse occurred. In the left hypochondrium a large tumor appeared. | Before operation a stomach tube was passed and failed to reduce the size of the tumor. At operation the stomach was found much dilated. Under ether a second attempt was made to empty the stomach by a stomach tube, but without success, though apparently no obstruction by stricture. On opening the stomach about a gallon and half of yellow fluid escaped. Gastro-enterostomy by Murphy button. | Died 3 days after oper'n. | Condition at end of operation very poor. On the third day after operation a mass similar to that found before operation appeared in the left hypochondrium. No relief from the passage of stomach tube. Collapse and death. No autopsy. |
| G. Z. 1899. Mar., 7 | M. † | 54 | Chronic gastric trouble for years. For 10 months unable to work. Had vomited and passed blood by rectum. | Pylorus buried in adhesions, thickened walls causing stenosis. Pyloroplasty. | Disch. rel'd. | No work for 1 year, 5 months. March, 1901: Returned to hospital with pain in stomach and dark stools and vomitus. May, 1903: Improving. Some vomiting, without blood. Lives on soft solids. Able to work. March, 1904, well. |
| L. L. Nov., 1899. 8 | M. † | 39 | Two years before operation symptoms began with epigastric pain and much vomiting. Grew worse constantly. Now much epigastric pain, vomits everything he eats. Vomitus generally dark, once or twice slightly tinged with blood. Free HCl. absent. Lactic acid present. Stomach capacity 37 oz. Lower border at umbilicus. Patient much emaciated. | Pylorus small, thickened, and opening admitted only a director. No ulcer found. Heinecke-Mikulicz pyloroplasty. No shock. | Rel'd. | Dec. 31, 1903, was in fine condition. Had worked steadily since leaving the hospital. |
| J. S. Nov., 1900. 9 | M. | 37 | Indigestion for one year. For last two weeks very uncomfortable, epigastric pain so severe that he was unable to eat. For two days vomited "coffee ground" material, and continued to vomit in spite of feeding. Nodule felt in pyloric region. Patient pale and emaciated. Free HCl. absent. Lactic acid present. | A large ulcer with much indurated elevated edges 2 in. in diameter on lesser curvature. ¾ in. from pylorus. Malignancy suspected. Ulcer excised. Hemorrhage controlled by continuous silk suture. Plastic to prevent narrowing on pyloric side. Resection of healthy tissue around ulcer was free on account of suspected malignancy. | Rel'd. | Disch. from hospital Jan. 16, 1900. Reported well soon after leaving hospital, when he moved to Philadelphia, where he could not be traced. |
| J. M. Feb., 1901. 10 | M. † | 31 | Epigastric pain. Vomiting begun 9 years past. Gradually grew worse. Pain independent of food, but increased by lying on right side. Operation, — anterior gastro-enterostomy (Murphy button) — gave relief for about 2 years. Then old pain returned. | First operation, many adhesions and pylorus stenosed. Question of T. B. peritonitis. Anterior gastro-enterostomy. Murphy button. | Disch. Rel'd. | Second operation. Stricture of pylorus as before. Gastro-enterostomy opening had contracted to size of tip of little finger. Gastro-enterostomy (McGraw) at site of former anastomosis. Well Feb., 1904. |
| H. S. June, 1901 11 | M. | 32 | Symptoms began 6 months ago with sudden attack of faintness, epigastric pain, and vomiting. These attacks were frequently re- | Pylorus contracted too much to admit tip of finger. Ulcer extending ¾ inch along greater curvature. Excision of ulcer | Rel'd. | Convalescence 1 year, but since has worked steadily and without gastric discomfort. |

Case 11. — *Continued.*

| Name, etc. | Sex | Age | Symptoms, etc. | Condition, etc. | Result | Remarks |
|---|---|---|---|---|---|---|
| | | | peated and obliged him to leave off work for varying periods. Hematemesis occasional. Had six weeks careful hospital treatment without marked improvement. Pale, emaciated, slight epigastric tenderness. | and stricture, involving almost a complete pylorectomy, only a small strip being left posteriorly. Pyloroplasty. | | |
| J. H. B. July, 1901. 12 | M. | 30 | Three years previous to entrance sharp pain in the right hypochondrium. Vomiting. In following year and also one year ago had a similar attack. Three months ago — was seized with acute abdominal pain, lasting four weeks. Since getting up has had daily attacks of epigastric pain and much distress from gas. Vomiting in night. No hematemesis. Stomach holds 88 oz., and in the first washing considerable coffee-ground material. Visible peristalsis at times. Free hydrochloric and lactic acid present. Medical treatment was tried for eight days, and patient grew steadily worse. Exploration of stomach resulted in temporary relief. Numerous firm adhesions about the pylorus and the pylorus thickened. Improvement continued for 6 or 8 months. Three months after the operation had gained 45 pounds. Symptoms reappeared, and for 3 weeks before entrance there had been daily vomiting, ¾ hour after eating. | Under ether a mass in the region of the pylorus was palpable. At operation this pyloric mass was thought to be carcinoma. Pylorectomy was done, and in the operation the surrounding tissues and vessels were badly traumatized. Union, end-to-end, was accomplished by means of a Murphy button. Death all but occurred on the table. | Died within a few hours after oper'n. | No autopsy. |
| J. P. Aug., 1901. 13 | M. † | 61 | Entered medical service July 5, 1901. Symptoms dated from 7 weeks before, when he had swallowed strong carbolic acid. Epigastric pain, vomiting continued in spite of medical treatment. He did not improve, and was transferred surgical on Aug. 6. Pale, emaciated. HCl. absent. Lactic acid present. Stomach holds 21 oz. | Pylorus thickened, and opening barely admitted a director. Gastro-jejunostomy with a Murphy button (anterior). No shock. | Died seventh day. | Vomited for 10 days until relieved by lavage. Then vomiting recurred, and gradually failed. |
| E. F. Sept., 1901. 14 | F. | 44 | "Dyspepsia" for 3 years. Eighteen months ago fainted, and vomited a cupful of blood. Had rectal feeding for 3 weeks. After this epigastric pain. No melena. Vomiting, but not of blood since first attack. No loss of weight. Pale, tender below left costal margin, and some general abdominal tenderness. Free HCl. present. No lactic acid. Normal blood in stomach contents. | Pale, indurated ulcer on anterior wall, about midway of lesser curvature. Posterior gastro-enterostomy. | Rel'd. | In Jan., 1903, patient was explored for intestinal obstruction (partial), and carcinoma of peritoneum, stomach, omentum, colon, etc., found, probably having started from the old ulcer. |
| J. H. Sept., 1901. 15 | F. | 28 | Since youth has had nausea and epigastric pain, vomiting usually after eating. Three years ago vomited blood, fainted and had bloody stool. Several simi- | Omentum found adherent to old laparotomy wound. Tied off and released. Pylorus admitted finger. No ulcer found at operation. Posterior | Rel'd. | Had more or less vomiting for two years after operation, but improved much in general condition, and was able |

CASE 15. — *Continued.*

| Name, etc. | Sex | Age | Symptoms, etc. | Condition, etc. | Result | Remarks |
|---|---|---|---|---|---|---|
| | | | lar attacks since. Has lost considerable weight and noticed a tumor in epigastrium. Pale, emaciated. Tender mass felt in left epigastric region. Free HCl. present. Capacity, 920 cc. Laparotomy 4 years ago for disease of ovary. | gastro-enterostomy. No shock. | | to do her work. Early in Feb., 1904, vomited for a week, with much pain in the stomach. Clots of blood in the stools. |
| E. S. Oct., 1901. 16 | F. | 19 | For 4 months sharp epigastric pain and vomiting after every meal. Has fainted and suffered from dizziness and dyspnea. No hematemesis. No melena. Treatment in medical ward for 5 weeks with improvement, then relapsed, and vomited blood after solid food. Pain returned. Very anemic and weak. Systolic murmur at base. | Indurated area on greater curvature close to pylorus. Posterior surface of stomach adherent to transverse meso-colon by old fibrous adhesions. Cicatrix on posterior surface of stomach. Meso-colon considerably thickened. Posterior gastro-enterostomy. Opening in meso-colon not sutured to stomach wall. | Died in 14 days. | Did well for 4 days, except for occasional bilious vomiting. Then vomiting became severe and was not relieved by lavage. Grew quite weak, and on fourteenth day entero-enterostomy was done with the Murphy button. Operation showed obstruction of descending loop by thick edge of transverse meso-colon which had slid laterally. Death 8 hours after entero-enterostomy. |
| H. E. C. Dec., 1901. 17 | M. † | 50 | Twenty-three years before entrance he had nervous dyspepsia and for two years much discomfort from gas. Since then stomach has been delicate. In 1899 jaundice, lasting for 2 months, and gallstones in the stools. Since 1900 there had been frequent attacks of pain in right hypochondrium. For 1 year stomach symptoms have been decidedly worse. Daily vomiting, often very large amounts of old food. Almost daily stomach washings. Weight has gone from 140 to 85½ pounds in the last 12 months. Visible peristalsis below umbilicus. Stomach held 58 oz. Analysis of contents showed the presence of free HCl acid. Hemaglobin 65%; white cells, 6,400. Was kept on medical treatment for 15 days, during which time he gained weight, but treatment did not relieve the evident pyloric stenosis. | Pylorus buried in adhesions, walls thickened and lumen constricted. Pyloroplasty. | Died 5 days after oper'n. | Autopsy showed a stenosis of the pylorus, due to an ulcer which extended out into the duodenum. The stitches of the pyloroplasty were holding and apparently the obstruction had been relieved. Also a pneumonia, which was cause of death. |
| L. Q. T. Feb., 1902. 18 | M. † | 43 | For 20 years had had difficulty in emptying stomach. No vomiting, no pain. Stomach held 50 oz. | Lumen of pylorus small. No induration. Pyloroplasty. | Disch. rel'd. | "I am just as bad now as I was before the operation." |
| J. C. Apr., 1902. 19 | M. | 42 | For 4 years symptoms of pyloric obstruction, — epigastric pain, vomiting of large quantities of old food, sometimes with blood. Stomach held 64 oz. Had lost 25 pounds. | Indurated mass at pyloric end of stomach on the anterior surface. Thought to be malignant. Pylorectomy, with end-to-end suture. | Died 9 days after oper'n. | The course after operation was uneventful until the seventh day, when a gastric fistula developed. Death 2 days later. No autopsy. |
| G. P. L. Apr., 1902. 20 | M. † | 41 | For 15 years epigastric pain and vomiting, growing gradually more frequent. Excessive hematemesis on 2 occasions within 10 years. Vomitus constantly coffee colored. Has had hospital treatment for two periods | Pylorus much constricted. Lower border of stomach below umbilicus. Anterior gastro-enterostomy by silk suture. | Rel'd. | Had no gastric disturbance after leaving hospital. In Jan., 1904, was in perfect health and weighed 140 pounds, a gain of 49 pounds since the operation. |

Case 20. — *Continued.*

| Name, etc. | Sex | Age | Symptoms, etc. | Condition, etc. | Result | Remarks |
|---|---|---|---|---|---|---|
| | | | of several weeks. Much loss of weight. Now weighs 91 pounds. Much emaciated, pale. Lower border of stomach 2 inches below umbilicus, and peristalsis of stomach visible through abdominal wall. Free HCl. absent. Lactic acid, trace. | | | |
| D. C. July, 1902. 21 | F. | 48 | Pain in left hypochondrium, eructation and occasional vomiting for 8 to 10 years. Four weeks before operation copious bloody vomiting, preceded by 10 days of severe nausea and anorexia. After this, bloody vomiting for 5 days. Pale, emaciated, epigastric tenderness. | Stomach appeared normal. Ulcer not found. Anterior gastro-enterostomy with suture. Pylorus patent and not thickened. | Rel'd. | Convalescence complicated by a parotitis which required incision. Left hospital Sept. 3 in good condition, with no gastric symptoms. Jan. 4, 1904, reported to be in fine condition. |
| T. McG. July, 1902. 22 | M. | 44 | Headache and vomiting for 15 months. Vomited 5 to 12 times daily. Had been unable to work for over 6 months. | A few adhesions, but no definite induration about pylorus. Anterior gastro-enterostomy (McGraw). | Disch. rel'd. | Return of pain and vomiting, which have continued, despite a second operation, which showed patent anastomosis, and a third in which pus was evacuated. |
| J. L. July, 1902. 23 | M. | 41 | Constant epigastric pain for 1½ years. Pain increased by taking food. Examination negative. | First operation 7 months after onset of symptoms; an exploratory laparotomy gave no relief. Second operation 10 months later. A few adhesions separated. No definite induration about pylorus. Anterior gastro-enterostomy (McGraw). | Disch. rel'd. | "I am no better than when I left the hospital, . . . stomach troubles me continually, . . . what I eat distresses me." |
| B. G. July, 1902. 24 | M. † | 32 | Gastric pain for 10 years without vomiting. Pain came at irregular intervals and lasted a day to 2 weeks. In one attack jaundiced. | Pylorus indurated and lumen stenosed. Anterior gastro-enterostomy (McGraw). | Disch. rel'd. | Sponge removed 3 months after discharge. Pain and vomiting continue. |
| J. J. B. Sept., 1902. 25 | M. † | 36 | Swallowed nitric acid 5 weeks previous. For about 3 weeks had vomited practically everything taken by mouth. | Pylorus and first part of duodenum were like a rope. Anterior gastro-enterostomy (McGraw). | Disch. rel'd. | Well. Serving a 6-months' term in Deer Island for stealing. |
| W. K. W. Oct., 1902. 26 | M. † | 42 | Dyspepsia for 20 years. No history of any acute attack with vomiting of blood. Stomach held 55 oz. | Old scar at pylorus which constricted the lumen. Anterior gastro-enterostomy (McGraw). | Disch. rel'd. | "I don't feel any better than . . . the day I went in." |
| M. M. Nov., 1902. 27 | F. | 44 | Vomiting and epigastric pain for 3 years. Hematemesis 2 days before entrance. No melena. Vomiting ½ to 2 hours after eating. Indefinite resistance and dullness in epigastrium. Loss of weight, 25 pounds in 3 years. | Dilated stomach. Distinct scar on pylorus. A few old adhesions of omentum to duodenum. Finney's operation of gastro-duodenostomy. | Rel'd. | Discharged from hospital Dec. 16. No gastric symptoms. Appetite and general condition improving. |
| L. F. Nov., 1902 28 | F. | 33 | Four years ago a severe attack of vomiting and epigastric pain. Some hematemesis. Delicate stomach always. Right ovary and tube removed Oct. 20, 1902, for salpingitis. Ventro-suspension also performed 18 days after operation. Severe and persistent vomiting with hematemesis began and continued 10 days. Some blood in vomitus. Exhausted and emaciated. Tenderness in epigastrium. | Separations of old adhesions of duodenum and pylorus to posterior abdominal wall. Anterior gastro-jejunostomy with Murphy button. Patient in poor condition and operation had to be rapidly completed. | Rel'd. | Vomited almost constantly for six days after operation. Vomiting continued occasionally at gradually increasing intervals till Dec. 28. Discharged in good condition Jan. 10, 1903. No symptoms. |

| Name, etc. | Sex | Age | Symptoms, etc. | Condition, etc. | Result | Remarks |
|---|---|---|---|---|---|---|
| G. N. T. Nov., 1902. 29 | F. † | 37 | After birth of twins, 11 months ago, did not recover strength, and 9 months ago began to have attacks of vomiting once a week, gradually increasing during 2 months until they occurred daily Five months ago began lavage, which relieved her. Has lost much strength and 20 pounds in weight. No solid food for 2 months. In medical ward from Oct. 4 to Nov. 25, 1902. At time of transfer surgical, on Nov. 25, was emaciated and exhausted. | No distention of stomach. Small intestine distended. Marked spasm of pyloric end and of duodenum, practically closing lumen for several inches. Anterior gastro-enterostomy with Murphy button Good recovery from ether. | Died. | Five hours after operation began to fail, and died about 8 hours after operation. |
| J. F. May, 1903. 30 | M. | 29 | Eight years ago for 4 weeks had epigastric pain and vomiting for 6 weeks. Hematemesis once during this period. Four days ago vomiting and epigastric pain returned. Tenderness in epigastrium. | Thickening of pylorus found, but no definite evidence of ulcer. Posterior gastro-jejunostomy by Mickulicz method. | Died. | Patient did not vomit, but did not sleep, became delirious, and steadily failed after operation. Died on third day. No autopsy. |
| A. R. June, 1903. 31 | M. | 50 | Epigastric pain for 5 weeks, very severe for past week. Pale, emaciated. Dullness and marked tenderness in epigastrium, especially in left. Marked muscular spasm. Normal pulse and temperature. | Chronic ulcer of stomach on anterior surface near the cardia on the left, having a large perforation at its center, but adherent at point of perforation to abdominal wall. Much thickening of walls of stomach about ulcer. Gastro-plication. Posterior gastro-enterostomy by suture. | Rel'd. | Convalescence was slow on account of mural abscess which was opened on 8th day. The sinus was slow in healing. Was discharged on July 24, 6 weeks. Was up and about with no symptoms, and wound healed except for a small granulating area. Returned to hospital Aug. 13 and was operated Aug. 29 for abscess of right lung. Gradual convalescence. Small tumor excised from abdominal scar Oct. 22 and pronounced "Small, round, called sarcoma." Discharged Nov. 3. Up and about, though in rather poor condition and having a small sinus. Died at home about Dec. 10. |
| T. J. W. June, 1903. 32 | M. † | 58 | Chronic epigastric pain without vomiting. No history of symptoms suggesting ulcer. | Pylorus small, nothing else remarkable. Posterior gastro-enterostomy (McGraw). | Disch. rel'd. | One week after discharge all symptoms returned and died 1 month later. Autopsy showed anastomosis contracted so as to admit only tip of little finger. |
| A. C. June, 1903. 33 | F. | 19 | Pain and burning in epigastrium for one year. Had vomited blood. During attacks, epigastrium had been tender. | Stomach not remarkable. Posterior gastro-enterostomy (McGraw). | Disch. rel'd. | Better for 4 months. "After I eat I have the same bad pain, and I vomit most everything." |
| N. C. June, 1903. 34 | F. | 35 | Six years ago attack of sharp abdominal pain with occasional hematemesis began and has continued with varying intervals since. Attacks last about 2 days. Last attack 2 weeks ago, accompanied by hematemesis. In good general condition, tender spot in epigastrium. | Stomach normal in size and contour. Some thickening at pylorus and a few slight adhesions. Posterior gastro-enterostomy with suture. Clamps used for hemostasis, linen thread used. | Rel'd. | Left hospital July 23 in excellent condition, with no symptoms, and was in excellent health on Jan. 5, 1904, 6 months later. |

| Name, etc. | Sex | Age | Symptoms, etc. | Condition, etc. | Result | Remarks |
|---|---|---|---|---|---|---|
| J. McL. July, 1903. 35 | F. | 28 | Gastric trouble for 10 years. For 3 months constant epigastric pain increased by food. In past attacks had vomited blood. Epigastric tenderness. | Old ulcer on anterior wall which had perforated and was buried in adhesions. Ulcer excised. | Disch. rel'd. | Well for 5 months, when pain returned and distress after any kind of food. |
| N. D. P. Aug., 1903. 36 | M. † | 52 | Pain in epigastrium, nausea and vomiting for 3 years. Attacks of these symptoms have increased in severity and frequency. No hematemesis, no melena. Lower border of stomach 8 inches below umbilicus when inflated. | Pylorus found thickened and apparently obstructed. Anterior gastro-enterostomy with Murphy button at most dependent portion of stomach. | Died. | On second night after the operation vomited copiously and pulse was up to 135. On fourth day was comfortable and convalescence satisfactory. On eighth day developed a cough, became cyanotic and died suddenly. Autopsy showed an inhalation pneumonia. |
| J. W. Aug., 1903. 37 | F. † | 39 | Distress after eating for 18 years. Pyrosis and sour eructations. Vomits large amounts every day or two. Daily stomach lavage for past 3 months has relieved her symptoms, but during this time she has lost 13 pounds. No hematemesis. Emaciated, but pulse good and in fairly good general condition. Gastric tympany a finger's breadth below umbilicus. Nodule sometimes felt in right side of epigastrium. | Stomach dilated, lower border below umbilicus. Marked thickening of pylorus, no lumen made out. Much induration of pylorus, suggesting possible malignancy. Pylorus undoubtedly almost completely occluded. Posterior gastro-enterostomy according to Moynihan's method. | Rel'd. | No vomiting after first night. Left hospital Sept. 12 in excellent condition. Soon went to work, and was well and at work in Jan., 1904. |
| S. I. McP. Aug., 1903. 38 | F. † | 24 | Entered hospital in Sept., 1901. Symptoms suggesting gallstones. Operated and nothing found except a liver which was scarred so that diagnosis of probable syphilis was made. Re-entered July, 1903. Had taken mercury only for 6 months after discharge. For 3 months had been improved. Since then had suffered from dragging pain in epigastrium, belching of wind and nausea, but no vomiting. Good appetite. Medical treatment for 3 weeks without relief. Stomach held 36 oz. Analysis of contents showed no free HCl. | At operation many adhesions found around pyloric end of stomach. Posterior gastro-enterostomy, McGraw. (No mention of condition of stomach or liver.) | Disch. well. | |
| A. C. Sept., 1903. 39 | F. | 39 | For seven or eight years has vomited pretty regularly 1 to 3 hours after meals. Steady pain—relieved only by vomiting—in epigastrium extending through to back. Treated at medical O. P. D. about 1 year. Diagnosis: Slight hyperacidity and gastroptosis. Lavage 3 times a week for just 3 months, has not relieved vomiting. In 5 months has lost 19 pounds. | Indurated area on anterior surface near lesser curvature. Pylorus much thickened, but not indurated. Enlarged glands in mesentery, one of which was excised. Posterior gastro-enterostomy with suture. | Rel'd. | No vomiting after operation. Left hospital Sept. 29, 1903, eating full diet and having no discomfort. Jan. 3, 1904, was in excellent condition. |
| L. L. Sept., 1903. 40 | F. | 23 | Brought to the hospital on July 12, 1903, for tetany. Was said to have had a gastric ulcer ten years ago. While on medical side had epigastric pain, tenderness and vomiting. No hematemesis. No melena. Treated | Sept. 10, 1903, gastropexy. No evidence of ulceration found, no relief of symptoms. Oct. 7. Stellate cicatrix found on anterior surface near the greater curvature. Thickening at pylorus. Poste- | Rel'd. | Patient still in hospital to-day (Feb. 11, 1904). Gaining steadily, and vomiting only occasionally. Subsequently vomiting increased, and on March 23, was re- |

CASE 40. — *Continued.*

| Name, etc. | Sex | Age | Symptoms, etc. | Condition, etc. | Result | Remarks |
|---|---|---|---|---|---|---|
| | | | from July 12 to Sept. 10, 1903, without much improvement. | rior gastro-enterostomy. Marked relief of symptoms till Oct. 31, 1903, when vomiting returned, and continued at intervals until Dec. 7, when entero-anastomosis was done with the Connell suture. A spur was found at site of anastomosis, probably obstructing loop. Temporary relief, followed by return of vomiting and symptoms of tetany. Jan. 6, 1904, Finney's operation. Pylorus found contracted and gastro-enterostomy wound closed so as not to admit tip of finger. | | ported in poor condition. |
| E. G. C. Sept., 1903. 41 | F. | 44 | Stomach trouble 20 years ago. For 6 months epigastric pain and nausea, increased by eating. Has vomited coffee-ground material several times. No melena. Loss of 25 pounds in weight. Insomnia. Pyrosis. Anorexia. For 6 months has had stomach washed every few days. Occasionally blood in the washings. Trouble began 20 years ago, with an attack of inflammation of the bowels. Is in fair general condition. Stomach not dilated. Slight tenderness in epigastrium. | Omentum found adherent to pelvic viscera and walls, evidently due to an old pelvic inflammation. Stomach normal size. Slight thickening on posterior wall, near greater curvature to the left. Pylorus normal. Omentum ligated with silk and freed from pelvic attachments. Stomach then turned up and posterior gastro-enterostomy performed by Moynihan's method. | Died in 8 days. | Excellent convalescence for 48 hours. Then patient began to look badly and vomit. Vomiting of greenish fluid became constant in spite of lavage, and condition became very poor. On Sept. 26 (eighth day) entero-enterostomy was performed, but patient never rallied, and died that evening. Autopsy: Several small ulcerations on the fundus. A rather large omental stump, with a coarse silk ligature, had attached itself to the anastomosis, and surrounded by this had formed a mass which obstructed the gut at the anastomosis. Gastro-enterostomy tight and also entero-anastomosis. |
| P. J. G. Oct., 1903. 42 | M. | 20 | Admitted Oct. 13. For 1 week had had dull pain in right hypochondrium. 24 hours before was seized with sharp pain shooting into right scapular region, with chill and vomiting. Examination: Pale, sick looking, marked tenderness and spasm in right hypochondrium. Probable diagnosis: Cholecystitis. | Incision at outer border of right rectus. Gall bladder found normal. Appendix buried in adhesions very long and sharply bent on itself. Tedious appendectomy. The excess of clear fluid noted in peritoneal cavity, and on further examination pylorus found to be much thickened, especially in upper portion, and firmly attached to fresh adhesions to under surface left lobe of liver; fearing that detachment of the pylorus would almost certainly result in a perforation (there had probably been a perforation which was closed by immediate adhesion of the liver), the stomach and colon were turned up and a posterior gastro-enterostomy performed with suture. | Rel'd. | Vomited for two days after operation, but pulse and temperature remained good. Elevated to a sitting posture stopped the vomiting on the third day. Left hospital in good condition in 21 days; and 2 months later, Jan., 1904, was in excellent health. |

| Name, etc. | Sex | Age | Symptoms, etc. | Condition, etc. | Result | Remarks |
|---|---|---|---|---|---|---|
| S. B. Oct., 1903. 43 | M. † | 30 | Vomiting a short time after meals for two years. No hematemesis. No melena. In hospital 3 times and operation advised. Dilated stomach visible and palpable in upper left abdomen. Tetany. | Stomach found much dilated and pylorus obstructed, apparently by fibrous thickening. Posterior gastro-enterostomy | Rel'd. | No vomiting after operation. Solid food on tenth day. Convalescence delayed by a phlebitis of left leg. Left hospital on Dec. 19, with no gastric symptoms. |

III. Operations for Perforation of Gastric Ulcer.

PERFORATION.

| | | |
|---|---|---|
| Number of cases | 18 | |
| Number of recoveries | 5 | 27.8% |
| Mortality | 13 | 71.2% |
| Present conditions — well | 5 | 27.8% |

It is certainly gratifying that surgery was able to save these five patients whose condition rendered recovery almost hopeless. In the next series of eighteen cases with perforation of a gastric ulcer operated upon at the Massachusetts General and Boston City Hospitals, we feel sure that the per cent of recoveries will be far greater, and we are led to this conclusion by the study of results obtained in the last six years.

*Duration between perforation and operation.* — The lapse of time between perforation and operation can be only approximately determined. In the five successful cases the duration was on the average fourteen and one-half hours, while in twelve of the fatal cases it was nearly twice as long, namely, twenty-five hours. Three of the fatal cases were operated upon under such favorable conditions as regards time — four, six, ten hours respectively — that their fatal issue demands especial explanation. The first of these patients (Case 18) walked to the Medical Out-Patient Department, but was allowed to depart with the condition undiagnosed. She shortly returned to the accident room and was promptly operated upon. This active exertion at the time of perforation had probably much to do with the final result. Case 12 was operated upon six hours after perforation, and did well until the eighth day. The stitches were then removed. Shortly after, in a fit of coughing, the wound was burst open, and, despite a prompt secondary operation, the patient rapidly failed and died. Case 8 was forty years of age, and had used whiskey to excess for one week previous to the operation.

Three cases were operated upon sixteen hours after perforation. Of these, one died upon the table (3) and another (11) in three hours, thus showing the desperate condition of the patients. The remaining patient (14) lived until the ninth day.

A study of the fatal as well as the successful cases plainly shows the advantage of early operation. This implies an early diagnosis, which, as a rule, is not difficult to make from the severe epigastric pain and the history of the patient. The importance of prompt action does not appear, however, to have been grasped by surgeon or physician in several instances. Case 1 was kept on the surgical side for some twenty-four hours after perforation took place, and Case 6 remained in a medical ward for the same length of time. Case 2 remained in the medical ward eleven hours after perforation. Case 17 while on the medical side developed sharp epigastric pain and abdominal rigidity at 6.30 P.M. The liver dullness became partially obliterated. Leucocytes = 17,500. At midnight the leucocytosis had slightly increased and the patient had vomited. Both medical and surgical house officers agreed in the diagnosis of perforation, and the condition was reported to the visiting physician, who advised medical treatment. The next morning the belly was much more distended, and an operation was finally performed. Death occurred in this instance in sixteen days from the general infection plus the acute infection due to a fecal fistula.

*Age.* — The average of the five patients who recovered was twenty-one years, while the average age of the thirteen fatal cases was twenty-nine years. Only one case above the age of twenty-one recovered, and this patient was thirty years old. Only three patients died who were twenty-one years of age or less. The influence of age appears striking in these 18 cases, but quite possible in a larger series it would lose its significance.

*Sex.* — There were nine male and nine female patients, and of the five patients who recovered two were female. Sex is therefore without import.

*Condition since operation.* — Five of the 18 patients left the hospital alive, and of these three have been continuously well. Of the remaining two, one patient (Case 5) developed intestinal obstruction twenty months after operation. This was relieved, and now, five and a half years after the first operation, he is in good health and at work. The remaining patient (7) had a recurrence of the ulcer, and at the present time is convalescing from a gastro-enterostomy.

| Name, etc. | Sex | Age | Symptoms, etc. | Condition, etc. | Result | Remarks |
|---|---|---|---|---|---|---|
| J. M. Dec., 1898. 1 | M. | 40 | Operation 24 hours after perforation. Entered as an accident room emergency. For five weeks attacks of sharp epigastric pain, lasting a few hours. Two days before entrance confined to bed by this pain, which had | Operation about 30 hours after entrance. The abdominal cavity was filled with stomach contents. A perforation in the lesser curvature of the stomach was closed with Lembert sutures, and the general | Died. | Died a few hours after operation. Autopsy showed a general peritonitis. |

Case 1. — *Continued.*

| Name, etc. | Sex | Age | Symptoms, etc. | Condition, etc. | Result | Remarks |
|---|---|---|---|---|---|---|
| | | | grown worse. Examination made by attending surgeon, and patient sent to ward. During the afternoon abdominal rigidity developed. Attempts were made to move the bowels. The following morning vomiting began and later became peritonitic in character. In the afternoon, pulse 140, with signs of general collapse. | cavity washed out with salt solution and drained. | | |
| J. M. Jan., 1899. 2 | M. | 19 | Operation about 15 hours after perforation. Acute indigestion for one week. Probable perforation a few hours before entrance to hospital. At entrance temperature, 95.4. Pulse 60. Blood count 43,600. Abdomen rigid. Kept in ward about 12 hours before operation. | Perforation the size of a lead pencil on anterior wall. General cavity filled with debris. Perforation closed, lavage, drainage. | Well. | Well, Jan., 1904. |
| C. L. Apr., 1899. 3 | F. | 22 | Operation 16 hours after perforation. For three or four years much nausea and epigastric pain after eating; worse during last year. Vomitus sour. No blood vomited or passed by rectum. The night before entrance went to bed apparently in the usual condition. At 2 A.M. awakened by severe pain on the left side, and vomited three or four times. Deep inspiration caused acute pain and the attending physician diagnosed diaphragmatic pleurisy. During the day constant epigastric pain, increased by food, which also caused vomiting. A haggard expression and pale face. Rigidity of abdominal muscles; localized tenderness over the eleventh rib, near the spine. White count 23,200. Temperature 102.8. Pulse 120. | The general peritoneal cavity was full of debris, and on the anterior wall of the stomach at the cardiac end was a perforation. | Died. | Died on the table. No autopsy. |
| M. B. Apr., 1899. 4 | F. | 35 | Operation 24 hours after perforation. Two years before entrance an attack of epigastric pain with vomiting. Ten months ago a similar attack which lasted several weeks. For five days severe epigastric pain after eating and frequent vomiting. Evening before entrance a sharp pain in the left hypochondrium, worse than ever before. At entrance patient was in state of collapse. Abdomen distended and tympanitic. Liver dullness obliterated. Abdominal wall rigid. White count 13,000. Pulse 120. Temperature 99. | Immediate operation. General peritoneal cavity filled with gastric contents. At the cardiac end a perforation of the stomach wall the size of a cent. Perforation closed, lavage, drainage. | Died. | Died the same night. Cultures from general cavity showed mixed growth of bacteria with abundant streptococcus hyogenes. No autopsy. |
| W. L. June, 1899. 5 | M. | 30 | Operation 18 hours after perforation. Indigestion for one year. Twenty-four hours before operation vomited, after drinking moderately of beer. Eighteen hours before operation a sudden attack of epigas- | On opening abdomen in epigastrium, gas and bile-stained fluid escaped. General peritonitis. Pus and fibrin everywhere, and in pelvis. Induration of pyloric portion of stomach, and a perfora- | Rel'd. | Operated upon Feb. 16, 1901, for intestinal obstruction by a band. Jan. 5, 1901, 5½ years after first operation, was in good health and at work every day. |

Case 5. — *Continued.*

| Name, etc. | Sex | Age | Symptoms, etc. | Condition, etc. | Result | Remarks |
|---|---|---|---|---|---|---|
| | | | tric pain, which was severe and continuous. Pale, eyes sunken, abdomen retracted and held in boardlike hardness. General tenderness, extensive in epigastrium. | tion ⅜ in. in diameter on anterior surface, ¾ in. from the pylorus. Gastroplication, folding stomach over on to first portion of duodenum. Lavage of cavity and drainage of pelvis by glass tube passed through incision below umbilicus. | | |
| M. McE. Dec. 1899 6 | F. | 20 | Operation 72 hours after perforation. Four days ago suddenly seized with sharp pain in lower left chest, running up into shoulder. Two days ago severe pain in epigastrium caused her to go to bed. Vomited only once two days ago. Twenty-four hours ago vomited dark brownish material and spasm appeared in epigastrium. Peritoneal facies. Temperature 102. General abdominal spasm and tenderness, especially marked in epigastrium. | Median epigastric incision enlarged by lateral cut at upper end. Alimentary contents in peritoneal cavity. Perforation size of slate pencil in lesser curvature. Large ulcer surrounding perforation. Gastroplication. Lavage of peritoneum. Drainage of pelvis by glass tubes and gauze. | Died. | Shock, 24 hours after operation. |
| M. H. Jan., 1900. 7 | F. | 19 | Operation 24 hours after perforation. Eighteen months ago in hospital for gastric ulcer with epigastric pain and hematemesis. Two subsequent attacks of pain and vomiting. Twenty-four hours ago acute violent pain in epigastrium, left abdomen and left shoulder. No vomiting, No syncope. Good color, does not look sick. Spasm and tenderness over left rectus and whole left abdomen. Extreme tenderness in epigastrium. | Median epigastric incision. Peritoneal cyst beneath abdominal wall. At pyloric end, close to lesser curvature, a perforation ¼ inch in diameter lying in the midst of edematous tissue. Gastroplication, after partial excision of ulcer. Lavage of peritoneum. No general peritonitis. | Rel'd. | Subsequently had a recurrence, and on Jan. 5, 1901, was recovering from a gastro-enterostomy. |
| J. K. May, 1900. 8 | M. | 40 | Operation 10 hours after perforation. One week ago began to vomit in the evening. Worked until yesterday. Ten hours ago sudden sharp pain in abdomen, constant, general. Vomiting every few minutes. No blood. Has taken whiskey to excess during last week. Pulse 136. Pale, peritoneal facies. Abdomen slightly distended, tender and tympanitic. | Incision in epigastrium. Free brownish fluid in cavity. One inch from pylorus a perforation nearly ½ in. in diameter. Gastroraphy. Lavage and drainage of peritoneum. | Died. | Shock and peritonitis. Died in eight hours. |
| E. J. Oct., 1900. 9 | F. | 17 | Operation 10 hours after perforation. Stomach trouble for a year. Pain, eructation. For one week severe pain in epigastrium. Sudden onset. Vomiting at first. At work till this A.M. Sudden attack of pain this P.M. at 1 so severe that she lay down on the floor for some time before getting strength to crawl to bed. Vomiting continued with a little blood. Looks sick. Temperature 102. Pulse 110. General abdominal tenderness and spasm, much more marked in epigastrium. | Median epigastric incision. Turbid serum free in peritoneal cavity. Flakes of fibrin on anterior surface of stomach. On drawing stomach out, slightly adherent to liver; near the cardia on anterior surface was an indurated area 1½ in. in diameter, having a pin point perforation at its center. Ulcer inverted, sutured with interrupted sutures of silk. | Rel'd. | Excellent convalescence. Went to work in 2 or 3 months, and in Jan., 1904, was in first-rate health. |
| N. O'C. Dec., 1900. 10 | F. | 21 | Operation 48 hours after perforation. Stomach trouble for about 6 months, pain after eating, relieved | Short incision below umbilicus. Cloudy serum free beneath peritoneum. Diffuse fat necrosis of | Died | Died in 8 hours Shock and peritonitis. |

CASE 10. — *Continued.*

| Name, etc. | Sex | Age | Symptoms, etc. | Condition, etc. | Result | Remarks |
|---|---|---|---|---|---|---|
| | | | by vomiting. Two days ago, three hours after eating, taken with severe pain in upper part of abdomen. Vomiting. No blood. Pain very severe that evening. Chill yesterday. Pain continued. Flushed, face drawn. Tenderness and spasm all over abdomen, most marked in epigastrium. | omentum. Thin pus in pelvis. Adhesions in epigastrium, showing omentum surrounding a large pocket of bile and thin pus. Fibrin at pylorus and on anterior surface and upper border, close to pylorus, and on gastric side a clean punched opening about ¼ in. in diameter. Very little surrounding induration. Gastroplication. Drainage after irrigation. | | |
| A. H. June, 1901. 11 | M. | 26 | Operation 16 hours after perforation. Epigastric pain 8 or 9 years, and occasional vomiting of watery material. No hematemesis. No malena. About 16 hours before operation, at 8.30 in the evening, sudden severe pain in abdomen, with great prostration, sweating and vomiting. Pain severe all night, but better this A.M. Face drawn and anxious. Abdomen tender. Marked muscular spasm. Dullness in flanks, changing with position. | Median incision below umbilicus. Gas, pus and stomach contents escaped from peritoneum. Epigastric incision. Perforation found on lesser curvature, near pylorus, surrounded by considerable induration. Two silk sutures applied, but did not close it very well. Perforation walled off with wicks and glass drainage tube. Thorough irrigation and drainage of abdomen through another incision below umbilicus with tubes and gauze. | Died. | Died in about 3 hours. General peritonitis. |
| A. F. Aug., 1901. 12 | M. | 23 | Operation 6 hours after perforation. Two years ago short attacks of pain in right abdomen, with vomiting and fever. Six hours ago while carrying heavy sac on shoulders felt something give way in abdomen, with pain so severe as to double him up. Vomited twice. Looks sick. Pulse 89. Temperature 100.8. Abdomen rigid. Excessive tenderness below umbilicus in median line. | Median incision, with umbilicus as central point. Thick pus in abdomen. Incision carried to ensiform. On anterior surface near greater curvature 2 inches from pylorus, a perforation 1 cm. in diameter. Induration 2½ cm. in diameter. Gastroplication. Irrigation. Suture without drainage. | Died. | Steady improvement for 8 days. Stitches then removed. Patient had a mild chronic bronchitis. In a fit of coughing burst open the wound and intestines protruded. Etherized and intestines irrigated and replaced. Considerable shock attended this procedure, and patient died in about 2 hours. |
| A. G. Oct., 1901, 13 | M. | 48 | Brought to accident room at 4.30 A.M. During the past year attacks of epigastric pain. For 2 months the stomach symptoms have been more acute, requiring treatment in the Out-Patient Department. No attacks of sudden pain or faintness. At entrance, temperature 97; pulse 96. Examination of the belly was remarkable only from the presence of a small epigastric hernia. White count 12,000. Patient sent to the ward. Immediate operation advised at 9 A.M. | On opening the peritoneum, gas and milky fluid escaped. On the anterior wall of the stomach was found a good-sized perforation. This was closed with a silk stitch and the general cavity washed out. On the day after operation condition was satisfactory. On next day abdomen became distended, and an attempt was made under ether to drain the bowel by an artificial anus. | Died. | Died 2 days after operation. No autopsy. |
| K. H. June, 1902. 14 | F. | 18 | Operation 16 hours after perforation. Entered accident room at 10 A.M. Temperature 102.4; pulse 146. Up to 3 months ago general health good, when for 3 weeks attacks of pain developed at intervals of 2 or 3 days in the region of the | Immediate operation demonstrated the general peritoneal cavity filled with turbid fluid. At the cardiac end of the posterior surface there was a perforation. This was closed and the cavity washed out. The after | Died. | Died 9 days after operation. Autopsy showed general peritonitis. The stomach wall, where the ulcer had been closed, had remained solid. On the anterior wall of the |

Case 14. — *Continued.*

| Name, etc. | Sex | Age | Symptoms, etc. | Condition, etc. | Result | Remarks |
|---|---|---|---|---|---|---|
| | | | umbilicus. Vomiting during the attacks, but without blood. Four days before entrance, after lifting a pail of water, patient was seized with acute pain in right side of abdomen. Pain was severe during all of that day and finally shifted to left side. At 6.30 P.M. on day before entrance she had a sharp pain in the umbilical region and vomited twice. In the night the epigastrium became tender. Examination showed general abdominal rigidity. Belly tympanitic. Shifting dullness in flanks and liver dullness obliterated. Color fairly good. | course was that of a typical general peritonitis. | | stomach were multiple ulcers. |
| L. P. Oct., 1902. 15 | M. | 21 | Operation 6 hours after perforation. Not well for 2 to 3 weeks. Afternoon of entrance had very acute abdominal pain without vomiting. At entrance temperature 101; pulse 100. Leucocytes 21,000. Shifting dullness in flanks. During examination vomited blood. | Immediate operation. Perforation on anterior wall at pyloric end. Small amount of turbid fluid which gave no growth on cultures. Perforation closed and posterior gastro-enterostomy, with McGraw ligature, lavage and drainage. Mixter tube in cecum. | Well. | Well Sept., 1903. |
| M. M. Jan., 1903. 16 | F. | 22 | Operation 48 hours after perforation. "Stomach trouble" for many years. Two years ago was treated on medical side 46 days for gastric ulcer. For 2 days has not felt well. Strained herself while lifting, and soreness appeared in umbilical region. Vomited. Color pasty. Sensorium dulled. Abdomen distended, soft, except on right, where there is slight voluntary spasm. For 2 days pulse rose from 104 to 120, and temperature from 101.4 to 102.8. | Long itudinal incision over gall bladder. Gas and bloody fluid escaped from peritoneum. Grape seed removed from peritoneum. Incision carried to left, but patient's condition became so poor that perforation was not searched for. A thick wall cyst containing hemorrhagic and fine contents was packed with gauze. Query: Was not this the stomach? | Died. | Rallied from operation, but gradually failed and died 4 days later. No autopsy. Patient was admitted "surgical." |
| A. S. R. Jan., 1903. 17 | M. | 39 | Operation 17 hours after perforation. For 7 years pain in the epigastrium about 2 hours after eating. At the end of 4 years the pain became worse, more frequent and associated with nausea and vomiting. Entered hospital in 1901. Hemoglobin, 75%; leucocytes, 9,900. Capacity of stomach, 3 pints. Free HCl. present. Lactic acid absent. By the hemin test blood was demonstrated in the stomach washings. The diet was regulated and in 9 days the patient was discharged, much relieved. Improvement continued for a year and one half. Six months before final entrance to the hospital, Dec. 30, 1902, there had been constant epigastric pain in attacks of 3 or 4 weeks' duration, followed by several shorter attacks. Once after passing a stomach tube he had vomited blood. For 3 weeks | On opening the abdomen, gas and stomach contents were found, as well as a perforation in the anterior wall of the stomach. Perforation closed and an omental graft applied; cavity washed out and drained. Pulse at end of operation 180, and condition poor. Thirteen days after operation a fecal fistula, not gastric, developed. | Died 16 days after oper'n. | The patient had apparently overcome the acute peritonitis, and death was due to the chronic absorption plus the acute process caused by the fecal fistula. Autopsy showed evidence of a general peritonitis and multiple small abscesses imbedded in meshes of fibrin around the spleen. In the left pleural cavity a moderate amount of blood-tinged fluid. The stomach showed at the pyloric end an old ulcer, 8 cm. in width by 7 cm. in length, extending in the direction of the lesser curvature. The base of the ulcer was fairly smooth, but showed several depressions. At the base of one of the |

CASE 17. — *Continued.*

| Name, etc. | Sex | Age | Symptoms, etc. | Condition, etc. | Result | Remarks |
|---|---|---|---|---|---|---|
| | | | previous to Dec. 30, 1902, had suffered from epigastric pain. Pain not dependent upon food, and was relieved by sodium bicarbonate. No large amounts vomited. Hemoglobin 75 %; white count 9,600. During the day of entrance and until evening of the following day the patient was comfortable. At 6.30 P.M. sharp epigastric pain appeared, and abdominal rigidity developed. The liver dullness became partially obliterated. Leucocytes 17,500. At midnight the leucocytes had slightly increased and the patient had vomited. Iodophilia test gave slight reaction. Condition was reported to the visiting physician, who advised medical treatment. The next morning the belly was much more distended and operation advised. | | | deeper depressions, situated nearest to the lesser curvature and about 5 cm. above the pylorus, there was a small, blackish-red area. Section through this area showed that the depression reached quite to the peritoneal coat and was covered over by an adherent ridge of rather dense grayish tissue material. Fecal fistula in descending colon. |
| M. E. R. Jan., 1903. 18 | F. | 22 | Operation 4 hours after perforation. Entered hospital as an accident room case. General health good until 2 months ago, when epigastric pain, gas and sour regurgitations developed. At times the epigastrium was tender, but on lying down tenderness and pain would pass away. No mention of vomiting, with or without blood. At nine o'clock on the morning of entrance the patient was seized with a violent pain in the right hypochondrium unaccompanied by chill or vomiting, and came to the Out-Patient Department, but her condition apparently did not warrant entrance to the hospital. Later in the accident room immediate exploration was advised. | At the operation an indurated mass without definite perforation was found in the region of the pylorus. Within this mass several small abscesses were evacuated. Abdomen wicked. On reaching the ward after the operation, the temperature was 104.8 and pulse 120. For 3 days the temperature remained at 104, 105, 106. | Died. | Died 3 days after operation, evidently from general peritonitis. No autopsy. |

## IV. OPERATIONS FOR GASTRIC HEMORRHAGE.

Ten cases; ten deaths. The series includes 6 females and 4 males. Four of the patients were under thirty years of age, 3 between thirty and forty, 2 between forty and fifty and 1 of unknown age. The youngest man of known age was twenty-eight, the oldest forty-six; the youngest female twenty-three, the oldest forty-seven.

In 9 cases gastric symptoms had existed for two to ten years. In one, a female of twenty-three, the hemorrhage ushered in the first gastric attack. A definite history of previous attacks of bloody vomiting was obtained in 3 cases. In 5 cases the hemorrhage came without other acute symptoms, and in 3 of these cases there was also a sudden collapse. Three times definite severe epigastric pain preceded the vomiting of blood or melena.

A lowered percentage of hemoglobin or pallor was noted in all cases. Epigastric tenderness was general. Once there was definite tenderness in the back, on the level of the eleventh rib.

In the case of the female in her first attack the operation was within thirty-six hours of the hemorrhage. In the other cases the time of operative interference varied between two and thirty days after the beginning of the acute attack.

The general condition of each patient before operation was desperate, as is shown by the fact that 6 of the cases were medical transfers which were regarded as cases of forlorn hope and the remaining 4 were admitted as surgical emergencies of the most severe type.

Eight times the stomach was incised and explored by invagination of the wall. Twice no general examination of the interior was made. Of the 8 careful explorations 3 were negative; 1 other was negative, save for two bleeding points which were possibly due to manipulation; 1

showed numerous areas which seemed to ooze; 1 had pyloric thickening; 1 showed an ulcer on the posterior surface without any evident point of hemorrhage, and 1 had an ulcer on the lesser curvature with a definite point of hemorrhage. In the two operations where no exploration of the interior was made, one stomach showed at operation an induration on the anterior surface near the pylorus and the other a thickened pylorus.

Twice the operation consisted in the repair of the stomach wall after incision; twice the ulcer was excised; once the ulcerated area was turned in with a purse-string suture; once the stomach was sutured to the abdominal incision and tamponed with gauze; and four times a gastro-enterostomy was done.

Death occurred from three hours to eight days after the operation, seven dying within seventy-two hours.

The cause of death given in order in the cases in which an autopsy was made was gastric hemorrhage, general peritonitis following a second operation, gastric hemorrhage, gastric ulcer with probable bleeding point at its center combined with operative shock, inhalation pneumonia.

The probable cause of death, given in order, of the cases in which no autopsy was made was continued hemorrhage with inanition, acute hemorrhage, continued hemorrhage into bowel, probable acute hemorrhage, shock of operation in the extreme condition.

The large proportion of males in this series, a ratio of 2 to 3, is a striking illustration of the accepted fact that gastric hemorrhage in men is a much more serious symptom than in women.

The previous histories and entrance examinations are not remarkable. Only the severity of the symptoms differentiates them from routine gastric hemorrhage cases.

Operation was undertaken at a time when the resistance of the patient had been reduced too far. This in our opinion was due primarily to the belief that gastric hemorrhage is a condition for medical treatment alone, and rarely to unavoidable circumstances.

Isolated instances of operations "*in extremis*" are justified, but to continue to interfere in these cases of gastric hemorrhage only at the point where all hope of recovery under medical treatment had gone would seem to be a questionable procedure and to offer practically no advantage to the patient. Operations must be attempted before the resistance has been reduced to the extreme, and that time, it seems to us, must be determined by the internist and the surgeon working together. Their combined judgment of general condition and probable prognosis under either method of treatment will determine in each case the advisability of operative interference.

The findings at operation are disappointing, in that autopsies when made and the subsequent course of the case so generally disproved their negative reports.

In the 2 cases in which nothing was done but to repair the wounds of the stomach wall, certainly no advantage was given the patient. The method of suture to the abdominal wall and tampon of the stomach, considering the necessary course of the wound, must be classed as a procedure of questionable value. Excision or turning in of the ulcers as performed in 3 cases, while apparently indicated, is certainly not the accepted doctrine of to-day. Hence in 6 of the cases the operation was theoretically in error. Gastro-enterostomy which was done four times was equally unsuccessful. Why this was so, probably depended upon the condition of the patient, but the one autopsy finding available is suggestive, that is, "the anastomosis admitted the passage of the middle finger." As the whole virtue of this operation depends on the theory of free and easy drainiage of the stomach cavity, the explanation is suggested that the location and size of the anastomosis may have been at fault. The failure to relieve the irritation of the ulcer probably accounts in at least some cases for the continued or recurrent bleeding.

The "bleeding point" is so seldom found, and the results of a hurried examination so unreliable, that a prolonged exploration in these hemorrhage cases where operative shock may be such a factor is not justified. A properly placed gastro-enterostomy with an ample opening is, in our opinion, the operation which offers the greatest hope of success.

The cause of death may be stated in general as a continuation of the conditions existing before the operation plus the shock of operation. The inhalation pneumonia attracts notice from its presence in so small a number of cases and serves to emphasize the importance of the consideration of this risk in stomach surgery. The one general peritonitis which followed a second operation after the breaking open of the wound must be regarded as an unfortunate calamity that is not likely to occur again. Three deaths in females under thirty years old is in marked contrast to the results of medical treatment as shown by statistics. Two of these cases, however, were admitted to the medical wards and transferred after treatment for five to eight days as practically hopeless.

| Name, etc. | Sex | Age | Symptoms, etc. | Condition, etc. | Result | Remarks |
|---|---|---|---|---|---|---|
| M. J. A. May, 1898. 1 | M. | 46 | Chronic indigestion for 10 years. Markedly worse for 2 months. Two days before entrance vomited blood and fainted. At entrance, examination negative, except for localized tenderness in the | Indurated mass the size of a silver dollar on the anterior surface of the stomach, near the middle of the lesser curvature. Indurated area turned in with a purse-string suture. | Died on 7th day after operation. | After operation stools continued to be tarry for 18 hours. For 6 days condition of patient was satisfactory. On 7th day sudden collapse with |

CASE 1. — *Continued.*

| Name, etc. | Sex | Age | Symptoms, etc. | Condition, etc. | Result | Remarks |
|---|---|---|---|---|---|---|
| | | | back over eleventh rib. Blood showed hemoglobin 35%: white corpuscles 4,800; reds 3,324,000. Medical treatment for 48 hours without relief. Transferred for operation, with pulse of 120 and temperature 96°. | Condition at end of operation, poor. | | classical symptoms of hemorrhage. Autopsy demonstrated a hemorrhage from the gastric ulcer on the anterior surface of stomach. General peritoneal cavity clean. |
| C. C. Dec., 1898. 2 | F. | 29 | For 3 years epigastric pain about 30 minutes after eating. Eighteen months before entrance vomited considerable coffee-ground material. Two days ago vomited 4 oz. more or less blood, and fainted. Entrance examination negative, except for localized tenderness in epigastrium. Hemoglobin 70%. No free hydrochloric acid in stomach contents. Rectal feeding for five days, but continued to vomit bright blood. Transferred for operation with pulse of 140. | No definite area of ulceration. Exploration of stomach showed several areas which seemed to ooze blood. Stomach sutured to abdominal wall and packed with gauze. | Died on the eighth day after operation. | Gauze tampon in stomach apparently caused no special symptoms. Packing removed after 48 hours, during which time the general condition was satisfactory. Removal of gauze followed by continued hemorrhages and usual sequelæ of gastric fistulæ. Death apparently due to hemorrhage and inanition. No autopsy. |
| T. McG. Mar., 1901. 3 | F. | 33 | For 2 to 3 years distress after eating. On morning before entrance, without other symptoms. Vomited a cupful of blood. Entrance examination negative. Medical treatment for 22 days without relief. Pulse suddenly went from 70 to 140, abdominal pain increased, localized tenderness developed in epigastrium, and vomiting became more nearly constant. Transferred to the surgical wards, where rectal feeding was continued for 48 hours. Condition before operation extremely poor. | No definite point of hemorrhage or perforation. Adhesions about pylorus and pyloric end of stomach thickened. Anterior gastro-enterostomy with suture. | Died 3 days after operation. | After operation the stomach was less irritable. On the evening of the third day the pulse suddenly shot up, and this, with other signs of collapse, suggested another hemorrhage as the cause of death. No autopsy. |
| W. R. May, 1901. 4 | M. | 28 | For 3 years attacks similar to present one. Had been in hospital 3 times for treatment of gastric ulcer. Medical treatment for 1 month, during which time hematemesis, melena and hiccough persisted. Systolic murmur at apex. At surgical transfer there was epigastric tenderness, and stomach tympany extended below umbilicus. | Exploration of stomach and as much of the duodenum as possible was negative. Gastro-enterostomy with suture. | Died 5 days after operation. | Vomiting continued, and 3 days after operation the patient strained the wound open. Chloroform and suture of wound. Vomiting continued. Autopsy showed slight lesion of mucosa 1 cm. square, situated 4 cm. from the pylorus and general peritonitis. |
| M. S. Aug., 1901. 5 | F. | 39 | Indigestion for 2 years. Two weeks ago had severe epigastric pain after eating. 48 hours ago vomited blood and began to have bloody stools, which continued up to entrance to hospital. At entrance, there was pallor of skin and mucous membranes and general tenderness over abdomen, but most marked in the epigastrium. Pulse 88, irregular and intermittent. | Median epigastric incision. Stomach explored, but no evidence of ulcer. Duodenum also explored as far as possible, but with negative results. Anterior gastro-enterostomy with Murphy button. | Died on 3d day after operation. | Rectal hemorrhages continued after operation. Occasional vomiting. Pulse and temperature gradually went up. No autopsy. |
| M. R. Sept., 1901. 6 | F. | 23 | Previous history unimportant. 36 hours before entrance vomited blood, and had a bloody stool. Hematemesis repeated twice. Evening of entrance vomited about a basin full of | Subcutaneous infusion of salt solution before operation. Exploration of stomach failed to show any ulceration. Two small bleeding areas near edge of incision excised. | Died on 3d day after operation. | Rallied from shock, which was extreme, but the following day began to grow weak, pale and very restless, and failed to respond to stimula- |

Case 7. — *Continued.*

| Name, etc. | Sex | Age | Symptoms, etc. | Condition, etc. | Result | Remarks |
|---|---|---|---|---|---|---|
| | | | blood, and pulse became rapid, feeble and thready. | | | tion. It was a question whether the bleeding points which were excised, might not have been caused by the trauma of the operation. No autopsy. |
| M. B. Sept., 1901. 7 | F. | 25 | Had been in hospital 6 years before for chlorosis, and 1 year before for gastric ulcer. For 13 days before entrance vomited all food. Once vomited a cupful of bright blood. Medical treatment for 8 days without relief of vomiting or hematemesis. Transferred for operation with sub-normal temperature, pulse of 150, and epigastric tenderness. | Not much blood in stomach and no definite bleeding point. On posterior stomach wall, close to the center of the lesser curvature, was an ulcer 15 by 12 mm. Ulcer excised. Stomach wall sutured in layers. | Died on second day after operation. | Patient did not rally from the shock. Pulse and temperature rose. No response to stimulation. No autopsy. |
| M. L. Apr., 1902. 8 | F. | 47 | Chronic indigestion for 6 to 8 years. Symptoms more marked for 10 months. Vomiting of bright blood and collapse 4 days before entrance. Two days after entrance vomited half a pint of bright blood. Operation 8 days after her first gastric hemorrhage. Patient in state of moderate collapse. Hemoglobin 75 %. | Pyloric end of stomach indurated. Posterior gastro-enterostomy with the aid of a bone bobbin. | Died 2 days after operation. | After the operation hematemesis continued. Autopsy showed a small ulcer on the anterior surface of the stomach, situated near the lesser curvature and midway between the pylorus and esophagus. At base of ulcer was an erosion of a large branch of the gastric artery. Near the open ulcer were 2 small cicatrices. The anastomosis admitted the passage of middle finger. |
| J. J. F. Mar., 1903. 9 | M. | | "Indigestion for years." Two days before entrance had a sharp epigastric pain; and later vomited coffee-ground material. Vomiting continued at entrance. There was extreme pallor, a retracted abdomen with epigastric tenderness and a thready pulse at 190. | Exploration of stomach through incision in anterior wall showed only blood clots. Two other incisions at cardiac end failed to show any ulceration. Incisions sutured. | Died 3 hours after operation. | Did not rally after operation. Autopsy showed a small ulcer with a cicatricial base, located at the pylorus. At the center of the indurated base was a bright red spot which was evidently the source of the hemorrhage. |
| A. R. F. Nov. 1903. 10 | M. | 39 | "Stomach trouble" for 2 years. For 5 weeks epigastric pain and occasional vomiting, during which time he had lost much weight and strength. For 2 days stools had been tarry and offensive, and he had grown weaker. Five hours before entrance there was a sudden collapse. At entrance the skin was grayish; expression anxious; pulse of 100, regular and of fair strength. Tenderness and spasm in epigastrium. | High left rectus incision. Ulcer 2.5 cm. in diameter, situated 10 cm. from the pylorus on the lesser curvature. Ulcer evidently chronic, having a cicatricial base. At the center of the base was an eroded vein, which was plugged by a clot. Excision of ulcer and suture of stomach wall. | Died on 3d day after operation. | For 36 hours did well. Then followed a rapidly rising pulse, restlessness and marked thirst. Salt infusions, gelatin and adrenalin without effect. Autopsy. Stomach free from blood, but considerable old blood in the intestines. Inhalation pneumonia, which was probably the cause of death. |

## V. General Conclusions.

(1) The results of the operations in benignant disease of the stomach at the Massachusetts General Hospital and the Boston City Hospital between Jan. 1, 1898, and Jan. 1, 1904, are as follows:

| | *Number of Cases* | *Deaths* | *Well Rel'd* | *Not Rel'd* | *Secondary Operations* | |
|---|---|---|---|---|---|---|
| Chronic ulcers | 21 | 5 | 7 | 4 | 5 | 8 |
| Pyloric obstruction | 21 | 5 | 9 | 3 | 4 | 2 |
| Acute dilatation | 1 | 1 | | | | |
| Perforation | 18 | 13 | 5 | | | 2 |
| Hemorrhage | 10 | 10 | | | | 1 |
| Total | 71 | 34 | 21 | 7 | 9 | 13 |

(2) Surgical intervention in gastric hemorrhage should be considered even before it is urgent and the surgeon should jointly with the physician

watch the course of the patient. Cases of gastric hemorrhage entering the accident room should be seen as a rule by a physician as well as a surgeon. Operations upon females under thirty years of age should be most conservatively advised, since death under medical treatment is rare. This generalization, however, should not unduly influence consultants in a case of repeated hemorrhages threatening life, even in a patient below this age. Time should not be lost during an operation in seeking the bleeding point, but gastro-enterostomy should be performed.

(3) Mortality in operations for perforation of the stomach is chiefly dependent upon the length of time intervening between perforation and operation and the virulence of the infection. To lessen the mortality, house officers should report suspected cases simultaneously to the physician and surgeon on duty, or their substitutes, and should obtain permission for a possible operation from the patient or friends.

(4) Patients with chronic ulcers of the stomach or strictures of the pylorus should be jointly watched by the physician and surgeon. The surgeon should know the patient before being compelled to operate. Postponement of operation after it is indicated is dangerous, owing to the possibility of hemorrhage, perforation and exhaustion.

(5) Errors in surgical technique occurred, which in subsequent operations will presumably be avoided. Methods of operation were chosen which in the light of the experience of to-day would be considered unsuitable. Together these classes of cases account for about half of the deaths.

(6) The seventy-one cases were operated upon by twenty-five different surgeons — an average of one case to each surgeon in twenty-five months. It is reasonable to conclude that the mortality would have been less if each surgeon had had more experience.

## THE UNION OF THE TEACHINGS IN CYSTOSCOPY AND MICROSCOPY.

BY FRANK M. JOHNSON, M.D., BOSTON.

An adage of an earlier time still rings with the same truth and its forcible meaning to-day. It was then the thought had birth that "in union there is strength." Thus from a medical standpoint might its application be converted to carry out the peculiar characteristics of these two adjuvants in our investigation of the diseases of the bladder and the kidneys. It is not the intention at this time to enter into the minute details of the methods used, or descriptions of various instruments, but rather to bring perhaps more forcibly to your attention and consideration the value of suggestions to be gained when in harmony the microscope and cystoscope can give to us more clean-cut and definite knowledge. Before instrumental interference is demanded or warranted, the wise procedure is to obtain a complete record from an exhaustive chemical and microscopical analysis of a specimen of urine. By this step a diagnosis is obtainable that will most likely approximate the conditions to be met with.

From the number, condition and appearance of the epithelia present, the presence or absence of casts, mucus, red blood corpuscles, pus corpuscles, connective tissue shreds and the varied forms of crystalline and amorphous sediments, — all these with the data of clinical history, in a certain case, will repay by the value of the deductions that are now far less difficult to surmise.

If a doubt might remain, it is then that the cystoscope will readily prove or disprove the microscopic findings. The tiny brilliant electric light, in conjunction with delicate lenses, gives to the observer vivid pictures and often clears up mysteries that were perplexing.

A growth is discovered that before gave no symptoms or signs of its existence. A clever instrument, lately devised by Dr. Follen Cabot of New York, enables an operator to secure a small piece of such a growth, and then our microscope will reveal its nature, or a fragment of a calculus is caught up, and its composition soon determined. Again, with angular or straight observation telescopes, all parts of the bladder can be viewed. Various grades of inflammatory origin can be seen and exact conditions realized.

Now perhaps it is fairly said that the microscope first gives permission, and then may demand the cystoscope as its aide-de-camp. May the day come, and that quickly, when such examinations as have been noted play their important parts in our routine practice; may our microscope receive the consideration that its teachings merit! No doubt a human life cannot nor will not last long enough to make the master of any person who may attempt to solve all the problems, all the riddles and all the kaleidoscopic transformations that lie within the minute drop — under the fragile crystal. Errors arise due more often to the lack of complete understanding on the part of the observer than to any fault that could possibly escape detection in a finely made instrument. Each and every object must meet with recognition, and relative values of the more important elements must have our careful consideration. The surgeon whose time is absorbed with many operations, the general practitioner who has no moments he may call his own, yes, even the successful follower of some special subject, is forced to rely upon some one else and accept his conclusions. The necessity of true, impartial, microscopic findings, however, will still constitute a factor of mighty value.

This same thought can apply again to the cystoscopic revelations. Both these measures require time, patience and a long experience. Can one in a pardonable enthusiasm overestimate their true worth? At the present time the most important rôle played by the microscope and cystoscope is in the examination of the kidneys. With the catheterization through the

ureters, and the microscopical examinations of the separate urines, a vista of new thought is opened, whose field of usefulness is large and wide and whose possibilities are almost beyond comprehension. Here will it be found, that before a kidney is removed the surgeon must know the absolute conditions of both kidneys, or perhaps the location of a calculus or of growth in the bladder and its character. A very few out of the many doubtful phases may be dispelled by these methods of research from a surgical aspect. For a moment then, only lightly touching this phase, we turn to a large number of patients who apply for medicinal treatment for alleviation of their pains, distress and exhausted nervous conditions. When the true realization has not been granted to the physician, who certainly has done everything in his power, yet when medicinal remedial measures have been without avail in either giving nature a chance to cure, or of completely alleviating the stubborn symptoms and their sequelæ — let it be said frankly and squarely that lavage of the pelves of the kidneys with appropriate medicated solutions given carefully and each change and effect noticed will, in the majority of our cases, either eradicate or certainly will ameliorate the disturbing influences created by a chronic pyelitis, or a pyelo-nephritis or cirrhosis, those of lithæmia or an irritative oxaluria; these alone being simple examples of a thousand varied and complex conditions that may arise.

These few suggestions are offered with the hope that they will awaken a broader and keener interest, that they may appear worthy of deliberate consideration, and that each and every true student, who has devoted his life to a beloved cause, can, if he will, find helpful aid and gain a clearer vision from the keener sense of a better understanding through this union of thought in the teaching of these two most valuable and, may it be said, inseparable companions, — the microscope and cystoscope.

## Clinical Department.

### A CASE OF UNIRADICULAR BRACHIAL PALSY AFFECTING THE FIFTH CERVICAL NERVE.

BY JOHN E. DONLEY, M.D., PROVIDENCE.

The following case, which was referred to me by Dr. Frank H. Jackson, would seem to be worthy of record, since it probably represents a very rare palsy of the brachial plexus:

Miss C., a young woman of twenty, a book-binder by occupation, came under observation complaining of disability and of some pain in her left upper arm. Her family history is unimportant, except for the fact that her father suffers frequently from attacks of severe articular rheumatism. She herself has always enjoyed good health with the exception of an attack of malaria of one week's duration, five years ago, and her appearance in general is that of a well-nourished and healthy girl. On Easter Sunday, ten weeks before coming under observation, having exchanged heavy for light clothing, she took a long walk, and upon returning home complained of feeling very cold. On Monday a sharp pain appeared in her left shoulder and neck, and by Tuesday it had become more severe, and was especially intense at night. By Wednesday it had extended as low as the elbow, and the arm was somewhat swollen from the shoulder to the elbow-joint. On Friday the pain had involved the forearm and fingers, and at the same time the right arm became swollen and painful from the shoulder to the elbow, this condition persisting for a week, when the pain and swelling in the right arm and left forearm disappeared rapidly and have not returned. A week after the beginning of the trouble she put her arm in a sling, in which she carried it for three weeks, and only at the end of this time was it noticed that there was inability to flex the forearm or to move the upper arm, although she cannot tell how long this disability had existed before she became aware of it. From the first she received constitutional treatment for rheumatism, and at the end of eight weeks came under the writer's attention, when the signs of disease were as follows: There was paralysis with atrophy of the left supra- and infra-spinati, teres minor, deltoid, serratus magnus, both rhomboids and pectoralis major. These muscles did not react to faradism and gave quantitative changes to the galvanic current, contracting sluggishly to strong currents. The left biceps was perhaps a little weaker than the right, but showed no alteration to electrical stimulation. The atrophy in the deltoid, spinati, teres minor and rhomboids was severe. The scapula was winged, its lower angle approaching the vertebral column and its upper part being directed outward. The whole scapula was elevated. The acromion was uncovered and the head of the humerus had dropped from the glenoid cavity, an inch intervening between the acromion and the head of the bone. There were some thickening and adhesions about the joint, passive abduction and external rotation being partly restricted. There was no fluid in the joint. Voluntary abduction, external and internal rotation were absolutely impossible. The nerve trunks were not tender in the arm, but firm pressure over the plexus above the clavicle gave tenderness. There had never at any time been tingling, numbness or other paresthesia, nor had there been herpes zoster or any variety of skin eruption. Sensation was everywhere normal except over the lower deltoid region, where there was some blunting of sensibility to pain, tactile and thermal stimuli, the defect, however, not being marked. No affection of the brachialis anticus, supinator longus, triceps, subscapulasis or diaphragm could be discovered. There was no sign of disease in heart, lungs or other viscera.

Although we are acquainted with many cases of paralysis affecting several of the peripheral or proximal nerves, or as in the palsies of Erb and Klumpke, combined cords of the brachial plexus, the number of recorded cases in which the lesion has been limited to the individual spinal nerves is small, and the literature very meager.

Buzzard, in a recent article in "Brain," remarks upon the infrequency with which uniradicular palsies are mentioned, even in the extensive monographs upon the subject, and he quotes from Duval and Guillain, Seeretan and others, whose only reference to the subject consists in the statement that uniradicular palsies of the brachial plexus are exceedingly rare. In the same contribution, Buzzard reports six cases,

three of them suggesting a lesion of the first dorsal nerve, two of them a lesion of the fifth cervical nerve, and one a lesion of both these nerves, and he suggests that this may be a coincidence, or it may point to a special susceptibility on the part of the lowest and highest roots of the brachial plexus. Wolfstein has recently recorded a case in which the lesion appeared to be limited to the first thoracic nerve, and our own case points to an involvement of the fifth cervical nerve, so that the observation of Buzzard as to the greater susceptibility of these nerves would seem to receive some confirmation.

The distribution of the paralysis in our case is interesting as affording evidence of the motor innervation from the fifth cervical root. It involved temporarily the biceps, and permanently the deltoid, teres minor, serratus magnus, both spinati, the rhomboids and the pectoralis major. There was no evidence of any affection of the spinal cord, no stiffness of the neck and no change in the neck muscles. The tenderness over the brachial plexus points to peripheral trouble, so that if we exclude multiple foci in several nerves, the site of the lesion must be as repre-

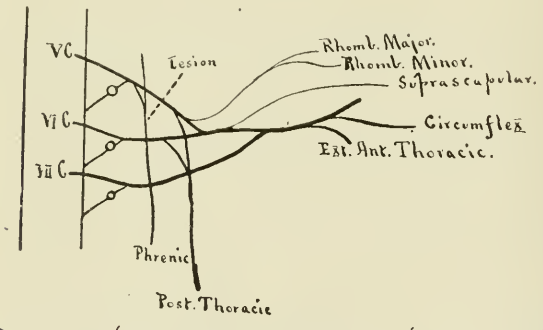



Diagram (after Buzzard). Illustrating position of lesion affecting fifth Cervical nerve.

sented in the accompanying diagram. The nerves supplying in part the serratus magnus, the levator scapulæ and the rhomboids arise from the fifth cervical nerve, as it lies between the scalene muscles, and in order to account for the paresis in our case the situation of the morbid process must have been in that part of the root proximal from the origin of these nerves.

It is interesting to note that at the time of the examination, the levator scapulæ was not involved. The muscles affected support the observations of Herringham, which the writer has confirmed in the case of the suprascapular and circumflex nerves and the outer head of the median. Herringham concludes from his dissections as follows: (1) It is usually at the junction of the fifth and sixth nerves that the suprascapular nerve is given off, but it is not uncommon to find it springing from the fifth before the junction is made. (2) The sixth, therefore, exercises sometimes an extremely small influence and sometimes none at all over the spinati. (3) It appears that the pectoralis major does not usually receive from the fifth. (4) The biceps is supplied by the fifth and sixth seven times out of eight. (5) Thirty-one dissections showed no exceptions to the rule that the fifth does not enter into the outer head of the median. (6) The circumflex comes from the fifth and sixth; in six cases from the fifth alone; sixth branch often very small. (7) The teres minor is always supplied by the fifth alone. (8) The supinator longus and brevis are usually supplied by the sixth; the fifth is not always excluded. The muscles paralyzed in our patient appear to show that in this instance, at any rate, the fifth nerve gives motor innervation to the pectoralis major and a partial nerve supply to the biceps, for it will be remembered the biceps was paralyzed for at least a week, when it promptly recovered.

The sensory loss in the circumflex area was not unexpected, but the subjective sensations, or rather lack of them, are interesting and important, and apparently, as suggested by Buzzard, have some diagnostic value. Buzzard was impressed by the fact that in not one of his patients was there any sensation of numbness in the affected region, and not until it was pointed out to him was the patient aware of his sensory loss. Wolfstein had the same experience with his patient, and in my own case careful inquiry directed to this point failed to elicit any subjective sensation other than that of pain. The patient was somewhat surprised when it was demonstrated to her that there was a hypnesthetic area over the deltoid skin. It is quite possible, therefore, that this absence of subjective sensation of tingling and numbness may prove to be a valuable sign in distinguishing root from peripheral nerve lesions.

As to the etiology and pathology underlying the symptom complex in these cases, we are unable at the present time to advance beyond speculation. The term " neuritis " which has been applied to indiscriminate nerve lesions is a legacy from former days, when nervous pathology was oftentimes neither accurate nor careful of distinctions. We are beginning to understand that in the case of the spinal cord and peripheral nerves, as well as in the affections of the brain, we must distinguish between true inflammatory processes and those others, probably more frequent, of vascular origin. The work of Williamson, Singer and others has demonstrated that in many cases of what was formerly called " myelitis," the lesion is really a thrombosis due to disease of spinal blood vessels; and while as yet we have not the confirmation of the microscope for our hypotheses, it seems reasonable to assume by analogy that the same distinction should be made in diseases of the peripheral nerves. In our own case the symptoms are suggestive of a vascular foundation for the trouble, particularly the rapidity with which the pain and swelling disappeared from the right arm and the left forearm, this taking place during one night. And furthermore, the limitation of the lesion to a restricted area of one nerve seems to

favor a primary vascular process as against an inflammation, for in the latter case the nerve involvement would probably have been more extensive.

## Reports of Societies.

### SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR SURGERY.

E. A. CODMAN, M.D., SECRETARY.

A meeting of this section was held on Jan. 6, 1904, Dr. F. B. Harrington, in the chair.

The subject for discussion was

EARLY OPERATION IN DISEASES OF THE STOMACH

with especial reference to the following questions which were announced on the call for the meeting:

How often is persistent stasis of the stomach contents due to a purely functional condition?

Should exploration be advised as a routine in cases of marked stasis of the stomach contents?

Comparative results of medical and surgical treatment in cases of stasis.

Dr. F. B. Harrington: The object of this meeting is not a discussion of gastric surgery in general but of certain non-cancerous conditions of the stomach, such as gastric ulcer, stricture of pylorus, hemorrhage, dilatation of the stomach, etc.

We live in a medical community which takes pride in its advanced position in medical knowledge, and yet in the West, Mayo has operated on nearly 150 cases of benign disease of the stomach, doing gastric anastomosis with a mortality of 6%, and in Leeds, Moynihan has just reported 100 gastro-enterostomies for gastric ulcer with two deaths. In the well-known paper on "Gastric Ulcer at the Massachusetts General Hospital, 1888 and 1898," Greenough and Joslin say: "The mortality of 8% and the failure of medical treatment to effect lasting cure in 60% of the patients indicates the need of surgical intervention in other than emergency cases of this disease." Dr. Munro ("The Surgical Treatment of Gastric Ulcer") says: "In cases of pyloric obstruction, we have a purely mechanical problem with which to deal. No amount of medicine can overcome this condition; no amount of argument by the internist can convince the surgeon that such cases are best treated medically.". Mayo says ("Operations on the Stomach"): "The hope of the future lies in early exploratory incision, and the necessity for this depends upon clinical observation rather than laboratory methods, which too often only become valuable when the extent of the disease is beyond cure. Given a patient of middle or later life who begins to lose flesh and appetite and suffer from indigestion without apparent cause, the possibility of cancer should be considered; and if the source of the symptoms cannot be shown within a few weeks, the situation should be explained to the patient and the choice between exploration and procrastination allowed him."

The mortality from gastric surgery will always be high in advanced cases of malignant disease and in cases of non-malignant disease in greatly enfeebled subjects when operation is done as a last resort. Much of the operating in this community has been of this latter sort, and the results must necessarily be less encouraging than operations on more favorable subjects.

A mortality chart prepared by Drs. F. T. Murphy, G. O. Clark and F. B. Lund was then exhibited and explained. This chart compared the reported statistics of Mayo with the actual mortality of a similar series of statistics compiled from all the stomach cases operated on at the Massachusetts General and Boston City Hospitals. It had been intended that Dr. Murphy should have given a more detailed explanation of this chart, but owing to his absence the explanation was made by Dr. Codman, who said that the object in thus contrasting the immediate results of the stomach cases done in Boston with those of Mayo, Moynihan and others, was to arouse more general interest in gastric surgery. Although in the cases of the above-mentioned surgeons the results might be expected to be better by a considerable per cent from the mere personal skill and experience of the operator, yet he thought that the main reason for the relative greatness of our mortality was due to the character of the cases which came to the operating table. Even considering the fact that the operations in the Boston hospitals were done by a large number of relatively inexperienced operators, who each had but a few cases, and that the operations were in almost every case *last resort* operations, the mortality as shown by the chart was not so very great, except in the malignant cases. Even in the malignant cases for the five years ending with 1903, only seven of the eighteen gastro-enterostomies at the Massachusetts General Hospital died. One of these Dr. Codman operated on himself as an emergency on account of perforation of a malignant ulcer. The other six cases were in very advanced malignant disease and most of them had palpable tumors.

Owing to the discussion aroused by the meeting, Drs. Joslin, Lund and Murphy were interested enough to prepare a detailed paper[1] on the non-malignant stomach operations at both the larger hospitals in the last five years, with especial reference to the end results.

Dr. F. Pfaff: Your secretary requested me to answer especially the second question on your program, — Should exploration be advised as a routine in cases of marked stasis of the stomach contents? To answer this question briefly I would say absolutely not before medical treatment has been tried to either relieve or cure the stasis of the stomach contents. Why should not an exploration be made in cases of marked stasis of the stomach contents? Stasis of stomach contents is always due to motor insufficiency of the muscular apparatus of the stomach. Motor insufficiency may be caused by many different factors which can be completely relieved, even after marked stasis of many years, by medical treatment. I say motor insufficiency is the general cause of all cases of stasis of the stomach contents. It may be due either to muscular relaxation of the muscular apparatus, the muscle becoming too weak to expel the stomach contents in normal condition at the normal time. The stomach at first is of normal size, but later, due to stagnation of food, we get permanent enlargement of the stomach. Muscular insufficiency may be further due to impossibility of the stomach contents to get out through a narrow orifice. In such cases the muscles of the stomach may be hypertrophied and yet insufficient. The cause may be either intragastric or outside of the stomach, as in cases of gallstones, adhesions, etc., but even in such cases we may sometimes be able, by medical treatment, to relieve the stasis, and not only get again normal expulsion of food contents, but the patient may also gain in weight. Very often we see stasis of the stomach contents due to general conditions — gluttony, malnutrition, pro-

[1] This paper forms the leading article in this number of the Journal.

longed fever, etc., We find stasis of the stomach contents much oftener than is generally admitted. I make it a rule to always examine the motor power of the stomach, no matter what the condition complained of by the patient is — not so much stress to be laid on the chemical condition of the stomach contents as the motor sufficiency or insufficiency of the stomach.

The statement made by the authorities abroad to the effect that if one finds stomach contents present seven hours after a test meal the case is one of motor insufficiency does not apply to all of the cases seen here.

American people as a rule eat greater quantities of food than they do abroad, especially at night, the stomach naturally becomes accustomed to a relatively greater amount of work, and consequently if you give them a light test meal subsequent examination fails to reveal evidences of motor insufficiency.

I have found by experience in treating my patients here, that the best methods to use in giving the test meal is to have the patient eat a dinner at night and then wash out the stomach the next morning, some twelve hours later. If then there is any food present, you may be sure the case is one of motor insufficiency.

My main object is to find out the cause of the stasis, and according to the cause I arrange the treatment. First of all a suitable diet is to be given. Lavage is only indicated in very marked stasis of the stomach contents, light stasis we can get rid of with diet. The more intelligent the patient, the better the results. If after months and months of trying the patient has not gained in weight, and the stasis has not decreased, then surgical treatment may be resorted to. First of all, to my mind, medical treatment, then surgical. Abroad operations are done much less often now than fifteen years ago.

Dr. M. H. Richardson: I have little that is new to say on this interesting subject. I was impressed early by the great anatomical advantages of the stomach for successful surgical operation, especially by the splendid results of even the most extensive surgical operations upon healthy individuals. By *healthy individuals* I mean those whose general condition is favorable for operations upon a purely limited disease. I should have said in prefacing these remarks that I have nothing to say with reference to the first question. With regard to the second question, I think nothing can be added to what Dr. Pfaff has already said. As to the indications for early operations, my experience is that if the patient is in good general condition the mortality from the most extensive surgical operations is small; while, if in a poor general condition, the mortality, even from a comparatively trivial operation, is great. In the former case the results are splendid; in the latter, deplorable.

I have to-day looked over in my card catalogue the collection of stomach cases that I have had in the last fifteen years. A brief glance at these cases shows, first, that the mortality in operations upon the stomach is caused by the patient's poor general condition, and not by the operation. The mortality in the tabulation before us, as all will admit who have seen the cases, has been dependent directly upon the advanced cachexia at the time of operation. In gastric cancer especially, the mortality from simple exploration with the finger has been in my own experience considerable. In many cases deaths have been recorded as caused by exploration when the patients would have died in a very short time if they had not been operated upon at all. The mortality in these exploratory operations for hopeless cancer shows nothing at all except that in advanced cachexia it is necessarily great. To compare in this table, or in my own cases, the dangers of operations upon a stomach extensively diseased with cancer with the dangers of resecting the pylorus in an individual in comparatively good health suffering from a benign stenosis of the pylorus is unfair. The latter has been a very successful operation in my own experience, even in cases in which we have made a complete pylorectomy. I have not the least doubt that if we could take healthy individuals under fifty or sixty — patients whom we describe as favorable for operation — the mortality, even of resection of the pylorus or of the stomach itself, would be very encouraging. My own experience bears out this statement. Many explorations for extensive cancer, as I have said, are fatal, even if you do nothing beyond making a simple incision. In resection of the pylorus for benign strictures from foreign bodies, corrosive poisons, etc., the mortality is small and the outlook most encouraging. The mortality after operations for other and rarer conditions, if the patient is in good condition, is small, even when the dissection is most extensive.

These remarks introduce the question: What are the early indications for operation? We should, I think, consider first the disease of the stomach which is perhaps the most common — cancer. I am convinced that, with the application of present knowledge and experience at the hands of men the most skilful in diagnosis of gastric diseases, seldom can the diagnosis of cancer of the stomach be made early enough for a permanently successful complete excision. I say this with profound respect for the skill of the most skillful. My conviction is that we must operate before the diagnosis can, from the nature of things, be positively made. The ultimate results in cancer of the stomach are bad enough even in cases which we discover accidentally during explorations for other lesions. All the patients with cancer of the stomach that I have operated upon are, I believe, dead, except one whom Dr. Joslin and Dr. Pfaff will remember, and another in whom I discovered the disease in exploring a gall bladder. When the diagnosis of cancer of the stomach is made by the discovery of a tumor, there is, in the great majority of cases, no use in operating at all. Indeed, in my experience, a perceptible tumor is almost a contra-indication for operation. The earliest indication for operation in cancer of the stomach is a strong suspicion of that disease. The mortality from exploration itself in that early stage is extremely small, although there always must be some mortality in abdominal exploration — however brief.

With reference to the indications for operation, in patients whose symptoms are comparatively trivial but prolonged and obstinate, I am convinced that the earliest indication for surgical intervention in this class of case is the failure of medical treatment under the direction of skillful physicians.

This subject is extremely interesting to all surgeons. While we should strive to be in the front rank in the surgical treatment of gastric diseases, there should be, I think, on the part of some at least, a restraining conservatism rather than a frequent resort to such operations as gastro-enterostomy for trivial symptoms. We should know, definitely and unmistakably, the permanent results in a large number of cases in which this operation has been performed for gastric atony, *e. g.*, as compared with medical and palliative treatment of these cases.

Dr. A. T. Cabot said that he understood the term "persistent stasis" to mean a stasis which is not relieved by medical treatment, or if so relieved soon recurs. Defining "persistent stasis" in this way, he felt that it was rarely a purely functional condition. When this stasis is so pronounced that the stomach

fills up and is obliged to empty itself by vomiting once or twice a day, it is evident that some mechanical condition or obstruction must exist, and such a stomach should be operated upon at once.

When the stasis is less pronounced than this, of course, medical treatment may be given a somewhat longer trial, but if it constantly fails to afford permanent relief, surgery should not be too long delayed.

He said that he should like to hear from some of the medical practitioners as to the permanency of results that they obtained by their treatment of these cases of stasis. What, in short, they expected to accomplish, failing in which, they are prepared to turn their patients over to the surgeon. He said that his feeling was that the surgical statistics in this neighborhood were bad because the cases brought to the surgeon had been unfavorable. That it seemed to him that if the medical men throughout the community could be convinced that surgery does offer sure relief in these cases, and would learn to recognize earlier the cases in which medical treatment is not likely to prove successful, he was sure that many more surgical successes would be accomplished in gastric cases.

Dr. J. T. Bottomly: (1) How often is persistent stasis of the stomach contents due to a purely functional condition?

In the fairly large experience of my colleague, Dr. Munro, and in my own brief experience in stomach cases, we have yet to open an abdomen as an exploratory measure in cases with symptoms of gastric stasis and find no pathological or mechanical cause for the trouble. Perhaps, I should modify that statement a little and say that, if we have found no cause for the symptoms, drainage of the stomach by gastro-enterostomy has in the vast majority of cases given such satisfaction that we could onlly conclude that some cause other than a functional one was at the bottom of the trouble.

(2) Should exploration be advised as a routine in cases of marked stasis of the stomach contents?

It is our belief that exploration should be thought of not only as a routine but as an *early* routine measure. I want to lay a special stress on "early" as a matter of justice not only to the surgeon, but what is most important, to the patient. Given a surgeon familiar with the technique an exploratory operation of such a nature in a patient in good, even in fair, condition has but little danger attached to it. This holds true, even if a gastro-enterostomy is done. But this presupposes a patient in at least fair condition, and does not hold good for patients who come to the surgeon in a half-starved, weakened condition.

Moreover, our operations have often disclosed a state of affairs that no man with our present means of obtaining knowledge could possibly foretell, — such as dilated or sagging stomachs due to adhesions about the pylorus, about the duodenum, about a chronically inflamed gall bladder, etc., — cases in which one could not possibly foretell the cause of the stasis, cases in which no amount of medical treatment could have any lasting effect, but in which surgical measures can and do afford not only marked but immediate relief.

(3) Results.

Surgery of the stomach is still comparatively young. We do not get brilliant results in all cases. It is only fair to say that we get good, most satisfactory results when we get the cases in fairly good condition. Most of the deaths in stomach surgery are caused by the condition of the patient when he gets to the surgeon, and not to the operation itself. Statistics do not always tell the whole story. We must know conditions before we can pass judgment on the merits of a given form of treatment. Both sides should be fair in this matter. What we are looking for is the good of the patient; this is the common ground on which both sides stand. We must admit with Mayo that there is certainly a time in the history of cases of stomach trouble when medical treatment is no longer useful. When does that time come? In all justice to everybody it comes before the patient has reached a state of anemia and weakness in which he is in no condition to undergo what might otherwise be a simple operation.

There is much truth in what Murphy says, and I want to quote a few words of his: "On the basis of frequency with which surgical diseases of the stomach are brought to the surgeon's notice, we may divide them into: (*a*) gastric carcinoma; (*b*) gastric ulcer; (*c*) pyloric obstruction; (*d*) pyloric retention; (*e*) gastroduodenal or pyloroduodenal lesions.

"If surgery is to accomplish for the stomach all that it is capable of, the frequency with which surgeons deal with the stomach must be for lesions in substantially the reverse order, except in the class of gastroduodenal disease, — *i. e.*, to obtain the greatest results from a prophylactic as well as therapeutic standpoint. The order of frequency with which the surgeon should be consulted must be — (1) pyloric retention; (2) pyloric obstruction; (3) gastric ulcer; (4) gastric carcinoma; (5) gastro-duodenal lesions." We must, in other words, get at cases early. Improvements in technique will probably not aid us greatly. The gain must come through earlier operation. Mayo Robson reports 101 cases of posterior gastro-enterostomy with 3.9% mortality and 21 cases of pyloroplasty without a death. Most of his deaths were due primarily to the poor condition of the patient at the time of operation.

STATISTICS.

The following is a condensed table of the operations performed for gastric troubles by Dr. Munro and myself. Most of them were done at the Carney Hospital and the great majority of them by Dr. Munro. By "recovery" in the table, recovery from the operation only is meant. It does not always signify permanent recovery.

| | *Number* | *Recovery* | *Death* |
|---|---|---|---|
| Perforating ulcer | 6 | 3 | 3 |
| Pyloroplasty | 1 | 1 | |
| Pylorectomy | 1 | | 1 |
| Jejunostomy | 2 | 2 | |
| Gastrectomy (partial) | 3 | 2 | 1 |
| Penetrating wounds | 2 | 1 | 1 |
| Gastrostomy | 4 | 4 | |
| Gastrotomy | 1 | 1 | |
| Gastroduodenostomy | 2 | 1 | 1 |
| Gastro-enterostomy | 45 | 38 | 7 |
| Shortening gastrohepatic ligament | 3 | 3 | |
| Exploratory | 9 | 8 | 1 |

Dr. M. P. Smithwick: If six hours after the heaviest of the three meals the stomach of a well-fed person isn't empty, it is slow-acting. If after the same period it cannot pass onward breakfast or lunch, there is stasis. If it isn't empty after the twelve or more hours before the morning meal, there is marked stasis.

In the dilatable, atonic stomach, so often the result of nervous exhaustion, food may be present constantly from breakfast until the evening meal, but not in any great amount before breakfast, unless there is considerable dilatation or marked ptosis.

Persistent, marked stasis is not often due to a purely functional condition, and justifies exploration. If, in the absence of any condition demanding further operation it is decided not to treat the motor insuf-

ficiency surgically, the confidence gained by exact knowledge is worth the risk from exploration.

Unsuspected conditions unsuited for medical treatment may be found, or conditions, like ulcer, requiring special precautions if treated medically. In some of these cases stasis may be the only striking symptom. The great variation in the clinical picture presented by the same condition in different cases necessarily renders diagnosis difficult and uncertain. Uncertain diagnosis means inappropriate treatment and perhaps unnecessary risk. Early exploration when necessary for diagnosis is conservative. The possible disadvantage of operations which, like gastro-enterostomy cause permanent alteration of the digestive tract, compel us to look beyond the mortality statistics. If medical treatment is available and promises ultimate ability to take enough food for proper nourishment, surgical interference is inadvisable, but we have no right by withholding surgical aid to make hopeless invalids of those who cannot be properly nourished without operation.

In cases of persistent stasis so marked that the stomach must empty itself largely by vomiting, immediate operation should be urged. No case of stasis should die of starvation.

Dr. C. L. Scudder: I have been seeing a number of cases of gastro-enterostomy recently, and have been interested in them not only as bits of surgical procedure, but because there were about the stomach in almost all of these cases lesions which the physician did not recognize previous to operation as causative of the symptoms. When these lesions have been removed or relieved by operation, the symptoms have disappeared.

The cases of so-called chronic gastritis, sour stomach, chronic indigestion, biliousness, those general symptoms in which the physician may find no distinct physical signs, no great diminution or increase in HCl, no marked stasis of stomach contents, and in which the percussion may not determine that the stomach is dilated or that there is a gastroptosis, in those cases there will be found certain physical conditions which are amenable to surgical interference. It is in cases of this kind that Mayo is operating. In the group of cases I have been watching this winter there were adhesions about the pylorus or posterior surface of the stomach or the pylorus would not quite admit the finger tip; there was a dilatation of the stomach or there was a falling down of the stomach, sometimes not detected previous to the operation. It seems to me that the physical examination of such patients does not determine the condition present; that the early operation discloses a living pathology which is defining more and more proper surgical procedure.

Dr. J. G. Mumford: In this investigation [2] we are after facts regarding the results of methods of treatment. A considerable number of cases treated *surgically* have been tabulated, with what results as regards the cure of disease and on mortality you are more or less aware. On the other hand, so far as I have been able to learn, satisfactory tables of *medical* treatment are not accesssible.

The discussion to-night centers around the question of stasis, which is usually associated with and dependent upon obstruction with dilatation.

I am at present engaged in a study of digestive disorders, for another purpose than to present it at this meeting, and my investigations are still far from complete; so that what I may say here must be taken in a qualified sense only, but such as they are the apparent facts are suggestive.

I found recorded in the clinical catalogue at the Massachusetts General Hospital 122 *medical* cases listed as "gastric dilatation"; no other diagnosis being made, probably because definite diagnosis in these cases was impossible; the presumption, of course, being that the dilatation was due to pyloric obstruction, malignant or non-malignant, though some few were called "atonic," and in very many of the cases, with our better knowledge of to-day, doubtless a correct diagnosis would now be made. It is an interesting fact that very many fewer cases of dilatation were reported fifteen years ago than to-day. These hospital cases cover fifteen years. In 1888 there was 1 case; in 1889 there was 1 case; in 1890 there were 3 cases, and so the annual number rises until 1895, when there were 17 cases. Then it sinks again until, in 1902, there were but 9 cases, and in the first six months of 1903 but 2 cases. These facts suggest that fifteen years ago gastric dilatation was infrequently recognized, and that in recent years the true cause of the dilatation has been ascertained and the cases recorded under a more accurate diagnosis than "dilatation" merely.

The average stay of these patients in the hospital was three weeks; the longest individual stay was eight months. It is my purpose to follow up all of these cases and ascertain their subsequent histories; but from the hospital records, at the time of discharge, we learn the following facts:

Of the 122 cases, 2 died in the hospital; 17 left the hospital without relief of symptoms; 98 had improvement or partial relief of symptoms; and only 5, or about 4%, were discharged symptomatically "well" (one of these returned for further treatment). Of these 122 cases, 87 or 71.3% were males; 35 or 28.6% were females.

These facts suggest the possibility, contrary to the usually accepted figures, that gastric ulcer, the commonest cause of pyloric obstruction, may be more frequent in males than previous statistics have stated.

The total number of cures at the time of discharge from the hospital is surprisingly small. It remains to be seen what improvement took place in the 98 cases who left the hospital, relieved only; what their length of life may have been, and what the cause of death.

Dr. E. P. Joslin: About the medical results of these cases of stasis we know that some of them will improve, but many will not. I have only two stasis cases of marked severity which I have followed for two years or longer that are still all right. All the other cases I have had have been turned over to the surgeon.

[2] Owing to lack of time this was not read at the meeting.

## Recent Literature.

*A Practical Treatise on Medical Diagnosis for Students and Physicians.* By John H. Musser, M.D., Professor of Clinical Medicine, University of Pennsylvania; Physician to the Philadelphia and the Presbyterian Hospitals, etc., etc. Fifth edition, revised and enlarged. Illustrated with 395 wood cuts and 63 colored plates. Philadelphia and New York: Lea Brothers & Co. 1904.

We have already noticed Dr. Musser's Medical Diagnosis several times, and have only to add to words of previous commendation the statement that the present edition brings the book thoroughly abreast of the latest investigations in the field to which it is devoted.

The rapidly recurring editions testify to a deserved popularity among students and physicians.

THE BOSTON

# Medical and Surgical Journal.

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## THE ALLEGED PHYSICAL DEGENERATION OF THE ENGLISH NATION.

Notwithstanding the fact that the expectation of life has materially increased in England, as shown by the Registrar-general's figures, and by those of several medical officers of health in English towns,[1] it is still urged that the standard of health has deteriorated, and that the proportion of weakly persons surviving to adult life is greater than formerly. Newsholme has answered this statement in his comments upon the Brighton Life Table for 1881–90, and now after ten years more of experience in public health work, he replies to these propositions more definitely as follows:[2]

The principal reasons which have led so many to consider that the physical condition of the English population is deteriorating are the following:

1. The survival of a large number of adults, who would formerly have died of infectious, including tubercular, diseases, or of other diseases which now yield to medical and surgical skill.

2. The alleged increased stress of modern life.

3. The fact that the English population has become increasingly urban.

4. Industrial have in a large measure superseded agricultural occupations, and home industries have given place to those carried on in factories and workshops.

"1. It had been claimed that the operation of the law of the survival of the fittest had been impeded by the work of public hygiene, with results unfavorable to the health and vigor of adult life. This argument assumes that weakly children are more prone to attack by infectious diseases than robust children, an assumption which experience does not confirm. These diseases appear to attack the majority of children, weakly or robust, who are exposed to their infection. It might be reasonably expected, therefore, that with a decrease in the total deaths from infectious diseases, there would have been at least a corresponding decrease in the number of those who are left maimed by an attack of one of these diseases to survive to adult life. The weeding out of weakly lives, caused by the greater mortality among weakly children suffering from an infectious disease, is, in my opinion, counterbalanced by the greater number of children made weakly in former times by non-fatal attacks of an infectious disease.

"So far as consumption is concerned," Newsholme also says, "it may now be affirmed that in all probability any possible national deterioration caused by the survival of tubercular persons is at least counterbalanced by the improved health and physique of that large portion of the population who formerly would have become tubercular, but now remain free from this disease, as well as of the general mass of the population.

"2. *Stress of modern life.* — It is doubtful if increased strain exists in the community as a whole. Each adult, as he becomes year by year more deeply involved in the battle of life, comes to the conclusion that the general strain of life in the community is increasing, forgetting that the same causes operated as life advanced in previous generations. There is reason for thinking, with Dr. Pye-Smith, that much of the evil ascribed to 'over-pressure' is really due to over feeding and drinking.

"Assuming, however, that over-pressure exists in certain stations of life, *e. g.*, among city merchants, medical men, etc., it cannot be said to exist generally among professional men. Clergymen, lawyers and civil servants are, as classes, long-lived.

"Even assuming that over-pressure exists throughout the whole of the professional and mercantile classes, these do not form the mass of the community. The majority of the population belongs to the wage-earning classes, and the conditions of these classes will therefore necessarily have the greatest influence on the total result. Sir R. Giffin[3] shows that the wages of the agricultural laborer have increased, while his hours have decreased. In many trades, the workman gets from 50 to 100 per cent more wages than fifty years previously for 20 per cent less work. He sums up as follows: 'While the workman's wages have advanced, most articles he consumes have rather diminished in price, the change in wheat being especially remarkable, and significant of a complete revolution in the condition of the masses. The increased price in the case of one or two articles — particularly meat and house

[1] Annual reports of the Registrar-general of England and Wales. Similar figures for the population of Massachusetts were published in the Thirtieth Report of the State Board of Health for the year 1898, pp. 799–827.

[2] The second Brighton Life Table, based on the mortality experience of the ten years, 1891–1900, by Arthur Newsholme, M.D., Medical Officer of Health of Brighton, England.

[3] The progress of the working classes in the last half century. Inaugural address Royal Statistical Society.

rent — is insufficient to neutralize the general advantages which the workman has gained."

The author presents figures to show that the reduction of the death rate from phthisis in England has occurred almost *pari passu* with the reduction in the price of wheat. More than this, the English population has increased its standard of comfort and has become able to afford, not only more abundant, more varied and more wholesome food, but is also better clad and better housed than it has ever been in the past. It cannot, in short, be maintained, with any approximation to fact, that the majority of the English population live now under conditions of greater strain and stress, or that poverty is more prevalent than formerly.

In the tendency to rapid increase of urban populations, the author does not find evidence of national degeneracy of a decided character, for while the chances of acquiring infection are greater in town than they are in the country, this fact is balanced by the improved conditions under which indoor occupations are now conducted as compared with those of earlier periods.

The improvement in the expectation of life in recent years may be attributed to various causes; chiefly to the increased wealth and resulting comfort of the population, and the immense improvements in sanitation during the past thirty years.

Infant mortality has increased, not only in England but also in many American cities, and it is here that radical improvement may be attained by the introduction of measures designed to improve the methods and material used for infant feeding, since the artificial feeding of infants must be held responsible for a large share of infant mortality. Other means may be found in the establishment of day nurseries in large manufacturing districts and the improvement of sanitary conditions in the homes of the working classes.

## BOSTON'S DEPENDENTS AND DELINQUENTS.

In the appendix of the monthly bulletin of Boston's Statistics Department for April and May, 1904, are given certain interesting facts regarding the city's dependents and delinquents for the year 1903. The statement is made that these classes which are a public charge are so mixed that a division into those whom the city supports and those whom it only aids is extremely difficult. Aid, for example, is given to patients who pay, in the city and insane hospitals, but naturally such patients can in no sense be classed as paupers. Leaving such out of the account, there is a large class supported temporarily or permanently by the city. These include residents of pauper institutions, prisoners in city institutions, and Boston patients in the hospitals for consumptives, for epileptics and for dipsomaniacs. As a convenient classification those persons who received aid from the city or were supported by it for the whole or a part of 1903 are divided into sick, poor and criminals, although naturally such discrimination cannot be absolutely maintained. Estimating the population of Boston, Dec. 1, 1903, as 606,566, it appears that 9,537 individuals were supported or aided by the city on that date. Of this latter number 6,767 were in charge of institutions and 2,770 were in the receipt of permanent aid from the Soldiers' Aid Department. The proportion borne by the various classes of persons aided in December to the general population is given as follows: "Total cared for, 20,877 or 3.44%; sick, 3,659 or .60%; poor, 13,994 or 2.31%; criminals, 3,224 or .53%. Of the sick, 1,667 or .27% of the total population were in hospitals for general diseases, and 1,982 or .33% in hospitals for brain diseases. Of the total number cared for in the month, 11,572 or 1.91% of the population had indoor and 9,305 or 1.53% outdoor relief. Over 50,000 out-patients — not included in our tables — received medical aid from the Boston City Hospital."

Such figures and statistics are certainly illuminating. It is well for us from time to time to realize how widely disseminated the charity work of a great city becomes as its various departments develop. Classification is naturally in such matters difficult and at times impossible. It is, nevertheless, desirable to appreciate the fact that very many of those classed as poor or dependent without other reason are actually sick and should, as our methods of classification become more exact, be so recognized. Particularly must we protest against the tendency to regard the chronically infirm as totally distinguished from the more acutely ill. The definition of disease should be formulated, and all persons falling under this category should be regarded by the city authorities as sick and should receive the privileges accorded to this class.

## SUICIDE IN NEW YORK.

According to the reports of the Health and Police Departments the present year is likely to break all records for the number of suicides com-

mitted in New York City. During the first six months of 1904 there were over 450 suicides, a number which indicates a rate for the year of 224 to the million of inhabitants, as against 215 in 1903, 187 in 1902, 206 in 1900, and 150 (in the older city of New York) in 1890. If the relative proportion of suicides in the first half of the year is continued in the second, there will be over 900 in 1904, as against 806 in 1903, 772 in 1902, and 743 in 1900. The number of persons who have attempted suicide unsuccessfully during the half year just ended shows a similar increase over 1903, the figures being 264 for the current half year, as against 231 for the same period last year. At the same time, the suicide rate in New York is still considerably below that in any of the large European cities. The steady and noticeable increase in the suicidal tendency is no doubt to be ascribed principally to the increasing density of the local population and the rapidly growing complexity of metropolitan life, with its constant influx of ignorant foreigners but poorly equipped for a new struggle for existence. Almost two thirds of these suicides are among the foreign born. One fourth are Germans, and in commenting on this a prominent officer of the Health Department attributes it largely to the fact that, according to his observation, a considerable number of the Germans do not profess any established religion and have no particular scruples against taking their own lives. Also they are a "temperamental" people, highly sensitive to adversity. The French are also much addicted to suicide, but they form proportionately so small a part of the city's population that the total number of their suicides is small. The Irish, while constituting almost as large an element in the population as the Germans, do not furnish one third so many suicides. In the first quarter of 1904, 70 were natives of the United States, 58 of Germany, and 16 of Ireland. In the same period the principal means employed for self-destruction were as follows: Poison, 99 cases; shooting, 42; gas, 35; hanging, 20. Two fifths of those committing suicide now use carbolic acid, the reasons for this being assigned as its cheapness, its effectiveness and promptness, and the ease with which the drug can be obtained. A much larger proportion of men than women commit suicide, and the percentage of men appears to be increasing. During the past three years women have furnished only 27% of the suicides in New York, while in 1896 the percentage was over 39. Of those who attempt suicide but do not succeed a larger proportion are women, about two fifths of the attempted suicides being among females.

## REPORT OF GOVERNMENT LABORATORIES IN MANILA.

We are glad to call attention to the second annual report of the superintendent of Government Laboratories in the Philippine Islands, taken from the fourth annual report of the Philippine Commission. The volume comprises 622 pages, and is most elaborately and attractively illustrated by numerous full-page half-tones. A glance at Dr. Freer's report discloses the increasing work which these laboratories are accomplishing in the determination of the innumerable questions presented by the diseases of the Philippines. Considering the very short time during which work of a scientific sort has been attempted, it is clear that a beginning has been made which must develop into most important results. Among other things which show the development of the work as a whole is the growth of the library which has been naturally somewhat retarded, owing to the difficulty of getting complete files of the various journals needed. At present the library boasts a large number of periodicals, including back numbers of the more important scientific publications in medicine and many fields of chemistry. In addition to these, subscriptions to foreign scientific and medical periodicals bring all the recent work of value within reach of the laboratories. Periodicals in the field of industrial chemistry and veterinary medicine are particularly needed for obvious reasons. The botanical laboratory, recently started, makes also a further demand on current literature. It is hoped that in the future this library, so auspiciously started, will be in general used by educational institutions throughout the Philippine Islands, and particularly will it be of advantage to native students who need the contact with modern scientific methods which such literature brings. As the report says, "An increasing number of Philippine students are now being educated in the United States, and it would indeed be a misfortune if upon returning to their native country they should be cut off from the literature which is most important in continuing their mental growth." It is quite impossible in the space at our command to do more than call attention to the contents of this really interesting volume. It will well repay a careful perusal by men engaged in widely diversified branches of scientific research.

## MEDICAL NOTES.

Hospital for Cancer in Philadelphia. — It is reported that plans have been formulated for the erection of a large hospital in Philadelphia to be devoted to the study of cancer and allied disease.

Summer Courses in Paris. — It is announced that for the brief period from September 19 to October 1, various courses and practical medical demonstrations will be given at the Hôtel des Sociétés Savantes and in several hospital services in Paris. A large number of subjects are offered, and much of the teaching is done at certain of the well-known Paris hospitals.

Sanatorium for Tuberculosis in Denver. — A sanatorium for the treatment of tuberculosis, built by Mr. L. C. Phipps in memory of his mother, has recently been opened. The location is at a height of more than five thousand feet above sea level, with ample grounds. At present the institution is capable of accommodating one hundred. It is intended for curable cases.

Plague in Teheran. — It is reported that plague is active in Teheran, with a mortality reaching many hundreds daily. Europeans are said to be abandoning their property and leaving the region, and the Russian government has ordered the closing of the frontier to prevent the importation of the disease.

Death of an English Physician from Plague. — The death from bubonic plague of Dr. Noel Unsworth, assistant inspector of the Sanitary Department of the Egyptian Government, is announced. Dr. Unsworth had previously been employed in Egypt during the cholera epidemic in 1902, and more recently was on plague duty in the Delta. His illness lasted but three days.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Aug. 3, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 30, scarlatina 11, typhoid fever 24, measles 16, smallpox 0.

Quarterly Meeting of the Massachusetts Association of Boards of Health. — The quarterly meeting of the Massachusetts Association of Boards of Health was held in Gallup's Island, Boston Harbor, July 28. Dr. Theobald Smith read a paper on the "Etiology of Leprosy," in which he discussed the history of the disease as well as our present knowledge of the subject. Dr. S. H. Durgin, Dr. Paul Carson, port physician, and Dr. H. W. Hill were some of those who took part in the discussion which followed on the general subject of leprosy.

Practical Health Exhibition. — A practical exemplification of how to live has recently been given on the grounds of a club in one of the poorer sections of Boston. The exhibition was held under the auspices of various workers for the poor, among which the Association for the Relief and Control of Tuberculosis and the Health Education League were conspicuous. An attempt was made to demonstrate objectively various matters pertaining to health and proper methods of life. In one part of the grounds food was shown both in its natural and prepared states, and also what might be bought in the way of nutritious food for ten cents and lesser sums of money. An attempt was also made to illustrate certain chemical principles in relation to food. Elsewhere clothing for babies was illustrated graphically by two large dolls. The tuberculosis exhibit consisted of photographs of the State Sanatorium at Rutland and also the Sharon Sanatorium, with charts graphically representing the stages and spread of the disease. Outdoor treatment was illustrated by a tent and its appurtenances. Other exhibits were of a like practical nature, and addresses were also made by men prominent in charitable and hygienic work.

## Obituary.

### SIR JOHN SIMON, K.C.B., F.R.S., D.C.L., LL.D.

John Simon, born in 1816, became at the early age of twenty-four senior assistant surgeon at King's College Hospital, where, and at Greenwich, he studied for his degree. Two years later he wrote an essay which attracted wide attention, on "Observations regarding Medical Education." "His physiological essay on the "Thymus Gland," in 1847, gave him still more reputation, and after the publication of his "Aims and Philosophic Methods of Pathological Research" in 1847, he was appointed in the same year to the lectureship on General Pathology at St. Thomas's Hospital, where he endeared himself to the students as the personal friend and adviser of every one of the workers there.

He was one of a remarkable group of young men, including Edwin Chadwick, William Farr and the sanitary engineers, Lindley and Rawlinson, who early became interested in sanitary science, each of whose great usefulness measured nearly or quite half a century, four of whom received the coveted K.C.B., and to all of whom

civilization and humanity owe an immense debt of gratitude for the stupendous work which they did in general sanitary reform.

Farr's wonderful series of reports on vital statistics, begun in 1838 and continued for forty years, and Chadwick's masterpiece, a "Report on the Sanitary Condition of the Laboring Population of Great Britain," together with the wide-reaching legislation from 1837 to 1848, furnished the facts and the authority and gave the opportunity which Simon seized with that far-seeing wisdom, without which the laws might easily have remained without full effect.

He was health officer of the city of London from 1848 until 1855, when he accepted a similar position in the General Board of Health, the duties and powers of which in 1858 were transferred to the Lords of the Privy Council whose chief medical officer Simon became and remained until 1876. With his resignation the office lapsed. He was also, until 1876, Chief Medical Officer of the Local Government Board, created in 1871, in which he so thoroughly organized his department that it has continued in his methods ever since.

In the twenty-eight years of Simon's activity as a public officer his reports covered the whole range of public health with such clearness and force as to reach all classes. As edited and published by the Sanitary Institute of Great Britain in 1887 their eleven hundred pages are sufficient testimony to their paramount importance.

Simon was president of the Royal College of Surgeons in 1878 and of the Royal Society in 1879, and he held the highly-prized membership in the Athenæum Club. He was honorary member of various societies at home and abroad, and received honorary degrees from Oxford, Cambridge, Edinburgh, Munich and Dublin. He had been president of the Pathological Society, senior surgeon at St. Thomas's Hospital and member of the General Medical Council.

To great personal charm, Simon added a deep interest in people, great wisdom in selecting men for their work, marvelous perseverance and industry, surprising tact in dealing with the traditions and vested interests of an intensely conservative community, a delightful and forceful use of language which was both attractive and convincing, and a broad general culture.

After his resignation from active work at the age of sixty, he devoted himself partly to promoting measures of public utility in his chosen life-work, but more especially to art and general literature in which he had always been interested, and in parts of which, especially as regards the Orient, he became an authority.

His address before the International Medical Congress in 1881 on "Experiment as a Basis of Preventive Medicine" contained one of the strongest arguments in favor of vivisection.

Simon's generosity in giving full praise where it was due, to his assistants and to others, was a marked feature in his character, and enabled him to get the most efficient co-operation in all his wide and varied activities. In his "English Sanitary Institutions," a scholarly work of five hundred pages, published in 1900, he says that the modern demand for sanitary reform may be said to have begun in England in 1838, and that the successes which it gained in the next ten years were of so important a character that the story should be told in detail, adding, with characteristic self-effacement, "the story of the ten years is above all an account of the zealous labours of one eminent public servant, the present Sir Edwin Chadwick." During the succeeding quarter of a century Simon was easily the foremost power and influence in preventive medicine, and the monuments to his serviceable labors are to be found over Europe as well as throughout Great Britain and this country.

## Miscellany.

### OPERATION FOR PERFORATED GASTRIC ULCER.

According to the *Lancet*, the mortality after operation for perforation of a gastric ulcer appears to be diminishing. Mickulicz was the first to operate for this condition in 1880, but it was not till twelve years later, in 1892, that we have any record of a successful case, when Kriege sutured a perforation and the patient recovered. At first the mortality of recorded cases was very high, and in all probability the mortality of all cases treated by operation was still higher, for unsuccessful cases are never so readily recorded as the successful. Several factors have concurred in lowering the death-rate. Experience has taught us the best methods of operating, and practice has enabled us to operate more quickly, but probably the chief factor in lessening the mortality is the fact that cases are operated on at an earlier period after perforation, and as the length of the interval between the perforation and operation is the chief element in the prognosis, we must look upon any reduction of this interval as a potent agent in reducing the death-rate. Practitioners are more ready in invoking the aid of the surgeon now that they are acquainted with the value of early surgical treatment, and the public more readily submit to operation. It is not improbable that the mortality in hospital practice after operation for gastric perforation is less than in private practice, for in hospitals there is much less delay in preparing for an operation than is generally necessary when an operation has to be performed in a private house. In the present issue of the *Lancet* are recorded the notes of nine consecutive cases of operation for perforated gastric ulcer at St. George's Hospital. Eight of these patients recovered, and the only death occurred in a patient in whom perforation had probably taken place forty-eight hours previously, and who had had to travel about one hundred miles before operation. These results are excellent and reflect credit on the surgeons who performed the operations.

## RECORD OF MORTALITY
FOR THE WEEK ENDING SATURDAY, JULY 23, 1904.

| Cities. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid Fever. | Diarrheal Diseases. |
| New York . . | 3,908,644 | 1,726 | 868 | 47.44 | 6.08 | 1.45 | .75 | 32.73 |
| Chicago . . . | 2,021,086 | 538 | 213 | 38.66 | 4.65 | .74 | 1.57 | 21.93 |
| Philadelphia | 1,407,968 | 482 | 193 | 38.38 | 6.02 | .80 | 2.27 | 23.24 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 250 | 108 | 40.00 | 2.00 | .40 | 2.40 | 25.20 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 161 | — | 43.47 | 5.59 | 2.48 | 6.83 | 24.22 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 88 | 36 | 40.90 | 2.27 | — | — | 31.08 |
| Boston . . . | 617,950 | 195 | 71 | 32.30 | 7.18 | 1.54 | 2.05 | 14.87 |
| Worcester . . | 136,925 | 28 | 13 | 28.57 | 3.57 | — | — | 17.85 |
| Fall River . . | 119,349 | 59 | 41 | 44.07 | — | — | — | 35.60 |
| Lowell . . . | 104,402 | 62 | 31 | 37.09 | 6.45 | — | 3.22 | 20.96 |
| Cambridge . | 100,998 | 23 | 7 | 43.48 | 8.70 | — | — | 21.74 |
| Lynn . . . . | 73,875 | 23 | 6 | 26.09 | — | 4.35 | — | 4.35 |
| Lawrence . . | 72,348 | 30 | 15 | 46.67 | 3.33 | — | — | 33.33 |
| Springfield . | 72,020 | — | — | — | — | — | — | — |
| Somerville . | 70,413 | 10 | 3 | — | — | — | — | — |
| New Bedford | 68,863 | 20 | 11 | 50.00 | 5.00 | — | — | 45.00 |
| Holyoke . . . | 50,538 | 17 | 10 | 47.05 | 1.17 | — | — | 41.17 |
| Brockton . . | 46,601 | 11 | 4 | — | — | — | — | — |
| Newton . . . | 39,310 | 4 | 1 | 25.00 | — | — | — | 25.00 |
| Haverhill . . | 39,061 | 13 | 3 | 15.40 | 7.70 | — | — | 7.70 |
| Malden . . . | 37,205 | 10 | 3 | 30.00 | 10.00 | — | — | 20.00 |
| Salem . . . . | 37,188 | 22 | 7 | 31.81 | 9.09 | — | — | 22.72 |
| Chelsea . . . | 36,499 | 12 | 4 | 16.67 | — | — | — | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 17 | 5 | 11.76 | — | — | — | 11.76 |
| Everett . . . | 30,209 | 6 | 2 | 16.67 | — | — | — | — |
| North Adams | 29,201 | 7 | 3 | 28.60 | — | 14.30 | — | 14.30 |
| Quincy . . . | 26,798 | 6 | 1 | 50.00 | — | — | 16.67 | 16.67 |
| Gloucester . | 26,121 | 5 | 1 | — | — | — | — | — |
| Waltham . . | 25,797 | 9 | 1 | — | 11.11 | — | — | — |
| Brookline . . | 23,576 | 3 | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | — | — | — | — | — | — | — |
| Medford . . | 21,956 | 6 | 2 | 50.00 | — | — | — | 33.33 |
| Chicopee . . | 21,692 | 10 | 2 | 10.00 | 10.00 | — | — | — |
| Northampton | 20,314 | 4 | 0 | 25.00 | — | — | — | — |
| Beverly . . . | 15,807 | — | — | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 5 | 2 | 20.00 | — | — | — | 20.00 |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | — | — | — | — | — | — | — |
| Newburyport | 14,478 | 5 | 2 | 20.00 | — | — | — | 20.00 |
| Woburn . . . | 14,315 | 0 | — | — | — | — | — | — |
| Melrose . . . | 13,819 | 5 | 1 | 40.00 | — | — | — | — |
| Westfield . . | 13,809 | 11 | 7 | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 4 | 1 | 50.00 | — | — | — | 25.00 |
| Revere . . . | 13,609 | 2 | — | — | — | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 3 | 2 | — | — | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 1 | 0 | 100.00 | — | — | — | — |
| Weymouth . | 11,350 | 0 | — | — | — | — | — | — |
| Plymouth . . | 11,139 | 3 | — | — | — | — | — | — |

Deaths reported, 3,896; under five years of age, 1,680; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,621; acute lung diseases 206, consumption 389, scarlet fever 9, whooping cough 17, cerebrospinal meningitis 27, smallpox 1, erysipelas 4, puerperal fever 12, measles 17, typhoid fever 57, diarrheal diseases 1,045, diphtheria and croup 43.

From whooping cough, New York 5, Chicago 3, Philadelphia 2, Pittsburg 4, Lawrence 2, Melrose 1. From measles, New York 7, Chicago 2, Philadelphia 2, Baltimore 1, Pittsburg 1, Boston 1, Worcester 1, Lowell 2. From scarlet fever, New York 3, Chicago 1, Philadelphia 1, Baltimore 3, Pittsburg 1. From cerebrospinal meningitis, New York 22, Baltimore 1, Pittsburg 1, Worcester 1, Fall River 1, Marlborough 1. From erysipelas, New York 3, Chicago 1. From typhoid fever, New York 13, Chicago 9, Philadelphia 11, Baltimore 6, Pittsburg 11, Boston 4, Lowell 2, Quincy 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending July 9, the death-rate was 13.5. Deaths reported 3,948; acute diseases of the respiratory organs (London) 52, whooping cough 109, diphtheria 40, measles 182, smallpox 6, scarlet fever 32.

The death-rate ranged from 3.2 in Hornsey to 21.4 in Huddersfield; London 12.9, West Ham 12.8, Brighton 12.8, Southampton 12.1, Plymouth 16.0, Bristol 9.6, Leicester 10.7, Nottingham 13.2, Liverpool 18.2, Bolton 16.9, Manchester 17.9, Salford 16.2, Bradford 15.0, Leeds 14.8, Hull 13.8, Sheffield 13.7, Cardiff 7.7, Rhondda 14.5, Wigan 12.5, Merthyr Tydfil 15.8, Tottenham 6.9, Hanley 13.9.

## METEOROLOGICAL RECORD.

For the week ending July 23, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| Date | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. . 17 | 29.92 | 73 | 80 | 66 | 65 | 64 | 64 | N | S | 8 | 10 | C. | F. | 0 |
| M. 18 | 29.92 | 73 | 78 | 68 | 67 | 72 | 70 | N | S | 5 | 9 | F. | C. | 0 |
| T. . 19 | 29.85 | 76 | 87 | 65 | 74 | 72 | 73 | S E | S | 2 | 12 | C. | C. | 0 |
| W . 20 | 29.76 | 79 | 88 | 70 | 61 | 40 | 50 | N W | N W | 10 | 9 | C. | C. | 0 |
| T. . 21 | 29.86 | 75 | 84 | 66 | 48 | 52 | 50 | W | N | 12 | 9 | C. | C. | 0 |
| F. . 22 | 30 01 | 67 | 72 | 62 | 60 | 82 | 71 | E | E | 10 | 8 | F. | R. | T. |
| S. . 23 | 30.02 | 61 | 63 | 59 | 94 | 94 | 94 | E | N | 22 | 13 | R. | R. | .36 |
| ☞ | 29.91 | | 79 | 65 | | | 67 | | | | | | | .36 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING JULY 28, 1904.

Glennan, A. H., assistant surgeon-general. Granted leave of absence for fifteen days from August 1. July 22, 1904.

Irwin, Fairfax, surgeon. Granted leave of absence for one month from August 15. July 26, 1904.

Kalloch, P. C., surgeon. Granted leave of absence for twenty-two days from August 1. July 28, 1904.

McIntosh, W. P., surgeon. To assume temporary charge of Portland (Me.) Quarantine, in addition to other duties, during the absence on leave of Surgeon P. C. Kalloch. July 28, 1904.

Guiteras, G. M., surgeon. Bureau letter of July 11, 1904, granting Surgeon Guiteras leave of absence for seven days from July 14, 1904, amended to read four days only. July 26, 1904.

McMullen, John, passed assistant surgeon. Granted leave of absence for one month from August 5. July 28, 1904.

Glover, M. W., assistant surgeon. Bureau telegram of July 13, granting Assistant Surgeon Glover leave of absence for seven days on account of sickness, amended to read five days from July 12. July 25, 1904.

Ward, W. K., assistant surgeon. To proceed to Bridgeton, Barbadoes, B. W. I., for duty in office of the United States Consul. July 12, 1904.

Stiles, Ch. W., zoologist. Detailed to represent Service at Sixth International Congress of Zoology at Berne, Switzerland, August 14-19. July 22, 1904.

Seavey, L. T., acting assistant surgeon. Granted leave of absence for fourteen days from August 8. July 27, 1904.

Smith, Emma F., medical inspectress. Granted leave of absence for thirty days from July 1. July 22, 1904.

### BOARD CONVENED.

Board convened to meet at Washington, D. C., August 1, 1904, for the physical examination of an Officer of the Revenue Cutter Service, and an applicant for admission into said Service. Detail for the board: Assistant Surgeon General G. T. Vaughan, Chairman. Assistant Surgeon A. J. McLaughlin, Recorder.

### PROMOTION.

L. C. Spangler, pharmacist of the third class, promoted to be pharmacist of the second class, effective May 28. July 25, 1904.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JULY 30, 1904.

F. M. Furlong, passed assistant surgeon. Detached from the Naval Museum of Hygiene and Medical School, Washington, D. C., August 5, and ordered to the "Chicago."

W. G. Farwell, assistant surgeon. Ordered to the naval recruiting rendezvous, Boston, Mass.

J. F. Murphy, assistant surgeon. Ordered to the "Hancock," temporarily.

G. H. Barber, surgeon. Ordered to the "Hist," and to additional duty at the naval training station, Newport, R. I.

C. D. Cather, assistant surgeon. Ordered to the naval hospital, New York, N. Y.

# Original Articles.

## OPERATIONS ON THE STOMACH, WITH REPORT OF CASES.*

BY JOHN C. MUNRO, M.D., BOSTON,

*From the Surgical Clinic, Carney Hospital, Boston, Mass.*

The bulk of the work reported here has been done within the last year by Dr. Bottomley and myself at the Carney Hospital; but I have included all of my own cases of operation upon the stomach from the very first, although the earlier operations were done with much less confidence in technic and with a bad prognosis in many instances. Frequently patients were turned over to surgical care after having tried everything in the way of internal medication, with the feeling in the medical attendant, the surgeon and the patient, that the knife was offered as a last resort. The earlier cases were, so to speak, filtered through medical hands. Latterly this has been done away with to a certain extent, because we are able to control our own clinic much more independently, and the patients are referred to us directly for the decision whether surgery can offer relief or not. If we did not have the convincing end results of surgeons of large experience, like Mayo, Mikulicz, Robson and others, I should hesitate strongly about reporting so many recent cases. We do know, however, from the experience of these surgeons that in cases of chronic ulcer, mechanical stasis and cancer, operation offers the best outlook at the minimum expense, and I feel confident that a good proportion of our temporary successes will abide, provided we have utilized properly the technic that has proven of benefit up to the present time. Time is necessary to establish the value of any method of treatment, and in the earlier applications over-enthusiasm and ill-trained judgment serve to weaken the virtues of any form of therapeutics. We must be willing to modify and change our surgical treatment of ulcers, dilatations and carcinomata of the stomach as the need is demonstrated. But meanwhile surgeons must continue sifting and rejecting, reporting and analyzing their failures as well as successes, just as they still do with their cases of appendicitis, gallstone, hypertrophied prostate, etc.

Last year, in a short plea made before the Medical Section of this Society, I begged that there should be a closer cooperation between the medical attendant and the surgeon, early in the progress of these cases; that for the patient's benefit, if for nothing else, he should be allowed to have an opinion from the surgical point of view. I am happy to state that I believe this plea has borne fruit in spite of the fact that our malignant cases still come too late for anything more than temporary relief.

I do not feel that surgery, or at least my surgery, has more than begun to solve the problem in the treatment of stomach diseases, and a perusal of my cases will convince you that there is much that has discouraged me throughout; but I believe a closer analysis will not place the odium for all our failures at the surgical door. In reporting the unsatisfactory results I have attempted as impartially as possible to fix the blame — if the term is not too harsh — where it belongs, whether on my own shoulders, or those of the reluctant medical attendant, or on the attitude of the laity in general towards seeking surgical relief. In spite of a case now and then that does not prove as satisfactory as we should like, both Dr. Bottomley and I feel that we are steadily nearing the point where we can judge what cases are to be discouraged as useless surgical risks and what cases can be assured of temporary or permanent relief. The risk from operation is lessening with experience and with selection of cases earlier in the course of the disease, until now I firmly believe that we can offer at least a gastro-enterostomy with no more risk of life than in the case of an interval appendix. I will frankly acknowledge that in several instances I have limited operation to a gastro-enterostomy, through timidity, rather than undertake a more radical procedure. The feeling of this community has been so strongly opposed to surgery of the stomach that it has seemed of the utmost importance, first of all, to establish firmly in the mind of the medical confrere that his stomach cases will not die under operation. If we can advance a little farther and establish in the mind of the general practitioner that the risk to life in any of the accepted types of operation is small enough to be disregarded when placed in the balance with the risks and the suffering that go with the so-called conservative treatment, we shall feel that the work has not been in vain. Moreover, the pathology of the various gastric lesions, as Mayo and others have pointed out, must be learned in the living at operation and not on the cadaver. All the time that we have been, so to speak, feeling our way, we have observed and noted the various conditions found at operation, hoping that eventually we can associate clinical symptoms with the operative findings.

It is a serious and embarrassing commentary that scarcely a single case of carcinoma in our series has sought, or been driven to seek, surgical aid until it was too late to attempt radical cure. There is no valid excuse nowadays with the clear-cut, splendid work of men like the surgeons named above, for the medical specialist to turn over his malignant cases, when far advanced in disease, with the apology that the laboratory failed to demonstrate a malignant process, at the time when an exploratory operation, as harmless as any major operation can be, would have definitely and accurately established a diagnosis.

It has been pathetic, in some cases, to have patients withheld from operation by the supposed absence of cancer, because of the presence of hydrochloric acid, when a calm consideration of the clinical symptoms would and should have indicated some serious lesion.

* Read before The Massachusetts Medical Society, June 7, 1904.

In many other cases what can we say? A patient is treated for months or years for a mechanical obstruction, by lavage, medicines, diet, etc., never with more than partial, temporary relief, only to slowly and insidiously develop a malignant growth, to be turned over to the surgeon long after it is too late, robbed of his money, strength, time and courage. Then if operation is done as a last resort and the patient dies, surgery receives all the blame.

The bulk of patients seeking aid of the medical practitioner and of the stomach specialist are medical, and not surgical, from first to last. These are the dyspeptics from alcohol, dietary errors, worry, etc., and they can all be cured far better in any way than by surgery. When we consider the ulcers, acute and subacute, it is probable that a good proportion can be, and are, cured by proper medical care. When, however, we come to relapsing or chronic ulcers I believe that, in the long run, surgery will offer a better outlook with less suffering, time and expense than can be obtained by prolonged internal treatment, limited diet, etc. In the grave cases of hemorrhage, the results of men of larger experience, like Moynihan and others, indicate that in all probability surgery can do more, and with greater saftey, than the time-honored treatment so much used at present. Of perforations, there is no room for argument in the matter of treatment. The possibility of perforation of both gastric and duodenal ulcers should be much more before the general practitioner's mind when treating patients with acute abdominal pain.

I have carefully avoided discussing technic in reporting the cases. The best method applicable to each individual case is far from settled, and it cannot be settled satisfactorily for many years. The internist must be content to let differences in methods be settled by the surgeon, meanwhile resting assured that, although there is much remaining to satisfy him, the simplification and the results are as steadily improving as is possible, and the results as shown in relief of suffering are steadily growing more satisfactory. In malignant cases we have used the Murphy button for the most part, but in other cases, where speed is of less importance, the method with clamps and suture as published by Moynihan has given satisfaction. Gastroduodenostomy by Finney's method we have liked also, but as we grow more proficient in our technic, and what is of more importance, as soon as the general practitioner realizes that stomach surgery is not as serious or fatal as the textbooks describe, I believe that the radical operation will be much more in vogue where now we resort to a simple anastomosis. Indeed, I am convinced of this in spite of the occasional discouraging failures.

No attempt has been made to report the chemical analyses of our cases. In quite a number careful and elaborate examinations were made, while in others only simple tests were used. Until we can collect a large series of several hundreds of analyses made by the same methods and under practically the same guidance, I believe that the discussion of tests made, as in our patients, by many different examiners and under very varying conditions, is only futile. I have tried, first of all, to demonstrate the clinical history just as the general practitioner would obtain it, testing the size, motility and acidity of the stomach, which can be done without elaborate apparatus. By comparing these clinical symptoms and the clinical histories (brief though they may be, but notwithstanding, so often very poignant) with the condition found at operation, I believe we can form some judgment in future as to the actual condition of the viscera before operation.

The cases that have but little interest to us in this report consist of 4 operations for stricture of the esophagus, 3 of which were carcinoma, and 1 a gumma. Two patients were operated on for perforating wound of the stomach, with one recovery. Two cases were explored, one for a supposed foreign body and the other was a man of forty-six who had had a gastro-enterostomy done by Dr. S. J. Mixter, with a McGraw ligature, in August, 1902. Following this operation he was well for six weeks, when his pain and vomiting returned. Often he would go for a week without vomiting, then would throw up food that he had eaten twenty-four hours previously. On the supposition that the gastro-enterostomy opening had closed I reopened the abdomen and found an edematous condition of the omentum. On the stomach on the anterior surface the artificial opening was clear and easily admitted the finger. The stomach had been drawn down into a funnel shape and was apparently draining perfectly into the jejunum. There was no sign of constriction or of impaired drainage. The gall bladder was covered with adhesions and was not palpable. Exploration elsewhere was negative. As there seemed to be no indication for further interference the abdomen was closed.

Two cases were admitted with an undoubted clinical history of gastric ulcer, but both refused operation and they have not been heard from since.

Of the malignant cases, ten were explored and the condition was found too far advanced to allow radical operation or there was not enough indication of pyloric stenosis to warrant a gastro-enterostomy. These cases were closed at once and were discharged from the hospital as quickly as possible.

In detail they are as follows:

No. XI. Male, fifty-two. Referred by Dr. V. Y. Bowditch. Dyspepsia for a year, with occasional attacks of severe griping pains, for which morphia was given. No vomiting, but some relief from eructation. Test breakfast at the hands of a stomach specialist showed no evidence of carcinoma. He was sent abroad for his health, but derived no benefit from the trip, vomiting more or less while he was in Europe, and at that time he noticed retained food in the vomitus. He then regularly produced vomiting

to relieve his stomach of retained food. He recently had lost a good deal of weight and strength. He was much emaciated and cachetic. Slightly to the right of the median line, in the epigastrium, was a hard movable tumor of the size of a hen's egg. He was put at once on rectal feeding for a few days and his condition improved somewhat.

Operation showed a hard growth about two inches in diameter in the greater curvature, extending towards the pylorus, but apparently not originating there. There were nodules in the omentum and colon, both of which were closely adherent to the stomach. Posteriorly the mesocolon was rough and nodular and likewise the major portion of the posterior stomach wall was studded with small metastases. Anteriorly the lymphatics, radiating in all directions, were filled with the growth. No nodules were found in the liver. As the case was hopeless the abdomen was closed. The patient was in good condition at the close of the operation, but in the course of an hour his pulse rapidly failed and he died twelve hours later.

No. XII. Male, seventy. Entered the City Hospital in August, 1896.

Two months before that he began to complain of constipation, soon followed by vomiting once or twice each day, which had continued ever since, and marked loss of weight. He was cachetic, very thin, and below the costal border a small, hard, round mass could be felt.

Operation showed malignant adhesions of the omentum and stomach and a hard, round ulcerating tumor of the pylorus, with dilatation of the stomach and malignant retroperitoneal lymph nodes. As the patient was too sick to warrant any further interference the abdomen was closed, and he died two days later, vomiting continuously. No autopsy.

No. XIII. Male, fifty, entered the City Hospital in April, 1898. Ten and six years before he had had hemorrhages from the stomach. At one time he used alcohol to excess, but had been temperate for the last five years. Seven weeks before entrance he developed pain, which was relieved by taking soft food. There was soreness and a feeling of pressure over the sternum. For a year he had had soreness across the abdomen and had noticed a feeling of resistance in the epigastrium. Three weeks ago he observed a distinct lump. He was losing strength. A hard tumor the size of a base ball could be felt in the epigastrium.

Operation showed adhesions of omentum and intestines to the liver and deep structures. In the posterior wall of the stomach over the pylorus was a malignant growth closely adherent posteriorly. Numerous nodules in the liver, the size of a walnut. As the case was hopeless the abdomen was closed, and the patient died two weeks later of gradual failure.

Autopsy showed carcinoma of the posterior wall of the stomach, the nodules in the liver being due to cirrhosis, not to carcinoma.

No. XIV. Male, twenty-seven years old, entered the City Hospital in July, 1902.

He had had an irritable stomach since the preceding February, marked by diffuse epigastric pain after meals, increasing in severity recently. He had vomited only a few times. Twice he had vomited a small quantity of reddish-brown blood, which the patient thought was fresh. Blackish, constipated stools. For three or four months a tumor mass had been developing in the epigastrium. For several weeks recently, throbbing of the tumor had given the patient annoyance, as he lay on his right side or on his back. He had lost weight and strength and had grown very anemic. Four weeks ago, after a period of severe constipation, he had severe abdominal pain, which at the time was diagnosticated as rupture of the stomach with a local peritonitis. At entrance he had only 30% hemoglobin. In the epigastrium there was a flat, circular, sharply circumscribed tumor, movable, very slightly tender. Under rectal feeding he improved steadily for about four weeks, although at no time did it seem safe to make even an exploration on account of his intense anemia. The hemoglobin increased up to 45%, and his appetite improved so that he was able to take a fair amount of nourishment by mouth. As soon as it seemed safe to explore he was given ether, and a large nodular tumor adherent to the anterior wall was found too extensive for any attempt at radical cure. The wound was closed and the patient was able to return home to Philadelphia in the course of a week, where he died some weeks later. Examination of specimen removed showed it to be sarcoma.

No. XV. Male, forty-eight, entered the City Hospital in April, 1903.

For five weeks he had had constant pain in the epigastrium with constant nausea. He had lost weight and strength and twice had vomited a moderate amount of dark granular material. There was a tumor mass filling the epigastrium to within two inches of the umbilicus, and disappearing under the costal margin on either side. The surface was irregular and dull to percussion.

Operation showed two groups of malignant nodules in the right hepatic lobe, one in the median line and the other in the right flank; a third in the left lobe. In the posterior wall of the stomach was a large mass the size of a small fist, merging into a sausage-shaped tumor lying along the greater curvature. The pylorus was free and open and the stomach not dilated. The wound was closed and the patient was discharged, temporarily relieved, in eleven days.

His later history has not been obtained, but death must have followed quickly.

No. XVI. Female, twenty-nine years old, referred to me by Dr. M. W. White.

Two years before I saw her she began craving food, with immediate relief on eating. There was no definite dyspepsia at that time. By the end of five or six months she lost her appetite and the abdomen felt full at all times. No vomiting, but eructation. Six months later — that is, a year before I saw her — she began to lose weight and had lost about sixty pounds. One week before I saw her she vomited for several days, but without blood in the vomit. The vomiting usually came on two hours after eating and consisted of undigested food. No history of blood in the stools. She did not complain of pain, but a feeling of pressure; otherwise she felt perfectly well. No history of early ulcer could be obtained. There was a well-marked tumor in the epigastrium, moving with respiration.

At operation, in July, 1903, at the Carney Hospital, the anterior wall of the stomach was found to consist of a broad, flat mass of carcinoma, extending up close to the esophageal opening. There were metastases in the omentum. As there was not enough normal tissue in the anterior wall to make an artificial opening, the wound was closed and the patient was discharged in ten days, unrelieved.

No. XVII. Male, sixty-four, referred by Dr. M. P. Smithwick. He gave a history suggesting a relapsing ulcer for a period of many years. Recently he had had vomiting, with loss of strength, and blood in the stomach washings. Hydrochloric acid was present a month or so before I saw him, but on recent examination this had disappeared. For several months he could keep nothing on his stomach, vomiting imme-

diately after eating, liquids as well as solids. He complained of pain most of the time and had been too weak to work for several months. He was emaciated, with some tenderness in the epigastrium and an indistinct nodule.

At operation at the Carney Hospital, there was an excess of serum in the cavity. Over the parietes and through the omentum there were numerous miliary nodules of carcinoma. In the stomach was a tumor the size of an orange, in the anterior wall and greater curvature just below the esophagus, with infiltration extending up to the diaphragm, and along the greater curvature and anterior wall. Adhesions also extended over to the spleen. The wound was closed and the patient discharged, unrelieved, in eight days.

He lived for about two months and at autopsy carcinoma of the stomach was found.

No. XVIII. Male, sixty-three, referred by Dr. Stack. Entered the Carney Hospital in August, 1903. His mother had died of cancer of the stomach.

For several months he had complained of gas in the abdomen, which produced severe enough colic to keep him awake at night, and he had cut down his diet practically to thin gruel. Pain came on about one half hour after eating. He had had no nausea; no hematemesis. He, himself, noticed a tumor two weeks before I saw him. He was pale, waxy, emaciated, and a mass the size of a cocoanut could be felt in the umbilical region, freely movable, not nodular.

At operation there was free fluid in the cavity and a large mass in the anterior wall of the stomach up to within two or three inches of the esophagus and extending down to the pylorus, involving the omentum, in which the major portion of the growth existed. No metastases were found in the liver, but in the anterior parietal peritoneum adjacent to the main tumor. The wound was closed and ten days later the patient was discharged.

Twelve hours after returning home he had a severe attack of pain without vomiting, but with marked dyspnea, which lasted six hours, followed by death.

No. XIX. Male, sixty years of age. Referred by Dr. Smithwick. Mother had died of dyspepsia. Patient had had occasional attacks of indigestion. Eight years ago he began to have gastric pain, relieved by drinking water. This pain came on several hours after eating, the intervals growing shorter in course of time. This pain would persist until he ate more food, when it would be temporarily relieved. He had had no nausea nor vomiting, but was poorly nourished. There was considerable belching.

At operation, at the Carney Hospital, in September, 1903, a hard tumor was found in the anterior wall just below the esophagus, of the size of a fist, together with additional nodules nearer the diaphragm. The pylorus was free and open; no metastases could be felt in the liver. As the growth was too extensive for excision the wound was closed and the patient was discharged in the course of a week.

A month later he reported at the hospital that he had gained weight, and felt well, still eating every four or five hours for the relief of pain. Death must have followed before long.

No. XCVII. Female, forty-eight years of age, referred by Dr. Dewis and Dr. Pettee. Entered the Carney Hospital in June, 1904.

As long as she could remember she had had indigestion, but within the last year she had lost weight and strength, and the indigestion had grown worse. Distress came on soon after eating, followed by vomiting and relief. For three months she had had almost constant epigastric pain, and for two months she had vomited very steadily after eating. No blood in vomitus at any time. Up to two months ago there had been much gas in the stomach, but recently that had not given trouble. Constipation. Examination of stomach showed considerable sour residue. On attempting to test the capacity great pain was produced and not over a half pint of fluid could be introduced.

Operation showed an excess of serum in the abdominal cavity, a diffuse carcinoma of the pyloric half of the stomach, with metastases in the liver, omentum, mesentery of the small intestine, etc. As it was not possible to make an anastomosis satisfactorily the wound was closed in layers and the patient sent home in a few days, unrelieved.

In the following twenty-two cases of malignant disease some attempt was made by operation to relieve the symptoms, at least temporarily. In a few, the operation was clearly inadvisable, to judge from the outcome. But on several of these unfortunate victims operation was done, because the patients had come from a long distance, begging for some slight relief even if the operation should prove fatal. In scarcely any of them have I regretted doing this little to make their death an easier one, or to relieve even temporarily the horrible suffering from starvation and the persistent vomiting that these patients undergo.

It is almost impossible that the discomfort from a rapid anastomosis can begin to approach the suffering from starvation and vomiting. On the contrary the relief that so quickly follows, sometimes within twenty-four hours, is one of the most gratifying experiences that the surgeon, as well as the patient, can enjoy. Of course the earlier operations took longer and were much less satisfactory because of the ignorance of technic and the hesitation that comes in working in a new field where medical and lay prejudice is so strongly against surgical interference.

CASE XX. One of my earliest attempts at relief, was that of a woman thirty-three years old, who entered the City Hospital in October, 1900.

For one year she had been losing weight and strength, without other symptoms. Seven weeks before entrance she began to have occasional cramps, coming on after eating. Then she began to vomit one to two hours after meals, the vomitus consisting of stagnant food. She had much belching, and five weeks before entrance she vomited what looked like coffee grounds, since which time she had remained in bed. She was emaciated and sallow. Just above the umbilicus a hard, nodular, elongated tumor could be felt. Various examinations of the stomach contents were made, but they were of little help except that hydrochloric acid was found absent. At operation a freely movable pyloric tumor was found and pylorectomy was done with clamps and suture. An attempt was made to tie a Murphy button into the end of the duodenum, but it was unsatisfactory and the side wall of the duodenum was joined to the posterior wall of the stomach with a button, making a satisfactory anastomosis. A long chain of infiltrated tissue, supposed to be lymphatic nodes, along the greater curvature, was removed with the excised portion of the stomach. There is no mention in my notes of nodes in the lesser curva-

tures, although half of the lesser curvature was removed in the stomach portion.

She did well for a week, when the external wound was found open for about an inch, with the escape of yellowish fluid. Later this fluid became bilious, the patient gradually failed, and seventeen days after operation died.

The technic was undoubtedly at fault here, and to that can be ascribed the patient's death. I think, without question, that to-day the same operation could be repeated with almost absolute safety.

No. XXI. Male, sixty-one, entered the City Hospital in August, 1901.

Seven weeks before entrance, after swallowing by mistake some strong carbolic acid, he began to have stomach trouble, vomiting food about three hours after each meal. He then reduced his diet to barley and milk, retaining this until the evening, when he would vomit all he had eaten during the day. Much loss of weight, no pain, no eructation, and marked constipation. The patient was cachetic; the stomach capacity 960 cm., hydrochloric acid present, lactic acid absent. Nothing could be felt in the abdomen. For six weeks he had had only four stools. He was treated on the medical side for a month before his transfer to the surgical side, where a diagnosis of occlusion of the pylorus was made.

At operation there was edema of the peritoneum and considerable serum in the cavity, with thickening about the pylorus, which was nearly closed. A longitudinal incision over the pylorus showed a gummatous-like tissue of the walls surrounding the opening, just admitting a director and found with difficulty from within the stomach. The tissues were too thick and the opening too small to warrant a pyloroplasty, so an anterior button anastomosis was made. He was in such a condition of starvation that he was fed through the intestinal incision, at the time of operation, with beef-tea, coffee and brandy. Vomiting persisted after operation, for two days. He rapidly grew worse, the bowels became loose, he grew delirious, and one week after operation died. Shortly before death he was able to take food by mouth without vomiting, but he was so profoundly starved that he was unable to react.

I think there is no question but what this patient would have been saved had he been operated upon in the early stages of his starvation instead of being held for a month, for the purpose of making an accurate diagnosis and to see if medical treatment could not prove of benefit.

No. LXXXVI. Male, forty-seven years old, with sarcoma of the stomach.

Reported in full by Dr. H. D. Arnold in the Boston City Hospital Reports, Series XI.

This patient entered the hospital in March, 1898, on account of pain in the epigastrium and increasing weakness. Eight weeks before entrance he had given up work on account of the pain, which was steadily increasing. He had lost weight. There was some eructation, gas and nausea, but no vomiting. The bowels were constipated. A large tumor was felt in the left epigastric and hypochondriac regions. Examination of the stomach contents was contemplated, but the patient grew rapidly weaker and it had to be given up.

At operation, in the left hypochondrium a large nodular tumor was found, the descending colon being collapsed below the tumor, but above it the transverse colon was much distended. It was thought at the operation, as well as before, that a malignant tumor involved the spleen primarily or secondarily and that the involvement of the bowel was secondary to this. A jejunostomy was made owing to the serious condition of the patient. He improved for a few days, but died a week after operation.

At autopsy the upper colon was found enormously distended. In the stomach, the lesser curvature was found normal except for hemorrhages beneath the mucous membrane, but the remainder of the stomach showed nodular, firm masses beneath the mucous membrane, ½ to 2 cm. in diameter. On the greater curvature near the pylorus was a large excavation with a necrotic mass extending through to the splenic flexure of the colon. The pancreas was evidently involved as its structures could not be made out. "The growth is evidently of mesenchymal origin and should be classed as a mixed cell sarcoma, perhaps better as an endothelioma." (Pathological Report.)

No. XXII. Female, forty-six, entered the City Hospital in August, 1901. Much emaciated, cachetic, starved and slightly delirious. Two weeks before entrance she had fallen into a trench, striking the region of the stomach, and vomiting soon afterwards. For two years she had vomited directly after meals, no matter what food she ate, and she complained of distressed, gnawing sensations, relieved by taking food. The vomitus never was dark colored nor contained blood. On several occasions recently she had vomited large amounts. There was a large mass in the epigastric region extending down to the umbilicus and to the right, somewhat tender and difficult to palpate on account of rigidity.

At operation the pylorus and pyloric third of the stomach were found infiltrated with a hard malignant mass ulcerated at the pylorus. Hard masses were felt in the retroperitoneal space and in the gastrocolic omentum. An anterior anastomosis, with a Murphy button, was made, the patient being in good condition at the close of operation.

The following day she was very weak, the pulse steadily rising, and two days after operation she died.

Partial autopsy showed a tight joint without evidence of a peritonitis.

No. XXIII. Male, fifty-three years old. Entered the medical service of the City Hospital in November, 1901.

A year before, he had distress and epigastric pain about an hour after eating, lasting for several hours, disappearing when the stomach was empty, relieved by hot drinks and hot applications. There was eructation but no vomiting. He had lost weight steadily, but had kept at work up to July, when he grew very weak. Two months before entrance he began to vomit once or twice a week very large amounts, often with dark coffee grounds, and for a week before he was operated on he vomited several times a day. Marked constipation. He was emaciated, pale, and in the epigastrium was a large mass, tender on pressure.

At operation a large nodular mass of the size of two fists was found in the pyloric half of the stomach and deep glands could be felt all through the upper abdomen. The cardiac half of the stomach was not involved, and an anterior button anastomosis was made, the patient standing the operation well.

After the operation he improved and had no vomiting for two weeks. Then the vomiting returned, he gradually lost strength, and died five weeks after operation.

The abdomen was opened through the incision and the button was found in the stomach.

No. XXIV. Male, thirty years old.

Two weeks and a half before entrance to the medical side of the City Hospital, in October, 1902, the patient had had a sudden onset of pain in the epigastric region which had continued up to his entrance. He had vomited persistently without regard to food and was in a condition of acute starvation. He had had similar attacks one, ten and fifteen years ago, respectively, lasting about a week.

He was transferred to the surgical side, and at operation a malignant tumor at the pylorus, firmly adherent to the gall bladder, the ducts and deep tissues, was found. The pylorus could not be freed sufficiently for its removal. The stomach was dilated and the lumen of the pylorus practically closed. An anterior button anastomosis was done and the abdomen closed rapidly. The patient stood the operation fairly well, but failed gradually and died three days afterwards of exhaustion.

No. XXV. Male, thirty-three years old, entered the City Hospital in December, 1901.

Nine months previously he had attacks of colic without nausea or vomiting. Two weeks later there was dull pain in the epigastrium constantly, most marked two or three hours after eating, with nausea, eructations, but no vomiting till the latter part of November, when he vomited a quart of brownish blood. Since then he had only vomited once. He had lost weight and strength, and had been able to do no work for two months on account of weakness. Just below and to the left of the umbilicus was a tender mass the size of a small orange.

At operation a hard malignant tumor in the pyloric third of the stomach was found starting from or close to the pylorus. The omentum was adherent by direct malignant infiltration. There were enlarged glands in the gastrohepatic omentum, behind the peritoneum, while through the omentum itself were a few small nodules. An anterior button anastomosis was made and the wound closed. He vomited a few times after operation, but was relieved by lavage. A month afterward he was discharged. About a year later the patient reported that he was hard at work and in good condition.

No. XXVI. Female, thirty years old, entered the City Hospital January, 1903.

For about three months she had had pain in the epigastrium, vomiting almost everything except milk and lime water. Pain was worse at night, so that she was not able to sleep. The stomach contents showed free hydrochloric acid and the absence of lactic acid. She improved somewhat under rectal alimentation, but when given food by mouth vomited excessive amounts. There was a movable epigastric tumor. No cachexia.

At operation, an excessive quantity of straw-colored serum was found in the abdominal cavity; a large malignant tumor of the plyorus was found infiltrating along the lesser curvature to the esophagus, along the greater curvature to the omentum, and into the great and small intestine in the neighborhood. The stomach wall was thickened and edematous. An anterior button anastomosis was made and the wound closed. She steadily improved after operation and was soon eating solids without nausea or vomiting. Discharged at the end of two weeks to the Convalescent Home.

A month later, however, she returned to the hospital, cachetic, greatly emaciated — but without having vomited — with edema and ascites; she rapidly failed, and died in the middle of April.

No. XXVII. Male, fifty-four, admitted to the City Hospital, April, 1903.

A history of stomach trouble for six months, with a loss of fifty pounds in weight, beginning with occasional vomiting, increasing in frequency to two or three times daily, always after eating, coming on as a rule within fifteen minutes. No hematemesis, no pain. He was emaciated, and in the left epigastrium there was a distinct prominence. Examination of the stomach showed absence of hydrochloric acid and presence of lactic acid and a dilated stomach. A week after his entrance he was transferred to the surgical side for operation, when the stomach was found with thick, hypertrophied walls, not dilated, rigid and unyielding. The pylorus was thickened but not indurated as from malignant infiltration. It was impervious so far as could be told by examination through the stomach walls. No nodules were felt. An anterior button gastro-enterostomy was made and the wound closed. After operation vomiting ceased, but the patient steadily grew weaker and died without other symptoms, four days later.

No autopsy was obtained and the diagnosis cannot be absolutely established, but in all probability it was diffuse carcinoma of the stomach.

No. XXVIII. Male, forty-nine years old. Referred to me by Dr. J. A. Gordon.

For five years he had been under treatment by a prominent physician for dyspepsia, fermentation and vomiting. He had improved somewhat up to about nine months before I saw him. Then there was recurrence of his trouble with enormous dilatation and fermentation. There was no history of hemorrhage, but the vomitus contained food eaten one or more days previously. There was marked loss of weight, and examination showed a distended stomach, with the lower border half way between the umbilicus and the pubes.

At operation, at the Boothby Hospital, the pyloric third of the stomach was found to be a mass of malignant infiltration extending into the omentum. An anterior button anastomosis was made, and the wound closed. He was soon up, eating heartily of soft solids, and liquids, and returned home in good condition.

Later he went to business regularly, but gradually the symptoms returned, he lost weight, and died several months after operation.

No. XXIX. Female, sixty-two years old. Referred to me by Dr. F. J. Peirce.

Twelve years before, after a fall, she was confined to her bed for five or six weeks and had been an invalid ever since. She complained at the time of injury of much abdominal pain and distention, but had no vomiting. Six months before I saw her, her first attack of vomiting came on and this was followed by nausea, lasting for some months. Then vomiting returned and steadily increased in frequency. No blood nor coffee grounds had been seen. The vomitus consisted of retained food and at times was excessive in quantity. She had lost thirty pounds in the last eight months. No history of stomach trouble in youth could be obtained. Examination showed an emaciated woman with an irregular tumor in the epigastrium. Irrigation of the stomach showed decomposed food.

At operation at the Boothby Hospital, in February, 1903, a hard malignant tumor in the right portion of the stomach along the greater curvature and close to the pylorus, but not involving it, was found. It invaded the mesocolon and the omentum. An anterior button gastro-enterostomy was done. A very much distended gall bladder was found, with two large stones, wedged in the cystic duct, which were removed. The patient slowly gained and was able to take sufficient food to satisfy her hunger, and returned home in good condition, but some weeks afterwards gradually failed and died.

No. XXX. Male, forty-four years old. Entered the Carney Hospital June, 1903, for sarcoma of the testis, which was removed. In the upper right abdomen was a large nodular tumor, which prevented the patient from lying down with comfort and obstructed the pyloric outlet. He had more or less regurgitation, without nausea. Soon after eating, he complained of more or less burning sensation in the stomach. There was another metastatic growth in the right neck. Operation was advised for temporary relief.

At operation a large nodular adherent mass in and about the pyloric third of the stomach, with retroperitoneal and mesenteric nodes, was found. Universally throughout the omentum were small translucent nodules one eighth of an inch in diameter. An anterior button gastro-enterostomy was done and the wound closed. The patient recovered well from the operation and was sent home in a few days perfectly comfortable.

The later history is unknown, but he undoubtedly succumbed to his disease within a short time.

No. XXXI. Male, twenty-seven years old. Was transferred from the medical service of the Carney Hospital, June, 1903.

The patient was in constant pain, with vomiting and marked emaciation. An operation was advised as a palliative measure only.

In the œsophageal third of the stomach was found a hard nodular growth extending up to the diaphragm but without evidence of metastases. It apparently blocked the entrance to the stomach so the jejunum was opened, a catheter tied in, and liquid food given at once. He was fed through the tube for several days, at the end of which time the opening into the stomach apparently enlarged, and he was able to take semi-solid foods. He continued taking food by mouth, but rapidly grew weaker and was transferred to the Ward for Incurables, where he died shortly after.

No. XXXII. Female, thirty-five years old. Referred by Dr. Foley of Worcester. Entered the Carney Hospital in September, 1903.

In February of the same year she began to have gastric symptoms, relieved by vomiting, but the symptoms steadily grew worse, the vomiting became sour, she lost weight, and finally was reduced to a diet of liquid peptonoids, on which she had lived for six weeks before I saw her. She was much emaciated, could not sleep at night and had pain in her left side. She had never vomited fresh blood, but examination showed some undigested blood. The pain usually came on from a few minutes to an hour after eating and was relieved at once by vomiting if the vomitus was in considerable amount. She had vomited retained food. A short time before I saw her she had been in a hospital and had derived considerable relief, going for a week or more without vomiting. After this treatment she had been on light mouth feeding for a while, but, as noted above, for the last six weeks had confined her diet to liquid peptonoids. Recently there was temporary edema of the lower extremities. The patient was emaciated, the abdomen showed visible peristalsis, and in the epigastrium above the umbilicus was a tender movable tumor, about an inch in diameter. The stomach was moderately dilated.

At operation a typical malignant growth involving the lesser curvature to the pylorus was found, with recent malignant adhesions of the neighboring anterior tissues. An anterior gastro-enterostomy, with a Murphy button, was made and the wound closed. The patient gained steadily after operation and was discharged in three weeks eating ordinary food.

Five months after operation a letter from Dr. Foley reported that the patient had gained forty pounds, had been able to go about, and was in very comfortable condition, but that recently she had begun to show signs of invasion of the opening with return of vomiting.

No. XXXIII. Male, forty-four, referred by Dr. Webber of Calais, Me. Entered the Carney Hospital in September, 1903.

Since June he had had stomach trouble, beginning with loss of appetite, pyrosis and belching. In July he vomited for the first time, afterwards vomiting from one to three times daily. At times the vomitus was dark colored, but never with fresh blood. Food had distressed him for several months, especially when lying down; pain was absent when the stomach was empty. The lower border of the stomach was at the level of the umbilicus. No tumor could be felt on palpation.

At operation, in the lesser curvature and close to the pylorus, probably involving it secondarily, was a hard nodule the size of an English walnut. In the omentum and mesentery were numerous hard lymph nodes, one of which was removed for diagnosis. A posterior gastro-enterostomy, with clamps and suture, was made and the wound closed.

The patient was soon eating the regular food and returned home at the end of two weeks.

In May of this year the patient reported that he had had no vomiting since the operation, had eaten three square meals daily, and had not lōst a day's work; but he was beginning to lose strength and was undoubtedly gradually failing from general malignant infection.

No. XXXIV. Male, thirty-eight years old, entered the Carney Hospital in November, 1903, and was transferred from the medical side for operation. He had complained of stomach trouble for eight weeks, vomiting occasionally one half hour after meals, but for the last four weeks he had vomited everything. There was much gas, epigastric pain and constipation. Examination of the fasting stomach showed eight and one-half ounces residue, free hydrochloric acid absent, lactic acid present.

At operation, by Dr. Bottomley, a hard mass half the size of the fist was found involving the pylorus. The retroperitoneal glands were enlarged; the stomach not much distended. A posterior anastomosis, with clamps and suture was made, some difficulty being found in obtaining sufficient healthy tissue to work with.

The patient was in poor condition and gradually died about two weeks after operation.

No. XXXV. Female, forty-nine years old, referred by Dr. Glennon of Stoughton, entered the Carney Hospital in January, 1904.

For a year she had had indigestion and pain, referred to the stomach, with distress following food. During the summer she was worse and had occasional vomiting. She was very much troubled with gas and constipation. Lavage showed undigested food, hydrochloric acid present and lactic acid absent.

At operation, by Dr. Bottomley, a hard, malignant tumor of the pylorus, with involvement of the glands posteriorly, was found. A posterior gastro-enterostomy, with clamps and suture, was made and the wound closed.

The patient vomited only two or three days after operation, some coffee-ground substance being in the vomitus. She then began to fail gradually, without nausea or vomiting. Then suppression of the urine appeared several days afterwards, followed by death.

No. XXXVI. Male, forty years old, referred by Dr. Hunting of Quincy, entered the Carney Hospital in March, 1904.

A year ago he began to lose weight and complained of dyspepsia at the same time. At first there were eructations of mucus, but during the summer he vomited sour food, usually four or five hours after eating. No blood had been seen at any time. The vomiting came on about every day and constipation was marked. For the last two months he had practically vomited all that he had eaten, but no history of excessive quantity could be obtained. He was constantly hungry, and eating satisfied the hunger in spite of the vomiting. He had lost weight and was markedly emaciated. He had been in one of our large hospitals under medical treatment, recently, growing rapidly weaker. In the epigastrium and left hypochondrium was a nodular superficial tumor, moving with respiration. He was able to digest a little malted milk since he had been on rectal feeding. An operation was advised in the hope that it would at least enable him to take food by mouth until he died of general malignancy.

At operation, a hard nodular mass involving the pylorus and pyloric third of the stomach in both walls was found, infiltrating the liver. It was difficult to obtain enough healthy tissue to make an anastomosis, but an anterior button anastomosis was made and the wound closed. The patient recovered well from the operation, was able to take food comfortably, and was encouraged with the result; but he gradually grew weaker and died nine days after the operation, without having vomited.

No. XXXVII. Male, sixty-five, referred by Dr. Deacon of Milltown, N. B. Father died of stomach trouble at sixty-seven years of age.

For a year the patient had complained of slight soreness in the right epigastrium, but without dyspeptic symptoms. Three months ago there was much gas and he was obliged to sit up in bed at night to relieve the distention. There was slight indigestion at this time, with distress after eating, but no vomiting. His appetite was good. Six weeks ago there was griping pain in the epigastrium and he was unable to sleep. He still had no vomiting, but began to limit his diet to liquids and soft solids. Four weeks ago he vomited after eating, and there was much pain and annoyance from persistent belching, which came on in spells. For two weeks he had been nauseated all the time, vomiting constantly. No blood had been seen until two days before entrance and then only in a few streaks. He had lost thirty pounds in six weeks and had been confined to bed for the last week. He entered the Carney Hospital in April, 1904, emaciated, with a hard nodular mass the size of a fist, in the epigastrium, not very tender. The patient was too sick to justify operation, but he had come such a long distance with a forlorn hope of even temporary relief that I could not refuse at least exploring the abdomen.

At operation the pyloric third of the stomach was filled with nodular masses aggregating a tumor the size of two fists. The growth invaded the adjacent liver and in the latter were metastatic masses the size of walnuts. Along the greater curvatures were large malignant nodes and in the retroperitoneal space were similar smaller nodes. The left portion of the stomach was pale and brittle. There was free fluid in the general cavity, and only by strong tension on the stomach could an area free of growth be brought into the field. To this an anterior button anastomosis was made. Exploration of the inside of the stomach showed nodular growths blocking up the pyloric end. There was no immediate shock from operation. The following day the patient had made a good recovery, but was still weak and there was considerable fresh blood in his vomitus. Two days later there was still some blood, dark in color but much less in quantity. The patient grew weaker, however, rejected his enemata, and three days after operation he rapidly failed and died.

No. XC. Male, fifty-six years old. Referred by Dr. Benner of South Framingham.

Stomach trouble began about fifteen years ago, with distress after eating, but vomiting did not appear until three months ago. He had never vomited blood, but had lost much weight. Examination of the stomach showed a capacity of over two quarts, with retained food, the lower border being below the umbilicus. For years the patient had been under the care of various physicians for dyspepsia, with only temporary relief. A day or two before I saw him he had lost rapidly and was stupid and partially delirious at examination. Operation was requested at any risk and was done at once at the South Framingham Hospital. The stomach was found dilated and distended with gas. In the pyloric region was a hard, scirrhous growth, apparently a carcinoma of the pyloric ring itself. In the neighborhood were numerous small, white metastases extending into the lesser omentum, the greater omentum, the mesocolon and the mesentery, with scattered nodules in the jejunum. The liver was normal. A posterior gastro-enterostomy, with clamps and sutures, was done as rapidly as possible, and the abdomen closed in layers. In both the stomach and jejunum was found very foul, decomposed blood, some of which the patient vomited, although the stomach had been carefully washed out previously. There was severe shock, and the patient died in twelve hours.

No. XCI. Male, sixty-two years old. Referred by Dr. George H. McIntire of Cambridge.

For several years he had had stomach trouble, beginning with dyspepsia, coming on after meals. He had been a commercial traveler for a number of years, with irregular meals, and recalled a number of times when he had attacks of temporary distress, without vomiting. Then the dyspepsia became more persistent, and for the past year it had steadily increased, with vomiting at times. For two years he had not been able to sleep through the night without rising once or twice and taking a dose of soda bicarbonate to relieve the gaseous distention of the stomach. Vomiting began about a year ago, and consisted of poorly digested food, and at times of food that had been retained for over twenty-four hours. He had never noticed blood nor coffee grounds, but had vomited excessive amounts, and in the last few months had lost weight. The distress after meals would come on in about one hour and he was made worse by lying down. He had limited his diet more and more, and when seen was eating very simple food. He had been treated by various physicians — stomach specialists among them; forced feeding had been tried, but attacks of severe vomiting was the main result.

At operation, at the Carney Hospital, a nodular, irregular tumor was found at the pylorus, with extension along the posterior wall of the duodenum for about three inches, making it impracticable to clamp the bowel through healthy tissue in order to perform a pylorectomy. No enlarged glands were found in either of the omenta. A posterior gastro-enterostomy, with clamps and sutures, was done, with a short jejunal loop. In the stomach was some digested blood. Wound closed in layers. Patient in good condition at close. Convalescence was satisfactory and several weeks later he was in excellent condition.

*(To be continued.)*

## MALPOSITIONS OF THE UTERUS; THEIR CAUSES AND TREATMENT.*

BY D. J. BROWN, M.D., SPRINGFIELD, MASS.

When we speak of a normal uterus, in the general acceptance of the term we mean that the fundus should be on a level with the plane of the superior strait, and the os externum should touch a line drawn from the lower surface of the symphysis pubis to the lower margin of the fourth sacral vertebra. This would bring the axis of the uterus very nearly at right angles to the vagina. However, some works on anatomy represent the uterus as having a straight canal, viz.: its axis corresponding to the long axis of the body. Dependent upon respiration, intra-abdominal pressure, body movements, and the bladder or rectum, distended or empty, the uterus changes its position very frequently. This is called the normal range of movements and is controlled by the uterine ligaments, the functions of which are as follows: The round ligaments resist backward displacement of the body; the utero-sacral and vesico-uterine resist the downward pressure or prolapse. The broad ligaments, besides preventing excessive lateral motion, enter largely into the support of the uterus — they are the weight carriers and have a fixed capacity. When the pelvic fascia is anywhere injured, every other portion of the pelvic contents feels the effect of the relaxation. If the uterus is sub-involuted and heavy with blood, the broad ligaments feel the increased weight and they are no longer able to resist the force of gravity; therefore, the uterus remains in its normal position by the concerted action of its several ligaments and the pelvic fascia, which are mutually interdependent for their integrity of action. That the perineum is responsible for the support of the uterus and vagina, I believe has but very few adherents at the present time.

In citing the causes of retro-deviation I shall make use of Krusen's classification.

### *Class A.* Virginal Retro-deviation.

(1) Congenital retroflexion was first recognized by Saxtorph in 1775, next by T. L. Lee in 1849, is usually due to the incomplete development of the anterior and posterior uterine walls.

(2) Schultze attributes puerile retroflexion to congenital shortness of the anterior wall, whence it follows that distention of the bladder, which normally would slightly displace the uterus, completely retroverts it.

(3) Senile atrophy of the genitals, which is associated with shortness of the vagina while the bladder capacity remains unchanged.

(4) Every time the bladder becomes filled, the uterus, as already stated, is placed physiologically in a temporary position of retroversion; hence prolonged over-distention predisposes to this form of displacement.

(5) Habitual constipation resulting in severe straining efforts and increased abdominal pressure during difficult evacuation of the rectum, is a frequent factor, both in virgins and parous women.

(6) Masturbation by relaxing the uterus and the loss of nutritive fluids, is, according to Fritsch, responsible for many cases of virginal retrodisplacement. Hildebrandt found seven such cases in twelve girls addicted to the vice.

(7) Constitutional diseases, such as chlorosis and anemia, tend to relax the uterine supports, cause a disappearance of the adipose tissue, produce constipation and even make the uterine muscle itself relaxed and flexible.

### *Class B.* Parous Women.

(1) Puerperal metritis, or sub-involution: This may be confined to the placental site or affect all parts of the uterine walls. If the placental site be on the anterior wall and the area be inflamed and thickened, this will produce a marked tendency to retroflexion. Chronic or puerperal metritis, by increasing the size and weight of the organ, with corresponding relaxation of the broad and round ligaments, will favor malposition.

(2) Laceration or over-stretching of the pelvic fascia, permitting the development of a rectocele and cystocele, is followed by downward or backward displacement.

(3) Salpingitis, by producing adhesions between the adnexa and the pelvic walls.

(4) Pregnancy may also be a factor, or may be complicated by it.

(5) Pressure from corsets, heavy skirts suspended from the waist, tight clothing, and prolonged pressure from a tight obstetric binder.

(6) Traumatism, blows, falls, or violent muscular effort.

(7) Neoplasms, either intra- or extra-uterine, may by their pressure displace the uterus.

(8) Among the more infrequent and problematical causes may be mentioned impotent husbands, as suggested by Hildebrandt, although Winckel states it is probably a simple coincidence.

(9) A wandering spleen was the direct cause in one instance reported.

Chronic cystitis, which shortens the vesico-vaginal septum by contraction, may produce a retrodisplacement. This form is incurable. (E. C. Dudley.)

Anteflexion is an accompaniment of non-development of the uterus which manifests itself by severe obstructive dysmenorrhea in girls at the beginning of menstruation and is a cause later in life of sterility. Among other causes may be mentioned, over-indulgence in dancing, gymnasium work, wheel riding. Sewing machine running, or severe work of any kind about the age of puberty may act as a derivative to the important menstrual organs, and one or more of them may be left undeveloped. Schultze has described a condition of immobile retroflexion resulting from posterior parametritis. W. L. Burrage has given the subject considerable thought and study and has published two interesting papers. He concludes that the chief cause of the condition is a shortening of the utero-sacral ligaments, which

* Read before The Massachusetts Medical Society, June 7, 1904.

shortening renders it impossible to permanently remove the flexure. Immobile retroposition with anteflexion is seen following labor and abortion from posterior adhesions, from tubo-ovaritis and hematocele. Generally one or both ovaries are found prolapsed or enlarged. Endometritis is almost invariably present. The condition is attended by dysmenorrhea, scanty menstruation or profuse flowing, pelvic pains, frequent abortions or sterility in the married, chronic irritation, bladder irritability, and leucorrhea. Where there is laxity of the uterine supports, the round, broad and utero-sacral ligaments associated with softness, fatty degeneration and want of tone of the uterine tissue, we have a pathological condition first mentioned by Pozzi in 1896 and afterwards described by Edebohls, known as excessive mobility of the uterus. The laxity of the ligamentous support is the essential condition. Add to this softness of the uterine tissue, and you explain the cause of flexions. If such a patient be examined by a number of men, the uterus will be found in different positions at each examination. I well remember such an occurrence. Each examiner made out a different position, consequently each thought the other had erred. According to Edebohls a diagnosis of excessive mobility of the uterus is made in the following manner: " Say we find the uterus, on bimanual examination, in anteversion or anteflexion, — push the cervix toward the symphysis by the intra-vaginal finger carried into the posterior fornix of the vagina, at the same time crowding the body of the uterus backward into retroversion by the fingers of the other hand upon the abdomen. An excessively movable uterus is thus readily retroverted and, moreover, remains in retroversion after withdrawal of the fingers from the vagina and abdomen, or returns but very slowly and sluggishly into a position approximating the normal." In this it differs from the uterus with normal mobility, which either would be replaced into retroversion of the second degree, or if forced into the latter position, immediately springs back into normal anteversion when released from the pressure of the fingers.

*Symptoms.* — Besides the usual symptoms, we have disturbance of the lower part of the intestinal tract, namely, tympanites and readily provoked irritation of the colon and rectum, as manifested by alternate constipation and looseness of the bowels, occasionally membranous enteritis, neuralgiæ and dysæphesiæ of a fugitive or wandering character, generally not severe, affecting the lower end of the trunk. This condition may be present in Glenard's disease. The symptoms of this condition are explained by irritation of the hypogastric plexus of the sympathetic.

A study of the treatment of malpositions of the uterus is unsatisfactory. A few years ago when corrections of uterine displacements became the surgical craze, one operative method after another was brought forth until at the present time the number is legion. Some of them are as unsurgical as others are surgical. How shall we best treat these conditions? The treatment of uterine displacements must have two distinct purposes in view: first, the bringing forward of the uterus to its normal condition; second, its retention therein. The vexed question is how to retain it there. Taking into consideration the wide range of mobility exercised by the normal uterus, a careful non-surgical and medical treatment should be first thoughtfully considered, being guided by the general condition of the patient, the symptoms complained of, duration of the displacement, and the complications, if any. What changes have the surrounding structures undergone?

The non-surgical treatment of uncomplicated retroversion is as follows: Carefully replace the uterus by bimanual manipulation from vagina and abdomen. If the vaginal manipulation fails, transfer the fingers to the rectum. If you are still unable to reduce it, try the knee-chest position. If all these measures fail, an anesthetic should be administered. This completely relaxes the patient and there will be no trouble in the reduction of the organ. If the displacement has been of short duration a well fitting pessary may be used immediately after reposition; on the other hand, if the displacement has been of long duration, the daily use of sterile tampons saturated with either ichthyol or glycerine and packed firmly against the cervix would be advisable, until all tenderness had disappeared. A Hodge-Smith pessary of proper shape and well fitted may then be used. This pessary will temporarily support the uterus in its normal position, besides relieving the abnormal strain. It gives the over-stretched sacro-uterine and round ligaments, which contain muscular fibers, as well as the vaginal walls, a chance to regain their normal tone. Also the lower bowel, which becomes atonic from constant pressure. As we learn to differentiate our cases more carefully, the prejudice which exists against the use of the pessary will promptly subside.

Besides this treatment, the patient should be given general tonics, especially those which have a tendency to tone muscles. Hot vaginal douches containing alum, at a temperature of 115°, twice daily, patient lying in the recumbent position. The patient should also be advised to assume the knee-chest position three or four times daily, two minutes each time, and with finger retract the fourchette, thus allowing air to enter the vagina, which distends the vaginal vault and counteracts intra-abdominal pressure. Patient should also be urged to lie upon the abdomen while sleeping. This treatment should be carried out during a period of at least two or three months. In a certain percentage of cases your efforts will be rewarded by good results. This may not meet the opinion of some whose teaching is always operative, but results often give us decided opinions of our own.

When, however, the retractile power of the utero-sacral ligaments is completely lost, the following simple operation, devised by A. H.

Goelet, is to the writer a step in the right direction. In 1899 Dudley, in a paper before the Chicago Gynecological Society, said, "We are now prepared to announce the great general principle of mechanical support as follows: If the cervix be normally placed within an inch of the hollow of the sacrum, the body of the uterus will, in the absence of complications, usually take care of itself." The operation about to be described aims at overcoming the displacement by holding the cervix permanently backward in the hollow of the sacrum and doing away with the necessity for a pessary, making use of the posterior vaginal wall for the attachment of the cervix, which, under normal conditions, is firmly connected with the anterior wall of the rectum.

*Technic.* — Patient is placed on the back in the exaggerated lithotomy position, vagina and vulva are cleansed in the usual manner by scrubbing, then the surface of the vagina and cervix are dried and painted with tincture of iodine to stain it and render it aseptic, or a solution of methylene blue might be used for this purpose. An area about one-half inch square upon the posterior surface of the cervix is denuded of its mucous membrane and a similar surface upon the posterior vaginal wall, well up in the sulcus, behind the cervix, is likewise denuded. These denuded surfaces are then approximated by deep sutures, three or four of which will suffice. Material, catgut or silkworm gut. A tampon of gauze is placed against the cervix to take the strain off the sutures and keep the surface of the vagina dry. Dressings are removed on the second day and may be renewed or not, as the judgment of the surgeon may dictate. Patient is kept in bed one week and encouraged to rest on either side rather than upon the back. If silkworm gut is used, it may be removed in two or three weeks.

The Alexander is a popular operation in uncomplicated cases of retro-deviation. Its advocates claim that the round ligaments will hold the uterus long enough in position to allow the utero-sacral ligaments to regain their normal tone. Many objections are urged against it, with all of which you are familiar. In two instances where the writer has performed the Alexander, a diseased appendix was also removed through the right incision, which was small, and carried through to the abdominal cavity. Both made excellent recoveries and no hernia followed.

In anteflexion due to muscular non-development, Martin advocates the use of electricity and has had exceedingly good results. He also recommends large and stimulating hot douches night and morning, supplementing these douches by an antiseptic douche immediately before treatment. The length of time required to carry any case to a successful termination is from three to six months. This might be urged as a serious objection. He also advocates proper exercise, general tonics, and laxatives if necessary.

In choosing operative procedures in cases of anteflexion, we have Dudley's operation, which consists in a division of the posterior wall, past the utero-vaginal attachment nearly to the utero-peritoneal fold in the pouch of Douglas; or, a modification of the same now in vogue at the Free Hospital for Women, a description of which appeared in its bulletin, Vol. I, No. 3, January, 1904. The success obtained has been remarkable and is worthy your consideration. Simply to dilate and curette, in this form of displacement, as is generally done, and expect good results, is a practically useless procedure. In extreme cases the anterior lip may also need attention.

In immobile retroposition with anteflexion, Burrage advocates, besides curetting, a division of the utero-sacral ligaments through an abdominal wound, and suspension of the uterus.

Where we have retro-deviation plus adhesions, it may be corrected in the following manner: Make a transverse incision through the posterior fornix, break up the adhesions, carry the uterus forward, then pack gauze into Douglas's pouch and also beneath the cervix, pressing it well upward and backward. The adhesions thus formed will lead to a correction of the displacement.

The treatment of excessive mobility of the uterus is essentially the same as that for movable retroversion of the uterus. A pessary will effect a cure in a percentage of these cases. Edebohls advocates Alexander. The writer would suggest cervico-vaginal fixation to those who object to wearing a pessary.

In retrodisplacement it sometimes happens that one or both ovaries may be prolapsed. This condition very frequently is the cause of more disturbance than the malposition of the uterus itself. When the prolapse in question is due to a lax and elongated ovarian ligament, to simply correct the malposition will not relieve the patient. The ovaries must also receive your attention. Two methods of treatment are advocated: first, by taking up the slack or making a fold in the ligament and stitching it with either silk or cat gut; second, as advocated by Dudley, stitching the ovary to the posterior surface of the broad ligament. In the absence of severe complications, this may be done through the vaginal route, when it is also possible to shorten the round ligaments, or simply correct the ovarian prolapse and do the posterior cervico-vaginal fixation. Of course, where the complications are extensive, viz., deep infection involving intestines, appendix, etc., the suprapubic route would offer better facilities.

The writer's work through the vaginal route, which includes a number of cases of resection of the ovaries, tubes, shortening of round ligaments and hysterectomies, has been very gratifying. It was really a stepping stone to thorough study of plastic work.

Presumably it may be said that the nearest approach to an ideal operation in uncomplicated retrodisplacements, is the one which takes up the slacks of the utero-sacral and round ligaments.

We now come to the consideration of complete prolapse. We have the following factors to consider: Backward displacement, including relaxation of the utero-sacral muscles; a sub-

involuted uterus, probably a ductile cervix, and a relaxed vaginal outlet, or a complete tear. We therefore have certain fundamental facts that must be considered: first, the whole vaginal walls are inverted. There can be no uterine procedenture without a corresponding vaginal inversion, unless it occur as a part of Glenard's disease, and then the vagina may be inverted by the sagging downward of a long ductile cervix; third, the anatomical relations of fascial structures; fourth, the intact levatores ani is the most important factor in preventing this form of displacement. The indications in this form of displacement are clearly as follows: First, to cause involution of the uterus, thus rendering it lighter and capable of support by the pelvic fascia in the broad ligaments and elsewhere. To renew the tension of the pelvic fascia throughout the pelvis, that proper support may be given to the levatores and the connective tissue and its vessels and the rectum and bladder. When this is thoroughly done, we will be able to discard various auxiliary operative procedures, such as the Alexander ventro-fixation and others, and stand squarely by the results of our plastic work on the pelvic floor.

Previous to any surgical procedures, Emmet advocates preparatory treatment. After replacing the uterus and pushing it up as far as may be in the pelvis, the patient is placed in bed, the foot of which is raised from 12 to 18 inches from the floor. The object of this treatment is to cause contraction of all the pelvic veins with a resulting involution of the uterus and vagina. This treatment must, however, be carried out for some time, which will be urged as a serious objection, as many poor patients cannot afford the loss of time. Munde's custom was to amputate the cervix high up and leave a granulating wound at the fornix, which, by its contraction, was to hold the cervical stump backward, when the fundus must fall forward.

If the cervix is repaired, two objects must be attained: first, the complete removal not only of all scarred tissue, but, equally important, of all diseased tissue; second, the excision must be carried down to the plane level with the bottom of the tear where it touches the canal. You may choose between Emmet's and Reynolds' anterior colporrhaphy. In doing the posterior operation the writer would advise carrying the denudation the whole length of the vaginal wall. I have succeeded in obtaining splendid results in five cases operated upon according to the above described methods.

To maintain a prolapsed uterus in a normal position by means of a series of plastic operations is by no means an easy task; still, there is less danger to the patient than in doing either a ventro-fixation or a suspension. The writer has abandoned the operation for ventro-fixation for the following reasons: It is unscientific, as it places the uterus in an arbitrary position — the uterus is made to support rather than be supported. It is a barrier to normal gestation. The circulation is more or less disturbed as the vessels are put on the stretch, and vesicle irritation is sometimes caused by dragging the uterus beyond a certain level, which is certainly done in this operation. Again, no operator can predict in advance how large or how small the resulting adhesions may become. Just here is the element of uncertainty and danger. If small they will probably stretch into a suspensory ligament; if dense and large you may expect trouble.

The writer is opposed to creating artificial supports. Nature has furnished enough if proper use is made of them. After the menopause there may be no such objections as to making a fixed uterus support relaxed tissues, for then it is a functionless organ.

Soon after Dr. Gilliam published his operation known as "round ligament ventro-suspension for retrodeviations," the writer performed it in a number of cases. From a physiological standpoint, it would seem that a suspended rather than a fixed uterus would better meet the demands of gestation. Unfortunately, the writer has not had an opportunity to study the effect of gestation upon ligaments so treated. Like fixation, there are serious objections to it, — the great possibility of intestinal strangulation and obstruction. Again, the uterus is in an arbitrary position, one set of supports doing the work of all. How long ligaments treated thus will act as a sustaining power, is a question the writer is not prepared to answer.

In failures, after a series of plastic operations, the intrapelvic method advocated by Dr. Henry T. Byford, for prolapse and procedentia, is worthy of consideration as it makes use of every available support.

When a hysterectomy is decided upon the vaginal route is preferable, uniting the anterior and posterior peritoneal margins, and then an end to end approximation of the stumps of the broad ligaments ought to form such a perfect support that there will be no danger of any future hernia.

In conclusion, permit me to say that whichever method you may choose, it will depend upon the degree of skill with which the work is executed, whether the outcome will be success or failure.

## Discussion.

### malpositions of the uterus.

Dr. J. C. Irish, of Lowell: I beg to differ somewhat radically from the reader in regard to the treatment of retrodisplacement and prolapse of the uterus by ventral suspension. I am very much at a loss to understand why it has become so much the fashion to criticise or condemn this operation, or why, when we have at our hands so simple and so effective a means of correcting retroversion and prolapse, so many other more difficult and uncertain procedures should be resorted to.

The four principal criticisms of the after results of the operation are: First, that there is danger of obstruction of the bowels by being caught in the resulting ligament; second, dystocia of labor; third, that the uterus is still left in an abnormal position; fourth, that it is an unsurgical procedure.

I have had a long experience with this operation, going over a good many years, and including more than

one hundred and fifty cases. In no instance in my own practice has obstruction of the bowels occurred from ventral suspension, nor indeed have I ever heard of a case. This danger, I am certain, is very much more imaginary than real. In regard to the dystocia of pregnancy, a few years ago Dr. Noble of Philadelphia investigated over eight hundred cases of ventral suspension in reference to this point. The only dystocia of pregnancy or labor that he established was the following:

In some cases as the pregnant uterus enlarged, there was a thickening of the anterior muscular structure of the uterine body and neck which encroached upon the entrance to the pelvis and interfered with the engagement of the head. The os uteri was also carried backward towards the sacrum.

This single dystocia in labor, due to suspension of the uterus (and this is the only one that is shown), I believe to be entirely avoidable. I am very certain that this faulty development of the pregnant uterus has resulted from the introduction of the sutures on the posterior uterine surface. It is very evident that such forced right-angled attachment to the abdominal wall might interfere with uterine development. By placing the ligatures on the upper anterior surface of the uterus this whole difficulty would be prevented. If my conclusions are correct, the operation should be absolved from the charge of producing this dystocia of labor. It may be true that the uterus after suspension is not left in an exactly normal position, but it is near enough normal so that it ceases to give any trouble to its possessor, and the patient with the suspended uterus is exactly as well satisfied with it as though the position were perfect. At any rate, the patients consider themselves perfectly cured.

This is characterized as an unsurgical operation, but it seems to me that an operation which is so entirely simple, so easy to do, free from danger, and which perfectly corrects the disability for which it is done, is really a very surgical one. Finally, from the result of my own experience and that of my confreres who do ventral suspension, I believe that no other surgical procedure should be considered in the treatment of uterine retrodisplacement or prolapse.

Dr. J. G. Blake, of Boston, said that he had not seen any unsatisfactory results follow the operation of suspension of the uterus. If danger of strangulation of intestine arose from the adhesions between the fundus and the abdominal wall, this danger is just as great before as after the menopause; yet many writers say that the operation is indicated after the child bearing period, but not earlier. There are definite indications for suspension, in retrodisplacements and moderate degrees of prolapse. In all the cases he has seen, either in hospital or private practice, no trouble has arisen following the operation, and in almost every case partial or complete cure has resulted. The actual cases of strangulation reported as a sequel are extremely few.

## SUBPERIOSTEAL FRACTURES OF THE HUMERUS IN CHILDREN.

BY J. S. STONE, M.D., BOSTON.

The following cases presented themselves in the General Surgery Service at the Children's Hospital and seem of sufficient interest to be worthy of report. They illustrate the dangers of overlooking fractures in children, and call particular attention to the symptoms by which subperiosteal fractures of the surgical neck of the humerus may be diagnosed in the absence of the usual signs of fracture. The medico-legal importance of the recognition of such cases as those to be described is obvious.

For the radiographs the writer is indebted to Dr. Percy Brown.

Case I. M. F., a girl eleven years old, came to the Surgical Out-Patient Department of the Children's Hospital on May 18, 1903.

Two days before she had fallen from a swing injuring the right arm. The skin had been much inflamed by being rubbed at home with kerosene. No bony lesion was found. There was complete inability to raise the arm from the side. The elbow and forearm were moved with perfect freedom. The child was extremely nervous and of poor physique. The disability was thought to be chiefly hysterical.

A sling was applied. Some atrophy of the deltoid developed later. In a fortnight the arm could be moved much more freely and could be raised somewhat. After six weeks motion was free in every direction. The functional result was perfect. Three weeks later the child was examined more thoroughly. There was then to be felt, perfectly plainly, an irregularity in the neck of the humerus. There was slight forward projection of the upper end of the lower fragment and slight forward bowing. The callus was very small.

The radiograph taken at that time, nine weeks after the injury, confirmed this clinical diagnosis of fracture which was, however, made only after the lapse of two months and in view of the second and third cases.

Case II. M. S., a girl ten and a half years old, was brought to the Accident Room of the Children's Hospital on July 6, 1903. She had that day fallen down four or five steps hurting her left arm. She was unable to raise the arm from the side. She was examined very carefully in the accident room and no bony injury was found. The diagnosis made was injury to the deltoid. A sling was put on and the mother was told to apply an ice bag to the shoulder. Next day she came back to the Surgical Out-Patient Department. There was then marked swelling and slight ecchymosis in front of the neck of the humerus. There was slight thickening connected with the bone at the same place. The girl could move the forearm and hand freely. The arm could be moved fairly freely except that it could not be abducted. Passive motion was free in all directions, and caused but little pain.

A radiograph was taken at once which showed a transverse fracture of the surgical neck. There was absolutely no displacement laterally. The upper end of the lower fragment projected forward a little and there was slight impaction of about a quarter of an inch posteriorly causing a slight forward bowing.

No attempt was made to correct the slight deformity. The child was treated by coaptation splints and a shoulder cap with a wrist sling. Considerable atrophy of the shoulder muscles came on within a few days. The callus which resulted was small. Union was firm in six weeks and the child was discharged with a perfect functional result.

Case III. M. O'C., a girl aged six and a half years, was brought to the Surgical Out-Patient Department of the Children's Hospital on July 18, 1903.

Two weeks and a half before she had fallen off a fence. Afterward in spite of the fact that she had no pain whatever she could not raise the right arm from the side. She could use the forearm and hand perfectly but was brought in because of the continued disability at the shoulder which was not diminishing at all.

There was considerable atrophy of the deltoid and supraspinatus muscles, and slight of the infraspinatus.

There was complete inability to abduct the arm. Other motions were free and caused no pain. The hand could be raised above the head when the humerus was carried directly forward. A very slight bony projection could be felt in the region of the surgical neck. The radiograph showed a transverse fracture of the surgical neck. There was very slight displacement forward of the upper end of the lower fragment with slight impaction posteriorly and a slight resulting forward bowing. A callus was forming. A shoulder cap and wrist sling were applied. The resulting callus was small.

The child was discharged with a perfect functional result at the end of seven weeks.

CASE IV. H. C., Jr., a boy of twelve years, entered the General Surgery Service of the Children's Hospital on Oct. 24, 1903.

A few hours before he had fallen off a trapeze striking on his left arm and shoulder. Since the accident he had been unable to raise the arm from the side and any attempt to do so caused pain. The motions of the forearm and hand were free but there was absolute inability to raise the arm from the side, and passive motions at the shoulder caused slight pain. The head of the humerus rotated in normal position. There was no crepitus. The only deformity was a slight fulness over the anterior surface of the humerus just below the head. There was slight tenderness at this point. There was slight shortening. Within a few days slight ecchymosis appeared along the upper part of the biceps. The radiograph taken the day of the injury showed a transverse fracture of the surgical neck with slight impaction and slight forward and inward bowing. The boy was treated with a wrist sling and swathe and axillary pad. After six days in the hospital he was sent to the Surgical Out-Patient Department. In six weeks he was discharged with a perfect functional result but there remained even at the end of six months a very slight projection forward on the anterior surface of the neck of the humerus.

CASE V. M. T., a girl of eleven years, was brought to the Surgical Out-Patient Department of the Children's Hospital on Dec. 30, 1903.

Two days before while playing she had fallen with the left arm outstretched. Another child fell across her. Immediately there followed inability to use the arm. The mother noticed tenderness and some ecchymosis about the shoulder. The pain was considerable.

Examination showed considerable atrophy of the deltoid and slight of the supra- and infra-spinatus muscles. There was slight fulness and tenderness in front of the surgical neck of the humerus. Passive motions of the arm were normal, but there was absolute inability to raise the arm from the side, especially when the forearm was supinated.

The radiograph showed a fracture of the surgical neck with very little displacement. A shoulder cap and wrist sling were applied. In three weeks a firm, small callus could be felt. In five weeks the child was discharged well with perfect motion.

These five cases illustrate the risk of overlooking subperiosteal fractures in children.

In the first case the fracture was completely overlooked and the trouble was regarded as chiefly hysterical. The shoulder was carefully examined by several competent observers. It was true that the child was extremely nervous and excitable, but the real nature of the injury was not detected until the next two cases threw additional light upon it. Fortunately the arm was kept quiet in a sling so that in spite of the inefficient treatment the ultimate result was perfectly satisfactory.

In the second case the injury was thought to be to the deltoid when the child was seen in the accident room. Next day when seen in the Out-Patient Department the increased swelling and slight ecchymosis showed that there was some more serious injury. The swelling was greatest anteriorly just below the head of the humerus. The radiograph established the diagnosis at once. Fortunately a sling had been worn and so further harm had been prevented, though the fragments may have moved slightly if one judges by the ecchymosis and swelling.

With the first two cases in mind the diagnosis was at once suspected and promptly confirmed by the radiographs in the other cases, in spite of the fact that the objective symptoms, aside from the inability to use the deltoid, were so slight.

The cases are so similar, in fact so nearly identical, that it seems that the diagnosis should be made with assurance from the clinical symptoms without the aid of the radiograph. Each occurred in a child beyond the age at which greenstick fracture is most common. Each resulted from a fall upon the outstretched arm. In each there followed absolute inability to use the deltoid. Each child could with varying hesitation and difficulty raise the hand to the face and the top of the head but always with the arm kept as close to the side as possible. In each, passive motions in all directions could be made to the full normal limits and were guarded by but slight spasm. Each had a slight atrophy of the deltoid and scapular muscles.

The deformity in each case was trifling. Each had a very sharp, bony ridge on the anterior surface of the neck of the humerus just at the seat of fracture; but this deformity might easily be overlooked unless attention was directed to its exact location. Each had slight localized tenderness at the seat of fracture. Each had very slight pain about the shoulder. The two signs of fracture ordinarily sought, crepitus and abnormal mobility, were conspicuously absent in each case.

These injuries belong to what may be called subperiosteal fractures. Greenstick fractures occur most frequently in somewhat younger children. The latter term should be confined to those cases in which the cortical bone on the convex side is broken but on the concave side is merely bent at the point of fracture. In a true greenstick fracture there is thus always an angular but never any lateral displacement. In each of these cases the radiograph showed the fracture to be transverse with slight lateral displacement. In none of these cases except the fourth was the impaction alone sufficient to have maintained the fragments in their relation to each other. This is shown by the radiographs and perhaps by the absence of shortening. Impaction may mask a fracture, but in children the absence of marked deformity, the absence of



CASE II. July 7, 1903.



CASE IV. October 24, 1903.



CASE III. July 18, 1903.



CASE V. December 30, 1903.

crepitus, and the absence of abnormal mobility are to be attributed in part to the slight impaction, but chiefly to the toughness and strength of the periosteum.

When after a fall on the arm or shoulder children are unable to abduct the arm but present none of the other signs of fracture or dislocation and are able to move the arm in other directions most careful examination should be made to determine localized tenderness anteriorly just below the head of the humerus, together with a slight irregularity in the contour of the bone at the same point. These signs are sufficient to establish the diagnosis of fracture of the surgical neck, and should deter one from further attempts by rough handling to secure crepitus or mobility.

## THE PHYSICAL RELATIONSHIP OF FINSEN LIGHT, RONTGEN RAYS AND RADIO-ACTIVITY.*

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There has recently come into medical or surgical use three physical agents or processes, — Finsen light, Röntgen rays and the radiations of radio-active substances. All three are capable of producing sciagraphs, though of varying excellence. All three produce somewhat similar changes in normal and diseased body tissues. They are thus related in their effects, and the present purpose is to trace any physical relationship that may be the basis of this similarity. All reference to the conditions under which they are produced and the method of handling them will be omitted, and only their essential natures considered, — Maxwell's electromagnetic theory of light, of course in its simplest form, J. J. Thomson's highly probable hypothesis in regard to the nature of Röntgen rays, and the commonly accepted but rather complex conception of radio-activity. Finally, in looking for that which all three have in common, we shall find it in their so-called ionizing effect, — the breaking of molecules into subatomic particles, charging the larger with positive and the smaller with negative electricity. This effect common to the three is perhaps the intermediate process preliminary to the final physiological result.

The light medically rechristened as Finsen light has long been known to physicists as ultra-violet light, and known to have many remarkable physical effects. It differs from visible light only in the frequency of its vibrations. Visible light in turn differs only in frequency from the electromagnetic waves predicted by Maxwell, first discovered electrically produced by Hertz, and later made of practical use in a sensational manner by Marconi. To understand the nature of Finsen light, therefore, one has only to understand the nature of the waves of wireless telegraphy. While the difference in frequency and in the length of waves is enormous, in essential nature the two are identical.

* Read before The Massachusetts Medical Society, June 8, 1904.

The conditions of wireless telegraphy are so familiar to every one that it furnishes an excellent starting point for the explanation of the nature of the electromagnetic waves and of the ether. When the electricity surges up and down the vertical wire at the sending station, and this occurs whenever a spark passes, waves radiate from it in all directions horizontally. These waves have a dual nature. They consist of electrical stresses vertically — that is to say, parallel to the wire — and magnetic stresses horizontally. This point is, perhaps, worth elaborating slightly. The ether has three known attributes. These are ordinarily spoken of as its power to transmit electric, magnetic and gravitational forces. The mental picture which the physicist has before him is a little more definite than this. He usually pictures to himself the ether as having some sort of mechanical structure, and a number of crude models have been devised by different men. These, however, are most unsatisfactory, and the only safe statement is that the ether is capable of transmitting an electric and a magnetic stress. But his working conception is that an electric charge actually alters the condition of the ether; that this spreads to greater and greater distances; and that this condition of the ether is of such a nature that any other electric charge, which in the unaltered ether would experience no force, will, in the altered ether, experience a force urging it in a particular direction. Further, the ether is of such a nature that a magnet alters it, first near at hand, but in a very short time at very great distances. This change in the ether when completed differs from the former change, for now a magnet is necessary to detect it. And, moreover, a most important fact is that a *moving* magnet or a moving electric charge produces both changes in the ether at the same time. Considerable is known in regard to these stresses in the ether, — for example, their velocity of propagation, but not enough is known to make it possible to construct a detailed mental picture. The ether also transmits gravitational stress, but nothing is known in regard to this, not even the velocity with which it is transmitted.

Returning to the waves of wireless telegraphy the application will be evident. When the electricity with which the wire is charged surges up and down, it changes the ether in its immediate neighborhood, producing some modification, we know not what; we only know that it spreads like an exceedingly rapid contagion, — one hundred and eighty-six thousand miles a second, and that, on finding at any point an electric charge or a magnet, exerts on it a force. As the electricity surges first up and then down the wire, the modification of the ether is reversed, and waves are formed. Ordinarily in wireless telegraphy these waves, notwithstanding their enormous velocity, are about a mile in length. Were the sending wire short, the waves would be proportionately short. This process of shortening the conductor over which the electric oscillations take place has been carried so far that waves have been obtained only about one eighth of an inch

in length, and, could this process of getting shorter and shorter waves by using smaller and smaller oscillators be carried far enough, they would be identical with visible light, — a little farther, and only a little farther, and the result would be Finsen light. Throughout all this the point to be remembered is that these waves are merely such changes in the ether that they exert a force on a magnet if they meet a magnet, or on an electric charge if they meet an electric charge. With the magnetic effects we are not here concerned, for the tissues of the human body are almost wholly non-magnetic, not quite, but almost wholly so. With the electric forces exerted by these waves we are concerned, for every molecule of the human body carries positive and negative charges. The application of all this, however, will be made later.

Röntgen rays are in many respects similar to light rays. Here, however, the source is not an oscillating electric charge which gives out a train of waves, but a negatively charged particle abruptly stopped by striking against the platinum disc in the center of the exhausted bulb. The result of this sudden stoppage, J. J. Thomson has shown, is a very thin wave, or, as he calls it, a pulse sent off through the ether. These pulses are, like light waves, electromagnetic, but instead of being in a train are single, are numerous as the number of bombarding particles is great, but only one pulse arises from each bombarding particle. The light waves and the pulses differ in another important respect. The Röntgen pulse is exceedingly thin. Thus, the length of a light wave is such that if two points were placed at a distance apart equal to the length of the wave, the most powerful microscope would just be able to resolve them. A Röntgen pulse is only about one ten-thousandth as thick. This exceeding thinness is the source of its great penetrating power. Such is J. J. Thomson's hypothesis in regard to the nature of Röntgen rays. The proof of this hypothesis might be found in a measurement of the velocity of the rays. Should the velocity be equal to that of light, the hypothesis would stand confirmed. Only two measurements have been made, by Brunhes and by Blondlot. The velocity was found to be the same as that of light; but unfortunately the method employed was faulty in the extreme. Moreover, further doubt has been thrown on this work by the subsequent claim by Blondlot of the discovery of N rays — an observation which no physicist of high standing has been able to repeat, although many have tried. There is, therefore, no direct evidence of this kind supporting the hypothesis advanced by J. J. Thomson. Nevertheless, it stands as the most probable explanation of Röntgen rays, and is generally accepted.

The explanation of the radiations from radioactive substances has probably been made familiar by many recent discussions, particularly by Rutherford, who has contributed so much both theoretically and experimentally. These radiations apparently consist of the emission of positively charged particles, negatively charged particles and ether pulse. The phenomenon is just as if an atom of radium in its minute structure consisted of two sizes of particles: the large, about the size of a hydrogen atom, charged with positive electricity, the others very much smaller charged with negative electricity, and, through some power, in regard to which there is absolutely no adequate hypothesis, this atom would throw off with tremendous velocity these particles. The positively charged particles form the so-called alpha rays, the negatively charged particles the beta rays. As a necessary consequence of any such process we should expect, as pulses in the ether, the so-called gamma rays. For just as the sudden stoppage of a rapidly moving electric charge causes an electromagnetic pulse in the ether, so the sudden starting of an electric charge must produce a pulse in the ether. Thus the Röntgen rays and the gamma rays are exactly the same in nature, and differ — if they differ at all — only in thickness. Whether the one or the other is thicker depends on whether it takes a longer time to stop the particles bombarding the platinum vane, or to start the particles off from the disrupting atom. So on this depends their relative penetrating power. The larger positively charged particles constituting the alpha rays, because of their size and comparatively low velocity, have but slight penetrating power, and in consequence are of only remote medical interest. The negatively charged particles and the gamma pulses have much greater penetrating power and are pertinent to the present discussion.

Coming then to the physiological problem we have the effect of three physical processes to consider, — a train of ether waves, ether pulses and a bombardment of negatively charged matter. Of these, the first two have a good deal in common. It is almost axiomatic to say that Finsen light and Röntgen rays, being purely phenomena of the ether, exert their first effect on atomic matter, and have their physiological effects as secondary results. While these waves and pulses are both electric and magnetic, we may, because of the non-magnetic nature of the tissues of the body, consider only the electric effects. Every atom of the body carries electric charges. It therefore is acted on by forces as these waves or pulses pass. A few years ago we would have said that the only effect of such forces would be to increase the motion of the atom as a whole, and it is pretty well established that this would have the effect of raising its temperature or of altering its chemical relationship. Very probably the greater part of the energy of all these processes is absorbed in this way, but it does not represent the whole effect. Within the last few years, new conceptions of the atoms have been developed. It is no longer regarded as an indivisible mass of matter bearing an indivisible charge. And not merely the atom of radium and other radio-active substances must be regarded as complex, but the collateral investigations of the last few years have shown that the atoms of other substances also are not the simple bodies formerly supposed. The phenomena of

spectroscopy long foreshadowed this, but only recently have atoms been dismembered, and the separate parts studied. This work is only now at its height, and the rather large mass of observations and data has not been correlated, and is in a somewhat chaotic state. Until all the conditions are known entire consistency is not to be expected. Still, the general conception of an atom that results from these investigations is, either that the atom is a central body to which is bound one or more minute electrically charged particles called corpuscles, or that it is a cluster of such corpuscles. The mass and the electric charge of these corpuscles have been determined for a large number of gases, and have been found to be the same for all, no matter what may be the total atomic weight. The mass of a corpuscle in any gas is about one eight-hundredth part of the mass of a hydrogen atom, while the charge on the corpuscle is about equal to the charge carried by a hydrogen atom during electrolysis. When a negatively charged corpuscle is torn from the atom, and it is now known that there are a great many ways of doing this, the remainder is charged positively. The two parts thus separated are called ions, and the process of separating them is called ionization. There are a great many ways of producing ionization. Almost any violence, particularly if it be electrical, done to the atoms of a gas may tear off a corpuscle from those atoms that happen to be in a sensitive condition. Thus Röntgen rays in passing through air or any other gas ionize it. The same is true of the radiations of radio-active substances; and this ionization may be produced by either part of the radiations — the radiant charged particles or the gamma pulses in the ether.

The phenomena of ionization of gases by the three physical agents under consideration present considerable variation; some of these, although by no means all, can be explained. If we compare, for example, Röntgen rays and Finsen light, we shall find that Röntgen rays ionize air by merely passing through it, and Finsen light does not; although there is some evidence that the air is ionized by the light discovered by Schumann, this light being of shorter wave length than that employed by Finsen. Or, speaking more broadly, any gas can be ionized by Röntgen rays, while light can ionize only a few gases directly. The explanation of this discrepancy between two processes so closely allied as Röntgen rays and light is as follows: The total energy of the Röntgen rays from an ordinary bulb is very much less than that of ultraviolet light as it would ordinarily be used in an experiment. One might therefore very reasonably, at a first glance, expect less rather than greater effect. Against this is the following consideration: The number of Röntgen rays, that is to say, the number of pulses coming from the bulb, is very much less than the number of waves in the ultraviolet light; so much less indeed that the energy in each pulse may easily exceed the energy in each wave. Moreover, the pulse of the Röntgen ray, being only one ten-thousandth as long as the wave, the electrical stress exerted for equal energies in the single pulse or wave rises to an enormously greater maximum. It is on the maximum force that the separation of the ion from the atoms depends. Thus in their great maximum force the Röntgen rays have the advantage. On the other hand, light has an unquestioned advantage in its periodicity which results in a selectivity through resonance. This line of argument, if carried out, would rapidly pass beyond the limits of the present paper. The above is cited merely as an example of what must be looked for if one goes below the surface of the phenomena and beyond its empirical application.

In résumé, these three physical processes are electrical — not merely the Röntgen rays and the radiations of radioactive substances, but also the ultraviolet light. Their first effect is that of electrical violence upon the atom, which results in an increased atomic energy, and in the case of some of the atoms of partial dismemberment, and a resulting ionization. The great physiological efficiency of the Röntgen rays suggests that ionization is the more important process.

Finally, it should be pointed out that the greater part of the study of these processes has been carried out on gases, while the physician is concerned with their effects on liquid and solid substances. Some work has been done in this field, and ionization results obtained. If there is to be, corresponding to the rapidly growing physiological chemistry, a physiological physics, there lies here in the ionization of liquids a field which the pure physicist, as such, is not likely to attack for some time to come.

## Medical Progress.

### PROGRESS IN GASTRO-INTESTINAL DISEASES.

BY ELLIOTT P. JOSLIN, M.D., BOSTON.

#### FETOR EX ORE OF GASTRO-INTESTINAL ORIGIN.

Rosenheim[1] contributes an interesting and valuable article on this disease which so often baffles treatment. Usually a foul breath is due to disease in the mouth, to bad teeth, the tonsils, the nose and throat. If foci here and in the respiratory tract can be excluded, attention should be directed to the digestive tract even if no digestive disturbance is apparent. Besides the digestive tract, a foul odor to the breath may be observed in uremia and in prostatic disease accompanied by retention and decomposition of the urine in the bladder. Having excluded all such sources one systematically examines the alimentary tract.

The œsophagus may be the seat of the disturbance if there is cancer or stagnation of the contents. Fetor is not, however, an invariable accompaniment. When present it is usually

[1] Die Therapie der Gegenwart, 1902, Nov., p. 483.

relieved by systematic lavage with water or disinfecting solutions.

Fetor is also uncommon in diseases of the stomach except when these are associated with disease of the mouth, *e. g.*, inflammation of the tongue and mucous membranes, swelling of the gums and irritation of the salivary glands. In such cases treatment of the mouth and teeth results in a cure, even if the lesion in the stomach persists.

Fetor may occur in catarrh, ulcer and atony of the stomach when these diseases are associated with decomposition and regurgitation of food, but this same odor may appear in a healthy person who has eructations after eating meat and fatty foods like sausage, bacon and cheese. Cancer and marked dilatation are generally accompanied by fetor, but even in advanced cancer the products of decomposition may pass on into the intestine. Here they may be rendered innocuous or be absorbed into the blood and exhaled by the lungs, thus infecting the breath.

The intestine is the most common digestive source of fetor. This is most constantly present in cancer and stenosis, less common in moderate stenosis and constipation.

The foul odor reaches the mouth usually by way of the lungs, though the gases may pass from the intestine to the stomach and there be belched. Fetor may accompany diarrhea, especially when acute indigestion is the cause, or in infectious processes associated with diarrhea, such as dysentery, tuberculosis, typhoid, more rarely in diffuse intestinal catarrh.

Rosenheim recounts several instances of fetor of intestinal origin accompanied by little subjective intestinal disturbance. The following is an example: A girl twenty years of age whose teeth and throat were pronounced healthy by specialists was troubled with fetor. She had slight constipation, but no gastric symptoms. The secretory and motor functions of the stomach were normal and the test breakfast odorless, though at the time of its removal the breath was bad. Urine normal. The stools were in hard balls, but otherwise showed no striking abnormality. An aperient water was given and a diet prescribed which contained a little white meat (chicken, fish, veal) simply prepared, milk, bread and butter, simple desserts, well cooked vegetables and fruit which were finely divided and free from skins and husks. Following this diet recovery took place in four weeks.

Another similar case is mentioned. At first the patient was put on a mixed diet; in the second period tea, red wine, meat, fish, white and black bread, and butter were given, and in the third period milk, one portion of white meat, white bread, zwieback, desserts and purée of vegetables. The fetor was least in the third period, though still manifest. The following diet was then prescribed: milk, tea, coffee, rice, macaroni, sago, nudels, simple farinaceous desserts, thoroughly baked white bread, zwieback, butter, a simple aperient water, lemonade, sweet fruit juices, sugar, the white (only) of egg, spinach, the tops of asparagus, artichokes, carrots, potato purée in small quantity. All sorts of cabbage, peas and berries were forbidden. Upon this diet the foul breath soon disappeared. Gradually the diet was enlarged by the addition of white meat one day, fish another, and finally a gradual return to a general diet was accomplished except that the meat was limited.

Rosenheim reasons from exclusion and from the effects of treatment that the fetor in these cases is of intestinal origin, and offers several hypotheses to account for it. (1) Slight changes may exist in the intestine which allow greater absorption of foul though normal products. (2) The organism may have lost its power to destroy such products. (3) An abnormally large quantity of products of normal quality may be produced.

What is the source of the products which contribute to the fetor? Clinical experience and experiment indicate the albuminous bodies. These decompose with bacteria to indol, skatol, phenol, oxyacids, ptomaines, volatile fatty acids, ammonia, sulphuretted hydrogen, methyl mercaptan, methane, hydrogen and carbonic acid,— all substances which can be excreted through the lungs.

### ELECTRICITY IN DISEASES OF THE STOMACH.

Borri [2] working in Ewald's clinic upon the action of electricity on the stomach, when applied internally, summarizes his results as follows: The therapeutic advantages which can be attained by the application of the electric current within the stomach are negative as far as secretion and motility are concerned. On the other hand its action is noteworthy upon the sensibility, but only when the galvanic current is used. With the negative pole in the stomach there occurs an anesthetic action.

### DYSPEPTINE IN DISEASES OF THE STOMACH.

Dyspeptine is a natural gastric juice obtained from the pig which Hepp in Paris has recently introduced into the treatment of gastric disorders. The original suggestion to use natural gastric juice therapeutically came from Pawlow, and later Hepp found that the most suitable variety was that obtained from the hog. The acidity reckoned in terms of hydrochloric acid is .2% and the dried extract 2.3%. The original preparation keeps well in the cold. Mayer reports the result of its use in v. Noorden's clinic.[3] It was given chiefly to patients with catarrh of the stomach and absent or diminished hydrochloric acid, and to cases of tuberculosis and chlorosis. The results of treatment were very favorable and manifested in decrease of subjective discomfort, increase of appetite and gain in body weight, and in some instances a return of the hydrochloric acid to normal limits. Treatment extended over five to seven weeks. Dyspeptine in 15 cc. (half ounce) doses was given during and

[2] Berl. Klin. Woch., 1904, No 26, p. 695.
[3] Die Therapie der Gegenwart, 1903, Dec., p. 541.

at the end of each meal, later simply three times a day. It was administered undiluted or disguised with essence of peppermint, lemon juice or beer.

THE DIAGNOSIS OF ULCER OF THE STOMACH BY THE DEMONSTRATION OF THE OCCULT PRESENCE OF BLOOD IN THE STOOLS.

Boas [4] calls attention to the importance in diagnosis of the demonstration of small amounts of blood in the stools. Frequently it is possible to find small quantities of blood in the stomach in ulcer, but many times it is not desirable to insert the tube for this purpose. Moreover, the insertion of the tube may easily cause slight hemorrhages even if ulcer is absent. It may be questioned whether the presence of blood in the stools can be demonstrated if the gastric hemorrhage is slight, but in answer to this are several observations which show that the ingestion of 3 cm. of blood are sufficient for this purpose.

In such examinations the presence of blood from the gums, the respiratory system and the lower intestinal tract must be excluded. In women one must avoid contamination by blood in the urine or from the genital tract.

A positive blood test in the feces, obtained under the above precautions, is obviously of much value; not enough data are as yet accumulated to demonstrate the worth of a negative test.

The method is as follows: Five to ten grams feces are reduced to the consistency of soup with water. The fat is then partially removed with 20 cm. ether, which also prevents annoying emulsions in the further course of the test. Three to five cc. glacial acetic acid are then added to the stool, the whole poured into a test tube and again extracted with ether. The addition of alcohol must be carefully avoided since alcohol alone will color the guaiac turpentine mixture blue. A few kernels of well pulverized guaiac resin are then added to the ether, carefully shaken, and then twenty to thirty drops old oil of turpentine poured in. After a little shaking, on setting aside there gradually forms a violet color, even deepening to blue, which becomes more striking on the addition of chloroform. Since the blue color is frequently confused with brown shades, it is well to control it by another test suggested by Klunge and by Schaer and controlled by Rossel. Instead of guaiac they use aloin. A knife point full of aloin is placed in a test tube and 3-5 cm. of 60–70% alcohol added and gently shaken. Ten to fifteen drops of this freshly prepared mixture, when added to the acetic acid ethereal extract of feces containing 20–30 drops of turpentine, give a bright red color in the presence of blood, and on standing acquire a pretty constant cherry red color. If there is no blood, the aloin reddens the fluid a delicate rose red, at the earliest in one or two hours and later turns to a yellow. Twenty-five to thirty drops of hydrogen peroxide can be substituted for the turpentine.

[4] Deut. Med. Woch., 1903, No. 47, p. 865,

A GASTRIC PHENOMENON IN MIGRAINE AND EPILEPSY.

Mangelsdorf [5] some ten years ago observed that the stomach of one of his patients was much larger during an attack of migraine than on the preceding day. Since then he has repeatedly confirmed his first observation and more carefully studied the phenomenon. As the result of frequent attacks of migraine with the accompanying dilatation and contraction he considers that the tone of the stomach is gradually permanently altered. Atony ensues which finally leads to gastric and intestinal disturbance. The author shows schematically the increase in the vertical diameter which occurs during an attack of migraine, and how this changes as the tone of the stomach improves under appropriate treatment. The difference in size is less marked in the advanced cases, because the stomach is then already much enlarged. When the stomach is nearer normal size in the free intervals, as in the early cases, the effect of an attack is most striking.

Mangelsdorf examined 409 of 469 cases of migraine which have come under his observation, and in all but one the stomach was abnormal. In idiopathic epilepsy the same phenomenon has been noted by Mangelsdorf. In a later publication he will consider the subject more in detail.

PEGNIN.

Sigel [6] in Ewald's clinic has made use of pegnin, a rennet ferment combined with milk sugar, to make milk more readily digestible. This powder was first described by von Dungern. By its action the milk is said to be precipitated in as fine curds as human milk with the addition of rennet.

The preparation of the milk is simple. The milk is boiled in a glass flask for half an hour, then cooled to 90° F. and a tablespoonful of pegnin added to each liter. After a few minutes the milk curdles. The milk thus curdled is then vigorously shaken until the flocs have disappeared. The milk is then ready for use; it should not, however, be further heated.

The taste and nutritive value are not disturbed by this process. Sigel reports that while others have employed this milk with children, he has used it chiefly with adults, and especially with those suffering from gastric disease in which there is a diminished secretion of rennet, — chronic gastritis, achylia gastrica. It was further used in those patients who might suffer from the irritation of coarse curds, notably cases of gastric neurosis and gastric ulcer. A large number of ulcer cases were fed, after the period of rectal nutrition was completed, almost exclusively with this milk. In these various classes of patients the milk was taken gladly almost without exception and was well borne. Sigel, therefore, would heartily recommend the use of pegnin.

[5] Berl. Klin. Woch., 1903, Nov. 2, p. 1004.
Berl. Klin. Woch., 1904, No 1, p. 17.

(*To be continued.*)

# Reports of Societies.

## AMERICAN SURGICAL ASSOCIATION.

Proceedings of the Twenty-fifth Annual Meeting, Held in St. Louis, June 14, 15, 16 and 17, 1904.

The Association met in the Assembly Hall of the Board of Education under the presidency of Dr. N. P. Dandridge of Cincinnati, Ohio.

### PRESIDENT'S ADDRESS.

President Dandridge departed somewhat from the practice of his predecessors, and instead of bringing before the Association some medical topic based on his own work, or attempting a discussion of some subject of active interest, he took the members to the backwoods, and interested them in the life and exploits of a pioneer doctor. He depicted a man of high scientific attainments and true culture, with all the elements of character which become the doctor and the man. He gave an exhaustive sketch of Antoine Francois Saugrain de Vigni, who was born in Paris Feb. 17, 1763. He came from a long line of librarians, booksellers and printers, who, as far back as Charles IX in Lyons and Henry of Navarre, had served the royal family of France. His knowledge of mineralogy made his advice often called for in the development of the mines in the Ohio valley. In the wilderness he supplied himself with ink from a natural chalybeate water and an infusion of white oak bark, and when in need of a fire, lighted it from a lens made by two water crystals with clear water between. Dr. Saugrain gave notice of the first vaccine matter brought to St. Louis, and indigent persons were vaccinated gratuitously. He practised in St. Louis till his death, in 1820. He must have been eminently successful, for he left a large landed estate for the support of his wife and six children. His scientific work lives in tradition, and has gained for him the title of the "First Scientist of the Mississippi Valley."

### WHAT ARE THE MINIMUM REQUIREMENTS FOR ASEPTIC SURGICAL OPERATIONS IN HOSPITALS WHERE THE SURGEON IS ASSISTED BY A LARGE STAFF OF INTERNES AND BY NURSES FROM A TRAINING SCHOOL?

This subject was discussed with great detail by Dr. George H. Monks of Boston, Mass.

### MINIMUM REQUIREMENTS FOR ASEPTIC OPERATING IN A HOSPITAL IN WHICH THE PERSONNEL OF THE OPERATING ROOM IS PERMANENT.

Dr. A. J. Ochsner of Chicago, in a paper on this subject, pointed out the fact that with a permanent personnel a definite system could be developed, which was most satisfactory, because the observations which suggested changes, as well as those which confirmed satisfactory methods, could be carried through a large, continuous series of cases under unchanged external conditions.

Stress was laid upon the importance of simplicity in the methods chosen. The less that was done in any given case, the slighter was the likelihood of doing harmful things. There should be uniformity in carrying out a plan of work, in order that every one connected with the system might know what had been done and what was to be done by the other members of the personnel in any given case. Above all things, the methods should be reasonable in their details. This would make the work more attractive, and consequently more satisfactory to those engaged in its prosecution.

The author then gave a detailed account of the system followed by him and his assistants at the Augustana hospital, where he had had an opportunity to develop uniform methods with permanent conditions during a period of fifteen years. The system comprised disinfection of patient, operator, assistants' and nurses' hands, instruments, silk, silkworm gut, horsehair, drainage tubes, hand brushes, dressings, implements, towels, sheets, etc.

The author also discussed drainage and irrigation.

Stress was laid particularly upon the danger arising from tying sutures too tightly, thus causing pressure necrosis, which favored the development of micro-organisms accidentally introduced.

The method of selecting assistants and nurses was described, and a table illustrating the manner in which each assistant recorded the progress of the wounds under his care was appended.

Dr. Charles Harrington of Boston, Mass., read a paper, by invitation, in which he detailed his studies in asepsis.

These three papers were discussed jointly.

Dr. De Forest Willard of Philadelphia said that surgeons who had to deal with the practical side of asepsis in surgical operations knew that their results satisfied them to a certain degree, but it must be confessed that they had failures, and it was very essential to know whether the failures were due to the method or methods employed, or whether there were difficulties which could not be overcome. Difficulties would beset surgeons, but the question resolved itself largely into one of extreme care on the part of every one, from the surgeon down to the lowest assistant, who had the materials in charge or in preparation. There could be no doubt that a hospital which had permanent assistants, permanent nurses, was the one that was likely to secure the best results from operative procedures on the patients under its care.

Dr. Charles B. Nancrede of Ann Arbor, Mich., emphasized two important points, one of which was inhibition, and the other tissue resistance. A germ might be inhibited to the point that would render it safe in a given wound.

Dr. John E. Owens of Chicago stated that different results were reported by different surgeons after using the same methods, and he had often wondered whether some of them might not have been due largely to the habits of surgeons.

So far as the disinfection of hands was concerned, a few years ago he was compelled to stop the use of corrosive sublimate on account of the condition of his hands, and since then he had been scrubbing them thoroughly with soap and water, keeping the nails of the fingers pared down, and afterwards washing the hands with salt solution and alcohol, and he thought his results were as good in hospital work as where other chemicals for sterilization were used.

Dr. W. W. Keen of Philadelphia spoke of his own method and the results which he had obtained by some experiments. He had adopted for several years past for the cleansing of his hands a method which was first directed to the attention of the profession by Weir, namely, the use of chloride of lime and carbonate of soda. The hands were washed thoroughly with soap and water, and in order to do this, he had in his own private hospital and at the clinic at Jefferson, little egg boilers, which were practically hour-glasses or sand-glasses that were reversible. These were marked "Soft-boiled," "Well done" and "Hard boiled." Soft-boiled corresponded to about three minutes; well done, five minutes, and hard-boiled, seven minutes. He told his assistants that when they had scrubbed their hands until the sand had reached "well done,"

good and faithful servant, they should stop. Every person who took an active part in his clinic had a culture taken from under the thumb, or one or two finger nails, particularly at the root of the nail, and from the free surface of the skin. During the last winter there were 213 cultures made, from the hands of himself and his assistants, in the clinic at Jefferson. Of this number, there were only 3 cases in which any culture was obtained. This made practically a sterility of 97% and an infection of about 3%. There was but one person who was free at every clinic, and that was the head nurse, who was a permanent official in the operating room. All the other nurses, and all the assistants, except his principal assistant, changed every three months.

He thought the method of keeping such a record of every person's hands served an admirable purpose by creating a sort of rivalry among those who were endeavoring to have clean hands before operation, and it was more to prophylaxis in preventing infection than in the results obtained that he attributed the value of the method.

Dr. W. B. Coley of New York did not believe sufficient stress had been laid upon sterilization of the skin, and although some authorities maintained it could be done properly in a few moments before operation, his experiments showed that with careful preparation the day before operation, in addition to what was done on the day of operation, sterilization of the skin even then could not be said to be perfect. In 250 cases in which he had examined portions of the skin or Reverdin grafts, taken from the field of operation immediately before, 25, or 9%, of the cases showed all kinds of cultures, some of them being staphylococcus and streptococcus. The only case of suppuration in two hundred cases showed a pure culture of the streptococcus. Carefully sterilizing the hands, using tincture of green soap, applied carefully, brushing and hot water, then washing thoroughly with 95% alcohol, with the use of rubber gloves, would give as good results as any of the measures which rendered the hands very hard.

With reference to primary union, an important element in aseptic surgery was to guard against the bruising of tissues.

### A CLINICAL REVIEW OF FORTY-SIX OPERATIVE CASES OF DUODENAL ULCER.

This was the title of a joint paper by Dr. Christopher Graham and Dr. William J. Mayo of Rochester, Minn.

The authors stated that a careful history was of prime importance. The leading symptoms in the forty-six cases reported were, first, pain, which might be due to peritonitis, distention from gas formation, pyloric spasm, and the irritation of acid gastric contents on open ulcer. The pain might come on in colics or last for some hours. Second, vomiting, principally of sour, bitter liquids, or, if obstruction supervened, of food after varying intervals. Third, gastric insufficiency from interference with drainage. There was usually hyperacidity of gastric contents, constipation, and a great desire for food, although the patient reduced the diet and ate often a small quantity, but might fail to get relief sometimes obtained in gastric ulcer proper. In latent cases, evidences of blood in the fecal movements might be the only sign. Differential diagnosis from pyloric ulcer in some cases might be impossible. A considerable number of cases closely resembled gallstone disease, and differentiation often could not be made. Such an error in diagnosis did not militate against the clinician, as both conditions were purely surgical, and the differentiation in many cases must be made on the operating table. During the past eighteen months 27% of their operative gastric and duodenal ulcers involved the duodenum in combination — 53.33%. There were 33 males and 13 females; in 43 out of 46 cases the ulcer was easily detected upon abdominal exploration as a thick, white, scar-like area. Liability of duodenal ulcer to perforate was greater than gastric, but more often safely protected by adhesions. Relatively sterile contents was also favorable. In all cases the ulcer was situated in the first two and one-half inches below the pylorus, and entirely above the entrance of the common duct of liver and pancreas, with its alkaline secretion, showing the effect of the gastric juices on the duodenal wall. In all doubtful cases of differentiation between duodenal ulcer, pyloric ulcer and gallstones, the authors recommended making an incision through the right rectus muscle one inch to the right of the median line. Gastro-enterostomy best met the indications, in that it diverted the gastric contents. In acute perforation, suture was recommended, with suprapubic drainage, with after-treatment, and exaggerated Fowler's position, sitting posture.

The 46 cases were divided into 5 groups: (1) Acute perforation of chronic ulcer; 4 cases, 2 deaths. (2) Acute hemorrhage in chronic ulcer, 1 case, 1 death. (3) Duodenal ulcer with gastric complications, 25 cases, 1 death. (4) Duodenal ulcer, with gall-bladder and liver complications, usually due to adhesions from chronic peritonitis, 9 cases, 1 re-operation, no deaths. (5) Eight cases, chronic pain and distress with debility, no deaths. Total, 47 operations, 46 cases,— five operations for acute conditions, with 3 deaths; 42 operations for chronic conditions, with 1 death.

Dr. E. Wyllys Andrews of Chicago had seen in the last year or two several cases in which a marked hyperplasia, patches of exudate, with thickening of the wall of the duodenum, ulceration of the first inch and a half of the duodenum connected with a similar condition of the pylorus, had produced such a degree of massive thickening that clinically at the time of operation it was indistinguishable from carcinoma. In one such case the operation, which was a McGraw elastic ligature gastro-enterostomy, left him in a dissatisfied state of mind, as he feared he should have done a more radical extirpation, and yet in this particular case it was his fortune to do a second operation for obstruction a year after the first operation, and he found, very much to his surprise, absolute disappearance of the thickened massive wall which had formed in the first place and simulated carcinoma. This was what Mayo himself called attention to, namely, when the obstruction was relieved, when the flow was permitted from some other point, the inflammation, or ulceration, at any rate, the hyperplasia disappeared at the point of irritation, and secondary to this again, when obstruction had been relieved by drainage below, the drainage below ceased to act, and again the opening became closed, so that the surgeon had to do sometimes a second gastro-enterostomy.

Dr. John B. Murphy of Chicago said the practical lesson the paper taught was the frequency of occurrence of duodenal ulcer; that it was not recognized, and that it was not differentiated from gastric ulcer or gall-bladder disease, whether it was of infective or of stone origin.

Dr. Alexander Hugh Ferguson of Chicago asked Dr. Mayo if he had outlined for himself the class of cases in which he would do a posterior gastro-enterostomy; also the class of cases in which he would do gastrojejunostomy or Finney's operation.

The speaker mentioned one case in which he did a

pylorectomy, removing the end of the pylorus and a portion of the duodenum, with an excellent result.

Dr. MAYO, in closing the discussion, and in replying to the remarks of Dr. Ferguson, said he did not know that they had ever tried to excise any of these ulcers excepting in connection with Finney's operation. They were irregular and thick; they led to large vessels, close to the common duct, and it was difficult to get a good stump. He thought the best thing to do was to make a gastro-enterostomy, which would afford, at least, temporary relief, but the gastro-enterostomy opening was very likely to contract, so that food would, after a time, continue to pass down over the duodenal ulcerated surface, and sometimes these patients would return for a second operation.

Dr. GEORGE BEN JOHNSTON of Richmond, Va., detailed seven cases of complete removal of the shaft of the tibia, with restoration of the bone.

In the discussion, Dr. DE FOREST WILLARD said it was greatly to be regretted that not only the family physician, but many surgeons, treated such cases as Dr. Johnston had reported, for rheumatism, when there was really no sign of that disease, and they were from the beginning cases of acute suppurative osteomyelitis. Then came the septic symptoms. The physician treated them for typhoid fever and other conditions, until they drifted into the hands of surgeons, with bones absolutely destroyed, the majority of them crippled for life, with deformity of the legs. These cases from their incipiency were virulent in type, and the only time for treatment was forty-eight hours after the onset, and the quicker the surgeon got inside the bone, the better. If cases of appendicitis demanded early operation, surely it was doubly important that cases of acute osteomyelitis should be diagnosed and operated upon early.

Dr. A. J. OCHSNER stated that in a large proportion of cases in which the shaft of the bone was entirely loose, when the periosteum was incised, if the bone was left in place, there would be a regeneration of a considerable portion of the apparently dead bone. If one took such cases as had been described, made an incision which extended from one end of the bone to the other, split the entire periosteum, made it necessary for the flow of lymph to be away from the tissues, left bone there as a bone graft, he had found in a considerable number of cases that there would be a regeneration of a large portion of this bone.

Dr. JOHN COLLINS WARREN of Boston said the subject was one that should be thoroughly discussed, and a message given to the profession to realize the importance of this septic process, so that cases of acute osteomyelitis might be sent to surgeons early and treated properly.

As to treatment, the great point was to prevent the spread of sepsis. This might be accomplished by trephining the bone, by proper disinfection, by a comparatively moderate operation, or it might be necessary in certain cases to do quite a radical operation.

Dr. P. S. CONNOR of Cincinnati, O., said that in some of these cases the disease originated superficially. The cases were uniformly mistaken for erysipelas. The redness of the overlying skin was taken as an indication of the existence of the disease. Then, we had a condition simulating typhoid fever after the disease had existed for a considerable length of time, or rheumatism for a while, then typhoid fever, when the condition did not subside. Early boring of the lower end of the tibia would put a stop to the trouble. A moderate incision would not infrequently end the trouble if boring did not.

Dr. S. H. WEEKS of Portland, Me., said that while many of these cases began as a periostitis, requiring a simple incision down upon the bone, there were many others which commenced as an acute osteomyelitis in the medullary canal, and he believed under such circumstances, when an incision was made down to the bone, there should be an opening made into the medullary canal, and that canal drained.

*(To be continued.)*

## THE RHODE ISLAND MEDICAL SOCIETY.

THE ninety-third annual meeting of the society was held in Masonic Building, Providence, on Thursday, June 2.

The House of Delegates met for the first time. There were present: Drs. Wm. R. White, President; S. A. Welch, Secretary; Horace G. Miller, Geo. D. Hersey, F. B. Fuller, John Champlin, G. T. Swarts, F. E. Burdick, W. A. Risk, Julian A. Chase and W. E. Wilson.

A letter was read from Dr. Frederick Holme Wiggin, urging the passage of resolutions in favor of a national incorporation for the American Medical Association. After discussion it was voted not to instruct the national delegate in this matter.

Dr. WHITE called attention to the discrimination in railroad rates against New England. From the west and central portions of the country the rate for delegate is one fare and a dollar; from New England it is one fare and a third.

Dr. CHAMPLIN said that the attention of the proper committee of the American Medical Association would be called to this matter.

The general session was opened at 11.30 A.M., by the President, Dr. Wm. R. White.

Dr. GEO. S. MATHEWS reported for the trustees of the Chase Wiggin Fund that one meeting had been held and a plan of work outlined.

Dr. WM. R. WHITE reported for the trustees of the Fiske Fund that the prize of $250 offered last year for the best essay on the subject, "The Action of Light as a Therapeutic Agent," had been awarded to Dr. Leonard Keene Hirshberg of Johns Hopkins University, Baltimore, Md. The coming year a prize of $250 is offered for the best essay on the subject, "The Sequelæ of Gonorrhea in Both Sexes."

Announcement was made of the deaths of Dr. Elisha P. Clarke at Hope Valley, March 17, 1904, of tuberculosis, and of Dr. Charles D. Wiggin at Mystic, Conn., on May 21, 1904, of pneumonia. Dr. White said that Dr. Clarke was formerly an honored president of the society and of great influence in the town in which he lived, an influence professional, mercantile and social.

Dr. George M. Crowell, formerly of Pawtucket, has become a non-resident member and settled in New Canaan, N. H.

The following physicians have joined the society since the last meeting;

From the Newport Medical Society, Drs. Alexander J. Anderson and Wm. A. Sherman of Newport, Dr. Floyd W. Rogers of Tiverton and Dr. Berton W. Storrs of Portsmouth.

From the Providence Medical Association, Drs. Joseph C. O'Connell, Clinton S. Westcott, Frederick G. Phillips, George S. Hathaway and Remington P. Capwell, all of Providence.

Dr. Wm. J. McCaw was appointed delegate to the commencement of the Rhode Island College of Pharmacy and Allied Sciences.

As delegates, were presented from the Massachusetts Medical Society, Dr. Grace Wolcott; from the New Hampshire Medical Society, Dr. Oscar Young, and from the Vermont State Medical Society, Dr. H. Edwin Lewis.

Dr. Lewis said that in the last two years the Vermont Society had reorganized, with twelve county societies. They had made progress in legislating for reciprocity with other state societies. They had recently secured a commission to investigate tuberculosis. Dr. Young of New Hampshire spoke of the successful meeting which their society had recently held. Their last legislature passed a bill for a free home for consumptives, but the governor vetoed the bill.

Dr. Wm. J. Burge presented an old picture of Dr. Isaac Senter, which he had found in Wickford on the wall in the old Shaw Homestead. Dr. Hersey, in his annual address,[1] spoke of Dr. Isaac Senter as a native of colonial New Hampshire who came to Newport in early life to study medicine with Dr. Thomas Moffatt, a noted Tory and librarian of the Redwood Library from 1750 to 1753. Later Dr. Senter was surgeon in the ill-fated Arnold expedition to Quebec, where he was taken prisoner. On his release he settled in Pawtuxet and later in Newport, where he acquired a high reputation. He was the earliest writer of note among Rhode Island physicians. A portion of his valuable library has come down to us through Dr. David King, late of Newport. Dr. Burge said that Dr. Senter was his grandfather's family physician.

Dr. James L. Wheaton, Jr., of Pawtucket, read a paper entitled "Colica Mucosa and Its Treatment." An abstract of which is as follows:

Until recently it has been difficult to characterize or classify this disease. One group of writers, including Einhorn, Boas, Ebstein, and Schutz, concede the rôle of inflammatory processes in the genesis of the majority if not all of the cases of this affection.

A second group, headed by Nothnagel, believe that there are two forms of the disease, one with and one without inflammatory phenomena, and they separate the two forms, calling one enteritis membranacea and the other colica mucosa, the latter only of neurotic origin.

The third group includes V. Leube, Fleischer, Hemmeter, Van Noorden and Westpfalen. The last says that the majority of cases which are accompanied by the formation of membrane are in reality secretory neuroses of the bowels. The neurosis is made responsible for the production of excessive quantities of mucus.

The mucus excreted may assume different types, loose, glairy, drier or intermediary transitions, depending upon its length of stay in the intestines. The mucus, however, is very tenacious, and in this differs from the ordinary intestinal mucus.

The etiology is a matter of various opinions. The majority of cases occur between the twentieth and forty-fifth year, and in women. All show more or less extensive neurotic or hysterical stigmata.

In almost every case the patient lives on a restricted diet and is underfed. The majority are dyspeptic or constipated. As a rule, preceding the development of the disease, the patient has been obstinately constipated for weeks or months.

The two cardinal symptoms are paroxysmal attacks of pain and the passage of smaller or larger quantities of mucus.

In treatment we consider the attack itself and its causes. For the former a narcotic and high injections, preceded or not by oil enemata, are indicated.

For the second, instead of restricted diet, it has been found best to give a very coarse diet, such as bread with a large proportion of husks, vegetables containing much cellulose, fruits with small seeds, besides large quantities of fat. This, with an occasional high enema of oil, will cure most cases and, in addition, many of the nervous phenomena.

[1] Transactions, vol. vi, p. 166.

Dr. W. Frank Morrison, of Providence, presented a paper upon, "The Harmfulness of Overeating." He said in part:

"There are great societies for the encouragement of public sentiment and of legislation opposed to alcoholic intemperance, but little is said of intemperance in eating. Only a few religious societies demand moderation in eating, and yet, while we are surprised at the endurance of these people and their capacity for work, and while we admire their fresh complexions and the placidity of their lives, they have few followers. The poor man takes pride in furnishing his family with a diet of rich and expensive articles of food, and he imagines that he is inciting them to greater health and strength.

"The amount of food eaten by the ordinary person in a day is much more than is needed."

Dr. Morrison closed his paper by saying that he thought that the treatment of people suffering from overnourishment was a matter of close observation on the part of the physician.

Dr. Wm. R. White, the president, delivered the annual address on "Some Phases of Medico-Sociology."

Dr. White closed his paper by referring to the change in the government of the society, saying: "With larger fellowship our strength and influence in our own cities and state will be recognized, and our power in matters that rationally concern us will be increased. Under the new plan much responsibility will fall on certain officers of the local societies, and you who are members of them, being loyal and true to this society and to your profession, will see to it that the right men are elected to office. To me the future of your society looks most encouraging. Remembering the good work of the past, I foresee more and better work. All that is necessary is interest and co-operation. If you older men will draw from your years of experience and observation; if you of middle age will give us the benefit of your large clinical opportunities in hospital and private practice, reporting your rare and interesting cases; if you younger men will tell us of the new things you have recently been taught in the splendid medical schools of the period; if you country doctors will tell us how you, single-handed, cope successfully with emergencies that in the city would mean from one to four consultants; if you women physicians will bring reports from your field of labor and show us men some better ways than those we fancy are the best; if you specialists will impart to us as much as you can afford to, or as you think it proper for us to know, and through us add to public safety and intelligence; if you health officials, medical examiners and school inspectors will keep in touch with us; if you who are in charge of our hospitals and institutions will inform us as to current progress in your lines of work; if, especially, you laboratory experts will report on latest discoveries that bear on diagnosis and treatment; then, I say, will the Rhode Island Medical Society show stronger reasons for its existence and support."

At the dinner which followed, Dr. Chas. V. Chapin was anniversary chairman. The speakers were the mayor, Augustus S. Miller, Prof. Wm. C. Poland of Brown University and Dr. C. V. Chapin.

Dr. Chapin, in closing the dinner exercises, said that while the specialist of modern times is a valuable member of the medical fraternity, and his great knowledge is at times almost indispensable, he hoped the time would never come when the general practitioner, who knows something about every branch of the science, would become extinct. The meeting was then declared adjourned.

THE BOSTON

# Medical and Surgical Journal.

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## WORK AS A THERAPEUTIC MEASURE.

AMONG the many rational therapeutic measures which have been advocated of late years, small attention has been paid to the efficacy of work. Rest, exercise, massage, electricity, hydrotherapy, vibration and many other means of treatment have been tried with much enthusiasm by various persons within and without the profession. Of these, perhaps none has had so enthusiastic a following as the so-called rest treatment, introduced in systematic form by Dr. Weir Mitchell, and practised indiscriminately ever since. That the rest treatment is useful and has again and again demonstrated its usefulness in appropriate cases, we make no question. That it has been peculiarly misused is likewise not open to doubt. We venture to say, with small expectation of contradiction, that the rest cure, so-called, has been far more satisfactory in the hands of its founder than in the hands of others, however conscientiously they may have attempted to carry out the lesson which he taught. As a matter of fact, all experience goes to show that our enthusiasms in many methods of treatment often get the better of our judgment, and that discrimination is easily lost in our effort to better a difficult condition. That this undue enthusiasm is, however, a valuable, although unacknowledged, factor of the treatment must also be admitted, and with enthusiasm as such we must certainly have no quarrel.

In view, however, of all the time and attention which has been given to treatment by so-called rational methods, it is somewhat extraordinary that no systematic attempt has been made to systematize a method of treatment which shall have work, either physical or mental, as its fundamental principle. Of course, we recognize the fact that physicians are continually advising exercise, and often physical labor of a more or less definite sort, but so far as our knowledge goes, with the possible exception of Moebius, no one has mapped out a work cure in the same systematic fashion as a rest cure, for example, has been developed. We are so accustomed to consider our patients as individuals of lowered physical and mental vitality that we frequently overlook the fact that their appearance of invalidism is due to quite other causes than those for which rest and recreation could work a cure. It becomes increasingly apparent, as one's attention is directed to the matter, that overwork, as the term is popularly used, means almost nothing. It is the rarest possible experience to come in contact with a person who is really suffering from overwork as such. His hours may be long, his work may be uncongenial, and his physical strength insufficient to meet the demands placed upon it, but to generalize and say that overwork, as such, is the cause of the innumerable nervous breakdowns which are everywhere about us is no longer to be maintained. Our conviction is growing, on the other hand, that the lack of proper employment is rather the source of the various failures which are familiar to every physician. That such employment of the mind and also of the body is conducive to health cannot be questioned, and we are inclined to think that if physicians insisted upon the necessity of work with anything like the frequency that they insist upon the necessity of rest, in dealing with the so-called neurasthenic invalid, they would accomplish far more definite results. If it be true that overwork is rare, and that the moral and physical stimulus which work gives is desirable, it may hardly be questioned that a systematic treatment by work is as rational as a systematic treatment by any other means. If we could realize that many of the ills of life are due to perversions of natural processes rather than to fundamental defects, the rationality of a plan of work as opposed to a plan of recreation or rest or anything else would forthwith become apparent. We await with confidence the formulation of such a method of treatment, which shall have for its aim a building up of temporarily disordered functions through systematic effort and employment. This tendency in sporadic form we see about us everywhere, but its systematic application as a legitimate and useful therapeutic measure seems not yet to have been attained.

## HEALTH AND MEDICAL LEGISLATION OF 1904 IN MASSACHUSETTS.

No session of the General Court for several years has been so barren in its results, so far as health and medical legislation is concerned, as that of the present year; and yet an abundant grist of material was introduced for discussion before several committees, in which both medical men and health officers showed an active interest. Among the topics presented in the shape of bills and petitions were the following:

To protect animals from scientific cruelty, House 174 (this bill met with its usual fate); to license barbers, House 378; to prevent premature burial (an absurd and chimerical scheme, already referred to in the JOURNAL); to prohibit fraudulent advertisement of medicines; to prohibit expectoration in public places; to revise the plumbing laws; to prohibit sales of food and drink containing deleterious substances; to prohibit the sale of cigarettes by other than licensed persons; to promote public health in theatres and places of amusement; to regulate the taking of ice; to prohibit the use of boracic acid and salicylic acid in preserving food products; for legislation on pollution of water supplies; on the registration of nurses; to regulate undertaking and embalming; for better examination of bodies before embalming; for labeling canned goods; two bills to regulate the sale of baking powders; to regulate the sale of face bleaches; to state on packages the ingredients of patent medicine; on the adulteration of vinegar; on the sale and giving away of opium; to prohibit the use of aniline dyes in food; that dog licenses may contain rules for the prevention of hydrophobia; on the powers of local boards of health; to prohibit the use of cellars and basements for bakeries.

Out of all this proposed legislation, only two or three measures were finally enacted and placed among the laws of the Commonwealth.

One of these laws (Chapter 395) gives the State Board of Charity power to remove any person "infected with a disease dangerous to the public health, and who is maintained or liable to be maintained by the Commonwealth, to any hospital provided for state paupers, or they may provide such place of reception for such person as is judged best for his accommodation, and the safety of the public."

The emergency which gave rise to this legislation was the discovery of a case of leprosy in the town of Harwich.

Another act (Chapter 445) requires the approval by the State Board of Health together with certain other authorities of the plans for the construction of a dam across the Mystic River in Medford, and also directs the Board to report to the next General Court a method for purifying the Mystic River, Alewife Brook and adjacent water courses.

Two resolves were also enacted. One of these provided for an investigation by the State Board of Health as to the business of undertaking and embalming, and the other for an investigation as to sanitary and other conditions affecting the health or safety of employees in factories and other establishments.

## SHELLFISH IN POLLUTED WATERS.

CONSIDERABLE discussion has arisen within the last few years regarding the possibility of infection from contaminated shellfish taken in the neighborhood of sewage outlets. The matter has been discussed and studied at considerable length in England, with the result that a definite contamination of oysters has been demonstrated, making them a menace to health. In this state the legislature has also taken action, as the following excerpts from the revised laws show:

SECTION 113. The state board of health may examine all complaints which may be brought to its notice relative to the contamination of tidal waters and flats in this commonwealth by sewage or other causes, may determine, as nearly as may be, the bounds of such contamination, and, if necessary, mark such bounds. It may also, in writing, request the commissioners on fisheries and game to prohibit the taking from such contaminated waters and flats of any oysters, clams, quahaugs and scallops. Upon receipt of such request, said commissioners shall prohibit the taking of such shellfish from such contaminated waters or flats for such period of time as the state board of health may prescribe.

SECTION 114. Whoever takes any oysters, clams, quahaugs or scallops from tidal waters or flats from which the taking has been prohibited as provided in the preceding section shall forfeit not less than five nor more than ten dollars for the first offence, and not less than fifty nor more than one hundred dollars for each subsequent offence; but such penalties shall not be incurred until one week after the commissioners on fisheries and game shall have caused notice of such prohibition, with a description, or the bounds, of tidal waters or flats to which such prohibition applies, to be published in a newspaper published in the town or county in which or adjacent to which the tidal waters or flats to which such prohibition applies are situated.

These laws were passed in 1901, and it is under their authority that the State Board of Health has recently made an investigation of the condi-

tions existing in New Bedford, Mass., harbor. This investigation, which was prompted by the suggestion of the New Bedford Board of Health, has disclosed the fact that shellfish from the waters of certain parts of New Bedford harbor are infected. The State Board of Health has taken action prohibiting the taking of shellfish from these parts of the harbor, or from any place within three quarters of a mile of the outlet of any city sewer.

There can be no question whatsoever of the wisdom of such action, stringent as it may at first appear to be. As we have already suggested, the evidence is rapidly accumulating to show that infected shellfish are a very serious menace to public health, and that through their agency, disease, notably typhoid fever, may be spread to an alarming degree. The avoidance of this danger naturally lies in the closest possible inspection of oyster beds and other collections of shellfish used for food wherever there is a possibility of contamination through sewage. Were this done, and we have no doubt it will be done, this menace to the public health would quickly be eliminated. We are glad, therefore, to call attention to the action already taken with regard to New Bedford harbor.

## MEDICAL NOTES.

CHICAGO AS A HEALTH RESORT. — According to the weekly bulletin of the Chicago Health Department, it is again insisted that Chicago is the most healthful large city on earth. It is especially the best city in which to be born, as witnessed by certain figures of the number of deaths under five years. In 1894 the proportion of deaths under five to the total number of deaths was 46.1%, whereas in 1903 it was but 28.6%. The figures show a decrease of 37.9% in the child mortality in the last decade, and for the first six months of the current year the proportion of deaths under five to the total deaths was only 24.01%, or nearly 50% lower than in 1894.

HONORS TO PHYSICIANS. — On July 16 a monument in memory of Pasteur was unveiled in Paris by President Loubet. The unveiling was attended by Mme. Pasteur and by various representatives of the government and of abstract science. It is reported that a prize in honor of Adolf Kussmaul has been founded by Professor Czerny, his son-in-law. It is intended to award the income of $2,500 every third year for the best work on therapeutics published in German during the preceding three years. Dr. Otto Kahler, formerly professor of medicine at Vienna, has been honored by the unveiling of a bust at the school of medicine.

ROCKEFELLER INSTITUTE PLANS.— According to the *Medical News* plans have been filed for the new laboratory building in New York to be erected on Exterior Street, east of Avenue A, for the Rockefeller Institute of Medical Research, of which Dr. William H. Welch, of Johns Hopkins University, is president, and Dr. S. Flexner, Resident Director. It is to be a five-story edifice, 136 x 60, with a facade of limestone and brick. It will be decorated with pilasters of brick, and have a porch entrance flanked with decorative columns for the support of the electric lights. The first floor will be an assembly hall, with a library and study and directors' room. The upper floors will contain large general and special laboratories and research rooms. The fifth will have a dining hall and living quarters, and the roof a special operating room and quarters for the animals under examination. Adjoining the main building will be a two-story building for the animals used by the doctors, and power house. The cost of the buildings is estimated at $325,000.

### BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon Aug. 10, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 48, scarlatina 11, typhoid fever 28, measles 9, smallpox 0.

ADDITION TO BROCKTON, MASS., HOSPITAL.— It is announced that the Brockton Hospital is to have an addition at a cost of $20,000, to be devoted particularly to surgery.

BOSTON MORTALITY STATISTICS. — The deaths from diarrheal diseases and tuberculosis have been comparatively high owing to the hot weather. The total number of deaths reported to the Board of Health for the week ending Aug. 6 were 250, as against 170 the corresponding week last year, showing an increase of 80 deaths and making the death-rate for the week 21.15. The number of cases and deaths from infectious diseases was as follows: Diphtheria, 28 cases, 1 death; scarlatina, 8 cases, no deaths; typhoid fever, 26 cases, 5 deaths; measles, 17 cases, 1 death; tuberculosis, 49 cases, 25 deaths; smallpox, no cases, no deaths. The deaths from pneumonia were 16, whooping cough none, heart disease 23, bronchitis 2, marasmus 9, cholera infantum 21. There were 9 deaths from violent causes. The number

of children who died under one year was 83; under five years, 107; persons over sixty, 39; deaths in public institutions, 82.

### NEW YORK.

Pathological Laboratories at Bellevue Hospital. — The announcement is made that Dr. Charles Norris of New York has received the appointment of director of the pathological laboratories of Bellevue Hospital, the appointment dating from Oct. 1, 1904.

Resignation of Dr. George F. Shrady.—The *Medical Record* of Aug. 6 announces the resignation of Dr. George F. Shrady from the editorship of the journal after a service of nearly forty years. Dr. Shrady has had editorial control of this journal from its foundation, thirty-eight years ago. Dr. Thomas L. Stedman, for many years associated with Dr. Shrady in the editorial work, now becomes editor.

Appropriations. — Urged on by an emergency message from Mayor McClellan, the Board of Aldermen on July 26 passed resolutions of the Board of Estimate and Apportionment, appropriating $5,500,000 for the Department of Education, in order that the work of the department may be continued without interruption. The mayor's letter requested the immediate passage of the resolutions because of the insufficiency of school accommodations in the city, not only in the matter of sites, but also in recreation centers, vacation schools and playgrounds, lighting facilities, and the equipment of kindergartens, cooking schools, workshops, etc. "The very apparent necessity of doing all in our power," he said, "to remedy the school situation with which we are confronted makes it unnecessary for me to impress on you further the obligations we are all under of putting at the disposition of the Board of Education the funds represented by these several appropriations." Among the other appropriations passed the same day were the following: $243,000 for the Department of Health; $100,000 for cleaning the sewers in the Borough of Manhattan; $67,000 for a new boat to run to the hospital for contagious diseases on North Brother Island, and $3,000 for the School of Agriculture in DeWitt Clinton Park.

June Mortality in New York State. — The bulletin of the State Department of Health shows that the number of deaths reported in the state during the month of June was 10,997. This is about 1,500 in excess of the average for the month in the past five years, June being uniformly in New York the month of the lowest mortality, with the exception of November. This increase in the mortality is stated to be in great part due to the marked increase in the deaths reported by New York City, which returns 1,362 deaths from accident. A large part of these was, of course, caused by the "Slocum" disaster. Of epidemic diseases, the only increase in mortality is from cerebrospinal meningitis, which became epidemic in New York City in March and reached its height in May, the deaths from it in June being about the same number as in April. Pulmonary tuberculosis caused an excessive mortality for the month of June, and this was general throughout the state. There were almost as many deaths from it as in May, and 150 more than in June, 1903. The prevalence of influenza and its allied or resultant affections, which characterized the disease movements earlier in the year, have, so far as reports of it as a principal or contributing cause of death are concerned, been largely abated. It is evident, however, the bulletin states, that its consequences have continued, and the increase in tuberculosis is attributed to it. Deaths from pneumonia and other acute respiratory diseases which more immediately accompany influenza, and which had been very high since January, were less than half as many as in the month of May.

Reunion of Incubator Babies. — There was recently held at Coney Island a reunion of incubator "graduates," where no less than forty healthy infants and young children were present. Notable among them were the Cohen triplets, who were born in a New York tenement house in July, 1901, weighing together at the time only as much as one baby of ordinary size, and who, during the rest of the summer, attracted much attention at the Pan-American Exposition in Buffalo. Dr. Edward Wallace Lee of New York, who with Dr. M. A. Couney of Berlin, the inventor of the incubators employed, installed the system first at the Omaha Exposition in 1897, gave some interesting statistics. He stated that whereas about 97% of the class of infants now reared in incubators formerly died, there had been lost but six out of 56 incubator babies at the Pan-American Exposition, four out of 32 at Coney Island in the summer of 1903, and three out of 38 during the present season. In this year's incubator colony at Coney Island there are three sets of twins and one of triplets.

## RECORD OF MORTALITY
FOR THE WEEK ENDING SATURDAY, JULY 30, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid Fever. | Diarrheal Diseases. |
| New York . . | 3,908,644 | 1,520 | 709 | 45.00 | 5.72 | 1.58 | .85 | 28.02 |
| Chicago . . . | 2,021,086 | 400 | 164 | 34.44 | 6.89 | .88 | 2.00 | 21.55 |
| Philadelphia | 1,407,968 | 434 | 178 | 39.59 | 5.52 | .46 | 2.07 | 24.17 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 238 | 105 | 41.60 | 3.78 | .84 | 2.52 | 27.73 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 121 | — | 44.62 | 5.78 | — | 8.26 | 27.27 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 73 | 33 | 36.99 | 8.22 | — | — | 28.77 |
| Boston . . . | 617,950 | 207 | 76 | 36.23 | 6.28 | 1.93 | .98 | 21.74 |
| Worcester . . | 136,925 | 31 | 16 | 22.58 | 6.45 | — | — | 22.58 |
| Fall River . . | 119,349 | 64 | 48 | 68.72 | 6.24 | .62 | — | 58.79 |
| Lowell . . . | 104,402 | 53 | 34 | 37.74 | 9.43 | — | 1.89 | 24.65 |
| Cambridge . | 100,998 | 16 | 9 | 62.50 | — | — | — | 56.00 |
| Lynn . . . . | 73,875 | 28 | 12 | 32.13 | 3.21 | 3.21 | — | 14.28 |
| Lawrence . . | 72,348 | 29 | 15 | 51.72 | 6.89 | — | — | 44.82 |
| Springfield . | 72,020 | 35 | 10 | 31.43 | — | 2.86 | — | 17.14 |
| Somerville . | 70,413 | 16 | 7 | 25.00 | 12.50 | — | — | 18.75 |
| New Bedford | 68,863 | 35 | 25 | 60.00 | 8.56 | — | — | 51.42 |
| Holyoke . . . | 50,538 | 18 | 13 | 50.00 | 5.55 | — | — | 50.00 |
| Brockton . . | 46,601 | 19 | 7 | 10.56 | — | 5.26 | — | — |
| Newton . . . | 39,310 | 6 | 2 | 16.67 | 16.67 | — | — | 16.67 |
| Haverhill . . | 39,061 | 7 | 1 | 14.30 | 14.30 | — | — | 14.30 |
| Malden . . . | 37,205 | 6 | 5 | 33.33 | 16.67 | — | — | 33.33 |
| Salem . . . . | 37,188 | 24 | 15 | 58.32 | — | — | — | 50.00 |
| Chelsea . . . | 36,499 | 12 | 9 | 16.67 | — | 8.33 | — | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 9 | 1 | 33.33 | — | — | — | 22.22 |
| Everett . . . | 30,209 | 7 | 4 | — | — | — | — | — |
| North Adams | 29,201 | 8 | 3 | 37.50 | — | — | — | 37.50 |
| Quincy . . . | 26,798 | 8 | 2 | 25.00 | — | — | — | 25.00 |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 6 | 1 | 33.33 | — | — | — | 16.67 |
| Brookline . . | 23,576 | 4 | 2 | — | — | — | — | — |
| Pittsfield . . | 22,870 | 13 | 3 | 23.10 | 15.40 | — | — | 15.40 |
| Medford . . | 21,956 | 8 | 6 | 37.50 | 12.50 | — | — | 37.50 |
| Chicopee . . | 21,692 | 6 | 3 | 33.33 | — | — | — | 16.67 |
| Northampton | 20,314 | 3 | 3 | 33.33 | 33.33 | — | — | 33.33 |
| Beverly . . . | 15,807 | 3 | — | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 2 | 1 | — | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | — | — | — | — | — | — | — |
| Newburyport | 14,478 | 2 | 0 | — | — | — | — | — |
| Woburn . . . | 14,315 | 3 | 2 | 66.67 | — | — | — | 66.67 |
| Melrose . . . | 13,819 | 3 | 1 | 66.67 | — | — | — | — |
| Westfield . . | 13,809 | 3 | — | 33.33 | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 2 | 0 | 50.00 | — | — | — | — |
| Revere . . . | 13,609 | 1 | — | — | — | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 2 | — | — | — | — | — | — |
| Southbridge . | 11,716 | 5 | 3 | 60.00 | — | — | — | 60.00 |
| Watertown . | 11,575 | 5 | 3 | 40.00 | — | — | — | 40.00 |
| Weymouth . | 11,350 | 1 | 0 | — | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,546; under five years of age, 1,531; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,468; acute lung diseases 204, consumption 345, scarlet fever 14, whooping cough 14, cerebrospinal meningitis 31, smallpox —, erysipelas 3, puerperal fever 5, measles 16, typhoid fever 50, diarrheal diseases 949, diphtheria and croup 41.

From whooping cough, New York 3, Chicago 5, Philadelphia 2, Pittsburg 2, Boston 1, Melrose 1. From measles, New York 8, Chicago 1, Philadelphia 3, Boston 2, Lowell 1, Chelsea 1. From scarlet fever New York 8, Chicago 2, Baltimore 2, Pittsburg 1, Lowell 1. From cerebrospinal meningitis, New York 25, Boston 3, Lynn 2, Marlborough 1. From erysipelas, New York 2, Taunton 1. From typhoid fever, New York 13, Chicago 9, Philadelphia 9, Baltimore 6, Pittsburg 10, Boston 2, Lowell 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending July 16, the death-rate was 13.7. Deaths reported 4,019; acute diseases of the respiratory organs (London) 62, whooping cough 92, diphtheria 37, measles 142, smallpox 5, scarlet fever 28.

The death-rate ranged from 4.8 in Bournemouth, to 26.2 in Bootle; London 12.9, West Ham 12.7, Brighton 13.6, Southampton 13.4, Plymouth 16.0, Bristol 11.5, Leicester 10.5, Nottingham 13.6, Liverpool 19.6, Bolton 8.9, Manchester 16.4, Salford 18.7, Bradford 15.2, Leeds 14.8, Hull 15.6, Sheffield 14.0, Cardiff 12.1, Rhondda 21.3, Wigan 14.1, Merthyr Tydfil 17.2, Hornsey 5.8, Huddersfield 22.5.

## METEOROLOGICAL RECORD.

For the week ending July 30, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | Rainfall in inches. |
| S. . 24 | 30.10 | 61 | 63 | 59 | 89 | 94 | 92 | N | E | 8 | 7 | R. | R. | .05 |
| M. 25 | 30.14 | 69 | 78 | 60 | 100 | 78 | 89 | N E | S | 4 | 8 | R. | C. | .02 |
| T. . 26 | 30.18 | 74 | 84 | 64 | 95 | 70 | 78 | S E | S | 7 | 10 | O. | C. | 0 |
| W . 27 | 30.11 | 76 | 83 | 70 | 86 | 76 | 81 | S W | S W | 10 | 10 | F. | C. | .11 |
| T. . 28 | 30.08 | 75 | 85 | 65 | 82 | 80 | 81 | S W | S W | 7 | 8 | F. | F. | 0 |
| F. . 29 | 29.99 | 72 | 81 | 64 | 84 | 50 | 67 | S W | W | 10 | 10 | R. | C. | .06 |
| S. . 30 | 30.15 | 68 | 77 | 59 | 51 | 56 | 54 | N W | S W | 8 | 12 | F. | O. | 0 |
| ☞ | 30.11 | | 79 | 63 | | | 77 | | | | | | | .24 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING AUGUST 4, 1904.

PURVIANCE, GEO., assistant surgeon general. Granted extension of leave of absence from June 20 to June 30, inclusive. July 30, 1904.

BANKS, C. E., surgeon. Granted leave of absence for one month and fifteen days from August 12. July 29, 1904.

SPRAGUE, E. K., passed assistant surgeon. To report to Surgeon G. W. Stoner, Immigration Depot, New York, for duty. July 29, 1904.

GREENE, J. B., passed assistant surgeon. Upon the return of Assistant Surgeon H. McG. Robertson, relieved from duty at New York (Stapleton) and directed to proceed to Fort Stanton as Inspector of unserviceable property. Upon completion of this duty to remain at Fort Stanton and await further orders. July 30, 1904.

LAVINDER, C. H., passed assistant surgeon. Relieved from duty at Delaware Breakwater Quarantine, and directed to proceed to New York (Stapleton) and report to medical officer in command for duty and assignment to quarters. August 1, 1904.

FOSTER, M. H., passed assistant surgeon. Granted leave of absence for fourteen days. August 4, 1904.

TROTTER, F. E., assistant surgeon. Granted leave of absence for ten days from August 5. August 4, 1904.

BAHRENBURG, L. P. H., assistant surgeon. To assume command of service at Delaware Breakwater Quarantine, relieving Passed Assistant Surgeon C. H. Lavinder. August 1, 1904.

SALMON, T. W., assistant surgeon. Granted leave of absence for seven days from August 2, 1904, under paragraph 191 of the regulations.

PORTER, J. Y., sanitary inspector. To proceed to Havana, Cuba, for special temporary duty, and to inspect the disinfecting steamer "Sanator." July 27, 1904.

BRICE, J. W., acting assistant surgeon. Granted leave of absence for thirty days from September 20. July 29, 1904.

FOSTER, J. P. C., acting assistant surgeon. Granted leave of absence for thirty days from August 1. August 1, 1904.

STUART, A. F., acting assistant surgeon. Department letter of June 22, granting Acting Assistant Surgeon Stuart leave of absence for thirty days from July 1, amended to read twenty-one days. August 1, 1904.

ROGERS, EDWARD, pharmacist. Granted leave of absence for sixteen days from August 5. July 28, 1904.

TROXLER, R. F., pharmacist. Granted leave of absence for thirty days from September 5. August 1, 1904.

NEVES, GEO., pharmacist. Granted leave of absence for thirty days from August 27. August 1, 1904.

### BOARD CONVENED.

Board convened to meet at Port Townsend, Washington, D.C., for the physical examination of candidates for second assistant engineer in the Revenue Cutter Service. Detail for the board: Passed Assistant Surgeon J. H. Oakley, Chairman. Acting Assistant Surgeon W. E. Patrie, Recorder.

### PROMOTIONS.

T. B. MCCLINTIC, JOSEPH GOLDBERGER and W. A. KORN, assistant surgeons. Commissioned (recess) as passed assistant surgeons to rank as such from July 28, July 27 and July 27, 1904, respectively. July 27, 1904.

# Original Articles.

## MIND CURES FROM THE STANDPOINT OF THE GENERAL PRACTITIONER.*

BY ROBERT T. EDES, M.D., READING.

If one wished to ascertain the general trend of opinion in the community relative to the progress of medicine in recent years, and with this object in view were to glance over the table of contents of a large number of medical journals from cover to cover, he might infer that leaving out surgery and obstetrics there was a sort of polarization going on in which one set of opinions grouped themselves around mental, psychical, and even miracle cures, as represented by all sorts of 'pathies, 'ologies and sects, religious and otherwise, and at the other extreme around a condition of polypharmacy such as the world has never before seen; where if we believe half of what we read on one side the wonder is that any one dies, if at all, before he reaches one hundred; or, if we believe another set of writers, that any one ever lives to grow up.

It may seem absurd, or at least disrespectful, to suppose that The Massachusetts Medical Society goes to either of these extremes. As a matter of fact I don't think it does,— not as a society,— but a little experience showed me that one of these poles is not without its attractions for some of the members, and it is not an unfair inference that the other is drawing to itself some adherents by the fact that such a subject as that upon which I have been asked to say a few words finds a place upon the programme.

I had occasion to send to a good many of the Fellows some years ago a circular letter of inquiry as to the drugs which it was thought desirable to reject as useless from the U. S. Pharmacopeia, and what should be added. I received some answers somewhat as follows: "What is the use of putting in a lot of trash such as is now there? Give us something practical and useful."

Then would follow a list in which the influence chiefly to be noticed was evidently the latest advertising pages in the Journals. When one looks over pharmacopeias and works on therapeutics (and by the way I know of little more instructive reading on the subject than Stillé's "Materia Medica" compiled when the learned author was a young man, studied side by side with the last edition of the "American Dispensatory" of which the therapeutic part was written by the same author after many years of evidently well digested experience), and if he notes the changing lists of drugs which have, many of them, been vaunted just as highly and on apparently the same basis as those now produced in such bewildering rapidity by the coal-tar chemists, and when he recalls the varied and often contradictory theories which have controlled the practice of medicine, many of them being, according to our present knowledge of pathology, absolutely groundless, he is obliged to acknowledge the vigor of the *vis medicatrix naturæ*.

But when we find that in spite of mistakes and contradictions, which the critics and satirists are not slow to perceive nor reluctant to remind us of, that the physician is still sought for in sickness as a helper and not merely as a sort of sanitary adviser, in order to promote recovery or at least to witness it, we have evidently to reckon with some kind of constant and permanent usefulness which has comparatively little to do with therapeutics as laid down in books, but which has been a part of the physician's *armentarium* ever since there were physicians.

This moral support or encouragement, the relief from responsibility, the substitution of decision for doubt, even a masterly inactivity when there are no active steps to be taken, has long been recognized by the laity and by those literateurs who are fond of doctors but not of drugs, although it is apt to be somewhat slightingly spoken of by those who want something to be done promptly.

We are all familiar with the story, which I presume continues to go down from one generation to the next, and which in one form or another is told to us by gentlemen of other professions who wish to pat us physicians on the back on public occasions, of the doctor's smile which was supposed to be worth so many hundreds or thousands per annum, according to the social stratum to which he administered. The market for this commodity, however, varies greatly. While a lady fatigued with what she is pleased to term her social duties may be very willing to pay quite a liberal fee for his smile to the fashionable practitioner who "does not believe in drugging," which is the proper name to apply to the administration of all medicines except those which *you* happen to fancy, and which does *not* exclude in the case supposed "just a little sleeping powder" or "just an occasional nerve tonic," there are others who begrudge even a small one for the moral support of an equally competent physician unless they get something with it which they can taste or feel. But this sort of comfort is hardly therapeutics in the strict sense, and it certainly does not work wonderful cures. If there are any, they are discounted in advance and supposed to be in the ordinary way of business, unless perhaps they find commendation in the doctor's obituary.

Considering the very prominent position which psychic treatment in one form or another occupies in the public mind and the extravagant claims made for it, and hence its necessary importance in the professional consciousness, it is worth while to consider what morbid processes can be beneficially affected by mental action. Of course we do not expect or admit any influence of outside or foreign mind or spirit or nerve function upon the bodily processes of any patient except through that patient's own mind or emotions. If any such be possible it is the nature of a miracle and does not come within the scope of human physiology.

*Read before The Massachusetts Medical Society, June 8, 1904.

"Christian Science" is so far correct that it refers its therapeutic action to the mind of the patient, stimulated of course by its meaningless phraseology and fantastic doctrines, which to a certain kind of intelligence appeal so much more strongly than either scientific reasoning or old-fashioned Christianity.

In an extremely philosophical and suggestive work ("Anglo-Saxons and Others," by Aline Gorren), which I saw for the first time after this paper was written and in part read, I find so excellent a statement of the mental attitude of a large part of our community that I cannot forbear quoting it:

The habit of action and attention to the realities have drawn away the mind from the field where the highest criticism of life is achieved, and the mental processes which such criticism calls into play are stiff from disuse. Human reason was told to act, to test all things for itself, to take no one's word for it, at the Reformation. But as a stimulant to its activity in the realms of abstract thought the Reformation was a failure. M. Guizot but observed what many others have seen when he wrote that in all Reformed countries something was lacking to the perfect organization of intellectual society, and to the free circulation of general ideas.

And here, by the way, is to be found the cause of all that vague, inconsequent, metaphysical yearning which, with apparent contradiction, runs like a vein in a rock up through the solid unspeculativeness of the Saxon nature. Nowhere are there so many persons of sound intelligence in all practical affairs so easily led to follow after crazy seers and seeresses, and after new "psychic" doctrines of every known and unknown degree of wildness, as in England and the United States. The tenets of the Russian religious sects are at least free from the pseudo-scientific pretensions which constitute the chief absurdity of American and English metaphysical churches, healing societies, and the like.

The truth is that the mind of man refuses to be shut out absolutely from the world of the higher abstractions, and that, if it may not make its way thither under proper guidance, it will set off even at the tail of the first ragged street procession that passes. If no habit has formed of making discriminations, of separating the genuine from the false, there will be sad mistakes made, evidently. And we shall continue to see business men not to be "taken" in by the sharpest in the management of their daily interests, not to be deceived in the quality of any material goods offered to them, sitting, ingenuous and receptive, under the jargon of some foolish woman with claim to a newly revealed cure for all the ills of the body and the soul.

And the upshot? — In the aggregate, with all his lack of critical faculty, no harm comes to this order of man. His brain, as to the abstractions, is never clear, is always in a fog; but he works, and he fights if need be, and he goes on without ceasing in the thing which he has undertaken and he succeeds. He succeeds because he never questions that he is right all through, and takes much of his proof on faith.

Who cannot feel the power that goes out from such a mental stand as this? A rationalistic, modern Frenchman, debating his motives, cynical as to his virtues, philosophizing his own errors, doubts and is lost.

This newer type of man does not debate, is by no means doubtful of his own virtue, and never philosophizes, not finding it easy work. And he is invulnerable, and everything goes down before him.

That trait of his which is called hypocrisy, but which is not hypocrisy, only a confusion of ideas and feelings, is the direct cause of one half of his impressiveness. The day on which he loses it will be a day of disaster.

What are the real physiological or pathological processes over which mental action, intellectual or emotional, can be supposed to have any effect?

There are certain ones covering a very wide field in the ordinary practice of medicine in which there is no satisfactory evidence of any such direct influence at all.

Fever, which is so important an element in pathology, especially of acute diseases, and a very large number of chronic infectious ones, is apparently uninfluenced. In the novel, to be sure, the mother, or the very old and wise physician, or the good "sister," or the pretty nurse, lays her hand upon the heated brow of the hero and his fever subsides. The so-called "fever of excitement," or "anger," over-excitement of any kind, may undoubtedly be controlled by reason, but there is not the least ground for supposing that the pyrexia of the pathologist, marked by a rise of temperature, an increased secretion of solids, and usually dependent upon a more rapid metamorphosis of tissue, is influenced in any important way by mental action, except so far as rest promotes and excitement hinders the normal processes of defervescence.

And yet in its early stages fever is to a large extent an affair of nerves. It can be reduced by baths and by various drugs. Why not by the determination of the patient or the spell of the faith curist? Simply because it is not. Over many processes of nutrition there is little influence for the worse and none at all for the better. Diabetes apparently sometimes takes its origin in shock, but the mischief once done is not to be undone by finding that the cause of the shock was an imaginary one.

Secondary anemia sometimes seems very amenable to psychic influences, but probably rather in an indirect than a direct way.

Idiopathic anemia, on the other hand, furnishes about as conclusive an illustration of the uselessness of an apparently well-founded encouragement as could well be.

What could apparently be more calculated to promote a cure, if a rational conviction of its possibility and actual presence could do such a thing, than the improvement in strength, in color, in well being, all sustained by the careful examinations of the physician who finds by his blood-count increasing amounts of red blood and disappearing abnormal forms; all but one of which the patient need know neither the presence nor the significance. And yet how fallacious! If well-grounded and reasonable expectations, seemingly almost realized, cannot cure, why should unreasoning and ignorant hope do so?

It was a remark of the older clinicians, that the mental condition of patients with disease above the diaphragm is much more cheerful

than that with disease in the abdominal viscera. If this disposition had a saving virtue, then pulmonary tuberculosis and valvular disease of the heart ought to be much more susceptible of cure than acidity of the stomach or constipation.

The value, importance and efficacy, as an adjuvant, of psychic influence in such cases is not to be denied, and no one would be inclined to minify it either in theory or practice, but it is most certainly not a direct one. It acts by encouraging the patient to persevere in such more positive measures as may be necessary in the particular case. It has been wisely remarked that it is possible for a patient to be too much encouraged, so that he is not willing and anxious, as he ought to be, to take the measures which are of the utmost importance for his recovery. The precise proportion in which hope and fear may be most advantageously combined is a matter for consideration in each case for itself.

No alienist would consider the "*delire des grandeurs*" of the paretic, in which he is convinced not only of his own abounding strength and universal powers, but of his perfect health, as a favorable element in the prognosis.

It is not probable that the most persuasive teaching of any sect can for the average man and for the moment produce a greater sense of well-being or lift him, in his own estimation, to a higher plane of thought than the administration of certain narcotics. The song may say,

> "Fill the bumper fair;
> Every drop we sprinkle
> O'er the brow of care
> Smooths away a wrinkle,"

but the pathologist will be likely to suspect that the "smoothing" process may not be altogether unconnected with edema, and finds that the more frequently this psychic influence is invoked the less of a prophylactic does it become to cirrhosis of the liver and arterial and other degenerations.

I think we are justified in saying, that over infections, degenerations, slow organic processes not dependent in any way upon mental activity, such as are those very largely which control the duration of life, the general health and the vigor of the constitution, direct psychic influences are practically *nil*.

Psychic influences come in contact with organic processes to affect them through the nervous system, and in particular through the vasomotor and secretory nerves, and symptomatically not only these, but also the ordinary motor and sensitive.

The secretions are, as is a matter of common observation, largely under the influence of mental impressions and of sensation. The activity of digestion is promoted by the pleasing taste of the food, and even its anticipation, and by the congenial company at the meal, and the reverse of this is also true. Solomon said: "Better is a dinner of herbs where love is, than a stalled ox and hatred therewith."

It has undoubtedly happened to many of you to be consulted by some patient who informs you that everything he eats hurts him, except when he goes out to a big dinner. It is even possible that a few hours from now may witness on a large scale, speaking with all due respect to the committee having the banquet in charge, a similar triumph of mind over matter.

Constant attention to the processes of digestion is well known to have a disastrous effect upon its comfortable accomplishment. The weighing of food and, worse yet, the constant use of the stomach tube by the patient, are practices much to be deprecated.

The effect of mental influence upon the movements of the bowels is notorious, and it is utilized not only in the every-day practice of the physician, but in the mystic séances of the faith curist. The effect also upon the secretions of the kidneys and skin is well known, and although this is usually pathological there is no reason why it might not under some circumstances be really, as well as apparently, curative. One form of diabetes insipidus is distinctly hysterical and might very easily contribute to the triumphs of some healer if he had the good luck to succeed a physician who had made an erroneous diagnosis of dilatation of the lower urinary passages, or even of interstitial nephritis, or if he were shrewd enough to suggest such a diagnosis himself, a diagnosis whose correctness might be made very conclusive to a nervous patient.

The intimate relations between the genital functions and mental and moral conditions need only to be mentioned.

Mental influences upon many cardiac phenomena of a functional character, including attacks of palpitation, are well known.

One of the speakers yesterday spoke of his experience in examining applicants for admission to the police force where a systolic murmur present in a great many cases disappeared when the successful issue was announced. Another reported that the sight of the dinner has had more effect on the blood tension as measured by instruments of precision than did strychnia.

Albumin has been found in a great many cases of students awaiting examination.

Suppose for the sake of illustration (although the hypothesis is so wildly improbable that it is difficult to entertain it), that our colleague had been a careless or an unscrupulous diagnostician and the systolic murmur had been announced to the friends of the patients as "heart disease" and then they had been told that instead of being admitted among the elect of this city they were going to be admitted to the Kingdom of Heaven on earth. He would have gained as great a reputation among the laity for his cures of "heart disease" as he has since among his professional brethren for his skilful and courageous use of antitoxin.

We have left, as a field for psychic therapeutics, those diseases or, more correctly, those sets of symptoms, which are closely connected with mental and emotional activity through the

consciously or subconsciously active, sensitive and motor nervous system, *i. e.*, diseases which we usually call functional, which do not always involve directly the nutrition or the processes of organic life but which may easily and frequently do so indirectly, and which interfere greatly with comfort, usefulness and the normal relations of the individual to his surroundings. But even here, where we should expect, and in fact do find, the greatest and most picturesque, almost the only triumphs of psychic therapeutics, there are many and great disappointing limitations. In many forms of insanity, which are apparently most especially appropriate for such treatment, we get nothing more than a relief, perhaps great, perhaps trivial, of some symptoms which are accidentally added to the fundamental processes of the disease. But this is an apparent and not a real exception, for there is little doubt that these are dependent upon organic processes frequently of a degenerative character.

But in melancholia, or, in more modern nomenclature, the depressed phase of the manic-depressive type, it would certainly seem that if psychic therapeutics had any field of action it could call its own it would be this. Of course no one can say how many mild or incipient cases of depression which do not come within the ken of the physician may have been cut short by a diversion of some sort — a bit of travel, the encouragement of friends, a chance remark, the influence of a faith healer or a piece of good advice from a physician, or by attention to the bodily functions, especially the digestion; but it certainly comes within the observation of us all how often the encouragement is utterly futile, how the patient while freely admitting the purely subjective origin of his troubles nevertheless confesses that he is absolutely unable to look at his surroundings in a reasonable and logical way, or rather perhaps that this admittedly true way has no effect upon his depressive emotions, and we are unable by argument or exhortation to present matters to him in any such aspect as to produce the desired change of feeling. We are as inexorably obliged to await the slower processes of nature as if we were dealing with typhoid or tuberculosis.

It is seldom that the faith curist even claims to cut short such a case, but he does not for that confess a failure, for he can always represent that the patient does not give himself up to the healing influence. This is perfectly true, but it is because he cannot, and this very ability which faith or religion or magic ought to supply it is conspicuously unable to do.

If the patient could do this he would have no need of a cure, and yet here, where it seems as if a change of emotional attitude would be so easy and so naturally obtainable by purely psychic means, is the very point where it has so slight an effect.

It is hardly necessary to reiterate the admission of the great value of psychic treatment, diversion, amusements, and best of all when possible an employment in which the patient can be interested, as adjuvants and for the relief of symptoms. The point is simply this, that the psychic end of the circuit cannot be controlled powerfully enough to set the emotional current flowing in the proper direction.

After such limitations as these we find left but little except cases in which symptoms, constituting in themselves a psychic disorder, counterfeit more or less closely something of a more serious and organic character.

The different varieties under which such disorders may show themselves would require, and have indeed occupied, volumes for their description. Explanations are not satisfactory and amount to but little more than saying in one way or another that there are inhibitory influences of purely mental or psychical origin which can interrupt or confuse or disarrange the normal associations of movement and sensation, just as effectually for the time being as certain organic lesions, but they are naturally much more amenable to other psychic influences and hence to treatment of the same kind.

Accepting the usual nomenclature, and having made the exception of more clearly classified groups, we find that neurasthenia proper is not especially amenable in its essentials to psychic influences except temporarily and apparently. Their value as adjuvants, however, can hardly be over-estimated.

If there is a real deficiency of nervous force, and not a mere counterfeit of it by indolence or timidity, it can hardly be expected that it will be at once restored by any simple brief stimulation of one part of the circuit. Time is required to bring back what has been overexpended, but other conditions being favorable, the psychic stimulation is necessary to enable the elements to profit by the nutriment brought to the cell, just as the muscles, after being kept at rest, for the sake of a fractured bone or the injury of their motor centre, need exercise to bring them back to their normal force. Hysteria, that ill-defined and perplexing psychosis which has been the foundation of so much that is false and illusory in therapeutics, is undoubtedly the peculiar and favorite stamping ground of the faith curist and miracle monger; not under its own name but under those of the organic diseases which it counterfeits.

A graphic clinical picture, showing with great scientific accuracy what can and what cannot be expected and obtained from profound psychic impressions, is to be found in Zola's novel of "Lourdes," powerfully realistic though not real, depicting the sufferings, the disappointments, the commercialism, the faith uplifted and the faith destroyed and the rare miracle cures of visitors to that famous grotto.

What are the methods of psychic treatment? Is there anything special or mysterious about them? Is it necessary for the self-respecting practitioner to put on the manners of the quack or to claim that he has in his control supernatural agencies, or that he should advise his patient to give himself to the study of empty verbiage and

theories which have no meaning to the healthy mind?

I do not think these questions can be answered in every case alike. Two diagnoses are necessary — that of the disorder and that of the patient. It has been said recently by distinguished members of our profession, and by other eminent citizens, that the utmost honesty and frankness may be used in dealing with patients and that they may be told the exact truth. Both may have been correct from their point of view, but most practitioners have to deal largely with persons who are not soldiers or philosophers or saints, who are not tired of life, and above all, do not like to be told of their own weaknesses. I think the practitioner is justified in giving the patient the benefit of the doubt, when there is any, and in putting the best side of the case before him, without insisting on the other. The average man will not be comforted by being told the exact percentage of recoveries in the disease which bears the name of what he thinks he has. He needs a unanimous vote of confidence. One reason why a man with a perfectly sane and healthy mind wishes to consult a physician is that he may throw upon his shoulders the responsibility and free his own mind from all the ifs and buts which weigh heavily upon it and retard his recovery.

Even the lawyers admit that there are many cases where both sides have a certain amount of right, and that it is more important that the case should be *decided* on one side or the other than that it should be left indefinitely *undecided*, because absolute justice cannot be done to both sides.

When the physician is sure that he is dealing with a case of neuromimesis he cannot be too strong in his encouragement and exhortation, and he may then assume more of authority than comes from a simple scientific knowledge, which would very possibly be scouted by the patient. He had better fall back on his prestige and reputation and such measure of oracular mien and expression as nature may have endowed him with, and give no reasons, and, above all, not give the true name of the disease. This is an average, and not a universal, rule. There are patients who can bear to be told the truth — and nervous ones at that — but it is well to study the patient's disposition as well as his disease before you are too frank in your expressions.

But when nature kindly draws a vail before the dangers of the future, I think we have no right, for the sake of absolute scientific accuracy, to draw it aside and destroy the hope which may be the last fighting chance.

There are various ways in which treatment addressed to the patient's mind may be given, ways as different as there are patients and physicians. One practitioner cheers his patient by judicious pleasantry, another by a carefully reasoned exposition of the grounds upon which his recovery is to be confidently looked for, another by religious influence; one by hypnotism, another by non-hypnotic suggestion; one quack by the confident repetition of an absolutely unsupported and probably absurb assertion, another by absolute silence.

The methods may be various, but the essential thing is the implanting not merely in the patient's reasoning and conscious mind, but in what we call, as it seems to me somewhat inconsistently, the "sublimial consciousness"; that is, the store room of past and forgotten associations, ideas and emotions of which the patient is not at the time definitely aware, but which may be in various methods reached, the idea of recovery and health, of the unreality of the pains, of the ability to walk or to talk.

Our late associate, Dr. Russell Sturgis, used to practice a method which he considered of great value in utilizing the slighter degrees of hypnosis for diagnosis and treatment. It seemed to me that it went but little beyond inducing a specially confidential and persuadable frame of mind and completeness of recollection, so that the causes of abnormal psychical conditions became more clearly revealed and consequently more thoroughly removable.

Breuer and Freud have used a method which does not necessarily depend upon hypnotism, but upon successive séances of inquiry and upturning of the subliminal consciousness to its lowest depths.

According to their theories, hysteria is always based upon some special psychical injury at an early age, its concealment and the suppression of the appropriate motor reaction; as, for instance, in the case of an official who did not dare to resent the insult offered him by his superior, but became nervous and hysterical until he had confessed the whole matter fully and got well.

The great remedial value of a full and free confession, often perhaps of some trivial affair, is well recognized in our profession, although less formally than by the Catholic church and some others.

It is not uncommon in hearing patients relate their wonder cures, or perhaps more frequently after the stories have passed through more than one narrator, to learn that they had no faith whatever, but submitted to the treatment in order to please importunate friends, and so on.

I venture to doubt the correctness of this. I have no doubt that often when patients may be as willing as any of us to admit the foolishness of the methods pursued, they have yet a real but subconscious belief that something is to happen. In some cases the belief in something weird, uncanny, seems to be an essential point.

At to the particular doctrine taught in the various sects there is little choice, except that it should not be too repugnant to the patient's deep-seated convictions, religious or social.

A strenuous repetition of a positive assertion seems an absurd sort of method to be advanced when unsupported by any argument, proof or illustration; but if any one doubts its efficacy among a proportion of mankind large enough to have a great commercial importance, I would ask him why medicine makers find it to their great

pecuniary advantage to disfigure miles of railroad and square miles of territory with simple repetitions of the statement that "Blank's Pills cure everything," or that "Children cry for Catcher's Gambogia."

Many of the various modern mechanical means of treatment, especially those which are used in chronic nervous diseases, owe a certain part of their efficacy to the constant impression of something being done, of taking up the patient's attention while nature and time are taking their slow course. A prescription of this kind may be considered as having, like many prescriptions of drugs, a proportion of mental influence as one of its ingredients.

Electricity, for instance, is difficult to disentangle from this element of error. I recollect on one occasion in a society of neurological specialists an apostle of a peculiar form of electricity was exhibiting a new electrode, and on being rather hard pushed by the other members, not only as to the advantages of that particular form, but of electricity in general, fell back from one line of defence to another until he reached the last resort of saying that it had a very good moral effect in hysteria, which is no more than might be said of any drug in or out of the pharmacopeia, from abelmoschus to zygadenus, if administered with due solemnity, or of no drug at all.

The various kinds of active exercise have the very distinct advantage that the patient is kept from thinking of himself not only by the unusual sensations, but by being obliged to use his will in a definite direction, which is exactly what he needs to do. This is especially to be seen if the exercise consist in some employment in which he takes a real interest, and this must, of course, vary greatly with each individual patient.

The beneficial effects of certain systematic exercises in scleroses of the cord is not to be accounted for entirely on this ground. As I presume will be more fully and scientifically set forth by my successor, it is a question of readjustment, and not of restoration. The damaged tissue cannot be replaced, but other comparatively sound cells, nerves and muscles may be able, under training, to take up a part of their work and carry on the function with greater or less approach to perfection.

In how large a proportion of the ordinary work of the practitioner, beyond the cheering and encouragement that he may always offer to some extent as a contribution to his patient's comfort and happiness, is psychical treatment of consequence? According to some sects, the whole of medicine, surgery and obstetrics, although it is understood that recently in the highest circles in the latter departments the true believer is graciously permitted to seek human in addition to divine assistance and receive relief through agencies which do not act merely through the mind. According to the skeptics, only the cases of nervous and silly women.

How are we to account for the hundreds of assertions of cures obtained by all sorts of means which range from the crudest mixtures of common, perhaps inert, drugs, to the most transcendental imaginings of cultivated and intelligent persons?

If there were time, there would be an opportunity for a digression on the meaning to be attached to the words "cultivation," and "intelligence." But we may leave this aside and allow for a very liberal discount for the lie pure and simple, paid for by the advertiser to the patient perhaps, and heavily and appropriately to the journals which are willing to take such money with the same hand that does not refuse even the criminal advertisement. Then come other lies in various grades.

It would not be difficult to show by example that a person may be highly cultivated, intelligent, even with scientific talents of a high order, and yet under the influence of feelings and desires entirely uncritical and credulous.

We should then find a very considerable percentage due to imaginative but entirely honest exaggeration, by the shutting of the eyes to one set of facts and the opening them very wide to another. If time permitted I should like to describe one instance which happened to display both sides to me, which shows how the mind seeking for a miracle manages to get itself gratified.

Darwin makes the very pertinent remark that he found that facts which were in disagreement with his theories slipped from his mind much more easily than those which harmonized. If such a cause of error required to be guarded against by a Darwin what can be expected of ordinary humanity, which is not only not on its guard against it but cherishes it with fond affection?

Then there is the small residuum of genuine cases in which some form of functional nervous disease, a paralysis, a contracture, a neuralgia, a convulsion, which has undergone all sorts of scientific treatment in vain, yields in the hands of a faith curist.

Statistics in such matters are obviously very untrustworthy. A few years ago Mr. H. H. Goddard prepared for his graduation thesis at Clark University a paper upon this class of cures, and was kind enough to show me some of the answers returned to him, some of them referring to patients who had been under my care. He came in contact with one man who had had a good deal of success in dealing with many cases of which a considerable proportion were evidently functional nervous, and who was willing to give information which Mr. Goddard believed to be full and candid. He was not a medical man and his diagnoses were consequently not very trustworthy but were probably honest. He was willing to speak frankly of the cases which were not cured. This information Mr. Goddard compared with the published statistics of the celebrated medical hypnotists as representing the scientific side of the question. He found that in a general way the two sets of cases corresponded fairly well both as to percentages of cures, and as to the class of cases benefited.

" He (Dowie) says, in a certain issue of his paper: 'I pray and lay hands on 70,000 people in a year.' At that rate he would have prayed with 175,000 in two and one-half years. But in the two and one-half years immediately preceding this statement, he reports only 700 cures. The conclusion is indisputable that only a small portion of those prayed with are cured." — Goddard.

As regards the every-day practice of medicine with its very great proportion, among the acute cases, of infections; and among the chronic infections and degenerations, scleroses and new growths, psychic therapeutics as a primary and essential treatment finds but little scope, while as an adjuvant to the healing forces of nature and time it is and always will be a most precious resource of the physician, and he who wields it most judiciously will be the most successful.

Among the psychoses, notwithstanding there are many and great limitations even upon the side which we must still consider functional — though any day some new method may show us the incorrectness of this view — the relation is reversed, and the physician must look upon the building-up processes and the various appliances in use, pharmaceutical and otherwise, not only for their real and direct but for their mental impression.

For either case he must look before all for a diagnosis.

## A CONSIDERATION OF MENTAL THERAPEUTICS AS EMPLOYED BY SPECIAL STUDENTS OF THE SUBJECT.*

BY JAMES J. PUTNAM, M.D., BOSTON.

There are but few kinds of disorders which interfere more with the happiness of the community than those which cause a painful and hampered action of the mind though without implying the presence of serious mental derangement. The disorders to which I refer are mainly those characterized by insistent thoughts, emotions and impulses, "obsessions" and "morbid fears," which the patient recognizes as largely causeless yet cannot shake away. Starting, perhaps, with some severe or prolonged emotional strain, and on the basis of some weakness or defective organization which one would call hysterical or neurasthenic, these morbid tendencies become deepened by habit, and expand into complex systems or " temperaments," which mingle their influence with every motion of the mental life; or they show themselves in the form of occasional outbreaks which really have a definite, though hidden, history, or as constantly recurring and seemingly causeless tricks of muscular movement, the " tics " of the French writers, and in many kindred ways.

Even the " fatigues " and faintheartedness of neurasthenia are, in some measure, to be classified amongst these inco-ordinations of the mind.

These affections cloud the happiness of many persons whom every doctor meets upon his daily rounds, and yet, in spite of this fact, they are far more susceptible of relief, under prolonged and skilful treatment, than is commonly supposed.

On these accounts there is no branch of therapeutics more deserving of study than that which forms the subject of this conference. Of course, the mental therapeutics may rarely be the only kind of treatment to be thought of. Sometimes an impaired general nutrition stands in the way of improvement, or some local ailment, which perhaps a gynecologist or an orthopedic surgeon can remove, has lowered the vital tone just enough to make the patient a prey to troubles which would otherwise have been resisted, and if such a physician or surgeon is wise he may make his treatment the starting point of a new departure of hopefulness to which, perhaps, no other avenue could have been found.

But after the ground has been cleared through a consideration of these possibilities, there remain innumerable cases where some sort of specialized mental influence or education has to be employed. Of course, in practice, each case has to be studied by itself, but it will be useful for the purposes of this paper to distinguish between the patients who are more or less continuously and painfully conscious of nervous weakness or hypochondriacal depression and those whose symptoms present themselves intermittently, or only under certain conditions. The patients of the former class are mainly those suffering from neurasthenia, with its attendant distress of body and mind, while the second class is represented by the sufferers from morbid fears of specific sorts, or occasional outbreaks, often of a serious nature, which may, for convenience' sake, be classed as hysterical. In the case of the first of these two classes the question of bodily nutrition and reflex excitations is much more important than in that of the second class, and when these questions have been eliminated the problem as regards the mental state is the relatively familiar one of seeking to secure the conditions under which the patients can live a relatively active and useful life, of inducing in them, in an adequate form, the sentiments of courage, confidence, patience and determination, and making them familiar with the dangers that are likely to threaten from without and from within.

It frequently happens that the question of happiness or unhappiness of patients with severe forms of neurasthenia depends largely on influences which would ordinarily be classed as social rather than medical, though, in fact, the physician can help greatly in determining what the outcome of these influences shall be.

I have heard so many patients say that they had formerly entertained great disdain for nervous weakness, if not for the patients who allowed themselves to be controlled by them, that I think such sentiments must be very common in the community, and must be the cause of many needless burdens of distress. The time must surely come when nervousness and even serious

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mental derangements will be regarded in much the same light as other forms of illness, and with the growth of such a sentiment as this there will be great mitigation of individual suffering. For, to a great extent, a man's estimation of his own misfortunes is a reflection of the estimate made, or which he thinks is made, by others. I am inclined to believe that the real root of the disdain to which I have referred is sometimes a sense of dread for themselves, on the part of those who entertain it, which they try to suppress by an instinctive affectation of superiority.

It is quite natural that where influences of a spiritual order are in question, laymen should feel themselves on a par with the physician, and the fact that they often do so has shown itself in a thousand ways.

Most of the therapeutic influences coming under this head have taken their coloring from philosophy or religion,[1] and the patients in whose behalf these influences have successfully been exerted have often gained, through their illnesses, an insight into a higher life. Within the past decade another interesting and successful enterprise has been set on foot by a citizen of Zurich, Grohmann by name and originally an engineer by profession, consisting in a species of sanitarium where the healing influences are represented by real work, and simple habits of living, in a small community. The founder of this almost unique establishment is a man of intelligence, devotion and force, and his work is carried on under the auspices of some of the best physicians of Switzerland and Germany. The superintendents of sanitariums might well learn a lesson from this hardy effort, which is characterized, perhaps, not so much by novelty of idea as by novelty in the thoroughness of its execution.

It was intimated above that neurasthenia sometimes shows itself under a form that might be called "hysterical," but to avoid a term which is susceptible of misinterpretation, one might say it sometimes happens that persons who have suffered from neurasthenia fall into habits of invalidism which cling to them after they have really recovered from their original illness, and which the memory of their former sufferings makes them dread to disregard. The "neurasthenia" of youthful adolescence is often of a similar order. These are cases which might, strictly speaking, be better considered with the disorders of the *second class*, of which we are about to speak, but in fact it need only be said of them that they offer an excellent chance for intelligent and vigorous handling, the aim of which is to restore the confidence which has been lost.

The *second class* of cases, represented by the morbid fears, fright psychoses, insistent ideas and epileptiform or hysterical outbreaks, are much harder to deal with, and yet it is with regard to these that some of the best work of the last ten or twenty years has been done.

[1] A suggestive and stimulating essay entitled "The Spiritual Treatment of Neurasthenia," by Arthur A. Cary, is published in The New-Church Review, for April, 1904.

Fortunately, it is also true that some of the insistent fears which seem so invincible when they are present turn out to be possessed of little substance if resisted boldly and not taken too seriously. Under these circumstances a strong effort, or a series of graduated efforts, in which the patient is firmly supported by the physician, may overcome a morbid fear of long standing. The determined adoption of the attitude of dogged indifference, based on confident and authoritative advice, will often suffice to carry the patient through the first severe trials. Sometimes the triviality of a distressing but causeless fright can be made to appear more evident through the demonstration that it can be relieved by a trivial distraction, just as a slight turning aside of the attention may relieve the cramped mental attention of a balking horse.

On the other hand, there is an equal or greater number of insistent ideas, which seem trivial yet are so hard to master, that one is reminded of the legend of Thor, who in vain tried to drain off the horn of wine that had been given him, and found, at last, that it was connected with the sea.

It is a noteworthy fact that a good share of the advance in modern psychology, involving the so-called psychology of the sub-conscious life, is based on data which are the contribution of medical science. These studies have been of immense value in the interpretation of those forms of mental inco-ordination to which allusion has been made. They have taught that while we regard ourselves as free agents and our mental life as forming one harmonious mechanism, no one is really as free, no one's life is so complete a unity, as he would like to think.

Every one of a man's acts expresses, in a sense, a history of his life. What he has done before he will tend to do again, and the old habits and motives (themselves the expression of his total and partly unconscious experience) will ever strive to reassert themselves.

This principle will be admitted, but it is not usually realized how strongly and instinctively a man lends himself to self-deception in this matter, not what an important bearing this self-deception has in causation of disease. It is on this point that I now wish particularly to speak.

Under the exigencies of competing successfully with our fellow-men, a strong instinct has developed itself which leads us to push to the front, into the field of our habitual consciousness, only those memories and motives which seem of distinct utility in the attainment of our present, conscious needs. This arbitrary group of memories we call "ourselves" and we push out of sight those experiences of our past life which do not harmonize therewith.

It is of no apparent use to a man to recall a painful emotion or a serious fright. If he could he would gladly wipe them out from the records of his life, and, as it is, he strives to thrust them into the background, not realizing that he might, if he had the power, training and insight, con-

sciously assimilate these experiences, and that his present motives would be fuller and richer for their presence.

But it often happens that these painful experiences and memories which, in his ignorance, he thinks so needful to be rid of, often refuse to be banished thus cavalierly. His refusal to deal with them does not make them disappear from his mind, but as he cannot or will not assimilate them and utilize them and acknowledge the lessons which they could have taught, they lead a sort of parasitic existence in the mind and form a species of organization hostile to his well-being. And thus it happens that a serious breach is made in the unity of the conscious life, and a breach that may constantly tend to widen.

To this process the term "dissociation of consciousness" is often given, and it is one of far-reaching significance. Thereafter, when a call for action comes, a double set of reflexes — as for convenience we may call them — will tend to show themselves; one set expressive of the organized experiences, memories, and motives which the individual would be glad to have reckoned as constituting his personal identity, the other set expressive of the mental experiences which have clustered around some of these unassimilated painful emotions as a center.

Thenceforward, also, the conscious mental life will be marked with confusion, with a sense of an unexplained something which is wrong, and with inefficiency and self-distrust. In many cases the disorganization has its roots even far back in the years of childhood.

The function of the doctor is to heal this breach, to neutralize the dissociation which has taken place, and to restore the previous unity of the mind.

It is with regard to these cases that the method first employed by Janet, and by Breuer and Freud is of such great importance, and although the first communications of these writers were made a good many years ago, it is to be observed that their painstaking labors and those of a few others who have worked upon the same lines, amongst whom are to be mentioned our own colleagues, Russell Sturgis, Hamilton Osgood, Morton Prince, and Boris Sidis, have strongly reinforced the value of the facts as first stated.

It has been found that painful experiences are often enabled to work mischief just because they are hidden from the patient's view. The aim then ought to be to bring back the hidden experience into the clear light of consciousness, so that its real significance can be estimated, after which the reorganization of the disordered forces of the mind is likely to take place of itself. Sometimes the result thus aimed at can be attained by inducing the patient to talk at length and in full detail about all the circumstances connected with the onset of his illness. So strong, however, is this instinct for thrusting the unwelcome experiences out of sight, that the patient may, at first, declare himself wholly unable to recall any facts of which the physician can make use for making clear to his own mind the exact history of what has taken place. Nevertheless, if the patient co-operates voluntarily by withdrawing his attention from all distracting thoughts, relaxing body and mind, allowing his memory to be led by skilful questioning, and forcing himself to narrate every detail, however trivial or painful, connected with the onset of his troubles, it may be found at last that the whole story will be disclosed which the patient had instinctively excluded from his memory, and that, in this way, the chain of morbid links, stretching from the patient's present condition back to the experiences in which his symptoms had their rise, can be laid bare.

In a certain sense, it may be said that the hands of the clock are thus turned back to the date of these events, and that the patient is made to live over again that period of his life. Under these circumstances one can deal with him as one would have been glad to deal with him at that time, but with the difference that he is now more in the mood of responding favorably to encouragement and to reassurance. It may thus be said that, in a new sense, it is possible to "minister to a mind diseased," to "pluck from the memory a hidden sorrow."

This method of analysis of the patient's memory is useful for the purpose of diagnosis as well as of treatment. Through it the discovery may be made that conditions which had been thought to indicate the existence of serious forms of epilepsy are really curable attacks of a hysteroid character. Sometimes this analysis and treatment can be carried out more effectively when the patient is placed fully in the hypnotic trance. When this is decided on, the object of the treatment is explained beforehand, and the patient is assured that when he wakens from his trance he will remember clearly all the facts connected with the painful experience which it has been sought to discover and to remove.

The thought of hypnotism brings unpleasant associations to the minds of many persons. It has been thought that it tends to loss of independence and weakening of the will, and that it is, altogether, a practice to be discountenanced. As a matter of fact, these dangers do not, practically, exist. Even at an earlier time, when hypnotism had its day as a popular craze, the evils that were attributed to its use were not due to the hypnotism as such, but to the conditions of morbid excitement that went with it. Certainly, when it is employed by skilled persons, for the purposes that I have suggested, and with the sole desire of accomplishing through its means the object of the treatment, which is to make the patient master himself, there is no objection to its employment, and it may be used as a means of strengthening, and not weakening, the will, with the same confidence that this result is sought as the outcome of a rational conversation.

It is an idle criticism to say that hypnotism should not be employed because it induces states which are "morbid" or analogous to hysteria. We are continually inducing "morbid" states for therapeutic purposes, as by ether and mor-

phine, and artificially limiting and rearranging for special ends the movements of our conscious life. In each case, the only question is as to the value and significance of the ultimate result, regarded in all its aspects.

The cases of "traumatic hysteria," which occur so often in every physician's practice, afford remarkably good illustrations of some of the points which have been mentioned in the foregoing remarks. Thus, we have in them examples of typically painful and insistent experiences, which are here of especial interest because they often occur among persons not previously of an hysterical temperament. The instinctive effort to push the memory of such experiences out of sight, and likewise the fact that they really continue to live and to act with gathering force, are clearly brought out in the histories of these patients. Frequently such a person will say that he has followed his usual avocations, and that the thought of his mishap has not been prominently present to his mind, and even that he cannot recall distinctly the events that occurred. Nevertheless, a careful investigation will show that in his dreams at night, or in hysterical outbreaks, the circumstances of the accident are reproduced in minute detail. It also may appear that one arm or leg or one half of the body feels weak and is lacking in sensibility, and that effort of every kind is attended with fatigue and distress. Such a patient does not know that he has been suffering from a dissociation of his consciousness, and that while he has been instinctively striving, for his own peace of mind and for the sake of conventional appearances, to present the same front to the world that he presented before the accident, he is really under two masters, who do not act in harmony; that his mental forces are like an army through whose ranks a more or less organized demoralization has been spreading. He is not aware that the anesthesia may, for the dissociated portion of his consciousness, be a hyperesthesia, nor that the weakness and fatigue indicate that he is carrying a burden that is unseen.

Sometimes the patients of this class get well readily of themselves, under the influence of a return to their usual pursuits, but, in my experience, this result is less common than that of a more or less prolonged invalidism, unless, indeed, the case is taken in hand early and the patient is intelligent enough to put himself under favorable conditions for a cure. We have recently been able to relieve, at the Massachusetts General Hospital, one such patient who was suffering in an acute form from the anesthesia and hysterical tremor consequent on an accident, and in spite of the fact that a suit-at-law was pending.

The foregoing brief and diagrammatic sketch of certain aspects of mental therapeutics must be supplemented by at least a reference to certain other points.

It should be distinctly remembered that the necessity for mental treatment, even in the severer cases, does not exclude the necessity for general and local treatment, and this is true even for those conditions where, by strongly turning the mind in one or another direction, and enriching the conscious interests, we can enable the patient to overlook and forget his sufferings. We may, indeed, sometimes accomplish this result, for a time, by exciting a sort of mental exaltation, but then the mental treatment becomes a species of narcotic, and though narcotics have a distinct place in rational medicine, their employment is liable to great abuse and needs to be safe-guarded with especial care. The fact that the small boy's toothache disappears when he arrives at the dentist's door does not prove him to be beyond the need of the dentist's attention.

On the other hand, the local or general treatment, in the hands of a physician who really understands the mental needs of his patient and is prepared to use his influence in the best way, is often productive of a degree of benefit which the neurologist alone cannot secure.

The contrast between the expert mental therapeutics of the present day and that of an earlier period lies, thus, largely in the clearer definition of the objects to be sought and the steps by which these objects are to be attained. Most of the newer leaders of thought in such matters have turned aside from the inquiry, What effects can be induced by mental influences, to the study of the diseases for which these influences, among others, are of use. It will be remembered, for example, that, some fifteen years ago, a wave of revived interest in hypnotism spread over this community. Liébault and Bernheim had recently published their marvellous tales, the controversy between the schools of Nancy and of Charcot was still fresh, and a few of our townsmen had returned from abroad to show that Americans too could be hypnotized and cured of many ills. For a time the word hypnotism was on all lips, and the list of its accomplishments grew longer day by day. Many books were published, and a number of men, some of them of great ability, devoted themselves exclusively to that branch of practice. Their experience has certainly been of the greatest value, and many of the same men are still working and publishing on the old lines. On the whole, however, there has been, I think, a clearer recognition of the fact that one cannot deal satisfactorily with "suggestion" until a great deal more has been learned of the nature of the diseases in the treatment of which "suggestion" sometimes proves a partial aid, and of late years the pathogenesis of "insistent ideas," of "multiple personalities," of hysteria, and of the hysteroid forms of epilepsy and neurasthenia, has been studied as never before.

These studies have taken the form of clinical researches of the most minute and searching kind. Through analytic case-histories, patiently recorded, it has been sought to picture the mental history of sufferers from such disorders as those enumerated, with the same sort of fidelity as is displayed in the descriptions of the anatomists.

These researches have already placed mental therapeutics upon a far more rational footing,

and as time goes on their effects are sure to be more and more apparent.

The neurologist of the future will seek to treat his patients upon the basis of a broader and more intelligent study of their individual experiences and of the influences to which they have, severally, been exposed. He will try to leave each one better able to understand himself, less inclined to waste his strength in aimless self-reproaching, or to yield to paralyzing fears, and more inclined to engage hopefully and with interest in the task of successfully asserting his intelligence, his conscience and his will. And these results will not have been attained, or at any rate it will not be sought to attain them, by appeals to superstition or ignorance, but by methods which reflect the true spirit of scientific research.

No attempt need be made to draw a sharply dividing line between physical and mental therapeutic agents. It is desirable, on clinical grounds, to recognize that a kinship exists between the influence that improves the nutrition of the brain by increasing the harmony and efficiency of its functions, and that which reaches the same end by improving the quality of its nutrient fluids, or the mode of their distribution. With this principle borne in mind, the physician will be more apt to treat his patients from various points of view simultaneously, and not to neglect one for the other.

It seems impossible, in this brief communication, to refer by name to the men who have placed this branch of medical science on its present footing, or to refer to the attempts in the way of treatment with which I have become personally familiar. I must, however, in justice mention that the work of a number of our colleagues in Boston has contributed materially to the building up of this new branch of medicine, and has justified the placing of their names alongside of those which are so familiar to all students of the foreign literature with relation to this topic. Nor can I forget that it is owing mainly to the devotion and the skill of my friend and associate, Dr. George A. Waterman, that the winter's work at the Massachusetts General Hospital, in the Out-Patient Department and in the neurological ward, has been fruitful during this past season as never before.

## OPERATIONS ON THE STOMACH, WITH REPORT OF CASES.

BY JOHN C. MUNRO, M.D., BOSTON.
*From the Surgical Clinic, Carney Hospital, Boston, Mass.*

(Continued from No. 6, p. 152.)

No. XCVI. Male, sixty-two years old, referred by Dr. Boland.

For three years the patient had had pain in the stomach, and for two years he had been unable to work. The pain would come two to three hours after eating, and during the night it was so severe that he could not sleep. He had had some vomiting, of excessive amounts and of retained food but without blood or coffee grounds. There was much eructation of gas with relief. Marked constipation for two years. He had lost about thirty pounds in two years and had been under treatment at the various hospitals, etc., without relief.

At operation, at the Carney Hospital in June, 1904, a dilated sagging stomach was found with a hard scirrhous growth at the pylorus adherent to the gall bladder near the cystic duct and to the liver which was directly infiltrated. The patient was in no condition for radical operation, so a posterior gastro-enterostomy with clamps and sutures was made and the abdomen closed. There were no enlarged lymph nodes to be felt, but there was malignant infiltration into the liver.

Convalescence was most satisfactory, and he was discharged shortly afterwards eating and digesting well.

Of the foregoing thirty-two patients operated upon for malignant disease not a single case came early enough for radical cure. For the early deaths after operation less blame must be attached to the interference than to the long delay before operation was allowed. A few cases were of the fulminating type, and early operation, if it had been obtained, would have been futile.

In many of the histories of the malignant cases in the hospital records, the early symptoms were not put down and probably were not inquired into. In all probability careful cross-examinations would have brought out suggestive and pertinent data by which malignancy could have been suspected.

Practically no case, however hopeless, was refused operation, and the few that were so markedly benefited give encouragement in dealing with these forlorn people.

In several, the degeneration of a benign ulcer was most probable, and it emphasizes the occasional danger in treating a chronic ulcer as though it would remain benign indefinitely.

The rarity of vomiting as a symptom should be referred to over and over again, as demonstrated in these cases.

The combination of advanced age and steady loss of weight is very suggestive. Persistent pain in the stomach was common. In a few instances it was relieved temporarily by the ingestion of food.

Just as in chronic ulcer the steady limitation in diet is one of the most valuable clinical symptoms, especially if it takes place in spite of rational internal treatment.

Some patients were watched by their physicians until a tumor could be felt, in order to make a diagnosis, in the face of more leading signs as shown in emaciation, pain, vomiting or nausea, retention of food, etc.

However willing we may be to attribute death in the worst cases to the operation, yet to one who has watched them closely it is clear more and more that the prolonged starvation and the absorption of decomposed and never digested food play the most important role, although the end occasionally may be hastened a few days by operation.

The following seven cases of perforation are grouped together.

No. XXXVIII. Female, twenty-one years old.

For three or four years she had complained more or less of constant pain and distress in the stomach. She had never had hematemesis and, in fact, said that she had never vomited till four days before entrance to the City Hospital, October, 1896. Pain in the stomach became more severe than usual at that time, but she continued at her work. This pain persisted, and the day before entrance, in the morning, suddenly became very severe. She vomited and had a chill. On going to bed the abdomen at once began to distend. The vomiting ceased shortly afterwards, but the epigastric pain and distention continued. At entrance she looked bleached, with a pinched, anxious face, a distended, tender abdomen, with the tenderness and rigidity most marked in the left side below the costal border. There was rapid, shallow respiration and quick pulse.

At operation the peritoneal cavity was found to contain gas and stomach contents. A round, punched-out perforation was found a little anterior to the lesser curvature, at the pyloric end of the stomach, barely admitting the tip of the finger. The surrounding wall of the stomach was too brittle to allow the ulcer to be closed by suture so the pyloric end was drawn forward to the surface of the parietal wound and sutured there into place. The general cavity was then flushed out with sterile water and drained with iodoform wicks and a glass tube. A rubber tube was sutured into the stomach through the ulcer and carried to the outside of the dressings. Although the patient was in bad condition at the beginning of operation she stood it fairly well, stimulation being given freely. She improved for four days and was apparently on the road to recovery, when, in the evening, she suddenly collapsed and died with much suffering.

Autopsy showed a large pocket of pus deep in the pelvis. The ulcer was well walled off from the general cavity. Had the pelvis been drained as has been emphasized by Lund, I think recovery would have taken place almost without question.

No. XXXIX. Female, twenty-one years old. Entered the City Hospital in October, 1897.

She had complained of dyspepsia for several years, at times vomiting, but without blood until five weeks ago, when she vomited material that looked like coffee grounds. Two weeks before entrance there was severe pain in the left side of the abdomen, lasting for twenty-four hours, which on the following day was very severe, but did not last long. This pain she described as of a gnawing character. For a long time she had complained of soreness over the gastric region. Four days before entrance the pain in the left side was more severe, coming on suddenly with vomiting, but without blood. Since then the pain had been continuous while the tenderness of the abdomen had been general from the start. The bowels, naturally constipated, had moved frequently. At entrance the abdomen was distended and exquisitely tender. She was transferred from the medical service on the day of entrance, for operation, when edema of the abdominal wall was found, especially marked above the umbilicus. The peritoneal cavity contained gas, pus and stomach contents. An opening into the stomach was found on the anterior wall near the lesser curvature, about the size of a lead pencil, with thickened, cheesy edges. This could be turned in and sutured. The general cavity was then flushed out and the region in the neighborhood of the ulcer was packed with glass tube and iodoform gauze. The abdomen was filled with salt solution, the foot of the bed was elevated, and stimulation used freely.

The following day she was much weaker, and two days after operation she died. No autopsy was obtained, but examination through the wound showed that there had not been any leakage, the wicks being clean and dry.

No. XL. Female, twenty-one years old, entered the City Hospital in December, 1900.

For six months or more she had had stomach trouble, with pain coming on immediately after eating, and relieved by vomiting. She had never vomited any blood nor passed any dark-colored stools.

Two days before entrance she was taken with sharp pain in the upper abdomen three hours after eating, followed by vomiting but without blood. During the evening the pain became severe and was followed by a chill. At entrance she felt better but was vomiting. She looked sick, with drawn face, moderate distention, tenderness and spasm all over the abdomen, most marked in the epigastrium.

Operation at once showed cloudy serum beneath the peritoneum and diffuse marked fat necrosis of the omentum. There was thin pus in the pelvis and epigastrium. The omentum was found surrounding a large pocket of bile and thin pus, either behind the omentum or in the lesser peritoneal cavity. In addition there was another large pocket of bile, pancreatic fluid and pus in the hepatic region. There was fibrin with necrotic areas in the pyloric end of the stomach, and on the anterior surface close to the upper border, was a clear, punched-out opening a quarter of an inch in diameter, which was easily closed with a double layer of mattress sutures. The cavity was irrigated thoroughly, both the epigastrium and pelvis being drained. Just as soon as the operation was started the patient went into collapse, and although operation was done as rapidly as possible she was in profound shock at the close. She rallied a little, but died in about twelve hours.

Partial autopsy showed the location of the ulcer as described above. In this case there was a pancreatitis in addition to the perforated ulcer.

No. XLI. Female, twenty-five years old, entered the Carney Hospital medical service in November, 1903. She had complained of indigestion all summer, with sharp pain in the epigastrium in the morning and soon after eating. There was some gas, and at times she vomited several times a day, followed by freedom from vomiting for a week. The amount had always been small and nausea preceded the vomiting. Nine days before entrance she complained of a sharp epigastric pain, radiating to the right side and left flank, back and shoulders. It was so severe that she fainted. The pain continued until the following night, when she was given castor oil, and vomited. She then went to bed for five days, at the end of which time the vomiting and pain returned. The day before entrance she vomited and was tender along the lower costal border. The abdomen was tense but not distended. There was marked tenderness in the left side, through the ribs to the loin, as well as in the epigastrium. She was transferred three days later to the surgical side, with severe pain, high leucocyte count, and marked restlessness.

At operation there was a large quantity of foul pus and gas in the abdominal cavity. The anterior wall of the stomach formed the floor of the abscess cavity, the pus burrowing over the dome of the liver laterally, on both sides, as well as beneath it. Below and laterally the dilated stomach was adherent to the anterior wall, evidently limiting the spread of the pus. No definite perforation was seen. The stomach was adherent to the liver and these adhesions were not disturbed except to open whatever pockets there were. A small opening was made over the pubes. But the lower portion of the abdominal cavity was found free

of infection and this wound was closed at once. The upper wound was packed with iodoform gauze and a glass drain, the patient being no worse at the end of the operation than at the beginning.

The purulent discharge continued for a number of days, while she slowly and steadily improved. At the end of six weeks she was discharged much relieved, to our Surgical Out-Patient Department, where she was treated for several weeks for a granulating wound in the upper part of the abdomen. In March, four months after operation, she was at work and in good condition. When seen in May she was still in good condition and working steadily.

No. XLII. Male, forty-five, was seen with Dr. Brown of Newburyport in October, 1903.

When twenty years of age he had attacks of abdominal pain somewhat similar to the present one, coming on every few months, but not so severe. He would be sore for a day or two, but gradually outgrew these attacks. For several years he had had indigestion, which disappeared entirely at times. Pain had always been in the epigastrium, coming on about an hour after eating. He had never vomited. For a few days before I saw him he had felt as though there were a lump in his epigastrium. The night before I saw him he was awakened with very severe epigastric pain. Dr. Brown saw him an hour later and found him in agony with a hard, rigid belly. He had vomited somewhat but without blood. He was given morphia in a large dose and taken at once to the Newburyport Hospital.

At examination, six hours later, he had abdominal spasm, most marked in the epigastrium and right hypochondrium.

Operation showed free gas, bile and mucus in the abdominal cavity and a small round opening in the anterior wall of the duodenum close to the pylorus, from which gas and fluid were escaping copiously. About the opening there was slight thickening and a faint scar that would have escaped notice but for the hole. The latter was closed with a double purse-string suture and the omentum sutured over this. A posterior gastro-enterostomy, with clamps and suture, was made and the cavity irrigated out thoroughly. The upper wound was closed, but a small suprapubic puncture was made for the draining of the pelvis, and we found that, in spite of the thorough irrigation, there was some fibrin deep in the pelvis, which would have escaped detection otherwise.

The patient made an uninterrupted recovery, and six months later was perfectly well.

No. XLIII. Female, nineteen years old, entered the City Hospital in January, 1900.

Two years before that she had been treated on the medical side for gastric ulcer, vomiting considerable blood at the time. Three months before I saw her she had vomited for several days and had had much abdominal pain. At the end of a week she was well again. Two weeks ago she had a recurrent attack and vomited everything that she ate. She also had considerable pain in the epigastrium, extending to the left shoulder. Since her early attack, in 1898, she had never vomited any blood, but had been troubled with heart-burn, gas, distress, and, at times, pain after eating. In other words she had never been entirely relieved of her ulcer symptoms. The afternoon before entrance she had acute pain in the epigastrium, without vomiting or fainting. She was restless and feverish all night, but in the morning felt better. At entrance she was in good condition, with no distention, but with spasm and tenderness of the left rectus and in the epigastrium.

At operation the peritoneum was found very edematous. Lying close to the anterior wall was a cyst the size of a hen's egg, containing serum, apparently due to peritoneal fluid pent up in the adhesions. A few flakes of lymph were found on the neighboring coils of intestine. At the pyloric end of the stomach close to the lesser curvature was a perforation a quarter of an inch in diameter, through which some curds could be pressed. This ulcer lay in the midst of thick edematous tissue, extending towards the pylorus and half way to the edge of the greater curvature. Any stitches placed in this perforation cut out at once. A crater-like area was then excised and the wound was closed fairly satisfactorily, but the stomach wall was so brittle that it was difficult to invert the edges in order to cover in this line of sutures, so the healthy, lower portion of the stomach below the perforation was turned up and sutured against the line of stitches, completely shutting off the perforation from the general cavity. The abdomen was then irrigated out and the wound closed except for an iodoform gauze and glass drain.

She vomited a few times for several days, but otherwise convalesced satisfactorily and was discharged in about six weeks, with the wound firmly healed and without symptoms.

Nearly four years later she returned to the Carney Hospital with a recurrence of her old symptoms, that is, distress and pain about an hour after eating, vomiting of blood, with temporary relief following evacuation of the stomach. These had returned about three weeks before her entrance and, fearing that she might have another perforation, she sought operation.

At operation in December, 1903, the omentum and the anterior wall of the stomach were found adherent to the parietes and the stomach appeared considerably dilated. Both lobes of the liver were adherent to the anterior stomach wall by old, firm adhesions and deeper by lighter adhesions, the liver being drawn down for an inch or more below its normal level. Over the duodenum and pyloric portion of the stomach there was a light sheet of peritoneal-like adhesions, obscuring this portion of the stomach. The gall bladder was normal. The portion of the stomach adherent to the parietes was approximately in the region of the former perforation. The adhesions here were firm and deep, and after being dissected away, left a raw space that was covered over by a peritoneal flap. A posterior gastro-enterostomy, with clamps and sutures, was made, and the wound closed in layers.

The patient vomited more or less for the first three or four days — some of the vomitus containing digested blood — and she was discharged in three weeks, relieved of her symptoms and feeling well, eating house diet without discomfort and with a good appetite. When seen recently she was in excellent condition, eating ordinary food and working regularly.

No. XCVIII. Female, twenty-one years old, was seen by Dr. Bottomley, with Dr. Thompson of Fitchburg.

The patient had been strong and well up to four years ago, when she had an attack of grippe, with loss of strength, followed a year later by distress after eating, not marked at first, but a year later accompanied by attacks of vomiting lasting from a day to a week. No blood had been seen in the vomitus nor stools. For four or five months she had had epigastric pain, more or less constant, and always after eating.

Forty hours before she was seen by Dr. Bottomley she had a sharp sudden attack of pain, coming on two hours after eating, with collapse, nausea and extension of the pain over the abdomen generally, and into the left scapular region. These symptoms continued for

thirty-two hours before she summoned medical aid. Distention began about twelve hours after the onset of the attack.

At operation there was general abdominal distention, a pulse of 130, temperature 100° and respiration 40, though she did not look very ill. Tenderness was most marked in the epigastrium and to the left. There was general abdominal spasm. On opening the abdomen, gas and large quantities of light green fluid escaped. A perforation, admitting the finger, was found on the anterior wall near the pylorus and fairly close to the greater curvature. About the perforation there was considerable induration, but it could be turned in and closed by a double row of linen purse-string sutures. The peritoneal cavity was washed out, the pelvis drained through a suprapubic opening, and the patient put to bed with the head elevated.

She recovered well from the operation, but died in forty-eight hours of general peritonitis.

Although perforation of an ulcer is rare, the possibility of this accident should be considered as carefully as the possibility of a perforation of an appendix, especially when a previous history pointing to gastric trouble can be obtained. Probably a large proportion of these causes can be cured if they are detected and treated surgically within the first twenty-four hours.

One of my cases would probably have recovered if I had had the wisdom to drain the pelvis, which in such cases cannot be flushed out thoroughly from the upper wound.

All of these cases gave histories of more or less continuous gastric symptoms before the operation. The plea that some cases of perforation recover spontaneously as shown in several of our patients reported in the ulcer series is not worthy of consideration, when contrasted with the relative safety of intelligent, early, surgical interference.

The following case is the only one of pyloroplasty that I have done. It is an operation that nowadays is discouraged as being less efficacious than the more radical procedures.

No. XLIV. Male, thirty-nine years old, entered the medical service of the City Hospital in October, 1899.

Two years before that he began to have epigastric pain after eating, with much vomiting. He was in a hospital in Brooklyn for three or four months, where he improved somewhat. He then grew worse and was in a hospital in Maine for several months, steadily growing worse. At entrance he had pain in the epigastric region, and vomited everything he ate, the vomitus being dark generally, but slightly tinged with blood once or twice. He had lost weight steadily, was very weak, and had much belching of wind. The bowels were constipated. Numerous tests were made of his stomach contents, hydrochloric acid being found present or absent at different times, and so far as the interpretation of the chemical analysis went, nothing definite could be determined as to the presence or absence of a malignant growth. In brief, there was marked stasis and distention, persistent vomiting, with pain in the epigastrium; in addition to this he was steadily losing weight. After about seven weeks of medical treatment he was transferred to the surgical service, much emaciated, with tense abdomen, but without any definite tumor to be felt.

At operation the pylorus was found closed so that it admitted only a director. A pyloroplasty was done and the abdomen closed. No ulcers were found in the stomach or in the pyloric region. He rapidly gained weight and strength and was discharged in a month, eating solid food, with good digestion. A year later, he was seen in perfect health, fat and strong.

This, the only case operated upon by the old method for enlarging the pylorus, illustrates the wisdom of operating in cases, no matter how hopeless the outlook may be. For all that we could tell, the case was malignant, and had it been so, he probably would have promptly died. As it was, he proved to be the most brilliant and satisfactory case that one could desire.

CASES OF PARTIAL GASTRECTOMY.

No. XLV. Male, thirty-five years old, was seen in November, 1901, with Dr. Goodwin of Clinton, convalescing from an attack of acute gastric ulcer and suffering in addition from a mild attack of appendicitis. He quieted down and operation was advised in case of return of the trouble. He gained for a number of months; then, a short time before operation he had a return of his gastric pain and eructations of sour fluid. This was followed by distress, with vomiting, the distress severe in character being located in the epigastric region. Vomiting relieved it temporarily. Three times he had noticed coffee-ground material.

At operation, November, 1902, at the Clinton Hospital, a dilated stomach was found, with a hard, crater-like tumor of the lesser curvature, a little to the right of the middle. There was also an old scar and induration of the pylorus. A partial gastrectomy was done, the proximal third only being left. A button anastomosis was made between the stomach at its lower anterior edge and the jejunum. The omentum was sutured about the joint. The patient was in good condition throughout.

He steadily improved, and in March, 1904, he reported himself as in good health, eating heartily.

Pathological report of the ulcers, which at the time of operation looked suspiciously like carcinoma, showed them to be simple ulcers of the stomach.

No. XLVI. Female, thirty-one years old, referred by Dr. Smithwick.

Eleven years before I saw her she had indigestion, with vomiting, lasting about six weeks. At no time was blood seen. After this more or less stomach trouble persisted, marked by pain in the epigastrium, and indigestion. In 1898 there was a severe attack of pain and vomiting, with some blood, and she went into the hospital for a month and was convalescing for two months. She then worked four months and had another attack, which laid her up for three months, but after that was unable to work for two years. Before I saw her, in August, 1903, she had tried to work for four months, but every day she had epigastric pain with vomiting, and was unable to eat anything except milk and lime water, or malted milk. Vomiting came on within an hour after eating and she said that she had vomited food eaten twenty-four hours previously. She was losing weight, and examination showed local tenderness under the left rectus, which was rigid.

At operation at the Boothby Hospital, in January, 1903, an indurated, puckering tumor in the anterior wall of the stomach, probably involving the lesser curvature, and extending downwards half way to the lower border — almost making an hour-glass contraction — was found. Three bands of adhesions passed

from the stomach near the pylorus to the upper and under surface of the liver. There was a scar at the pylorus, looking like the scar of an old ulcer. The tumor was evidently an ulcer with marked contraction of the adjacent stomach wall. The ulcer was excised, leaving a large opening in the anterior wall. The edges were sutured with catgut to control bleeding, and then the peritoneal edges were closed, in a sagittal line, with a right angle, continuous, linen suture, reinforced by mattress suture. After closure of the stomach there was ample room for passage of food. The abdominal wound was closed in layers with a temporary wick drain down to the stomach suture line, the patient being in good condition at the termination of the operation.

For three days she did well, when suddenly she complained of pain in the abdomen, the pulse rose rapidly to 160, and she died within twenty-four hours.

Partial examination through the wound showed that there was probably a leakage through the stomach wound into the abdominal cavity. Examination of the ulcer showed it to be a simple ulcer and not malignant. This patient died directly as the result of operation. Had a double line of sutures been placed instead of a single line reinforced, as it was, by occasional mattress sutures, the result undoubtedly would have been different.

No. XLVII. Female, thirty-six years old, referred by Dr. Goodwin of Clinton.

For nine years the patient had had indigestion, with gradual development of vomiting, the attacks varying in length, at times being free for a few days. Two months ago she grew worse, vomiting a little while after meals, the vomiting being preceded by severe pain in the epigastrium. There was no history of retained food, and for two weeks she had eaten scarcely anything.

The stomach was found dilated, without evidence of tumor, but with epigastric tenderness.

At operation, at the Carney Hospital, December, 1903, on the anterior wall at the lesser curvature, infiltrating the lesser omentum, was a hard, crater-like ulcer of the size of a silver dollar. No metastases could be felt anywhere. A large section of the upper border of the stomach was removed and the stomach walls closed in with linen sutures. A posterior gastro-enterostomy was then done and the abdominal wound closed in layers, allowing for a temporary cigarette drain at the upper angle. After the operation the patient had no vomiting, was rapidly put on house diet, and in three weeks was discharged, eating and enjoying regular meals.

Pathological report of the ulcer showed it to be chronic inflammatory.

The patient has recently been heard from and is in excellent condition.

The fatal result in one of these three cases was directly the result of an operation badly done. With the recent technical advances the risk has been lowered very much and I feel that in time the more radical operation will be done much more frequently as being conservative in the long run.

To determine the character of the ulcers such as these patients exhibited is impossible without microscopical examination. To err on the side of caution and perform pylorectomy or gastrectomy is wiser than to err the other way, as was done in one of my ulcer cases where death from secondary carcinoma resulted.

UNSATISFACTORY CASES, NOT MALIGNANT.

No. XLVIII. Male, fifty-eight years old, entered the City Hospital in April, 1903.

His illness began with vomiting after a Thanksgiving dinner in November, 1903. The vomiting had continued and increased in frequency until at entrance the patient vomited two or three times a day. He had never seen blood and had complained of but little pain except at the outset. He had lost from thirty to forty pounds in weight.

Examination of the stomach contents showed an excessive amount of residue, absence of free hydrochloric acid and presence of lactic acid. No blood was found. Two days after entrance to the medical service he was transferred to the surgical service for operation, when he was found weak, slightly cyanotic, in poor general condition, with prominent epigastrium and visible peristalsis of the stomach. Some blood was found on a later examination of the stomach contents. The patient was too sick for operation, and for five days was fed on enemata in the hopes of getting him into condition for interference. He had grown stupid and delirious and the operation was done as a desperate resort.

Under cocaine — the patient being too ill for general anesthesia — a loop of jejunum was drawn out and a catheter fastened in, nourishment being given at once. There was some shock even from this slight operation. He was fed frequently through the catheter but steadily grew worse and died of starvation about thirty-six hours after operation.

No. XLIX. Male, fifty-five years old, was operated upon by myself at the City Hospital in 1902, for supposed cancer of the descending colon, when a band of adhesions was found in the left iliac fossa obstructing the sigmoid. These adhesions were evidently of very old origin, and as exploration of the appendix region showed a lot of old adhesions in that location, the diagnosis of old appendicitis was naturally made. Twenty years before that, he had been treated at the Massachusetts General Hospital for acute abdominal inflammation. He was discharged in a short time, relieved of his bowel difficulty, but in October, 1903, he came to the Carney Hospital with an additional history of soreness in his stomach, persisting for years, with vomiting of a foamy substance, occasionally bilious, and vomiting also of food eaten one or two days before, with relief to the pain. He was still constipated, but complained of no symptoms of bowel obstruction. He had been a steady, hard drinker for years.

At operation the loop of sigmoid freed at the previous operation appeared normal. In the duodenum close to the pylorus was a stellate scar, with adherent omentum, dragging the pyloric portion downwards and apparently causing a kink. The pylorus was open and not indurated. The stomach was not dilated. The gastrohepatic omentum was shortened, after freeing the pyloric adhesions, carrying the body of the stomach upwards and relieving the sagging at the pyloric end. The wound was closed in layers and the patient went out, gaining in weight and eating food without trouble.

It is fair to presume that the adhesions in the lower part of the abdomen followed an old perforating ulcer of the duodenum.

No. L. Female, thirty-five years old, referred by Dr. Smithwick.

A neurotic patient with stomach trouble for a number of years, growing worse in the last two years. She complained of much gas, distress, thumping sensation

in the left side, especially, and eructations. Food apparently caused pain. She vomited severely before medical treatment, but under diet had vomited only occasionally. Constipated. Lower border of stomach two inches below the umbilicus.

At operation at the Carney Hospital, a sagging stomach, without evidence of ulcers, was found, the pylorus being relatively high, but open, though irritable. The gastrohepatic omentum was shortened with catgut, lifting the lower border of the stomach nearly up to its normal level, that is to say, almost perpendicular. The abdominal wound was closed in layers.

The later history of this patient has not been obtained, but it is doubtful if she received marked benefit.

No. LI. Male, fifty-two years old, entered the Carney Hospital December, 1903, with an obscure history, suggesting persistent hemorrhage from a duodenal ulcer. He was markedly neurasthenic, moderately alcoholic, and since spring, had had some vomiting, without blood, and had been unable to work all summer. Nothing definite could be found on examination, and exploratory operation was advised.

The stomach was found U-shaped, with a stretched gastrohepatic ligament, not dilated under ether. There was no sign of ulcer. The pylorus admitted the finger easily. The liver was slightly prolapsed. Examination of the abdomen elsewhere was negative except that some large, hard nodes were found near the appendix.

A second incision was made through the rectus over the appendix, which was found small and normal, but in the mesentery opposite the ileocecal valve was a hard gland, with contracted adherent peritoneum, and from this in various directions were smaller, indurated, discrete glands, one of which was removed for diagnosis. Careful search failed to show any evidence of the primary lesion. The gastrohepatic ligament was then shortened, raising the lesser curvature to a normal angle. Both wounds were closed in layers. Pathological diagnosis of the gland removed showed "obsolete tuberculosis presumably."

This patient improved somewhat and was about ready for discharge, when he developed a facial erysipelas, and was transferred to the City Hospital, where he died ten days later of the erysipelas.

These three cases were unsatisfactory, illustrating the unwisdom of half-way measures. It is doubtful if suturing the omentum is enough less serious to make it preferable to more radical operations. Combined with some form of anastomosis it is quite satisfactory.

No. LII. Female, thirty-nine years old, entered the City Hospital in August, 1901, with a history of persistent bleeding by mouth and rectum.

For two years previously she had been troubled with indigestion, but without symptoms as severe as the present. Two weeks before entrance she began to have severe pain immediately upon eating, and tenderness in the epigastrium, but without vomiting. She then limited herself to liquid diet, and forty-eight hours before entrance vomited and passed blood by stools. The vomiting had continued steadily up to entrance and she passed several bloody stools. There was considerable pain. She was markedly pale, with irregular, intermittent pulse, retracted abdomen, and some tenderness in the epigastrium. An operation before collapse had come on was advised.

At operation the stomach was opened and explored with the finger, and although it contained considerable liquid and digested blood no ulceration could be felt or seen, though all of its walls were not examined in the hurry of the operation. A button anastomosis was made and the abdomen closed. The patient, in poor condition at the start, stood the operation well.

The following day she still vomited blood and had five rectal hemorrhages, while the pulse and temperature steadily rose. The following day she had rectal hemorrhages, but without vomiting. Three days after operation she died, and partial autopsy showed that peritonitis at least did not cause death.

No. LIII. TIRRELL: Female, thirty-seven years old, entered the City Hospital, November, 1902.

About a year before this the patient had had uremia following childbirth. Then followed much vomiting, treated by lavage. At times she vomited retained food in large quantities. She entered the medical side and was under treatment for over a month, for dysentery and diarrhea, with relief. Improvement in her gastric symptoms followed lavage, but there was no gain in weight, and recently there had been a relapse of vomiting of large amounts of undigested food, but without blood. The patient was in poor condition, emaciated, and with plainly visible peristalsis.

The gastric contents showed no free hydrochloric acid nor lactic acid. The stomach, apparently dilated at entrance, resumed its normal limits gradually, but in spite of that, the symptoms referred to grew worse and she was transferred to the surgical service for operation.

At operation there was no distention of the stomach, but the small gut was distended; there was marked spasm of the pyloric end of the duodenum, practically closing the lumen for several inches; no tumor nor scars were found, while a hurried examination of the abdominal cavity failed to show anything definite, the patient being too ill for extensive search. An anterior button anastomosis was made, the joints being reinforced with omentum. The wound was closed in layers. The patient came out of the ether well, but failed rapidly and died within twelve hours.

Partial autopsy showed tubercular colitis and tubercular ulcer of the duodenum.

No. LIV. Male, twenty-nine, entered the City Hospital in May, 1903.

The patient was a hard drinker and came in with delirium tremens. Eight years before entrance he is said to have had an attack similar to the present one, lasting four weeks, vomiting blood three times during the attack. Six weeks before entrance, after hard drinking, he vomited blood and was in an out-of-town hospital for a week, with cessation of vomiting at the time of discharge. Four days before entrance he had epigastric pain, but without vomiting of blood. There was marked tenderness in the epigastric region but under low, mild diet and rest the patient improved. Unwisely, operation was advised and performed. Nothing but thickening of the pylorus — but with free opening — was found. A posterior gastrojejunostomy by Mikulicz's method was done and the wound closed in layers.

The patient relapsed into his alcoholic condition a few days after operation, became delirious, cynotic, and died four days after operation. This patient should have been left alone.

No. LII died as a result of operation done early in my series when the technic was much less simple than at the present time.

No. LIII was hardly a case for interference and operation was offered as a last resort.

No. LIV should never have been touched. It was bad judgment to have attempted anything surgical.

No. LV. Male, fifty-three years old, referred by Dr. Pierce of Norfolk Downs.

For a number of years he had had epigastric pain, and a year ago began vomiting after supper. Six months later the vomiting attacks came on more often and five days before I saw him he had had copious vomiting, preceded by severe gastric pain. Always constipated. The amount of vomitus was excessive. He had never noticed blood nor coffee grounds. He had lost much weight and recently had lost much strength.

Examination showed a retracted abdomen, with dilated stomach, but without definite tumor.

At operation, December, 1902, at the Quincy Hospital, in the front wall of the pylorus and extending in under the surface, were old scars and adhesions. The tissues about the pylorus formed a swelling the size of a hen's egg, but without induration, like a malignant growth. The pyloric opening was practically closed. This mass was adherent to the right lower edge of the lesser omentum, the duodenum lying behind some sheets of peritoneum that were apparently adhesions. The duodenum was freed and a gastro-duodenostomy by Finney's method was done. The pylorus was so adherent that, in trying to separate it, the cavity was torn into and had to be temporarily closed with catgut. Abdominal wound closed, allowing for a temporary wick drain to the line of sutures. Patient in good condition at the close.

He vomited more or less for a day or two after operation and inhaled some vomitus, which started up a bronchitis, to which he rapidly succumbed. Examination through the wound showed no peritonitis.

Although this patient died from inhalation pneumonia the operation must take the blame for the result. At present, I am sure the outlook would be far more favorable.

No. LVI. Male, forty-five years old, referred to me by Dr. Lawrence of Brockton.

Three years ago he had an attack of pain in the stomach, without vomiting, lasting for three months. A year later he had a return of the symptoms, lasting the same time. One year ago the symptoms returned for the second time and persisted up to the time that I saw him, in September, 1903, when I found pain in the left loin and hypochondrium, with eructations of gas, relieved by the use of the stomach tube for the last two or three months. For over a year, after eating anything he had complained of pain, lasting two or three hours, without nausea, and he had been very much constipated for months. He stated that a year ago he had tarry stools. When the pain in the stomach began he would lie down with relief. There was no history of retained food. He had lost much weight in the last year. There was some dilatation of the stomach, with slight tenderness, and, possibly, thickening under the left hypochondrium. Nothing suggestive of an aortic lesion was found in examination of the chest, and hence the aneurism from which he died was entirely unsuspected.

Examination of the stomach contents showed absence of free hydrochloric acid and much diminished combined hydrochloric acid.

At operation, at the Carney Hospital, the liver and stomach were both found prolapsed, with a slight thickening at the pylorus. The gastrohepatic omentum was shortened and a posterior gastro-enterostomy, with clamps and sutures, was made. A little blood was found within the stomach at the time of operation. The liver was sutured up into place, and the wound closed in layers. The patient progressed satisfactorily and was beginning to eat, when, five days after operation, he suddenly vomited up a large amount of fresh blood and died.

Autopsy showed a ruptured aneurism of the thoracic aorta, emptying into the pleura. There was no gastric ulcer to be found.

No. LVII. Male, sixty-five years old, had suffered from stomach trouble for six years, beginning with sharp, stabbing pain in the right side. He had vomited much and thought he had vomited coffee grounds. He had lost much weight in the last six months and was unable to work. On entrance to the Carney Hospital, in October, 1903, he was markedly emaciated and starved. Operation was urged to prevent death from starvation if possible.

At operation, in the region of the duodenum and gall bladder there was a general mass of old adhesions, the gall bladder being so covered over that it was not distinguishable. In the adhesions were old scars as though from a perforating ulcer. Nothing abnormal was felt in the stomach or elsewhere in the abdomen. The pylorus when relaxed admitted the finger, but it quickly thickened spasmodically and formed a hard, nodular tumor. A posterior gastro-enterostomy, with clamps and suture, was done and the wound closed. After operation the patient continued vomiting more or less steadily, growing weaker, not deriving any benefit from his rectal or stomach feeding, when, finally, the vomiting became persistent and ten days after operation he died.

Examination through the wound showed that there was no peritonitis nor obvious cause for death.

The outcome of this case was not anticipated before operation. It may have been a case of "vicious circle," but as we watched him it seemed more like death from prolonged starvation from which the patient was too weak to react. Technically the operation seemed most satisfactory, but in the light of a few other bad results it is fairer to ascribe the result to some operative defect.

No. LVIII. A boy three months old, entered the Carney Hospital in November, 1903. Referred to me by Dr. C. W. Townsend, who has reported the case in full in the Boston Medical and Surgical Journal for Feb. 11, 1904.

A brief history of the case showed almost persistent vomiting, with occasional intervals, from the time he was three weeks old, progressive emaciation and starvation, and a dilated stomach. Operation was advised as a last resort.

The stomach was found dilated, and the intestine collapsed. At the pylorus was an oval, fibrous, solid tumor, half to three fourths of an inch in diameter, apparently almost or completely obstructing the lumen. A posterior gastro-enterostomy, with clamps and sutures, was done, the omentum and mesocolon being found mere films, without trace of fat. Wound closed in layers. The baby recovered from the operation and seemed to hold its own, taking small amounts of hot water by mouth and retaining this fairly well, but eighteen hours after operation it vomited about four ounces of digested blood and bile and collapsed. Later it vomited more dark blood and bile and died twenty-four hours after operation.

Pathological report showed a hypertrophy of the pylorus, with the associated narrowing of its lumen.

This case suggests strongly the wisdom of early interference in infants with persistent vomiting not explainable on dietary errors. In such cases

the operation is probably very safe, and it is most probable that these cases are more common than the general practitioner realizes.

No. LIX. Male, twenty-six years old, was seen with Dr. McCook at Hartford a short time before operation. The history obtained at that time pointed to acute gastric ulcer, and operation was advised. The full history obtained later, through the courtesy of Dr. McCook; is as follows: Nine years before he had had a sharp attack of indigestion with vomiting and abdominal pain. In 1898 he was in bed three months with inflammatory rheumatism, and for the following six months he had a number of fainting attacks. In 1899 there was cough and expectoration, for which he went to Kentucky. He recovered and remained well until seven weeks before I saw him, when diarrhea began, lasting a couple of days, followed by vomiting, which had persisted up to the time of operation. The vomiting came on at variable times after eating, and he could hold nothing on his stomach except hot milk. Constipation was marked during the attacks of vomiting. For two weeks he had complained of dull pain in the abdomen, with occasional sharp pain in the right epigastrium. Once he noticed some bright blood in the vomit and had noticed, also, dark stools. There was slight tenderness over McBurney's point, loss of weight, and a normal white count and urine. Stomach contents showed absence of hydrochloric acid and presence of lactic acid, absence of blood, a little mucus and some bile. At consultation, when I saw him, the diagnosis lay between gastric ulcer, with pyloric obstruction, and a gastric neurosis.

At operation at the Hartford Hospital, an exploration of the gall bladder and appendix regions, etc., were negative. No ulcer could be felt in the stomach. The pylorus was open. Nothing could be felt in the duodenum. A posterior gastro-enterostomy was made by Mikulicz's method and the abdominal wound closed.

There was no shock following the operation, but vomiting began at once. He was kept on rectal feeding for five days. Then boiled water was given him by mouth, which he vomited at once. Delirium then began and continued until death, eight days after operation. On removal of the silkworm gut sutures a small stitch abscess was found. Otherwise the wound healed well. The temperature rose at once after operation and continued at about 101° until just before death, when it rose to 104°. The pulse, 90 to 100 for the first week, rose to 120 and thence higher until death.

An examination was allowed only through the wound. A little bloody serum was found in the abdominal wound. There was no peritonitis. The joint was tight. No ulcer of the stomach was found and no pyloric stenosis. The kidneys were slightly congested, and there were a few new adhesions (probably from operation) near the umbilicus. The appendix showed chronic inflammation, the tip being under the border of the ribs; and from the appendix an old fibrous band extended to the side of the abdomen under the liver, which looped up the appendix. The exact insertion of this band could not be made out with the limited incision permitted. Unless this band from the appendix, which was overlooked at the time of operation, was the cause of the vomiting, through constriction of the gut, there is no way to explain the symptoms nor the cause of death. The intestine at operation was not distended, but as in case No. 67 it may be possible that the vomiting was reflex from the dragging of the small gut, but without constriction sufficient to produce obstruction.

No. LX. Female, twenty-eight years old, entered the City Hospital in September, 1901. For a number of years she had had stomach trouble, with vomiting an hour or two after eating, nausea and epigastric pain. This had persisted up to the present time. Three years ago she had a severe epigastric attack, vomited blood after eating and passed blood by rectum. This attack was repeated two months, three weeks, and four days, respectively, before she entered the Hospital. There was a history of vomiting retained blood. Almost every night after midnight she would vomit excessive amounts. She had lost weight, and for nine months there had been marked tenderness in the epigastrium. Recently she had noticed a bunch in the same region. Analysis of the stomach contents showed dilatation, stasis, free hydrochloric acid, and a small amount of lactic acid. She had previously had a laparotomy for ovarian trouble.

At operation the omentum was found adherent to the old laparotomy wound. The stomach showed nothing definite on the outside. A posterior anastomosis was made with silk and catgut by the old method. Exploration showed that the pylorus admitted the finger and no ulcers could be felt on either wall. Abdominal wound was closed. After operation she vomited somewhat but less than before, and nearly three weeks later developed a phlebitis of the left leg. A month after operation, as she still had occasional vomiting, the stomach was washed out and analysis showed that there was still dilatation and stasis, no blood, no free hydrochloric acid, and diminished combined hydrochloric acid. Two months after operation she was discharged, a little improved, having refused to have any further interference. Taken in conjunction with several later cases the possible effect of an omentum adherent to the scar of a former laparotomy must be considered in diagnosticating gastric lesions.

No. LXI. Female, twenty-eight years old, was referred to me in October, 1902, by Dr. Smithwick. She was a neurotic woman, nearly unbalanced mentally, and the entire history must be taken with considerable latitude.

She had complained for five or six years of headache and constipation without definite stomach symptoms. She had never had vomiting, nor lost weight, and complained more of general debility and constipation than anything. Examination showed dilatation of the stomach. As there was a fairly definite specific history the patient was put on iodide of potash and operation advised against. In August, 1903, she returned again, having received benefit from the iodide for a while, followed by relapse, with symptoms worse than ever. An exploratory laparotomy on the basis of probable ulcer of pylorus was advised, but not urged.

At operation, at the Boothby Hospital, the stomach was found dilated. At the pylorus, on the proximal side, and extending for about an inch in the greater curvature, marked induration could be felt. In the lesser curvature was a small nodule suggesting another ulcer or scar. The pylorus itself was not narrowed. There were large lymph nodes along the lower border. Elsewhere the abdomen was negative. A posterior gastro-enterostomy by Mikulicz's method, but using clamps to control hemorrhage and leakage, was made. The abdominal wound was closed in layers. She convalesced well, had no nausea, and was discharged about ten days after operation.

Later it was learned that the symptoms had relapsed and that the operation had been of no benefit, as might have been anticipated from the first. At present she is receiving marked benefit from the treatment of one of our irregular practitioners and considers herself nearly well.

*(To be continued.)*

# Medical Progress.

## PROGRESS IN GASTRO-INTESTINAL DISEASES.

BY ELLIOTT P. JOSLIN, M.D., BOSTON.

(Concluded from No. 6, p. 163.)

### COMPLETE REMOVAL OF THE STOMACH.

The following is taken from a review of Boeckel's [7] book on "De l'Ablation de l'Estomac." At the date of publication the number of cases reported was 48 and of these the result was unknown in 2. Of the remaining 46, 18 died and 28 recovered, giving a mortality of 39.1%. In 9 cases collapse was the cause of death, in 7 purulent peritonitis, and in one pneumonia. Seven of the 28 patients who have recovered are not available for a final report. Of the remaining 21, 11 have died of recurrence after an interval varying between five months and five years; one died of intestinal obstruction without recurrence seven and a half months after the operation and another in two years of phthisis. Eight of the patients still enjoy the best of health. In the duodenum near the gastro-intestinal anastomosis a pouch forms which gradually dilates and to a certain extent acts as a new stomach. Digestion goes on without disturbance and there is a gain in weight. The reviewer strongly recommends Boeckel's book.

### SUBCUTANEOUS FEEDING WITH FAT.

Winternitz [8] reaches the following conclusions as the result of a series of experiments in which fat was subcutaneously injected. Fat so administered is absorbed and used in the metabolism. In the course of time absorption is complete, but the quantity of oil absorbed after an injection of five hundred gm. within five days does not exceed 2 gm. to 3 gm. per day; indeed during the first week the daily amount absorbed is notably less. Consequently, months pass until complete absorption takes place. Therefore, from his experiments, Winternitz concludes that the fats are not adapted for subcutaneous feeding.

### THE INFLUENCE UPON FAT OF GASTRIC DIGESTION AND THE TREATMENT OF HYPERACIDITY.

It is known that fat and sugar solutions will diminish the secretion of gastric juice. According to Pawlow this is brought about reflexly by the contact of the fat with the mucous membrane of the duodenum. Clinically, Aldor and Strauss found that butter and cream caused a lowering in the amount of free hydrochloric acid as well as of the total acidity and so recommended these foods as the best dietetic treatment of hyperacidity of the stomach. In a similar manner other observers have shown that the addition of fat to the diet not only decreased the amount of hydrochloric acid, but the quantity of gastric juice as well. Buch demonstrated this in hyperacidity. As a rule milk fat has been used therapeutically, but various authors have shown the equally good effect of olive oil. Influenced by these facts Walko [9] has made a systematic study of the question. His experiments were of the following character: A test meal consisting of 100 gm. bread and 400 cm. water was given, and the free HCl. and total acidity determined after a given interval. On another occasion the same meal was repeated, but this time with the addition of oil varying in quantities from 50 cm. to 100 cm. The analyses showed that the olive oil in the small as well as in the large doses delayed the secretion and at the same time confined the per cent of acidity within lower limits than was the case when no oil was administered. Clinically it was of interest that the large doses of oil did not necessarily mean a much larger decrease in acid than small doses. It is true that these amounts of oil delay digestion or rather cause the meal to remain one to one and a half hours longer in the stomach. However, it should be borne in mind that the oil remains no longer than would carbohydrates or proteids of equal nutritive value. And further the delay is not proportional to the quantity of fat given.

Much interest has been taken in recent years in the digestion, or more precisely the splitting up of neutral fat in the stomach. Evidence has steadily accumulated to show that the gastric juice is not passive in this regard. Walko proved that even as much as 77% neutral fat might be broken up into fatty acid by the gastric juice. The amount of fat splitting ferment in the stomach is greatest with a milk diet, less with meat and least of all with carbohydrates. Walko also studied the interesting question of the influence of olive oil on the simultaneous digestion of other foods in the stomach. His results are convincing that the oil decidedly favors the digestion of proteids and starches. By its action the extra quantity of starch converted into sugar is directly favorable to the treatment of hyperacidity as sugar is known to decrease the secretion of hydrochloric acid.

Bone marrow from its high content of fat acts similarly to olive oil and is therefore strongly recommended by Walko.

The clinical results obtained by Walko more than fulfilled the expectations which the experiments, above cited, suggested. In hyperacidity of the stomach, the acidity was lowered and the symptoms abated under the administration of the oil in doses of 20 cm. to 200 cm. given through the tube, or simply drunk by the patient. The oil was given a few mornings in succession after the test breakfast had been thoroughly removed. Concurrently the constipated bowels became loose, but, after a few days, regular, and the patient gained in weight. In dilatation of the stomach with hyperacidity the oil worked remarkably well. The acidity decreased, the motor function improved and with it the gain in strength and, as above, the bowels became regular. Walko further recommends the use of oil in ulcer of the stomach

[7] Paris, 1903. Felix Alcan. Reviewed Cent. f. d. Grenz. d. Med u. Chir., 1903. Bd. vi, p. 799.

[8] Zeit. f. Klin. Med., 1903. Bd. L., p. 80.

[9] Zeit. f. Heilkunde 1903. Bd. xxiv, p. 142.

because of its unirritating qualities, its high nutritive value, its restricting influence on the hydrochloric acid secretion and its cure of the constipation.

The remainder of the article is devoted to the discussion of the action of atropin, bicarbonate of soda and Carlsbad salts in the treatment of hyperacidity, and an analysis of the evidence in favor of a carbohydrate or proteid diet. He reaches the conclusion that the fat diet is the preferable method of treating the condition.

## Reports of Societies.

### AMERICAN SURGICAL ASSOCIATION.

PROCEEDINGS OF THE TWENTY-FIFTH ANNUAL MEETING, HELD IN ST. LOUIS, JUNE 14, 15, 16 AND 17, 1904.

(Continued from No. 6, p. 166.)

#### REMARKS UPON CERTAIN UNAVOIDABLE POST-OPERATIVE CALAMITIES IN ABDOMINAL SURGERY.

DR. MAURICE H. RICHARDSON of Boston read a paper with this title, which was based upon his experience more especially in abdominal surgery, and related exclusively to fatal cases. Four classes of calamities were considered: (1) Suppression of urine; (2) inexplicable deaths, with symptoms of local and general sepsis, but without any detectable bacterial source; (3) uncontrollable capillary hemorrhage; (4) pulmonary embolism.

Suppression of urine could be regarded as an unavoidable accident only when it took place after the urine had been shown to be normal by the most searching study. The influence of ether alone in causing suppression after operations was not regarded as sufficient and sole cause of this calamity. It was doubtless true that failure of the kidneys properly to perform their function was due to some pathological change in the secreting substance; if not a pathological change, a tendency to glomerular irritation or real inflammation, but a change or tendency which could not be detected beforehand. Such suppression of urine, however, might be prevented by the avoidance of all but imperative operations whenever there was the least evidence of renal disease, especially an insufficiency in the elimination of urea. Renal suppression was not believed by the writer to be the result of etherization alone.

In certain very rare instances death had taken place after abdominal operations without any pathological cause whatever. In one illustrative case, after an aseptic, though difficult and bloody operation, the patient presented the typical clinical picture of fatal general peritonitis. The pathologist at the Massachusetts General Hospital could find no evidence whatever of bacterial infection at the autopsy or in the laboratory. That there was an infection the essayist had no doubt, but by a germ which produced none of the usual physical signs of sepsis, which failed to grow on ordinary media.

Uncontrollable capillary oozing might be regarded as unavoidable, and beyond the power of prediction only when it took place after careful examination of the blood with reference to its coagulability, and other possible evidences of a tendency to bleed. Capillary hemorrhage from jaundice might be in certain instances uncontrollable. It could be regarded as uncontrollable only when operation must be performed in spite of the evidence of the tendency to hemorrhage. The coagulation tumor did not reasonably assure safety against bleeding, even if it was shown experimentally to be brief. The author's last fatal hemorrhage in jaundice took place from the capillaries of the lesser curvature of the stomach, remote from the operation area, though the blood coagulation tumor was perfectly satisfactory. In another case a fatal and uncontrollable capillary ooze followed an operation upon the common duct after a year of biliary fistula. In this case no bile had entered the intestine during the existence of the biliary fistula. The most frequent of such rare calamities was sudden death from pulmonary embolism. The cause of death could neither be predicted nor prevented. It occurred with no peritonitis. The probability of embolism being the result of a phlebitis was considered. In the author's experience, in a considerable number of deaths there were no premonitory symptoms whatsoever, while in cases of phlebitis, definite and unmistakable, no such accident occurred. Pulmonary embolism had been observed most frequently after pelvic operations upon women with large uterine or ovarian tumors, and especially in women long exsanguinated by fibroids.

#### PAPILLARY CYSTS AND PAPILLARY TUMORS OF THE OVARIES, WITH CONSIDERATION OF PROGNOSIS AND TREATMENT.

PROF. SAMUEL POZZI of Paris, France, read a paper on this subject, in which he summarized as follows:

"1. Papillary tumors of the ovary, cystic or solid, must not be considered as always malignant. Some of these tumors never undergo malignant degeneration, and do not relapse after removal. Some relapse after a long time, and locally without metastases.

"2. A careful distinction must be made between carcinomatous generalization, which takes place through the lymphatics and blood vessels, and simple grafts which result from contact or from the growing over the peritoneum of detached papillary vegetations of the ovary. This process is benign and can be compared to the grafting of papillomas and warts of the skin.

"3. Some of these tumors undergo a malignant degeneration which is for some time limited, but can later extend all over the mass, and which at last brings on a real generalization with cancer metastases. Before this last period, and at the outset of the malignant transformation, it is quite impossible to discern it with the naked eye, and microscopical investigations are needed. The prognosis is always uncertain in operations of this kind before a thorough pathological examination. Even such examination may lead to misinterpretation, if it has not been carried all over the tumor, for the degeneration may be limited to a small part of the growth.

"4. When positive symptoms of malignancy are absent, such as cancerous cachexia, or visceral metastases, operators must always treat these tumors as if they were benign, and proceed to remove, to the largest extent possible, the neoplasm. The disseminated growths or even small parts of the papillary tumor detached and lost in the peritoneal cavity may disappear. In other cases they may be the origin of local recurrence. But these relapses can be treated successfully by secondary operations.

"5. Frequency of successive invasion of both ovaries by papillary tumors furnishes an indication to remove the adnexa on both sides, even if one is still healthy, at least in women who are near the change of life. In young women it would be better to preserve a non-diseased ovary.

"6. In bilateral papillary tumors the operative technic can be greatly improved by performing partial or total hysterectomy, according to the case.

"7. Drainage is not necessary when the cysts have no outside vegetations, and when there is no ascites. But in case ascites exists for some time, it would be well to drain the peritoneal cavity. Incomplete removal, or even an exploratory section, in unoperable cases, is often accompanied by a real diminution of ascites, with local and general improvement."

### ANKYLOSIS TREATED BY ARTHROPLASTY, CLINICAL AND EXPERIMENTAL.

Dr. John B. Murphy of Chicago spoke on this subject. He mentioned three types of ankylosis, namely, ankylosis from periarthritis, ankylosis from capsular lesions and bony ankylosis.

Bony ankylosis could be relieved. Tissue could be interposed to prevent the re-establishment of bony union, and with the recognition of the changes which occurred in fat close to the aponeurosis, a joint could be produced with a serous-secreting surface. His experimental work had shown that after the removal of the hip joint in a dog, cartilage, synovial membrane and the articular surfaces in their entirety, with replacement of tissue in the acetabulum, and replacement of bone again, he had produced a typical synovial membrane in the sense of a hygroma. In the production of hygroma pressure on fatty tissue had a tendency to bring about a coalescence of the small fatty capsules. The shaft of these capsules produced a serous secretion, and there was developed a condition which was seen in housemaid's knee, over the trochanter of the boiler-maker, and over the wrist of the stonecutter. A serous-secreting surface was brought about. This could be done in a joint. The surgeon could restore joints to practically their normal condition.

The first case he reported was one of bullet wound of the abdomen. The bullet passed through the abdomen a little to the right of the median line, passed across the abdomen, perforated the intestine eight times, fractured the head of the femur, lodged in a pocket, remained there, worked its way out through ulceration, and was finally voided through the intestine. The wounds in the intestine were sewed up, and the patient recovered, with a sinus. The speaker saw the patient with ankylosis of the leg at right angles. He passed around a skiagraph which showed bony union. After removing the head of the femur transperitoneally, curetting and removing the bony debris from the ilium, the wound was allowed to heal, and a plan was devised for the restoration of the joint and the relief of deformity. He decided that it was necessary, first, to expose the joint and to secure bony tissue for the new head. Second, it was necessary to interpose between the fragments not only muscle, but fascia, covered with fatty tissue, because the fatty tissue here, subject to pressure, like the fascia lata of the trochanter, formed hygromata. A U-shaped flap was made, carrying with it fascia lata and all the superficial tissue and skin, then the joint sawed from around the trochanter major. None of the muscles was divided. A circular chisel was used to chisel out the bone in all directions, and with the assistance and leverage of the femur and chisel, a fracture was produced at the base of the cavity, and the head, which was new bone formation, as the original head was removed, was thrown out in connection with the neck, rounded off with bone-cutting forceps, and curette used to enlarge the cavity. The next step of the operation was to separate the fascia lata with its fat and a few fibers of the gluteus muscle; a flap was swung in behind the muscular attachments, and the trochanter major put in around the head of the femur and sewed to the neck. The neck was made short to prevent reunion of the fibrous portion of the capsule which remained, because if the capsule remained in its fixed position, the ankylosis would continue, and this was one of the practical points he derived from this particular case. The trochanter major was sutured to the neck, the head replaced, the trochanter major rounded off, the flap turned down, and the wound drained. The result of the operation was ideal. Dr. Murphy passed around a photograph showing the patient as he stood in the erect position, and the degree of flexion obtained at the end of four months after operation. The patient now had perfect motion and flexion.

He mentioned other cases on which he had operated by this method, with gratifying results. The method was largely intended for the treatment of joints with ankylosis.

### NEW AIDS IN DIAGNOSIS OF SURGICAL DISEASES OF THE KIDNEY AND THEIR VALUE.

Dr. A. T. Cabot of Boston read a paper on this subject. His conclusions from the experience he had had and from his study of the work of others were that segregation of the urines was of great use sometimes in deciding the question as to which kidney was diseased, or even as to which was most affected. Determination of the functional capacity of the kidney by testing the elimination through it might be of assistance by adding strength to what evidence we had, but would be often misleading if too implicitly relied upon for deciding operative measures.

### REPORT OF A CASE OF ACUTE PANCREATITIS ASSOCIATED WITH GALLSTONES.

Dr. James Bell of Montreal said that the demonstrated facts in his case were: (1) That in March, 1898, there were all the characteristic lesions, as well as the signs and symptoms, of acute pancreatitis, and at the same time an apparently quite healthy liver and gall passage, with two or three stones in the gall bladder. (2) That all signs and symptoms of pancreatitis disappeared, the patient recovering, and considering himself quite well until nearly two years later, when a new train of symptoms developed, which were characteristically those produced by gallstones. (3) Three years after the attack of acute pancreatitis it was demonstrated that while extensive and serious pathological changes had taken place in the gall bladder and bile ducts, all local signs of acute pancreatitis had, during the same period of time, entirely disappeared (subperitoneal fat necrosis and swelling of the pancreas); that was to say, that acute pancreatitis developed before there were any pathological changes in the gall bladder and bile ducts, and that while such changes were taking place, the pancreatitis was recovered from.

These facts would seem to be at variance with modern views of the etiology of acute pancreatitis which tended to attribute this condition in a general way to a pathological change in the common bile duct due to the passage of gallstones from the gall bladder to the intestine.

### TREATMENT OF CONGENITAL CLEFT PALATE: A PLEA FOR OPERATIONS IN EARLY INFANCY.

Dr. Truman W. Brophy of Chicago read a paper, by invitation, on this subject. After referring to the work of Lamonier, Kirmisson, Roux and many others in this field, the essayist stated that after having studied carefully the literature and the methods pursued by other operators, he had endeavored to over-

come the objections and to avoid the difficulties with which the older surgeons contended, and he was satisfied that the most desirable time to select for operating was within three months after birth. In operating at that time one was able to secure more satisfactory results than later in life, and avoided the objections usually raised by surgical writers. He believed in operating at as early an age as practicable after birth, preferably within three months, and his experience of twenty years in operations performed for the closure of cleft palate, at from ten days to fifty years of age, including 927 operations, had more and more justified the practice.

Among the advantages mentioned in favor of early operations were the following: Surgical shock was less because the nervous system of a young child was not well developed, and it was not, therefore, capable of receiving the same impressions that it would late in life. Furthermore, young children usually reacted better. All mental apprehensions were eliminated, and alarm and dread were among the most powerful factors in producing shock. Following early operations there was much less deformity, for all the tissues, bony as well as soft, developed naturally and according to accepted types. When the operation was postponed for a few years, it was very difficult to secure as good results. When the operation was made in early infancy, the parts were sufficiently developed to give possibility for normal speech when the child had reached a speaking age.

The author described his method of operating on cleft palate in detail, a description of which has heretofore been published in both dental and medical journals.

In conclusion, the author stated that if operations were made later in life the patient should be placed under the instruction of one who had the perseverance, the ability and patience to teach him how to overcome the defective speech which he had acquired.

THE EVOLUTION OF SURGERY.

Dr. J. Ewing Mears of Philadelphia read a scholarly paper with this title. He divided this unfolding of surgery into three periods of time: (1) That which extended from the beginning to the time of Ambroise Paré, 1517–1519; (2) the use by John Collins Warren (1846) of ether as an anesthetic in surgical operations, and (3) the discovery and introduction into general use by Sir Joseph Lister (1860–1875) of the antiseptic treatment of wounds. Each period was taken up and considered in a masterly manner.

*(To be continued.)*

## Recent Literature.

*Air, Food and Exercises; an Essay on the Predisposing Causes of Disease.* By A. Rabagliati, M.A., M.N., F.R.C.S. Edin., Honorary Gynecologist, and Late Senior Honorary Surgeon, Bradford Royal Infirmary; Consulting Surgeon to Bingley Hospital, to Bradford Children's Hospital and to the Bradford Home for Cancer and Incurables. Third edition, greatly enlarged and almost entirely rewritten. New York: William Wood & Co. 1904.

The author says in his preface that "this book is, then, written frankly for the public, in the hope that its perusal may simplify and clarify their ideas upon the subject of disease." That it has reached a third edition would indicate that it has had readers and that the public after two editions, is still in need of clarification.

THE BOSTON

# Medical and Surgical Journal.

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## THE BRITISH MEDICAL ASSOCIATION.

The seventy-second annual meeting of the British Medical Association was held at Oxford, and, so far as one may judge from the reports which have come to us, the meeting was peculiarly successful from every point of view. Not a little of the interest was derived from the fact that Oxford was chosen as the place of meeting, for the first time since 1868, a period during which many changes have taken place at the university, and particularly in those branches of science connected with the early training of the medical student. Dr. William Collier, who delivered the president's address, took for his subject, "The Growth and Development of the Oxford Medical School," and discussed the historical development of medical work at Oxford in a way which must be of interest to physicians outside of the United Kingdom. Dr. Collier is of the opinion that the university has been benefited by the establishment of the medical school on a modern basis, and particularly he finds the influence of the university student on other medical students of the metropolitan schools of very distinct benefit. It is in general the question of a preliminary university training to which so much attention has of late years been given in this country. Considering the previous meetings of the association in Oxford, Dr. Collier called attention to the fact that in 1835 the association brought together 300 members at Oxford; a second meeting, numbering 1,630 members, was held in 1852. In 1868 the association visited Oxford for a third time, the membership having risen to 3,672. Now the membership of the association is upwards of 19,000, when for the fourth time it has met in Oxford.

Sir William Selby Church gave the address in medicine on the important topic of "Our Sanitary Needs with Special Reference to the National Health." The address was in a measure retrospective, but brought out the important present day necessity of increasing attention to the laws of hygiene, both in urban and rural districts, begging finally that the British Medical Association would use its influence to impress both the public and the government with the desirability of a physical census of the nation being taken from time to time, and the necessity of the registration of the physical condition of children on whom the future depends.

The address in surgery by Sir William Macewen was eminently practical in its bearings, taking up in the first place the important question of the localization of brain abscess arising from primary pyogenic cranial lesions, a matter concerning which no one could speak with more authority. Few matters in cerebral surgery are more important than this, owing to the absolute necessity of a correct diagnosis, and the possibility of an immediate and complete relief. We commend the succinct statements made in this connection to aurists and other surgical readers. The remainder of the address was taken up with a discussion of a respiratory and cardiac reflex, and to the choice of ligature and suture material, the latter a matter upon which Mr. Macewen's opinion will be welcome.

An innovation at this meeting of the association was the introduction of a popular lecture, given in the town hall by Dr. Ferguson, attended by a large and appreciative audience. Dr. Ferguson spoke in a practical fashion upon disease germs, and described in language easily comprehensible to the uninitiated certain facts regarding the life history and the effects of various organisms. This plan, adopted this year for the first time, as we understand, by the British Medical Association, is worthy of imitation. That the laity should know certain facts regarding medical matters and hygiene is becoming more and more apparent, and that such knowledge should come through the auspices of a recognized medical body is also fitting.

The honorary degree of D.Sc. was bestowed upon the following physicians: Dr. Clifford Allbutt, Mr. Andrew Clark, Dr. T. D. Griffiths, Mr. Jonathan Hutchinson, Sir William Macewen, Sir Patrick Manson, Sir John William Moore, and Dr. William Osler. Professor Love of the University of Oxford, in presenting the degree to Dr. Osler, spoke as follows:

Among those who apply the results of modern science to the investigation of the causes and the cure of diseases, few have attained greater distinction than William Osler. By his professional teaching, first in Montreal, and afterwards in Baltimore, by his writings, which deal partly with questions of abstract science and partly with questions concerning the practice of medicine, by his skill as a physician, he has been for many years a leading exponent of the principle that the art of medicine should be based upon the most exact scientific knowledge of the day. For his work in exemplifying this principle, as well as for the merit of his contributions to science, he was elected a Fellow of the Royal Society. In him also we welcome a representative of one of those daughter States which are the pride of the mother country — the Dominion of Canada — and also of that great Republic of the West whose people, bound to us by the closest ties of kinship, are also among our best friends.

## AN OUTBREAK OF TYPHOID FEVER.

A serious outbreak of typhoid fever has occurred in what is known as the Bedford Park section of the Borough of the Bronx, New York, and it is stated that as many as forty-two cases have been discovered in one block. The existence of the trouble had been known for some little time to the Health Department, which had been carrying on an investigation quietly, in order not to unnecessarily alarm the people of the neighborhood; but it was not until Aug. 9 that the facts were made public. On that date a corps of fifty medical inspectors was detailed for the work of preventing the further spread of the disease. It appears that the outbreak has been successfully traced to a spring, the waters of which form a creek which flows through the great reservoir for Croton water, now in process of construction on the site of the old Jerome Park race-course. All of the typhoid patients, it is said, partook of this water, which has been shown to be contaminated. It is a rural neighborhood, and many of the residents have never had the Croton water in their dwellings, and depended entirely on the spring water for cooking and drinking purposes. In many instances, also, the houses have not been connected with the city sewers and have cesspools in their rear. A considerable number of the cases are among Italians, of whom there is a colony of over a thousand persons, the men of the families being engaged in work on the new reservoir.

This epidemic, which no doubt will be speedily checked, is another example of neglect of proper precautions, as all of the recent typhoid epidemics have been. It also shows that, complete

as our knowledge is of the methods of dissemination of this disease, an absolutely constant vigilance is requisite to prevent its appearance in epidemic form.

## ANNUAL ENCAMPMENT OF THE GRAND ARMY OF THE REPUBLIC.

Boston this week is the center of unusual midsummer activity owing to the presence in the city of the national Grand Army of the Republic encampment. This is presumably the last time that Boston will have the opportunity of seeing face to face the men who took part in the Civil War. Young as many of the soldiers were who enlisted and fought during the period from 1861 to 1865, the lapse of time has led to the inevitable result that many who are left are far advanced in years and show the decrepitude which comes from age as well as from wounds and injuries received in active service. Inspiring, therefore, as this occasion is likely to prove, there is associated with it a sense of sadness in that the actual participants in the War of the Rebellion will soon give place to men for whom the war is a remembrance simply and not an actual experience.

## MEDICAL NOTES.

Appointment of Professor Osler. — It is announced that Dr. William Osler has been appointed Regius Professor of Medicine at Oxford University, succeeding Sir John Burden-Sanderson.

Immigration Rules. — Among other immigration rules about to be established, the following is of interest to the medical profession, that a law be enacted regarding medical inspection of the immigrants at points of embarkation for this country. It appears that during this past year several hundred immigrants, suffering from dangerous communicable disease, have been deported at the expense of transportation companies. Could a more stringent examination be made of persons before embarking, an element of danger and also a source of great inconvenience would be removed.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon Aug. 17, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diptheria 35, scarlatina 7, typhoid fever 30, measles 8, smallpox 0.

Bequests. — By the will of the late Miss Mary McGregor Means the sum of $3,000 is bequeathed to the T. Morgan Rotch, Jr., Hospital of Boston, and $2,000 to the House of the Good Samaritan. Anonymous gifts of $800 have also recently been given to the Boston Floating Hospital.

Contamination of the Neponset River. — In accordance with an act of the Legislature in 1902, prohibiting the entrance or discharge of sewage into the Neponset River or its tributaries, and also of other substances injurious to public health, unless such substances be rendered harmless, the Massachusetts State Board of Health has taken action. Last summer the Board called the attention of property owners to the matter, to which it is said the latter have paid small attention. As a result, the Board now calls upon the attorney-general for an enforcement of its decree. Plants valued at from fifteen million to eighteen million dollars are affected by the order, but the manufacturers have never been willing to admit the right of prohibition of drainage into the river. It is, therefore, regarded as possible that the action of the Board may still be contested, although both law and right seem to be on the side of the complainants.

Bacteriological Laboratory of Boston Board of Health. — The Bacteriological Laboratory of the Boston Board of Health is soon to be transferred from its old outgrown quarters in the Sudbury Building, occupied since 1898, to the Boylston Chambers, 739 Boylston Street, where greater space and convenience have been secured. The existing arrangements for the free delivery daily up to 6 P.M. of cultures, through culture stations, will be continued exactly as heretofore. An addition to this has now been made, in that hereafter cultures too late for this free delivery may be sent for incubation, direct to the laboratory up to 9 P.M. The expense of delivering such late cultures will, however, rest with the physician, not with the culture stations. In addition to the diagnostic work, which has increased very much since the laboratory was established, the bacteriological examination of the Boston milk supply was begun in June, involving the examination of about six hundred samples each month.

### NEW YORK.

Muzzling of Dogs. — On Aug. 10 State Commissioner of Agriculture Weiting issued an order, directing that in the city of Binghamton and in certain districts of Tioga, as well as Broome

County, all dogs should at once be muzzled or killed. A short time previously a rabid dog came to Binghamton from Oswego and is known to have bitten over fifty animals, some of which have since developed rabies.

Gift to Medical Department, Tulane University. — By the will of the late Alexander C. Hutchinson the bulk of his property, partly in New York and partly in New Orleans, is bequeathed to the medical department of Tulane University, Louisiana. The appraisement, just filed in the surrogate's office, New York, shows that the testator left a personal estate amounting to $1,020,000, in addition to considerable real estate, the value of which is not made public.

Accident to a Summer Tuberculosis Camp. — On August 10, what is described as a veritable whirlwind, came up from the sea at Coney Island and demolished the tents of the camp instituted this summer by the Association for Improving the Condition of the Poor, for children suffering from tuberculosis of the bones and joints. The frightened children were drenched by the rain which accompanied the wind, but the nurses soon had them housed in the neighboring building of the society.

Bequests. — Among other charitable bequests left by the will of the late Marcus Goldman of New York are $1,000 each to the Mount Sinai Hospital and the Montefiore Home and Hospital for Chronic Invalids. By the will of Simon Lavenburg of New York, who died recently in Germany, most of his estate is left to charity, on the death of his widow. Among the bequests are $5,000 each to the Mount Sinai Hospital and the Montefiore Home and Hospital for Chronic Invalids.

Quarterly Mortality Statistics. — The condensed quarterly report of the Bureau of Records of the Health Department, just issued, which embraces the three months ending March 31, 1904, shows that the number of deaths for the quarter was 21,590. This, on an estimated population of 3,838,024, gave a death-rate of 22.58 per thousand, as compared with the average number of deaths for the preceding five years of 18,301, which, on an estimated population of 3,540,664, gave a death-rate of 20.98 per thousand, an increase of 1.60 points. The reason for this increased death-rate, as compared with the quinquennial average, is given as due to three factors, namely: First, an immense increase in the prevalence of measles; second, a persistent and severe type of influenza; and third, the unusually severe winter. The first of these factors, measles, was the forerunner of an increase in the number of deaths from respiratory diseases among children, while the second and third factors contributed to the increase in the respiratory, circulatory, urinary and tubercular diseases among adults and old people. The increase of deaths from pneumonia was 1,437 above the quinquennial average. The increase in the number of deaths under five years of age was 546, at the ages five to sixty-five years, 2,177, and at sixty-five years and over, 546 above the quinquennial average.

## Obituaries.

### JOSEPH WIENER, M.D.

Dr. Joseph Wiener, an eminent retired New York physician, died from cardiac disease on Aug. 11, in the seventy-seventh year of his age. He was born in Hanska, Bohemia, April 5, 1829, and came to this country in 1849. For thirty-five years he was in active practice in New York, and during a considerable part of this time was an associate of the late Dr. William Detwold in the chair of military surgery at the College of Physicians and Surgeons, since affiliated with Columbia University. He was also one of the founders of the department of pathology in that school. Dr. Wiener was prominent in literary and artistic circles, as well as identified with many philanthropic and scientific movements. In 1885 he made the presentation speech on the occasion of the unveiling of the bust of Washington Irving in Bryant Park, New York.

### WENDELL C. BOYD, M.D.

Dr. Wendell C. Boyd died at Linneus, Me., Aug. 3, 1904, aged thirty-four years and two months. The deceased was born at Linneus, received his early education in the district schools of his native town and at the Ricker Classical Institute of Houlton, Me., of which he was a graduate. He took his medical degree at the Harvard Medical School in the class of 1893, and at once entered into practice with his father, Dr. Robert Boyd, quickly meeting with success. He possessed a large fund of personal magnetism and professional tact which made his presence acceptable in the sick room, and in his early demise he leaves a great number of friends. He was twice elected and served two terms in the Maine legislature.

About one and one-half years ago he suffered from a severe attack of influenza from which he never fully recovered. Soon pulmonary tuberculosis developed, and after a vigorous fight of over a year his death quietly came.

The esteem in which he was held was attested by the large concourse of people who came to pay tribute to him in death. He leaves a wife

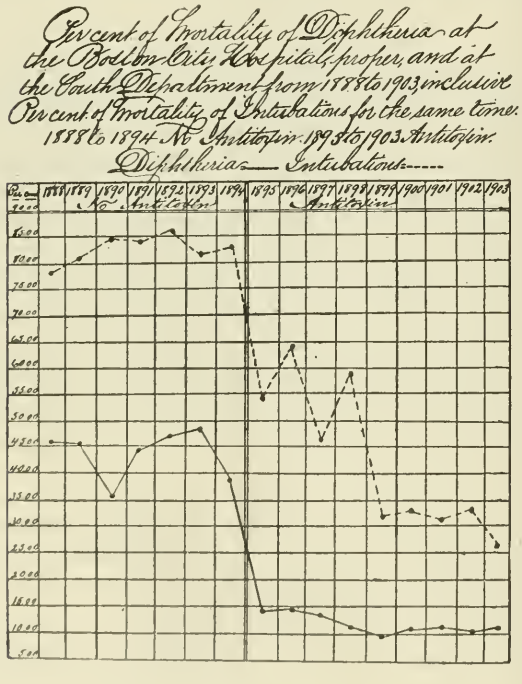
and one child, aged four years. His parents also survive him, with one brother (present Secretary of State of Maine) and one sister, the wife of Dr. W. N. Hand of Woodstock, N. B.

## Miscellany.

### DIPHTHERIA STATISTICS AT THE BOSTON CITY HOSPITAL.

THE following figures show the number of cases of diphtheria treated at the Boston City Hospital, proper, and at the South Department from 1888 to 1903, inclusive. The number of cases of intubation for the same time is also shown. 1888 to 1894, no antitoxin. 1895 to 1903, antitoxin.

| Year. | Number of Cases of Diphtheria. | Died. | Per cent. of Mortality. | Per cent. of Recoveries. | Number of Intubations. | Died. | Per cent. of Mortality. | Per cent. of Recoveries. |
|---|---|---|---|---|---|---|---|---|
| 1888 | 382 | 176 | 46.07 | 53.92 | 100 | 78 | 78.00 | 22.00 |
| 1889 | 529 | 239 | 45.17 | 54.82 | 128 | 104 | 81.25 | 18.75 |
| 1890 | 415 | 151 | 36.38 | 63.61 | 93 | 79 | 84.94 | 15.05 |
| 1891 | 237 | 105 | 44.30 | 55.69 | 50 | 42 | 84.00 | 16.00 |
| 1892 | 387 | 185 | 47.80 | 52.19 | 65 | 56 | 86.15 | 13.84 |
| 1893 | 419 | 203 | 48.44 | 51.55 | 109 | 90 | 82.56 | 17.43 |
| 1894 | 698 | 266 | 38.10 | 61.89 | 89 | 74 | 83.14 | 16.85 |
| Total, | 3067 | 1325 | 43.20 | 56.79 | 634 | 523 | 82.49 | 17.50 |
| 1895 | 1455 | 207 | 14.22 | 85.77 | 118 | 64 | 54.23 | 45.76 |
| 1896 | 1889 | 276 | 14.61 | 85.38 | 224 | 145 | 64.73 | 35.26 |
| 1897 | 1387 | 181 | 13.04 | 86.95 | 146 | 67 | 45.88 | 54.11 |
| 1898 | 817 | 97 | 11.87 | 88.12 | 71 | 42 | 59.15 | 40.84 |
| 1899 | 1621 | 162 | 9.99 | 90.00 | 192 | 63 | 32.81 | 67.18 |
| 1900 | 2547 | 293 | 11.50 | 88.49 | 259 | 87 | 33.59 | 66.40 |
| 1901 | 1576 | 185 | 11.73 | 88.26 | 184 | 58 | 31.52 | 68.47 |
| 1902 | 1008 | 111 | 10.20 | 89.79 | 145 | 49 | 33.79 | 66.20 |
| 1903 | 1179 | 138 | 11.70 | 88.29 | 139 | 37 | 26.61 | 73.38 |
| Total, | 13479 | 1650 | 12.24 | 87.75 | 1478 | 612 | 41.40 | 58.59 |




## Correspondence.

### MEDICAL EXHIBITS AT THE WORLD'S FAIR.

ST. LOUIS, Aug 15, 1904.

To the physician anticipating a visit to the World's Fair, mention of the various medical exhibits to be seen, both foreign and domestic, will not be out of place; and to his less fortunate brother a description of some of these will be of interest.

The medical exhibits, with the exception of those of the Marine Hospital Service, and the Medical Department of the Army and Navy, in the Government Building, are all in the Educational Building, arranged under the head of their respective states or nations. While all these exhibits are interesting and instructive, Germany, in the variety and scope of her exhibit, and the general excellence of its character, both in regard to the material displayed, and also as illustrative of the method of medical instruction, should certainly be given first place.

There are eight sections devoted to the medical sciences in the German exhibit alone. The first section, taking them in order, displays a heterogeneous collection, consisting chiefly of models and instruments, for the purpose of medical instruction. On entering the door, the first thing one notices is a case of instruments from the firm of Louis & H. Lowenstein of Berlin. Among these instruments may be mentioned Prof. Nitze's cystoscopic instruments, and a rubber phantom of the bladder by means of which the technic of cystoscopic instrumentation is taught the student. One other instrument should be mentioned, and that is an esophagoscope by Gluckmann, which is considered by the Germans to be superior to that devised by Mikulicz and Gottstein. Close by are phantoms for the purpose of passing the esophagoscope and for practising instrumentation by the aid of the laryngeal mirror. From the manufactories of Carl Zeiss, are some very beautiful optical instruments consisting of microscopes, dissecting microscopes, photomicroscopes and the various accessories.

The method of instructing the student in anatomy, the various steps of surgical operations, and the external appearance of disease is well shown by means of wax models. From Professor Passow's otological clinic at the Charité Hospital, Berlin, are models illustrative of the typical ear operations, the steps of a mastoid operation being especially well explained. A wax model for the purpose of explaining the manner of opening the frontal sinus is here displayed; also a model used in lecturing on the nose and accessory sinuses. The anatomical display consists of a complete dissection of the foot, showing the relations of muscles, tendons and ligaments, and a collection of tarsal bones.

From the studio of Fritz Kolbow of Berlin may be seen some very beautiful preparations in wax of tuberculosis and carcinoma about the face; also affections of the eye, such as tracoma, diphtheritic conjunctivitis, and gonorrheal ophthalmia. These preparations are so perfect that those not in the profession at first sight ask if they are not specimens preserved from the human body. On the wall of this room are many pictures taken at the Orthopedic Clinic at Berlin showing the effect of the subcutaneous injection of hard paraffin in plastic surgery with the most pleasing result. Pictures from the Medico-Legal Institute of the Royal University of Berlin show many of the conditions met with when death from violence occurs.

Passing on to the next section, one enters the x-ray and lecture rooms where exhibitions of the Roentgen rays are given. The next six sections contain the main exhibition of the medical department, each section representing one branch of the medical sciences. The first of these six sections is arranged by the Imperial Board of Health of Berlin and the Royal Ministry for Medical Affairs to illustrate the method of combating epidemics, bacteriological research, and experimental therapeutics. This room is fitted up as a bacteriological laboratory and displays the latest and most approved forms of apparatus for bacteriological research, also a compact "flying laboratory" which can be quickly and easily moved from

place to place, and contains everything necessary for the purpose of investigating epidemics. On the wall of the room are pictures of patients afflicted with smallpox, leprosy and bubonic plague. The exhibition of this latter disease deserves special mention on account of its completeness and excellence. In addition to the pictures showing the different stages of the disease, are pictures of the pathological anatomy of different organs infected; also pictures of the wards and laboratories where the investigations are carried out. On a table beneath is a model of the apparatus used for killing rats on board vessels, a preventive against the importation of plague. The agent used for this purpose is carbonic acid gas which is introduced into the vessel through the air shafts, the rest of the openings having been sealed up. Cultures of the plague bacillus, pathological specimens of different organs infected, and rats inoculated and preserved in Kaiserling fluid show beautifully the character of this disease.

Plates and cultures, showing the growth of different organisms, may be seen here. They include not only the ordinary pyogenic organisms, but those producing anthrax, meningitis, pneumonia, influenza, glanders, actinomycosis, Asiatic cholera, tetanus, diphtheria, dysentery, typhoid and tuberculosis. Among the therapeutic agents displayed are antitoxins for combating certain of these diseases; as diphtheria, tetanus, anthrax and swine erysipelas. The inoculating agent and the apparatus and methods of inoculating and obtaining the serum are here shown. The exhibition of the pathology of typhoid, diphtheria, and Asiatic cholera, is very good, showing in each case the culture of the organism producing the disease and the lesion in the infected organs. Monographs on the nature of the infectious diseases are placed with the corresponding exhibits for distribution to and instruction of the public in the cause, character and means of preventing these diseases.

In the next room devoted to anatomy are some very beautiful dissections of the muscles of the upper extremity preserved in Kaiserling fluid. A series of dissections of the foot showing the muscles, tendons, nerves, blood vessels and ligaments; a dissection of the brain showing in detail its gross anatomy; a series of twenty-two cross sections of the human head, neck and shoulders, illustrating this method of study and instruction, are here displayed. Sections of the temporal bone to show the minute anatomy of the ear are not the least important of this exhibit.

A number of wax models of the various joints and ligaments, a model of the human fetus, and a very interesting model of the development of the urogenital apparatus, are arranged by Dr. Boesike, prosector at the Anatomical Institute of Berlin. A refutation of the idea of maternal impressions is seen in the display of sixteen specimens of malformations in birds and mammals produced experimentally.

The surgical exhibit is arranged in two sections; one representing the Royal Surgical clinic of Berlin; the other the Royal Surgical clinic of Breslau. The first room shows the exhibits from the Royal Surgical clinic of Berlin under the direction of Prof. Dr. von Bergmann and contains many interesting models in wax of surgical procedures, such as, the extirpation of the tongue after dividing the ramus of the jaw, extirpation of the larynx, and hemicraniotomy. These models are very beautifully made and show in detail the various steps of these operations, and the anatomical relations. The successive steps of the Bassini operation for the radical cure of inguinal hernia are very clearly pictured by these models, also Von Bergmann's operation for making a gastric fistula. In addition there are pictures of tumors about the head, face and neck, showing by comparison the difference in appearance of the various growths that may occur in those regions. A number of very fine specimens of sarcoma preserved in Kaiserling fluid may be seen here.

The next section contains the exhibit of the Royal University of Breslau, under the direction of Prof. Dr. von Mikulicz-Radecki. Here may be seen, arranged around the walls of the room, an exhibit of the surgical affections of the knee, illustrated by casts taken from the living, and produced in wax, showing the difference in appearance of sarcoma, tuberculosis, tabetic arthropathies, loose bodies in the joint, effusions into the knee, and fractured patellæ — a comparison of the normal and affected knee being shown in each case.

On the stand beneath are prints taken from the original Roentgen-ray plates, and schematic drawings traced from the same plates to show the character of the growth in these different affections. On an adjacent stand are wax models illustrating the technic of certain abdominal operations. Among these may be mentioned the various skin incisions most commonly practised in abdominal operations at the clinic of Von Mikulicz; a model showing the important points in a posterior retrocolic gastro-enterostomy and a resection of the pylorus with an end-to-end anastomosis by means of a Murphy button. Near by may be seen a demonstration of esophagoscopy by means of a phantom showing the esophagoscope in position with a revolving disc at the distal end holding wax models of the pathological conditions which may arise in the living. There are photographs of foreign bodies lodged in the esophagus, and x-ray photographs — some negative, some positive. The diagnosis in each case was made by means of the esophagoscope, and the foreign body removed through the mouth, or pushed into the stomach and passed per rectum. Other cases are shown in which the diagnosis having been made by the esophagoscope esophagotomy became necessary to dislodge the foreign substance. Some very fine wax models from the dermatological clinic of Breslau and a display of surgical instruments and apparatus from the firm of Georg Haertel of Breslau completes this section.

Adjoining the surgical section is a room for the display of the pathological exhibit. Here wax models for the demonstration of an autopsy are shown. The thoracic cavity is exposed and the heart is grasped by a hand to show its position when opening the right and left side of the heart.

Wax models of the brain are displayed, explaining Virchow's method and the position of the hand in cutting the brain. These models are very beautiful and show perfectly the section of the brain, the cerebral hemispheres, basal ganglia, and cerebellum. The pathological specimens are extremely interesting and well preserved, Kaiserling fluid being the preservative most commonly used. The exhibit of sarcomatous tissue is especially fine; one display shows the secondary deposits which have taken place in the mesentery, liver and vertebral column; another shows the dissemination of a melanotic sarcoma, arising from a pigmented mole, involving the uterus, intestines, peritoneum, liver, lung and brain. The pathological conditions of the kidney are well illustrated. There are some excellent specimens of renal calculi, renal cysts, a specimen showing a compensatory hypertrophy of the right kidney with atrophy of the left, amyloid degeneration of the kidney, and last and very interesting is a specimen of tuberculous urethritis, cystitis, ureteritis and nephritis showing a caseous ulcerating condition of one kidney and a cyanotic induration of the other. A very fine specimen showing the effect of an unchecked hemorrhage of the dura is to be seen here, the dura with the clot is removed showing the resulting compression of the brain. A series of sections of the bones is displayed to show the pathology of rachitis, and several skeletons show the osseous deformities seen in the bones of the thorax.

The final section of this exhibit is devoted to internal medicine. As this subject is hard to picture, since the means of study, the manner of making a diagnosis and the method of treatment are taught mainly by lectures, it was decided to take as an example one disease, namely, tuberculosis. Through the assistance of the makers of diagnostic instruments, manufacturers of hospital supplies and accessories, and the pathologist, the means of making a diagnosis, the manner of prevention and the method of treatment of this disease are explained.

Here are also shown various forms of microscopes, stethescopes and laryngoscopes, apparatus for sterilizing clothing and rooms, and receptacles for the sputum. A model ward tent and a bed which can be utilized as a chair or bed illustrate a feature in the open air treatment of this disease. The pathology of the disease is pictured by specimens of the various organs involved.

This completes one of the most remarkable and thoroughly representative exhibitions of the Fair, embracing as it does almost every department of the medical sciences.

* * * *

## RECORD OF MORTALITY
FOR THE WEEK ENDING SATURDAY, AUGUST 6, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid Fever. | Diarrheal Diseases. |
| New York . . | 3,908,644 | 1,439 | 660 | 44.18 | 8.46 | 2.52 | 1.00 | 27.06 |
| Chicago . . . | 2,021,086 | 473 | 173 | 41.77 | 5.70 | .42 | 1.05 | 25.32 |
| Philadelphia | 1,407,968 | 428 | 156 | 38.30 | 4.44 | 1.16 | 1.16 | 21.95 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 223 | 95 | 43.94 | 2.69 | .90 | 1.34 | 26.45 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 149 | — | 36.23 | 3.35 | 1.34 | 10.06 | 16.10 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 67 | 39 | 39.80 | 2.98 | 1.49 | — | 28.34 |
| Boston . . . | 617,950 | 250 | 107 | 27.20 | 6.40 | .42 | 2.00 | 12.80 |
| Worcester . . | 136,925 | 44 | 13 | 20.45 | 4.54 | — | — | 15.90 |
| Fall River . . | 119,349 | 37 | 23 | 51.34 | 2.70 | — | 2.70 | 40.50 |
| Lowell . . . | 104,402 | 45 | 32 | — | 6.67 | — | — | — |
| Cambridge . | 100,998 | 28 | 14 | 39.28 | — | — | — | 39.28 |
| Lynn . . . . | 73,875 | 24 | 13 | 29.16 | 4.16 | — | 4.16 | 12.50 |
| Lawrence . . | 72,348 | 20 | 13 | 70.00 | — | — | — | 45.00 |
| Springfield . | 72,020 | 17 | 7 | 41.17 | 5.88 | — | — | 35.29 |
| Somerville . | 70,413 | 18 | 5 | 38.88 | 16.67 | — | — | 22.22 |
| New Bedford | 68,863 | 24 | 15 | 58.32 | — | — | — | 58.32 |
| Holyoke . . . | 50,538 | 15 | 7 | 46.67 | 6.67 | — | — | 33.33 |
| Brockton . . | 46,601 | 13 | 6 | 6.67 | — | — | — | — |
| Newton . . . | 39,310 | 7 | 2 | 57.20 | — | — | — | 42.90 |
| Haverhill . . | 39,061 | 9 | 6 | 33.33 | — | — | — | 33.33 |
| Malden . . . | 37,205 | 9 | 6 | 33.33 | 11.11 | — | — | 33.33 |
| Salem . . . . | 37,188 | 15 | 9 | 20.00 | — | — | — | 20.00 |
| Chelsea . . . | 36,499 | 17 | 4 | 11.76 | 11.76 | — | — | 5.88 |
| Fitchburg . . | 36,335 | 5 | 3 | — | — | — | — | — |
| Taunton . . . | 34,577 | 15 | 9 | 60.00 | — | — | — | 52.22 |
| Everett . . . | 30,209 | 8 | 5 | 12.50 | — | — | — | — |
| North Adams | 29,201 | 9 | 4 | 33.33 | — | 22.22 | — | — |
| Quincy . . . | 26,798 | 4 | 1 | 25.00 | — | — | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 7 | 1 | 28.60 | — | — | — | 14.30 |
| Brookline . . | 23,576 | 1 | — | 100.00 | — | — | — | — |
| Pittsfield . . | 22,870 | 12 | 5 | 41.65 | 8.33 | — | — | 25.00 |
| Medford . . | 21,956 | 3 | 3 | 33.33 | — | — | — | 33.33 |
| Chicopee . . | 21,692 | 4 | 3 | 25.00 | — | — | — | 25.00 |
| Northampton | 20,314 | 8 | 4 | 50.00 | — | — | — | 50.00 |
| Beverly . . . | 15,807 | 4 | — | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 2 | 0 | 50.00 | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | — | — | — | — | — | — | — |
| Newburyport | 14,478 | 5 | 2 | 40.00 | — | — | — | 20.00 |
| Woburn . . . | 14,315 | 5 | 1 | 20.00 | — | — | — | 20.00 |
| Melrose . . . | 13,819 | 3 | 0 | — | — | — | — | — |
| Westfield . . | 13,809 | 5 | 3 | — | 20.00 | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 1 | 0 | — | — | — | — | — |
| Revere . . . | 13,609 | 5 | 2 | 20.00 | — | — | — | 20.00 |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | — | — | — | — | — | — | — |
| Southbridge . | 11,716 | 3 | 3 | 100.00 | — | — | — | 100.00 |
| Watertown . | 11,575 | 2 | 2 | 50.00 | — | — | — | 50.00 |
| Weymouth . | 11,350 | 2 | 1 | — | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,484; under five years of age, 1,457; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,333; acute lung diseases 204, consumption 350, scarlet fever 9, whooping cough 15, cerebrospinal meningitis 27, smallpox 1, erysipelas 4, puerperal fever 4, measles 10, typhoid fever 50, diarrheal diseases 815, diphtheria and croup 48.

From whooping cough, New York 2, Chicago 6, Philadelphia 1, Pittsburg 6. From measles, New York 6, Philadelphia 2, Pittsburg 1, Boston 1. From scarlet fever, New York 2, Chicago 3, Philadelphia 3, Baltimore 1. From cerebrospinal meningitis, New York 18, Baltimore 2, Pittsburg 1, Boston 4, Worcester 1, Pittsfield 1. From typhoid fever, New York 13, Chicago 7, Philadelphia 5, Baltimore 3, Pittsburg 15, Boston 5, Fall River 1, Lynn 1. From erysipelas, New York 1, Chicago 2, Lawrence 1. From small-pox, North Adams 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending July 23, the death-rate was 14.1. Deaths reported 4,142; acute diseases of the respiratory organs (London) 36, whooping cough 91, diphtheria 50, measles 177, smallpox 5, scarlet fever 24.

The death-rate ranged from 3.1 in West Bromwick to 20.3 in Liverpool; London 14.8, West Ham 14.1, Brighton 13.6, Southampton 13.9, Plymouth 13.3, Bristol 11.5, Leicester 9.5, Nottingham 14.5, Bolton 15.4, Manchester 14.6, Salford 17.8, Bradford 16.8, Leeds 16.6, Hull 13.1, Sheffield 11.7, Cardiff 10.6, Rhondda 19.6, Wigan 10.0, Merthyr Tydfil 16.5, Bournemouth 9.7, Bootle 18.6.

## METEOROLOGICAL RECORD.

For the week ending August 6, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in Inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S.. 13 | 30.00 | 76 | 89 | 63 | 77 | 69 | 73 | S W | S W | 13 | 25 | F. | C. | 0 |
| M.. 1 | 29.96 | 80 | 89 | 72 | 77 | 74 | 76 | S W | S W | 14 | 8 | C. | O. | .01 |
| T.. 2 | 29.96 | 72 | 76 | 68 | 85 | 90 | 88 | E | S | 3 | 4 | R. | O. | .59 |
| W. 3 | 30.06 | 66 | 70 | 62 | 81 | 97 | 89 | N | E | 8 | 8 | C. | R. | T. |
| T.. 4 | 30.16 | 66 | 70 | 61 | 94 | 88 | 91 | E | S | 5 | 8 | T. | C. | T. |
| F.. 5 | 30.06 | 71 | 77 | 65 | 76 | 83 | 80 | S | S | 7 | 8 | F. | O. | 0 |
| S.. 6 | 29.83 | 74 | 81 | 67 | 90 | 86 | 88 | S | S | 5 | 10 | O. | C. | .25 |
| ☞ | 30.00 | | 79 | 65 | | | 84 | | | | | | | .85 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING AUGUST 13, 1904.

W. N. McDONNELL, acting assistant surgeon. Detached from the "Marcellus" and ordered to the Naval Recruiting Rendezvous, Baltimore, Md.

V. DABNEY, acting assistant surgeon. Detached from the Naval Recruiting Party No. 3, and ordered home to wait orders.

R. C. DEAN, medical director. Detached from duty as a member of the naval retiring board, Washington, D.C., and ordered home.

G. F. DUNCAN, acting assistant surgeon. Detached from the Naval Recruiting Party No. 2, and ordered to the "Franklin."

W. H. JANNEY, acting assistant surgeon. Detached from the Naval Recruiting Party No. 1, and ordered to the "Marcellus."

G. A. LUNG, surgeon. Detached from the "Hancock" and ordered to the "Kentucky."

M. S. GUEST, passed assistant surgeon. Detached from the "Kentucky" and ordered to Washington, D. C., September 1, for examination for promotion and to wait orders.

F. A. ASSERSON, assistant surgeon. Detached from the "Kentucky" and ordered home to wait orders.

P. T. DESSEZ, assistant surgeon. Detached from the Naval Academy and ordered to the "Kentucky."

## APPOINTMENTS.

The New York School of Clinical Medicine announces the following changes in the faculty: General Medicine: Professors Wm. Brewster Clark and Henry Lawrence Schively; Associate Professors Thos. M. Acken and Edw. L. Kellogg; General Surgery: Prof. Simon J. Walsh and Assoc. Prof. J. Cameron Anderson; Gynecology: Professors Augustin H. Goelet and A. Ernest Gallant; Pediatrics: Professors Dillon Brown and Henry Comstock Hazen; Nervous and Mental Diseases: Professors J. Arthur Booth and Emmet C. Dent; Gastro-Intestinal Diseases: Prof. Robert Coleman Kemp; Ophthalmology and Otology: Professors John L. Adams and Geo. Ash Taylor; Dermatology: Prof. Robert J. Devlin; Laryngology and Rhinology: Prof. Max J. Schwerd; Orthopedic Surgery: Prof. Homer Gibney; Hydrotherapeutics: Prof. Alfred W. Gardiner; Genito-Urinary Diseases: Professors Wm. K. Otis, Walter Brooks Brouner and John von Glahn; Pathology: Prof. E. E. Smith.

## RECENT DEATH.

ALBERT W. WARDEN, M.D., of Union Hill, Hudson Co., N. J., died at the Presbyterian Hospital, New York, on August 9, of septicemia, resulting from a poisoned wound received while attending a patient. Dr. Warden, who was forty-seven years of age, organized the first free public library at Union Hill, where he also served as a school trustee.

## BOOKS AND PAMPHLETS RECEIVED.

American Edition of Nothnagel's Practice. Tuberculosis and Acute General Miliary Tuberculosis. By Prof. Dr. G. Cornet. Edited, with additions, by Walter B. James, M.D. Authorized translation from the German, under the editorial supervision of Alfred Stengel, M.D. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

# Original Articles.

## THE PRESENT STATUS OF HYDROTHERAPY AND OTHER FORMS OF PHYSICAL THERAPEUTICS.*

BY JOSEPH H. PRATT, A.M., M.D., BOSTON,
*Physician to Out Patients, Massachusetts General Hospital; Assistant in the Theory and Practice of Physic in Harvard University*

In an admirable address delivered at the opening of the balneological course at Baden-Baden last October, Professor Vierordt [1] asserted that the recent introduction of physical methods of treatment marked a turning point of great importance in the history of medicine. In the past, the reluctance of scientific physicians to avail themselves of physical agents — light, water, air, heat, electricity, movement — has been in large part due to the fact that their use did not rest upon a scientific basis. They were employed chiefly by men devoid of scientific accuracy, untrained in careful diagnosis, who, content to allow physical methods to be judged by results obtained, made extravagant claims for them and introduced, to explain their use, wild conjectures and theories unsupported by physiological and pathological evidence. Within the past decade, however, empiricism in physical therapeutics has been overthrown, and to-day the use of air, water, heat and other natural methods of cure rests upon a firm foundation.

It is not surprising that the study of gross and microscopical morbid anatomy caused a loss of therapeutic faith, amounting in many instances to a denial of the efficacy of almost all medicines. The futility of the treatment employed was too often apparent at the postmortem table. This spirit of therapeutic hopelessness is passing away. A knowledge of pathology no longer presupposes that its possessor has no interest or faith in treatment. It is true that faith in drug therapy has not increased, but the value of physiological procedures is realized more and more as knowledge of physiological and pathological processes increases and nature's modes of cure are better understood. Let me cite an illustration. The tubercle bacillus is ubiquitous, and the only reason any individual escapes infection is owing to the ability of the healthy tissues to destroy the bacilli, and the only method of cure is to increase the resistance of the tissues. Judged by a study of morbid anatomy alone, few diseases would seem more hopeless than phthisis pulmonalis. Yet everyone knows that fresh air, good food and rest cure more than half of the incipient cases, and diminish or remove the distressing symptoms from those in whom the disease is far advanced.

The interest and study given to the investigation of physical therapeutics by the leaders of medical thought in Germany is certainly a hopeful sign. This new movement has resulted in the development of a system which embraces within its scope the treatment of all forms of disease. There is no attempt to substitute physical procedures for drugs of recognized value, but to combine both methods of treatment.

The experimental method in the study of hydrotherapy was introduced by Winternitz over thirty years ago, and his treatise published in 1877 placed hydrotherapy on a physiological basis. Although it was one of the first physical methods to be granted a place in scientific medicine, knowledge of the mode of action of water upon metabolism, the circulation, the blood and the nervous system is still very imperfect. The work which was begun along proper lines by Winternitz is now being extended, and during the past year important researches upon subjects connected with hydrotherapy have been reported in some of the leading scientific journals of Germany, — *Deutsches Archiv fur klinische Medizin, Zeitschrift fur klinische Medizin, Ziegler's Beitrage, et al.*

The reason that physiological therapy has developed so rapidly in Germany is explained by the fact that its study has been undertaken with the same thoroughness and by the employment of the same critical methods and with the same scientific spirit as has characterized the work of the Germans in physiology, pathology and the other fundamental medical sciences.

Of all the non-medicinal methods of treatment, nutrition therapy, to use a term introduced by von Leyden, has reached the highest point of development. It is the knowledge of the physiology of nutrition gained by the investigations of Justus von Liebig, Voit, Rubner, and others, which gives dietetics the important place it now holds.

The beginnings of this new period in therapeutics date back many years. Early in the last century a method of medical gymnastics was introduced by Ling in Sweden which is used to-day. Within comparatively recent times, Gustav Zander, another Swede, devised a system of mechanical gymnastics, and invented elaborate and ingenious apparatus. The Frenchmen, Junod, Tabarié and Pravaz, laid the foundation of pneumotherapy. Electrotherapy originated with Duchenne, of Boulogne, and its scope was extended by Erb, of Leipsic, now of Heidelberg. The recently developed light therapy is chiefly due to the investigations of Finsen, of Copenhagen. The compensatory exercise-therapy, so valuable in the treatment of tabes dorsalis, was introduced by the Swiss physician, Frenkel. Local hot air baths for arthritis were first employed by Bier, while an assistant of von Esmarch at Kiel. Scientific hydrotherapy, as we have said, is chiefly indebted to the Austrian, Winternitz. Thus it will be seen that modern physical therapeutics was developed by many men in different countries. These pioneers, isolated from one another, worked along special lines, and until recently their influence on medical practice was not great.

Some of the leaders of medicine, among whom was the honored Kussmaul, saw with almost prophetic vision the direction in which the therapeutics of the future would progress, and realized

* Read before The Massachusetts Medical Society, June 8, 1904.
[1] Vierordt. Die Therapie der Gegenwart, Nov., 1903.

the need of instructing the physicians and students of their generation in dietetics and methods of physical treatment. Eulenberg and Samuel, in their Handbook, pointed out clearly this defect in medical education, which existed in Germany as late as 1898. Much has been accomplished within the past ten years, and for this rapid development great credit should be given to Professor von Leyden, who has utilized the commanding position he holds in German medicine to the advancement of physical therapeutics. In 1897 he published, with the collaboration of the leading authorities, the "*Handbuch der Ernahrungstherapie*" in two large octavo volumes. This was so successful that another edition has been prepared, the second volume of which has just been issued. V. Leyden also established a journal, devoted exclusively to dietetics and physical therapy — the *Zeitschrift fur diatetische und physikalische Therapie.*

Inspired by von Leyden, his associate, Goldscheider, and assistant, Jacob, issued the "*Handbuch der physikalischen Therapie,*" in four volumes — an admirable work to which Hoffa, Eichhorst, Jolly, v. Liebermeister, Litten, Nothnagel, Riegel, Senator, and other well-known university teachers, contributed.

At the present time, in Germany, the leaders in internal medicine are the leaders in physiological therapeutics. Nothing indicates more clearly the present status of hydrotherapy in Germany than the fact that the three largest university clinics have recently been equipped with the latest and most approved apparatus for water treatments.

In Berlin, the University maintains a hydrotherapeutic institute at the Charité. It was opened in January, 1901, and is under the direction of Professor Brieger, distinguished for his investigations in chemistry and bacteriology. In establishing the institute, Brieger was aided by Professor Koch, a verification of the statement I have made that this new development in therapeutics appeals to the scientific mind.

Up to April, 1903, about 34,000 treatments had been given in Brieger's hydrotherapeutic polyclinic, important researches made, and nearly twenty-five papers published.[2] His lectures on general therapeutics were attended by one hundred and forty-five students, and three hundred and fifty-four physicians received instruction. Light, heated air, massage and mechanotherapeutic procedures are used in conjunction with hydrotherapeutic measures.

In connection with v. Leyden's medical clinic, is a department for physical therapeutics under the immediate charge of Paul Jacob, whose interesting report of the work accomplished during the past year occupies thirty-five pages of the latest volume of the *Charite-Annalen.*

The *Anstalt* for physiological therapeutics in the University Clinic at Munich is one of the most complete in the world. It was equipped by the Bavarian government at great expense. The hydrotherapeutic arrangements are unexcelled. There are facilities for full baths, half baths, local baths (arm, foot, etc.), sitz-baths combined with douches for the back, abdomen or vagina, vapor baths and vapor douches, hot-air baths, sand baths, mud baths, fango packs, salt baths, carbon dioxide baths, sulphur baths, electric baths and a variety of douches.

Several small rooms are devoted to inhalation therapy. One sees here the remarkable inhalatorium devised by Wassmuth, and other simpler systems of inhalation are also to be found. A large hall is devoted to mechanotherapy, and contains twenty-two different forms of Zander's apparatus for passive and resistant movements and massage manipulations. Another room contains a Finsen light of the original pattern, and general and local electric light baths.

The great Leipsic clinic is well fitted up with appliances for hydrotherapeutic treatments, as is also Erb's clinic at Heidelberg.

Many years ago, Liebermeister built rooms in his Tübingen clinic for hot air and vapor baths. At the present time, the hot air cabinet is generally preferred to the hot chamber (Turkish bath), because in the former the patient is not compelled to breathe super-heated air, and danger from congestion of the lungs is averted. Moreover, it is easier to supply pure air and the temperature of the bath can be regulated to the needs of the individual.

Elaborate apparatus is not essential to success in hydrotherapy. Much can be accomplished, as someone has said, with a bucket of water and and a couple of towels, if intelligently applied. For over fifteen years, simple hydrotherapeutic procedures have been extensively used in Professor Stintzing's clinic at Jena, in the treatment of chronic as well as of acute disease, including severe organic maladies. That the measures employed have yielded important results is indicated by the publication of Matthes' text-book of clinical hydrotherapy, based in part upon the experiences of the Jena clinic where Matthes served as assistant for nearly ten years. This work is probably the best, as well as the most scientific that has appeared. The opinions expressed are conservative and convincing. The author is not simply a specialist in hydrotherapy, but is a professor in the university, director of the medical polyclinic at Jena, and recognized as among the ablest of the younger German clinicians.

Another indication of the important place hydrotherapy holds in German medicine of the twentieth century is the attention given to this subject in the latest standard works on internal medicine. In the last edition of v. Strümpell's "*Lehrbuch,*" water treatments are recommended in sixteen diseases, exclusive of those of the nervous system. In Penzolt and Stintzing's "*Handbuch der Therapie innerer Krankheiten,*" third edition, 1903, over one hundred and fifty pages are devoted to the general hydrotherapy and balneotherapy of diseases of the nervous system.

In the summer semester of 1902, the following German universities offered one or more courses

[2] Krebs. Die medicinische Woche, 1903, iv, p. 255.

in some department of physical therapeutics, usually hydrotherapy: Berlin, Bonn, Breslau, Erlangen, Greifswald, Halle, Heidelberg, Leipsic, Munich, Strassburg, Tübingen, Rostock and Würzburg. This makes a total of thirteen out of the nineteen universities which gave specials on these subjects in a single half year. Compare this record with that of our American university schools, none of which, so far as I have been able to learn, gives a similar course.

In addition to the opportunities for instruction in the physical therapy of medical diseases, Ritter, of Bier's clinic, devoted a course to physical methods in surgery. During the present semester, one of the two courses given by Professor von Strümpell, at Breslau, is limited to physical therapeutics.

Austria is the home of modern hydrotherapy. At Kaltenleutgeben, in 1862, Wilhelm Winternitz, the "father of scientific hydrotherapy," established his sanitarium for water treatments, which has increased from eighteen patients treated the opening year, to two thousand patients in 1896. Winternitz founded at his own expense an out-patient hydrotherapeutic clinic, in connection with the university hospital at Vienna. Later he was made *ausserordentlicher* professor of internal medicine. He has given instruction in hydrotherapy to hundreds of physicians. In 1890, he founded the *Blatter fur klinische Hydrotherapie*. This has become the standard journal of hydrotherapy, and its original articles and reviews record nearly all the advances in this department of medicine.

In the model clinic of Jaksch Ritter von Wartenhorst, at Prague, are appliances for the most approved hydrotherapeutic treatments, and in the curriculum of 1904 he included, as is his custom, a two-hours' weekly course on hydrotherapy. Professor Pribram, in the same university, also offers special instruction in physical therapeutics.

At the *Spedale S. Maria nuova*, in Florence, connected with Grocco's medical clinic, is an institute for physical therapeutics which compares favorably with any in the world. According to Baruch, it possessed in 1900 the best douche apparatus in Europe. At the time of my visit, two years later, the establishment was supplied with the latest appliances for other forms of physical therapy. It was interesting and significant to note that the equipment was of Italian manufacture.

In Rome, an institute devoted to physical therapy has recently been opened which is complete in its appointments. The architect of the palatial building, with a true artistic sentiment, caught the spirit of the movement, and the classic style adopted not only gives the institute the character of a public building, but permits the entrance of the largest possible amount of sunlight. The director, Professor Colombo, holds an academic position in the University of Rome and is the editor of the *Revue Internationale de Therapie Physique*.

Practical hydrotherapy developed more rapidly in France than in any other country, and has for many years been held in high repute by leading clinicians. Fleury, a member of the faculty of medicine of Paris, introduced the douche, which is the most valuable of all hydriatic procedures in chronic disease. His excellent "*Traite d'hydrotherapie*" reached its fourth edition as early as 1875. Charcot used hydrotherapeutic measures constantly in his practice. Probably the best presentation of the douche treatment, which is known as the French method, is to be found in the manual of Beni-Barde and Materne, published in Paris in 1894.

In England, hydrotherapy has scarcely gained a foothold. Dr. Calvert, warden of St. Bartholomew's Hospital, told me he knew of no institution that had any special equipment for this form of treatment. The facilities for light therapy, however, at the London Hospital are admirable. Three of the original Finsen arc-lights have been installed, and a number of small lights of the French pattern. This movement was inaugurated by Queen Alexandra. Over a hundred cases of lupus receive daily treatment. The Röntgen rays and Tesla coil are also used.

Even hydrotherapy, in acute diseases, has made little progress in Great Britain, although it was early advocated by Wilson Fox and Ord. The leading champion of the cold bath treatment in typhoid fever has been Cayley, who, in the Croonian lectures for 1880, clearly and convincingly set forth its advantages.

Strange it is that the land of Currie, whose teachings influenced Brand, should be the last to adopt the cold water treatment in typhoid fever. There is some evidence, however, that the clouds of prejudice are being swept away. In the typhoid fever number of the *Practitioner*, published in January, 1904, Dr. J. W. Moore, in discussing the treatment, says that "in the water treatment alone have we a safe and certain means of controlling, or even reducing, temperature in the febrile state," and in another paper, contributed to the same journal, Dr. Hawkins states that for "controlling pyrexia there is nothing like cold water."

Mention should be made of the excellent *Journal of Balneology and Climatology* published in England, to which the distinguished clinical physiologist, Oliver, has contributed valuable articles.

The modern cold bath treatment of typhoid fever was introduced into America and first systematically used by a Fellow of this Society, Dr. R. T. Edes, who honors us with his presence to-day. In 1875, he presented at this annual meeting an able and scholarly paper, characterized by its philosophical tone, in which he described the work of Brand, Ziemssen and Liebermeister, and reported that he had used the graduated cold full bath with friction since 1872 in sixty-six cases of typhoid fever. Of thirty-two patients treated from the first week of the disease, only one died. The pity of it is that the generation to whom he announced this was so blinded that it could not see the truth. Think of the

lives needlessly sacrificed in Massachusetts alone since 1875, because Dr. Edes' advice was not heeded, — not the old and decrepit, but those in the vigor of early adult life. The cold full bath is certainly a heroic method, but it should be used because it saves life. Since July, 1890, hydrotherapy in typhoid fever has been practised by Dr. Osler at the Johns Hopkins Hospital, with a reduction in the death-rate to seven and a half per cent. Equally good results have been obtained by Gilman Thompson in New York and J. C. Wilson and Tyson in Philadelphia.

In this country, the value of hydrotherapy in chronic diseases has been specially emphasized by Kellogg and Baruch, and it has been used by Dr. J. J. Putnam for over twenty years.

The first modern work in the English language dealing with hydrotherapy and untainted with quackery was Winternitz's monograph in Ziemssen's "Handbook of Therapeutics," which was translated from the German in 1884. In 1892, Dr. Baruch published a short but excellent work on the "Uses of Water in Modern Medicine." Later his larger treatise on hydrotherapy appeared. Recently the second edition was issued, which shows not only that the book has been well received, but indicates an increasing interest in hydrotherapy among physicians.

Kellogg's "Rational Hydrotherapy" appeared in 1900. Although a large and expensive work, it has already reached a second edition. It is most comprehensive, and its descriptions of technic are worthy of special commendation.

A system of physiological therapeutics, in eleven volumes, edited by Solis Cohen, has just been completed.

The douche treatment is the most efficient form of water treatment in chronic disease, and its action is the most varied. Baruch, who has always insisted, and rightly so, on precision in method, devised an excellent douche table, which permits exact regulation of pressure and temperature. Douche apparatus has recently been installed in a number of hospitals in this vicinity, including the McLean Hospital, the Danvers Asylum, the New England Hospital for Women and Children, Dr. Millet's Sanatorium at East Bridgewater, the Butler Hospital at Providence, and our own Medical Baths in Boston. Dr. Blumer of the Butler Hospital says in his last annual report that "Hydrotherapy has been so productive of results that our baths are now used far beyond their capacity."

Dr. Baruch has established a hydriatic department at the Riverside Baths, in New York, to which physicians and dispensaries refer cases. The number of patients treated has risen from 2,146, in 1895, to 16,012, in 1902, — incontrovertible evidence, as Baruch says, of the increasing appreciation of the value of hydrotherapy. As a result of the efforts of Dr. J. J. Putnam, assisted by medical men and laymen, a hydrotherapeutic institute with facilities for all forms of hydrotherapy, owned and controlled by physicians, has been established in Boston, to which any physician may send patients. Although only opened seven months ago, the support given and the results obtained have been most satisfactory.

Baruch's douche apparatus is not the only invention American medicine has given to physical therapeutics. In 1891, Kellogg of Battle Creek devised the electric light bath, which, although in constant use to-day in the well-equipped clinics of Europe, remains almost unknown to American physicians.

As early as 1893, Dr. Peterson of New York urged that some of our medical schools give instruction in hydrotherapy. It is encouraging to read in the last annual announcement of the Cornell Medical School that to the students in small sections "will be demonstrated the various applications of water to the treatment of disease — such as baths, packs, douches, etc."

Among hospitals well equipped for other forms of physical therapy, the Royal Victoria of Montreal should be mentioned, which has excellent apparatus for electrotherapy. The facilities at the Boston City Hospital for x-ray therapy and the pioneer work of Dr. F. H. Williams are well known. No hospital in the world has so complete a set of Zander apparatus, numbering sixty-three pieces, as is to be found in the new department of mechanotherapy of the Massachusetts General Hospital.

From this brief sketch of the position hydrotherapy and other physical treatments occupy to-day, it is evident that this branch of medicine has attained a much higher stage of development in Europe than in America. It is a subject certainly worthy the attention of our leading clinicians, and it is to be hoped that our large hospitals, so excellent in other respects, will soon have facilities for physical therapy that will compare favorably with those of Germany, and that the facilities will be as intelligently used. But in order to insure the intelligent application of physical agents, it is necessary that instruction in physical therapeutics should be given in our schools.

### DISCUSSION.

Dr. J. J. Putnam of Boston: These two papers are certainly very timely, and will be of great service. I shall not attempt to say anything about the scientific aspects of hydrotherapeutics, but simply of the efforts that are being made to place this means of treatment at the service of physicians in this city. Of course much can be done with simple means, but for many purposes an institution is needed, and such an institution we now have at 126 Massachusetts Avenue under the charge of Dr. Pratt and an informal committee of physicians.

Of course such an institution is very expensive, and without outside aid we could not have fitted up the rooms and obtained the necessary apparatus to carry on the work successfully. Our small establishment is now on a good footing, except that we still need the support and interest of physicians, and funds for the introduction of further apparatus.

Dr. G. T. Tuttle of Wellesley: We have been using hydrotherapeutics in some form at the McLean Hospital since the spring of '97, and in order to employ it to the best advantage I have tried to ascertain what

it really did for our patients, since it seemed to me that rather extravagant claims had been made for it. The effect desired was chiefly stimulating or tonic, and great care has been used to secure a good reaction; that is, a permanent return of blood to the surface vessels after cold applications. The problem has been to adapt the temperature of the water, the pressure under which it is delivered, and the time of its application to the strength of the individual so that this reaction may be as perfect as possible. Patients differ in regard to their ability to respond, and there is also a variation in the same person at different times; even healthy people should use caution in taking these baths when they are tired. The neurasthenic, if the bath is too vigorous, complains of exhaustion, which seems to contradict the claim that these baths increase the capacity for work. To determine whether this is so, a series of experiments has been conducted with the use of the ergograph with practically negative results. We could not obtain fatigue curves showing the great increase in work done after the bath that has been recorded by others. Observations on the pulse rate, respiration and temperature during the various stages of an ordinary bath show that they all vary directly with the temperature to which the individual is subjected; while the blood pressure varies inversely with the temperature, — hot applications lower it, cold applications raise it. The sudden fall of blood pressure is no doubt the reason why some people faint while in the hot air cabinet.

Considerable importance has been attached to the fact that some observers have found a large increase of red and white cells in the blood after various hydriatic procedures. We have been unable to confirm this, and, in my opinion, any increase of cells in the surface vessels after cold baths is purely a local phenomenon, and a disadvantage if long continued.

Theoretically, cold applications to the entire surface of the body at once should cause a flushing of the internal organs and an increased activity. Observations have been made by Dr. Otto Folin in our laboratory to determine whether such baths as we give really cause any increase in destructive metabolism of the body, with practically negative results.

The wet pack has been found extremely useful in cases of exhilaration or excitement for its soothing and even hypnotic effects.

While I have been unable to confirm many claims made for hydrotherapeutics, there are, in my opinion, many and sufficient reasons for its use.

Dr. R. T. Edes of Reading: There have been several points in these papers which have interested me very much, and I am glad that they were read together, as Dr. Millet shows that a very efficient use of this highly important agent can be made without complicated and expensive apparatus.

Dr. Pratt's paper, in its very thorough treatment, gave one the idea, although he did not exactly say so, that hydrotherapy is quite a recent introduction in Germany and that it was introduced into this country by Dr. Baruch.

In a report on "Therapeutics" for the Boston Medical and Surgical Journal, 1872, I quoted from German authorities statistics on the subject, and in 1875 I read to this society a paper based on my experience of three years at the Boston City Hospital on the "Treatment of Typhoid by Cold Baths." This was published in the Boston Medical and Surgical Journal and in the Second Series of the City Hospital Reports.

Of course, the subject is growing and developing. Much elaborate apparatus has been devised and the scope of its application much extended. Probably it is more scientifically understood but it is not absolutely new here.

Dr. Pratt: Certainly, as Dr. Edes says, the use of water in the treatment of disease is no new thing. Probably no therapeutic method is of greater antiquity. I regret that I failed to make it clear that I was dealing only with the development of scientific hydrotherapy. Baths as a curative agent were highly valued by Hippocrates. Galen considered cold water most important in fever, as did Celsus, Avicenna and Rhazes. But the origin of hydrotherapy on a physiological basis dates from the work of Winternitz in the third quarter of the last century.

Over a hundred years ago the distinguished New York physicians, Samuel Bard and David Hosack, following the teachings of Gregory of Edinburgh and Currie of Liverpool, used cold sponging in the treatment of fever. Somewhat later Nathan Smith of Yale College employed with success cold water in typhoid fever. But the influence of these men soon ceased to be felt, and water as a curative agent was forgotten, and hence this period has but slight historic interest and played no part in the development of the hydrotherapy of to-day.

It is certainly not generally known that the modern cold water treatment of typhoid fever, developed in Germany by Brand, Ziemssen, Jürgensen and others, was introduced into America by Dr. Edes. I shall take pleasure in giving him deserved credit in my published address.

## THE PRACTICAL APPLICATION OF HYDROTHERAPEUTIC MEASURES.*

BY CHARLES S. MILLET, M.D., BROCKTON.

It will be my purpose, in the short time that I shall detain you, not to discuss *all* the hydrotherapeutic procedures, but only those with which I have had a personal experience. These procedures, like so many other things in medicine, are at first perplexing and seem well-nigh impossible in private practice; but if they are analyzed a little, and one begins to use them, he will soon find that their application is as simple as it is effective.

The skin contains far more nerves, blood vessels and glands than any other organ; in fact, so numerous are the blood vessels that it is said that they will hold half of all the blood in the body. Its function is to convey impressions to the brain and other nerve centers, to carry off waste products, and to regulate body heat. In other words, it is the organ of sensation, the next most important sense to that of sight. It is a powerful excretory organ, sifting out from the blood carbonic acid gas, various other products of metabolism, and water, in which enormous quantities of pathogenic bacteria have been found.

The heat of the body is produced by the combustion of non-nitrogenous substances, chiefly in the muscles, and it is given off by perspiration and radiation from the cutaneous surface.

Hydrotherapy, then, has to do with sensation, excretion and heat radiation, and if we could only keep these facts in our minds when applying this sovereign remedy, the application would be

* Read before The Massachusetts Medical Society, June 8, 1904.

much easier; it would be oftener made; and the results would be more satisfactory.

Of course, in endeavoring to influence any one of these three functions it is impossible not to affect the others to a greater or less degree; but at the same time, it is not at all difficult to so use water as to vary these impressions and cause the one most desired to become prominent.

Furthermore, by applying water to the skin at various degrees of temperature and in various ways, we can, through reflex action, produce decided effects upon the mind, the central nervous system, and all the internal organs.

Let us first consider the treatment of fever, which is largely, if not wholly, due to diminished heat radiation; there is nothing that will produce quite so much perturbation in the average medical mind as an excessively high temperature. The personal experience of any man who has been twenty years in practice must have carried him through a disappointing period with so-called antipyretics, — the principal one used being acetanilide, I fancy. I well remember a case of typhoid fever, in which the temperature reached 105° before the end of the first week, that I treated with large doses of this drug, some fifteen years ago. The medical magazines at that time were teeming with articles, telling of the efficacy of these coal-tar preparations.

Convinced by the brilliancy of the results claimed, I proceeded to give it on alternate days, and in liberal doses. The effect upon the temperature was as marvelous as it was temporary; but the resulting anemia and peculiar lividity were most distressing. And when Dr. Fitz, whom I called in consultation, wondered at it, I must confess I did not dare to tell him how heroically I had dosed the young woman, — for I had not forgotten his method of showing us our mistakes in the classroom, and I feared he might use it here, the cause was so just.

The reign of drugs in the treatment of fever was, as you all know, very short, and we soon began to hear of Brand and the remarkable results which he had obtained by the use of cold baths in typhoid; and while the idea has been very generally accepted, and its great value acknowledged, yet I firmly believe that his method of using water is so often modified that it would be very hard for the originator to recognize it. The so-called "typhoid bath" of to-day usually consists of sponging with cold water; and while this is quite sufficient when the temperature is not over 104°, any rise above that is not properly treated unless the tub, with friction while in the water, is used. On the other hand, it is to be remembered that reduction of temperature is by no means the main object in view, yet the strengthening of the heart and the calming of the nervous system are not obtained without a gradual fall in this respect.

In any given case, the use of water must be in the nature of an experiment, but failure to produce marked signs of improvement must not deter one from persisting; but rather should cause deep thinking, lest a measure far more productive of good than drugs shall be neglected. Take, for example, a case of scarlet fever which I once saw, — a strong, rugged girl of sixteen, so large and well developed that she looked twenty; there were other cases in the family, so that when she was taken sick it seemed very probable that it must be the same disease; the trained nurse had just taken her temperature when I went in, but said nothing. Placing my hand upon the patient, I found the skin quite cool and said that I did not consider her very ill, whereupon the nurse showed me her thermometer, which had registered 106°; and then when I counted her pulse, I found it to be 140. The extremely high temperature so startled me that I neglected to consider the other symptoms and cold sponging was ordered; the next day exactly the same condition was found, — the skin was cool, but the temperature and pulse were very high, and again the same mistake was made, the belief that the temperature must be reduced being paramount; and a more persistent application of cold baths was insisted upon. And so, on a third day there was found to be no change. It then dawned upon me that something else must be done if that girl was to live, and the nurse was told to wrap her up in a hot, wet sheet, — or in other words, to give her a hot pack.

The result was so remarkable as not to be forgotten; the eruption, which had been delayed, almost immediately appeared, and the pulse and temperature rapidly fell to not much above 100. The explanation is, apparently, that the blood vessels in the skin were so irritated by the poison of the disease as to be in a state of tonic contraction, so that the application of cold had no effect upon them.

Spencer says that *science* is nothing but common sense, systematically and thoroughly applied. Therefore, one can use a little here, and be guided by the condition of the patient, in determining whether the water should be hot or cold; its application long or short, and with or without force. If the pulse is high in tension and full in volume and the skin hot, a cold bath will produce better results, even though the patient cries out against it. I have seen a boy of five scream frightfully for ten minutes, every four hours, for days when the nurse gave him a cold bath, then dropping off to sleep almost immediately, his temperature and pulse being perceptibly improved thereby, in spite of his fright.

If it is true that the heat of the body depends upon and is regulated by the action of the skin, and is kept at a normal degree by the automatic working of this organ, and if it is true that an abnormal rise is in every case due to an impairment of this action, then certainly in hydrotherapy we have a method with which we can at will influence enormously one of the most important functions of the body.

To reduce fever, three kinds of baths are used: that with a sponge, the water containing perhaps alcohol or soda; the cold bath, either in a tub, or in bed with a rubber sheet; and the warm bath, gradually reduced. The question is, of

course, what shall determine our choice; to which the answer is,— *Experiment*; it does not matter which, so long as a good reaction is obtained. Long before any damage can be done to the patient, his own senses or the observation of his nurse, no matter how inexperienced, will give the desired information.

The sponge bath will do for febrile conditions not severe enough to cause any anxiety, and which will evidently be of short duration. But any infectious fever which is at all severe, is certainly poorly treated if a full tub bath, or a bath in bed, with lots of water and friction, is not employed. In order to obtain the confidence of the relatives, it is well to begin with a bath of 100°, and run it down to 90 in about ten minutes; the head should be wrapped about with a cold, wet towel, or the patient will be liable to faint. This is an excellent bath to give a child who has bronchitis, pneumonia, measles, or any other acute infection; and if is is not effective in producing sleep, the temperature of the water should be reduced two or three degrees every three or four hours. If no bath tub is available, an ordinary wash boiler or wash tub is a good substitute. But in a severe case of acute febrile disease in an adult, — of which typhoid fever might be called the type, — it will be necessary to use cold water, which is again mentioned in order to emphasize the point that unless friction is used with it, there is liable to be little or no reaction. The term "reaction" is so often heard in connection with hydriatics that a definition of it might not be out of place; a perfect physiological reaction takes place when the blood, having been driven out of the surface, is caused to return with redoubled energy. In other words, the restoration of heat after heat abstraction is the one thing essential. If the blood is not in the cutaneous vessels to begin with, it is necessary to first apply heat; if one realizes that the nerve filaments which convey the sense of cold act like lightning, while those which carry the heat sense act more slowly, it is very easy to understand why it is so often necessary to apply the latter for the long period; and why, when warmth is alone used, the reaction appears only after a time. Often this is desirable, — say, when one wishes to produce sleep and does not care to arouse the nervous system. But sometimes it is impossible to produce rest and quiet without stimulating the nerves. Such a condition is present in melancholia or acute mania, which it has been my good fortune to see greatly helped by means of bathing. Here the patient should be set in hot water, and a pailful of cold should be quickly and forcibly thrown over the shoulders. It is truly marvelous the way an extremely restless patient will quiet down and go to sleep after such rigorous treatment. Such cases, too, almost always refuse to take medicine; and if they do not, the hypnotics are ineffective except in lethal doses. *It is neither difficult nor dangerous to give baths.*

The hot wet-pack is relied upon by most physicians in eclampsia, and in fact whenever the kidneys are blocked or diseased. But the result obtained is not so much due to vicarious action, as it is to the withdrawal of blood from the internal organs. If used continuously, — I mean day after day, — in chronic Bright's disease, it is better to supplement the heat with a short, quick, cold affusion, and rubbing.

The water poultice is very beneficial in pneumonia, and in all acute pulmonary affections. This is made of three layers of old linen, which are wrung out of cold water and wrapped around the chest, and then dry flannel is placed outside of that. This should be wet as often as it gets warm.

Chlorosis, secondary anemia, chronic, pulmonary and organic heart diseases have all been decidedly benefited by systematic bathing. In these it is advisable to first produce warmth to the point of perspiration, — either with a hot air cabinet, or, better, by a sun bath, — and then to give the patient a warm shower, and to follow that with cold water through the hose. If possible, perambulatory cases would better be treated at a place where medical baths are given, — for a limited time, at least, — after which, if necessary, the treatment can be continued at home. If the physician would go with his patient and see him take a bath in the institution which Dr. Putnam and others have so generously placed at our disposal, he would very quickly discover that there is something in hydrotherapeutics other than charlatanism.

The local application of heat and cold acts on the part treated in a similar manner as the full bath does on the whole body. If a joint or muscle is very hot, apply ice; but if the disease is of a subacute nature, and the circulation and function impaired, first apply heat, and then cold, perhaps with gentle friction. Ice is too often used to need more than a passing word. It is certainly the best substitute for opium, but should not be used constantly, because it will finally cause paralysis of the vaso-dilators. I do not think it is applied over the precordia with the frequency that it should be; placed here, its effect is exactly like digitalis; and the beauty of it is, that it acts with great rapidity; that it has no cumulative action, and that it does not disturb the stomach. In cases of collapse or shock, it is as important to put an ice bag over the heart as it is to apply heat to the extremities; and how often is it done? Ice over the epigastrium will greatly relieve the thirst which follows abdominal operations.

As I said in the beginning, my remarks have been in the nature of a personal experience; and with an apology for the crudeness and cursory way in which I have treated the subject, I will close, — adding an urgent solicitation that you will give a remedy which is as powerful as it is harmless, the confidence which it deserves. Certainly, the skin, by which we are in close communication with the central nervous system, the heart, and in fact all the internal organs, should never be neglected; and half-hearted care and attention are worse than absolute neglect, because they deceive the physician himself.

# SACRAL SPINA BIFIDA, WITH REFERENCE TO THE SKIN REPRESENTATION OF SACRAL NERVE ROOTS.

BY E. W. TAYLOR, M.D., BOSTON.
*From the Neurological Department, Long Island Hospital, Boston.*

The following case is reported as a contribution to the segmental skin representation of sacral nerve roots, and also for its general clinical interest.

The patient, J. F. McC., thirty-three years old, unmarried, by occupation an amalgamated gold miller, was first admitted to the Long Island Hospital, Feb. 12, 1903. He was discharged, and readmitted Jan. 1, 1904, for the treatment of trophic ulcers and asthma.

The family history has no bearing on the present condition. The matter of chief interest in the personal history is the presence of a sacral spina bifida, from which his disabilities, excepting the asthma, come. He has had asthma since childhood, and as a child had measles, mumps and "cholera infantum." On several occasions he has had cystitis. He has always had incontinence of urine, and wears a urinal constantly. His bowels move irregularly, and coughing is apt to force out a small amount of feces; if the desire for defecation is not soon gratified he occasionally has incontinence. This has remained unchanged throughout his life. Five years before entrance at Long Island, he was treated for three months at the Boston City Hospital for an ulcer on the side of the right foot at the base of the little toe, with necrosis of bone. The ulcer finally healed. Four years later a similar condition appeared on the left foot, for which he was again treated at the City Hospital, with final healing. He was admitted to the Long Island Hospital with a recurrence and necrosis of bone. He has always noticed diminution of sensation over and above the tumor caused by the spina bifida and in the legs and feet. Except when struck the spina bifida has itself caused him no trouble. On those occasions, however, when it has been accidentally struck, he says "he drops like a shot," and has a tonic convulsion of the legs, the duration of the convulsion depending upon the severity of the blow. He makes the statement that "he was once paralyzed for three days as a result of a hard blow received there, and was in agony from a feeling of pins and needles over his legs." Except for the awkwardness due to deformity of his feet he is perfectly able to walk, and he maintains that his sexual capacity is unimpaired. He has had no venereal disease, has been very moderate in the use of alcohol and tobacco and has been able to learn and successfully apply a trade requiring physical effort and manual dexterity. In spite of urinary and fecal incontinence his companions have not recognized his disabilities.

*Physical examination* gives the following results: Well developed man, with no obvious sign of disability except the easily noticeable deformity of the feet. Tongue, chest, except at time for asthmatic rales, heart, abdomen and abdominal organs normal. Directly over the sacrum (see Fig. 1) is a hard, doubtfully fluctuant, round tumor, $2\frac{1}{2}$ by $1\frac{1}{2}$ inches in diameter, the upper level being an inch and a half below the posterior superior spine of the ilium, and the lower between two and three inches above the anus. Pressure over the tumor produces pain. Further examination made March 19, 1903, showed that gentle touch over the tumor was not felt; pin prick very slightly felt as touch (pressure?); outer side of left foot cooler than inner; loss of muscle sense in toes; legs, in general, cold, cyanotic and more or less discolored; tremor of thigh muscles (excitement?); knee jerks normal; no ankle clonus; plantar present; no front tap; no Achilles; no cremasteric; abdominal and epigastric reflexes also not obtained. The feet both show marked clubbing, which is apparently gradually increasing, interfering considerably with walking.

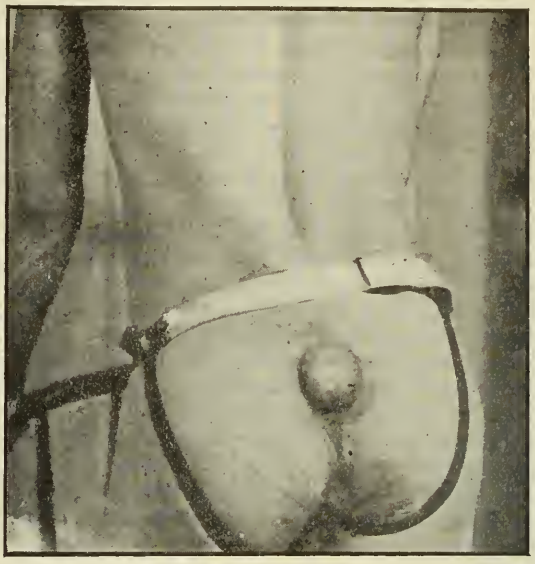


Fig. 1. Spina Bifida; sacral; showing also anal protrusion.

There is slight Romberg, due, he thinks, to the deformity of the feet. There is a scar on the under surface of the right foot, at the tarso-metatarsal joint. On the left foot, a sinus over the fifth metatarsal joint extends upwards about an inch and a half; bone is necrotic; moderate purulent discharge; considerable swelling of the foot, especially of the dorsum, with some induration. There are also slight excoriations in both gluteal folds. Except for the limitation of motion dependent necessarily upon the deformity of the feet, no motor paralysis is discoverable. Flexion at the ankle and movements of the toes are possible, though naturally imperfect. Movements at the knees and hip are perfectly free and made with good strength.

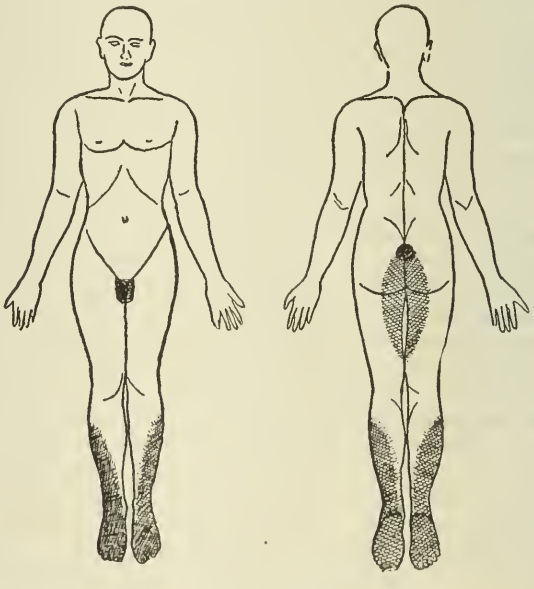


Fig. 2. Areas of anesthesia, shaded.

There is protrusion of the anus. (See Fig. 1.) The sensory loss is as indicated in the diagrams (Fig. 2). The areas deeply shaded are practically completely anesthetic, but the anesthesia everywhere fades out at the borders into the normal.

Treatment at the hospital resulted in a final healing of the foot ulcer, and in an amelioration of the asthmatic condition, and he was discharged. A recurrence of ulceration in both feet led to his return a few months later. In general, the condition remains unchanged, excepting, as he thinks, for an increase of the club-foot deformity; at a recent examination, also, the plantar reflex is reported as absent, instead of present as before noted. The patient remains physically well; the ulcers and club feet combined interfere with walking, which is otherwise perfectly possible, and his scrupulous care has prevented the complications likely to result from urinary incontinence.

The pathological condition in this case is undoubtedly in general this: a defect of development of the sacrum, with a resulting spina bifida, producing symptoms referable to the sacral cord, through involvement of its nerve roots, of predominant sensory character. The tumor is too low for direct involvement of any part of the functionally active cord, the result, however, being essentially the same from interference with sensory conduction through the lower nerves which presumably form part of the walls of the sac. The question of operation in such a case is naturally not to be considered; first because the tumor is so small as to be but a slight discomfort, and secondly because relief by surgical means in a spina bifida, of the type of a meningo-myelocele, is anatomically impossible. The fact that marked sensory symptoms have resulted from this somewhat insignificant-appearing tumor is sufficient indication of the direct involvement of nerve roots. It is also a fair presumption, though naturally one not capable of present demonstration, that in such a malformation, if the upper sacral nerves are involved the lower ones would also be affected. A study of the distribution of the anesthesia, therefore, becomes a matter of interest and importance in the determination of the peripheral areas of sacral segments.

There is still a wide divergence of opinion regarding the segmental distributions of the cervical, lumbar and dorsal nerves, due in part to a possible variation in different individuals, and to the failure to recognize the tendency toward overlapping of the various nerve areas, as pointed out especially by Sherrington; the fact that relatively few cases have been studied with sufficient

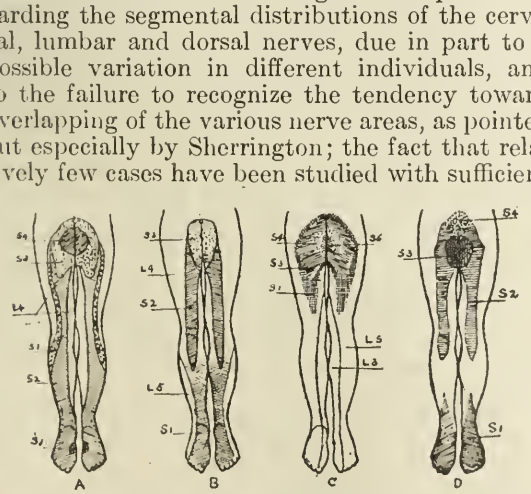



FIG. 3. Sacral Segments after, A, Kocher; B, Thorburn; C, Starr; D, Head.

care, both before and after death, is, however, more directly responsible for the existing differences. Reference to the accompanying diagrams (Fig. 3) illustrates this point with regard to the sacral nerves, to which alone it is desired to call attention. The general rule formulated by Herringham and confirmed by Paterson for the leg that, of two spots on the skin, that which is nearer the preaxial border tends to be supplied by the higher nerve, and of two spots in the preaxial area, the lower tends to be supplied by the lower nerve, and of two spots in the postaxial area, the lower tends to be supplied by the higher nerve, is in general confirmed by all investigators. The details, however, differ widely. Starr[1] contracts the sacral segments almost wholly to the saddle-back area. Kocher represents the widest departure from this distribution in giving an extensive distribution to the second sacral segment in thigh, leg and foot. Thorburn and Head stand between with a representation of the second sacral segment chiefly in the thigh, and of the first in the foot and part of the leg. It is altogether probable that such a divergence does not correspond to the facts as observed in different individuals, and that there is more consistency in the distribution than here represented.

The case here reported is naturally of far less value than if exact knowledge of the nerve lesions were obtainable; nevertheless, the clean cut character of the anesthesia points to a destructive process of extreme degree which is of significance as a contribution to the general subject. On the ventral side of the body the penis, scrotum, leg and foot as represented in the diagrams (Fig. 2) were anesthetic. The sensory supply of the external genitalia from the second, third and fourth sacral segments is very generally conceded, and this case offers nothing noteworthy in this respect. The anesthesia of the front of the leg and foot is, however, of interest. Kocher alone of the investigators to whom we have alluded gives a sacral representation (first and second nerve roots) over the front of the leg. The area he maps out corresponds almost exactly to the anesthesia found in my case, but in view of the dorsal distribution, it appears probable that the fifth lumbar nerve is also involved, its lesion constituting this well-marked anesthesia wholly or in part. This area is generally conceded to be innervated from the fifth lumbar segment. The dorsal anesthesia, to which I wish to call special attention, evidently cannot be explained if Starr's diagram, as represented in Fig. 3 C, be correct, nor can it be made consistent with Kocher's scheme, which supplies the back of the leg unbrokenly with sacral nerves. On the other hand if the plan as outlined by Thorburn and especially by Head be followed, the

[1] Starr: Am. Journ. Med. Sc., iv, p. 15, 1892. Fig. 3, C is after the diagram on p. 29 of this article. In his recent book, "Organic Nervous Diseases" he makes the second sacral segment correspond to the first in the earlier diagram, and extends the first segment down the back of the leg into the foot, bringing the distribution into much closer relationship with Thorburn's and Head's ideas. There can be little doubt that this is a more accurate representation of the facts, than the earlier diagram, which apparently does not account in any way for the second segment.

similarity to the anesthesia as seen in my case is at once apparent. Thorburn merges the area of the first sacral segment with the second, which occupies a strip, extending somewhat below the knee. Head pictures an area intervening between the first and second sacral segments, which is accounted for by lower lumbar segments. This arrangement of the areas is strikingly like that observed in my case. Assuming that the fifth lumbar as suggested above is involved in the spina bifida, the extensive dorsal anesthesia of the legs finds an explanation. The intervening space is in all probability not supplied by sacral nerves, which again, in general, coincides with Head's view (Fig. 3, D). The distribution of the anesthesia in the saddle-back area does not find an exact counterpart in the diagrams from the investigations mentioned, inasmuch as it includes more of the inner surface of the thighs, and does not extend so far down the leg. The fact may be taken for what it is worth as indicating a variation in sensory distribution of the lower sacral nerve roots.

The only motor disorders manifest in the case are marked clubbing of the feet, and protrusion of the anus. The foot deformity is no doubt in part due to faulty shoes, as suggested by Dr. E. H. Bradford.

The case throws no added light on the exact location of the sphincter representation in the cord. It is however, a matter of practical interest that in spite of absolute urinary incontinence and practically a similar condition of the rectum, the patient has been able to work and associate with others, without disclosing his disability. He has also avoided any serious degree of cystitis, and trophic disorders, excepting ulcers of the feet to which allusion has been made in the clinical history. Finally, it is worthy of comment, that in spite of practically complete anesthesia of the penis, his sexual desire and capacity, so far as he knows, have in no way suffered.

A somewhat recent paper [2] by Van Gehuchten discusses, on the basis of a lesion of the canda equina, the question of the centers of micturition, defecation, erection and ejaculation. His opinion is that the primary centers for these functions are for the first three wholly and for the last partly localized in the sympathetic ganglion of the hypogastric plexus, to which are added the centers lying in the lower cord, which in turn are under control of the central cortex. He is furthermore of the opinion that the sympathetic centers may functionate, independently of the cerobrospinal centers, as may be observed in infants, and in adults with lesions of the conus, or cauda equina. In my case voluntary micturition appears to be wholly abolished, whereas defecation is under relative control, and the sexual functions are apparently preserved. The case, therefore, bears out in part Van Gehuchten's views.

It is also of interest that in spite of anesthesia of the feet, the ability to walk has been maintained and appears to be hindered only by the existence of the clubbing of the feet. The patient presents none of the uncertainty of station which one invariably finds in tabes, for example, with an equal degree of disordered sensibility.

The points of significance which a study of this case brings out are:

The existence of areas of anesthesia, from lesion of sacral nerve roots, which in general coincides with Head's description of their skin representation: [3]

The retention of sexual capacity in spite of extensive destruction of the sacral nerve roots;

The absence of marked disturbance of gait in spite of plantar anesthesia;

The practical possibility of physical cleanliness with both vesical and rectal incontinence.

[2] Van Gehuchten: Le Nevraxe, iv, No. 2, 1902. Journ. Nerv. and Ment. Dis., xxx, 376, 1903.

[3] See also diagram from Müller in Dana's Text-Book of Nervous Diseases, Fifth Edition, p. 341.

## OPERATIONS ON THE STOMACH, WITH REPORT OF CASES.

BY JOHN C. MUNRO, M.D., BOSTON,
*From the Surgical Clinic, Carney Hospital, Boston, Mass.*

(Continued from No. 7, p. 190.)

No. LXII. Female, thirty-two years old came to me in February, 1903, with a long history of many operations.

Within the last two or three years she had had an exploratory operation for supposed movable kidney, a cholecystectomy, an operation for adhesions following this latter, nephrorrhaphy, then later an appendectomy. From all these operations she had derived no relief, and she came with persistent pain night and day, nausea, occasional vomiting and general discouragement.

Operation was done at the Boothby Hospital, and the gall bladder, full of gallstones, was removed. The adhesions in that part of the abdomen were formidable and made the operation difficult. After operation she complained steadily of pain deep in the abdomen, not severe, but persistent and dull and followed by vomiting. She begged for further operation for relief, which was unwisely consented to. Under chloroform the abdomen was again explored. Nothing definite was found beyond the general mass of adhesions dragging the liver downwards and pulling the duodenum far to the right and forwards. In separating the adhesions the duodenum was opened and examination through this tear showed the pylorus free and without induration. The tear in the duodenum was closed, but the tissues were so abnormal that it seemed wiser, if possible, to prevent leakage by doing a gastro-enterostomy at once. So the abdomen was opened in the median line and an anterior button anastomosis made at the same time.

About ten days afterwards, leakage of bile and pancreatic fluid appeared in the lateral wound and this continued for a number of weeks.

At the time of the first operation there were evidences of pulmonary tuberculosis. These increased after being in the hospital a few weeks, while the biliary sinus closed gradually. The patient steadily lost ground and was sent into the country on account of her tuberculous condition, where she probably died shortly afterward.

No. LXIII. Female, thirty-nine years old, referred to me by Dr. Hodgkins of Castleton, Vt., in July, 1903.

She had been under medical treatment for stomach trouble for two years, the symptoms steadily growing

worse. In February, preceding, she began to have hemorrhages, much pain after eating, and tenderness in the epigastrium. All these symptoms had steadily increased, with some loss of weight.

Operation, August, at the Carney Hospital. The stomach was found slightly dilated, the pylorus apparently normal, but alongside of it a small area of thickening suggesting an ulcer. A posterior gastro-enterostomy, with clamps and sutures, was made and the wound closed in layers.

The patient's stomach symptoms at once ceased, and at the end of four weeks she returned home, eating regular food without any symptoms. During convalescence there was a stitch abscess, due to some technical error at the time of operation. Three weeks after leaving the hospital vomiting began again and she returned in November with a history of persistent vomiting day and night, coming on one to two hours after eating. No hematemesis. She stated that just before the vomiting attacks recurred, she had fallen forward, striking the abdomen; but it is doubtful if that had any direct influence in the relapse. She still complained of severe pain in the left side, relieved by vomiting or catharsis.

At the second operation there were no adhesions to the old scar, but a portion of the omentum at the right border of the stomach was found adherent far to the left of the median line, pulling the right portion of the greater curvature leftwards and lapping this portion of the stomach over the main portion. This adhesion was freed and the raw ends covered over. At the anastomosis there was a thin sheet of adhesions puckering the distal arm of the jejunum close to the anastomosis so that the gut was folded upon itself into a Z-shape loop, apparently blocking the lumen to a considerable extent. The anastomotic opening was free and without evidence of constriction. The sheet of adhesions was ligated and freed, the jejunum being easily drawn out to its normal straight line. In addition to this the mesentery opposite the opening was shortened upon itself and sutured, in order to counteract any tendency of the mesenteric border of the gut to form a valve. Nothing abnormal elsewhere was found. The wound was closed in layers and the patient recovered promptly and was discharged, eating solid food without vomiting and perfectly well. It is probable that the sepsis which had produced the stitch abscess, infected at the same time the peritoneum at the site of anastomosis, making the troublesome kink. Almost as soon as the patient had arrived at her home vomiting returned, and when heard from in April last she had vomited persistently ever since, some hours after eating. Efforts were made to induce her to submit herself again to operation, but without success. I have no question but that the condition could now be entirely relieved.

No. LXIV. Male, twenty-nine years old, entered the Carney Hospital in September, 1903. Referred by Dr. Smithwick and Dr. G. N. Jones, with a history of dyspepsia for two years, gradual in its onset; distress after meals and latterly even before meals. The duration of the pain varied and relief was obtained by drinking hot water, fol lowed by eructation. He had never vomited and had never had nausea. He had been under all forms of medical treatment and diet, but without benefit. He had lost weight, was unable to work on account of his nervous condition, and operation was advised in the hopes of finding some definite organic cause. Lavage had shown some blood in the later washings. A small, diffuse mass could be felt in the region of the pylorus, moving with respiration. This region was the seat of his pain and tenderness.

At operation the stomach was found moderately dilated. There were no outside evidences of ulcer. The pylorus was free. There were no adhesions. Nothing could be found to account for the trouble beyond the possibility of minute ulcers or a small ulcer of the duodenum undetected from the outside. Posterior gastro-enterostomy was done in the usual way, and the wound was closed in layers. The patient convalesced satisfactorily and at the end of two weeks was discharged, able to eat almost anything.

February, 1904, he wrote that he had not derived great benefit. He had gained weight gradually, and strength, but was still troubled a good deal with gas. Up to Dec. 1 there had been no return of his former trouble. Then he began to have the same distressed feeling and had had several attacks that persisted pretty steadily for some days. He described his trouble as lasting for about a week, followed by relief for two weeks and then returning. He is living regularly and his work is easy, but it is evidently a functional rather than an organic trouble.

No. LXV. Female, thirty-seven years old.

In all probability addicted to the use of opium and cocaine. Referred to me by Dr. Twitchell in December, 1903. She was a marked neurasthenic and came with a history of attacks of faintness, severe pains across the upper abdomen, bleeding for a year, constipation, and enforced limitation in diet for a number of years. She complained of distress an hour or more after eating, and described it as very severe, the griping being followed by flatulence and distention. The diagnosis was extremely uncertain and an exploration was advised on the chances of finding some organic trouble.

At operation, at the Carney Hospital, the liver was found prolapsed, the stomach prolapsed and dilated, the transverse colon was found adherent to the sharp edge of the extreme right portion of the liver, dragging this portion of the lobe two to three inches past the main portion, where it was held by old, firm adhesions, backward against the duodenum and gall bladder, the latter being buried beneath the adhesions. The gall bladder after being freed appeared normal. The pylorus was found irritable at examination, but admitting the finger. Examination of the stomach, pelvis, etc., negative. All the adhesions were freed, the colon was replaced, and a posterior gastro-enterostomy, in the usual way, was done. The mesocolon was found abnormally adherent to the posterior wall, suggesting patches of scar tissue. The wound was closed in layers. The patient made a satisfactory convalescence and was discharged in two weeks, eating the regular food without symptoms.

Since her discharge it has been reported that the patient has had more or less return of her old trouble, but whether due to her neurotic condition or to any true stomach lesion is very doubtful.

This case (No. LXV) with Nos. LXII and LXIV are pretty good examples of the sort of case that should be let alone. When the neurotic element is predominant, even if there is some slight organic lesion to start the explosion, it is doubtful if anything more than temporary benefit will be gained by operation. Such cases are best treated medically and psychologically, judging from this limited experience.

No. LXVI. Female, twenty-six years old, was referred to me by Dr. Johnson of Winthrop, with a history of persistent hemorrhage from the rectum, supposedly from hemorrhoids. She had had several

pelvic operations in times past and came with a history of prolapse and rectal bleeding for two years, with poor appetite and indigestion for some months.

At operation for the hemorrhoids practically nothing abnormal was found to account for the hemorrhage, but what small varicosities there were, were clamped and cauterized.

About a week after operation she had a severe hemorrhage from the bowels, with dark stools, repeated in a few days, and it was evident that the blood had not come from the rectum. She complained at the same time of pain in the stomach region and was evidently losing blood from some region higher up in the intestinal tract. A more careful investigation of her history pointed to old gastric trouble, and at the second operation, at the Carney Hospital, the liver was found prolapsed, the stomach markedly prolapsed, the lesser curvature being at the level of the umbilicus, the gall bladder was adherent to the omentum by old adhesions and drawn out of its normal position. Around the duodenum the adhesions were more marked. Most of these adhesions were separated and ligated, and the gall bladder was sutured to the liver in its normal position. Exploration of the pelvis showed nothing abnormal. An examination of the intestines showed nothing abnormal except for some dark contents suggesting blood. The dilated U-shaped stomach was all that could be found pathologically. Consequently, a posterior gastro-enterostomy, in the usual way, was performed. The mesocolon was found adherent to the posterior wall so that the lesser cavity could not be explored. The gastrohepatic omentum was shortened, lifting the lesser curvature to its normal position. The wound was closed in layers. The operation was a long one and the patient had moderate shock. Examination of the stomach before operation showed stasis, dilatation, free hydrochloric acid. The patient was discharged in about two weeks, enjoying ordinary diet and with a better appetite than she had had for years.

In April she reported that after leaving the hospital she was well for a month, when she began to vomit again, at first in small quantities. She sometimes vomited at once after eating and at other times several hours after. Occasionally she would go an entire week without vomiting, only to have it return every day for a short spell. No difference in diet affected the vomiting. She had had no hemorrhage, was looking well, and had not lost weight. By percussion the stomach seemed to be somewhat prolapsed and dilated, the lower border being at the level of the umbilicus. She was urged to re-enter the hospital for a second operation, with the idea of having an entero-enterostomy or whatever other procedure might be found necessary.

This case and No. LXIII were most disappointing. There must be some technical error to explain the relapses, but I feel so sure that it can be overcome by an entero-enterostomy or a pylorectomy that I would urge another attempt with great confidence.

No. LXVII. Female, forty-nine years old, entered the medical side of the Carney Hospital in April, 1904, after an attack of vomiting for three weeks, latterly persisting day and night, in which she had never noticed blood nor coffee grounds. The patient was very sick, with dry skin, and in bad general condition.

At operation, at the pyloric end of the stomach and the duodenum were old adhesions to the gall bladder and neighboring region, pulling the gall bladder to the left and apparently obstructing the duodenum. After freeing these the pylorus was found to be open, but with a slight thickening close by it as from an old scar. Elsewhere in the stomach nothing abnormal could be detected. A posterior gastro-enterostomy was done in the usual way and the mesocolon was found firmly adherent to the stomach towards the pyloric end. A hurried examination of the abdomen elsewhere showed nothing pathological. The wound was closed in layers.

This patient did not do well after operation. The vomiting was relieved somewhat, then returned again, and three weeks after the first operation the abdomen was reopened and the anastomosis was found free, with apparently excellent drainage into the jejunum. There were a few adhesions of the proximal portions of the gut to the stomach, not causing a kink. At the mesenteric edge of the proximal portion of the gut opposite the edge of the anastomosis, there was thickening of the gut with radiating scars of the peritoneal coat, so that the lumen was partially closed. The proximal portion of the jejunum was a little heavier and more dilated than the distal. The thickening and scar suggested peptic ulcer as the occlusion seemed to be internal and not from any external lesion. Entero-enterostomy was made with clamps and sutures and the wound closed in layers. Vomiting persisted after this second operation and the patient steadily lost ground and died in a few weeks.

Autopsy by Dr. Magrath. Appendix and lymph nodes normal. Transverse colon widely distended with gas. Pylorus adherent lightly by fibrous adhesions to liver. Opening in posterior wall of stomach 2.5 cm. eummunicating with the small intestine. Pylorus admits tip of finger; 50 cm. from beginning of jejunum is anastomosis. Left pleural cavity shows fibrous adhesions. Right normal. Pericardial fluid 250 cm. Myocardium flabby, left ventricle dilated, 9.5 cm. in depth. Lungs alike, voluminous. Base of left slightly increased in consistency, due to small areas of focal pneumonia in a region of partial atalectasis. Both lungs edematous. Spleen 11 cm. in length; pulp slightly increased, composition normal. A coil of ileum 15 cm. from the cecum was united by fibrous adhesions to the floor of the pelvis. Liver and kidneys negative. Aorta normal.

The only cause for the vomiting that seemed possible was the dragging of the ileum by its pelvic adhesion, overlooked at operation because examination of the proximal half of the small intestine failed to show any signs of obstruction lower down. This dragging may have caused the vomiting by reflex action; there certainly was no obstruction.

No. LXIX. Female, fifty-four years old, entered the Carney Hospital in March, 1904, on the medical side, with indefinite gastric symptoms. She was transferred to the surgical side, and under operation a gall bladder full of stones, and an enlarged mass in the region of the pancreas, supposed to be chronic pancreatitis, was detected. The stomach was found prolapsed but not dilated. She gained somewhat, but a month later the gall bladder fistula was reopened because of return of supposed pancreatic symptoms. The stomach began then to give her trouble and the patient was fast becoming unable to hold any food. A gastro-enterostomy was advised as a temporary measure. At operation the retroperitoneal growth had increased and a section from this mass showed, on examination, that the tumor was a retroperitoneal sarcoma and not a chronic pancreatitis, as had been anticipated. A button anastomosis was made and the wound closed.

The patient derived relief from the anastomosis, but gradually failed and died of malignant exhaustion a few weeks later.

No. LXX. Female, forty-four years old, referred by Dr. H. D. Arnold, entered the City Hospital in September, 1901.

A year and a half previously she had vomited blood and was fed by rectum for three weeks. Soreness in the epigastrium persisted, and six months before entrance she had had severe pain which had recurred off and on ever since. There was no history of passing blood by rectum, and she complained of general weakness, soreness in the epigastrium, and sharp pain not related to taking food. Gastric analysis showed free hydrochloric acid present; no stasis; a slight quantity of blood and pus in the washings.

At operation the stomach was found normal in size and on the anterior wall was an indurated, round ulcer midway in the lesser curvature. A posterior gastroenterostomy, without clamps, was done with silk and catgut. Exploration through the stomach opening showed an ulcer with slightly raised, indurated edges and a more or less fissured base, in the anterior wall. Abdominal wound closed in layers.

Patient improved a good deal after operation, but had some vomiting, and two weeks after operation developed phlebitis of the left leg. She then gradually improved and her vomiting practically ceased and she was discharged from the hospital in fair condition.

In January, 1903, over a year afterwards, I was again asked to see the patient and learned that she had had no vomiting after return from the hospital, but that recently she had had more or less dyspepsia and had again been obliged to limit her diet. For two or three months she had complained again of the griping pains, and latterly these pains had been as severe as ever. Constipation had been a marked symptom. Examination showed in the left hypochondrium and umbilical region a tumor, superficial, hard in the left lower portion, and merging upwards and to the right, towards the right hypochondrium. The tumor was apparently in the stomach and exploration was advised.

At the second operation, at the Boothby Hospital, there was found an excess of abdominal fluid and a large mass in the stomach at the site of the old ulcer, with infiltration in the walls extending into the omentum and colon and apparently throughout the abdomen generally. There were extensive adhesions of the intestine to the stomach and omentum, but the anastomosis was found patent. The old ulcer had either degenerated into a carcinoma or was already carcinomatous at the time of the first operation and not recognized. Nothing more could be done and the wound was closed.

The patient lived several months fairly comfortably and died of general carcinoma.

The twenty-four cases from No. LXXI onwards include the more or less satisfactory results from anastomosis where the lesions were not malignant. The operations have been done too recently to make them of any value on the basis of end results. But the immediate results have been satisfactory and they are offered for what they are worth on that basis, and because they illustrate in the operative findings varied and interesting pathological conditions for which clinical explanations can usually be found.

No. LXXI. Female, forty-four years old, entered the City Hospital in November, 1902.

Had had bilious attacks, with vomiting and headache, ever since she was twelve years old. For three weeks she had had considerable vomiting, coming on an hour or two after eating, with epigastric pain, relieved by the vomiting. Had never vomited blood until two days before entrance, and had lost twenty-five pounds in the last three years.

At operation a dilated stomach, with well-marked scars at the pylorus, was found, without evidence of its being malignant. There were a few old adhesions of the omentum to the duodenum. The gall bladder was negative. A gastroduodenostomy, by Finney's method, was done and the wound closed in layers.

Three days after operation she had some vomiting which was relieved by lavage. The vomiting then ceased and the patient steadily convalesced, and was discharged a month after operation, without gastric symptoms and in good general condition. Her later history has been lost sight of.

No. LXXII. Female, thirty-three years old, entered City Hospital in November, 1902. She had been operated upon in the gynecological service a month before, for tubal and ovarian trouble. She was then transferred to the medical service, on account of almost continual vomiting day and night, which continued in spite of treatment. Her history showed that four years before entrance she had had a rather severe attack of vomiting, with epigastric pain lasting a week, with a little blood and bile in the vomitus. She then had no further trouble up to four months before entrance, except that she had been obliged to steadily restrict her diet in order to avoid gastric distress. At transfer to the surgical side the patient was seriously ill, with hollow, flushed cheeks, tender epigastrium and persistent, exhausting vomiting.

At operation the duodenum and pylorus were found firmly held to the posterior wall by old adhesions of unknown origin. Some of these were ligated and freed. No growth could be felt in the stomach. An anterior button anastomosis was made as quickly as possible, the patient being too ill to allow of careful examination. The upper jejunum was distended beyond normal, but it was impossible to determine whether it was due to any pathological lesion below that point.

After the operation the patient vomited almost without cessation and steadily grew weaker, but she retained her nutrients well, and by six days she was able to take a little nourishment by mouth. Gradually the vomiting quieted down, and in time she gained strength, appetite, and was discharged six weeks after operation, without symptoms and in fairly good condition.

In September, 1903, she reported that she had gained thirty-five pounds, that she had had occasional vomiting since leaving the hospital, and that in May, after a severe attack of vomiting and strangling, she felt something sticking in her throat, which she vomited up, and which she described as a blood clot the size of a small egg. It probably was the button, which had slipped into the stomach and was thrown up in this way, although the vomitus was not examined at the time. She was more or less sore afterward, as though some metal substance had scraped her esophagus, but since then she had had less dyspepsia and vomiting. About once a month she had some nausea and vomiting, but was able to do her own housework, eating simple food.

In April, 1904, she reported to the Gynecological Department that she still vomited blood at times, but was under treatment for pelvic trouble.

No. LXXIII. Female, twenty years old, referred by Dr. Ferguson in April, 1903.

For two years she had had epigastric pain, coming on after eating, with, at times, vomiting of blood.

A year before I saw her there was pain and vomiting immediately after eating, with epigastric tenderness, and she was obliged to give up her work. At that time she developed tuberculosis of the lungs and was treated accordingly, with considerable relief to her pulmonary trouble. She was unable to eat solid food without severe epigastric pain. There was diminished hydrochloric acid in the stomach contents, and examination suggested functional rather than organic disease. She was anemic and operation was advised more in the way of exploration than with a view to finding any organic lesion.

At operation at the Boothby Hospital, the stomach was found somewhat dilated and there was some induration, but the lumen was normal and along the greater curvature some enlarged lymph nodes were found. The examination of the interior of the stomach showed a slight roughness close to the pylorus that suggested an ulcer or a scar. An anterior button anastomosis was made and the wound closed. The patient was in poor general condition and extensive operation was not permissible. Convalescence was satisfactory and she left the hospital in good condition, relieved of her stomach symptoms.

No. LXXIV. Female, twenty-one years old, had suffered from stomach trouble for five years. Three years ago she had had hemorrhage, preceded by epigastric pain, especially after eating, and at that time she had not only hemorrhages from the stomach, but from the bowels. Was in bed four months, then had more or less retching and vomiting of coffee grounds, the vomiting coming on at once or about an hour after eating. Under the care of a stomach specialist she grew stronger and gained weight, but the conditions recurred about three months before I saw her, and she began vomiting, lost weight, and suffered from pain in the epigastrium after eating, with relief from vomiting. Examination showed tenderness to the left of the median line in the epigastrium. The stomach was apparently contracted. On account of the long duration of her dyspepsia, the hematemesis, chronic invalidism, persistent pain in the epigastrium, and recurrence in spite of long medical treatment, exploration was advised.

At operation, at the Carney Hospital, November, 1903, the stomach was found sagging a little downwards and to the left, but the pylorus appeared free and open. Gall bladder region was negative. No scars nor evidence of ulcers could be seen on the outside of the stomach. A posterior gastro-enterostomy, in the usual way, was done and the abdomen closed in layers. The stomach, at the time of the anastomosis, contained an excess of dark fluid blood, showing recent hemorrhage. Patient steadily gained in weight and strength and was discharged in three weeks, eating ordinary diet.

When seen in May of this year the patient was eating heartily of ordinary food, without trouble except that recently she had had some hiccough and was troubled with constipation. Both of these cleared up under simple remedies.

No. LXXV. Male, seventy-six years old, was seen with Dr. Brown of Newburyport in consultation, in September, 1903.

Three years before he had had a severe universal dermatitis, from which he had been entirely relieved. A year afterwards he began to have symptoms of duodenal ulcer, although for many years he had had indigestion, lasting for a week or more, coming on about two hours after meals, without vomiting, and ceasing on milk diet. In attacks two years and one year ago he had had tarry stools, and in the latter attack was in the hospital on rectal feeding, for three weeks. The pain persisted, however, for some time after discharge, gradually subsiding. For a year he had dieted more or less, and when I saw him there had been fresh blood in the stools for two days. Previous to this the blood had always been digested. For a month he had had quite constantly a mild distress in the stomach, not relieved by milk diet. He was healthy, with slightly atheromatous arteries, and just above the umbilicus a small, slightly tender swelling could be felt. Owing to his age and his success under rectal feeding in his preceding attacks operation was advised against. Two months later, not having gained at all and being obliged to resort to rectal feeding more or less of the time, operation was advised.

At operation, at the Newburyport Hospital, a thickened ulcer of the duodenum just beyond the pylorus was found, with recent adhesions and an appearance of beginning perforation. A posterior gastro-enterostomy, with clamps, in the usual way, was made and the wound closed in layers. The patient made an uneventful recovery, without pain or vomiting, food was taken early, and three weeks later, at Thanksgiving, he was able to eat a complete dinner without distress. Up to the present time the patient remains perfectly well.

No. LXXVI. A woman, forty-three, years old, referred by Dr. Boland.

Patient had had emphysema for several years, and for six months had had severe attacks of abdominal distress, at times so severe that she screamed with pain, being unable to lie down and obliged to sit up on the edge of the bed until exhausted. These attacks came on about midnight, rarely in the daytime, and rarely was there vomiting. The pain and distress were always referred to a point to the right, above the umbilicus. She had lost weight and looked badly. Examination showed absence of liver dullness in the normal situation. Both kidneys were prolapsed. The intestinal coils were plainly visible. So far as could be determined the severe attacks of asthma were caused by the gastric distress. Only partial relief could be obtained from nitrite of amyl. From the fifth rib downward the chest was markedly scaphoid.

During operation, at the Carney Hospital, in December, 1903, the patient was moderately cyanotic throughout, but had no attack of asthma. The liver was found prolapsed, lying entirely below the costal margin, the diaphragm itself lying almost on the level of the lower cartilages and the lower border of the right lobe at the level of the pelvic brim. The stomach, also, was prolapsed, as well as the first portion of the duodenum, but the second and third portions were apparently not depressed. The pylorus was thickened but not indurated, the lumen admitting the tip of the finger. The gall bladder and ducts were normal. A posterior gastro-enterostomy, with clamps and sutures, was made, the mesocolon being found firmly adherent, in places, to the stomach, but no scars were seen.

The patient convalesced satisfactorily from the operation, her asthma disappeared, and in three weeks she was discharged, in good condition. Since then the stomach has caused no trouble but she still has asthmatic attacks.

No. XXVII. Male, thirty-six years old, was picked up, in August, on the railroad tracks, lying in a pool of vomited blood, and was brought to the Carney Hospital at once.

He had been feeling ill for a week and everything he ate caused distress. That morning, before the hemorrhage, he noticed a black stool, and felt weak and unable to go to work. While walking on the railroad track, to his work, he became weak and dizzy and vomited

both food and blood. After admission he vomited blood a number of times, but refused operation. Adrenalin was given and at the end of three weeks he was discharged, relieved, in much better condition.

In December of the same year he returned, begging for operative relief, stating that for three weeks after his discharge he had felt pretty well and was able to work part of the day for a while, but then gave up because of weakness. He had had no vomiting since he left, but had been unable to eat ordinary food, and two weeks before entrance fainted. Examination showed him pale, with a sunken abdomen and soreness in the epigastrium.

At operation a contracted stomach, with open pylorus, was found, without evidence of scars or induration anteriorly. Posteriorly the mesocolon showed scars as from old inflammation and towards the right was adherent to the stomach. A posterior gastro-enterostomy, with clamps and sutures, was made and the abdomen closed in layers.

For two or three days the patient vomited considerable blood and passed blood by stool, but it was controlled by adrenalin, and at the end of three weeks he was discharged, eating solid food, with marked gain in weight and color. Since then the patient has steadily gained and when last seen was as well as ever.

No. LXXVIII. Male, forty-five years old, entered the Carney Hospital in October, 1903.

In August he had epigastric pain and stasis, followed three weeks later by hematemesis. Since then he had spit up small amounts of blood once or twice a week. A few days before he had had a small hemorrhage, without nausea or vomiting, and he described a lump in his stomach from which the blood seemed to come. He had a good appetite, but could not retain his food and was constipated. He had lost twenty-five pounds, but had never noticed blood in the stools. Distress in the stomach came on after eating. Examination of the stomach showed badly digested food, free hydrochloric acid, no blood.

At operation, by Dr. Bottomley, scars and adhesions were found in the posterior wall near the pylorus. A posterior gastro-enterostomy, with clamps and sutures, was made, and the patient was discharged in three weeks, eating solid food without discomfort.

No. LXXIX. Male, sixty-seven years old, referred by Dr. Stubbs of Newton.

The patient had complained of indigestion for two years and had been on medical treatment during that length of time. In the beginning he had had lavage every second day for three weeks. This was followed by some relief for six months, then the symptoms returned and he obtained no relief from a repetition of the washings. Three months before I saw him he had had marked indigestion, without blood in the stools, the distress coming on two or three hours after eating or at times appearing in the middle of the night. It was described as a dull, heavy pain across the middle of the abdomen. Examination of the stomach showed the lower border an inch and a half below the umbilicus.

At operation, at the Carney Hospital, in December, 1903, a moderately dilated stomach was found, and at the pylorus on the duodenal side was a tumor, not indurated like a malignant growth, apparently occluding the lumen and without lymph nodes in the neighborhood. A posterior gastro-enterostomy, with clamps and sutures, was made.

The patient was discharged in about two weeks, eating and enjoying regular food, without having vomited at all, and up to the present time he is perfectly well, without any symptoms.

No. LXXX. Female, twenty-seven years old, referred by Dr. T. J. Murphy.

Two years before I saw her she had had slight hematemesis, which had disappeared under restricted diet. A year ago she had a relapse lasting several months, accompanied by pain. Relief then followed for about five months, when she consulted Dr. Murphy, complaining of sharp epigastric pain not severe enough at the time to suggest a perforation. Under treatment this subsided until two weeks ago, when the pain returned. Four days before I saw her, vomiting began and two days afterwards this became profuse, at first containing dark, later bright blood. For three or four days the stools had been black, and she became blanched, with a rapid pulse. At my visit I found an exsanguinated, sick-looking woman, with definite tenderness in the epigastrium to the right of the median line, and a rapid, thin pulse. Operation was advised at once. She entered the Carney Hospital and we found, at the pylorus, anteriorly and extending into the lesser curvature, an irregular scar an inch and a half in diameter, indurated and crater-like to palpation, evidently the source of bleeding. A posterior gastro-enterostomy, with clamps and sutures, was done as quickly as possible as the patient was in too poor condition to warrant a pylorectomy. The wound was closed in layers.

The patient recovered steadily, with occasional vomiting, which finally subsided, and at the end of a month or so was discharged in good condition. In May she reported in good condition, with slight dyspepsia for a short time, relieved by limiting her meat diet.

No. LXXXI. Female, thirty-nine years old, entered the Carney Hospital January, 1904, with a history of gastric hemorrhage in profuse amount six and four years previously. For ten years she had had more or less severe pain in the stomach and one month ago the pain grew worse and she complained more of the distress after eating, and vomited. She had lost weight and at entrance was pale, with a mass easily felt under the left costal border, moving with respiration.

At operation, by Dr. Bottomley, the pylorus was found open, the stomach was adherent to the liver all along the lesser curvature, and about three inches from the pylorus below the lesser curvature were adhesions between the stomach, liver and abdominal wall, evidently the site of an old ulcer. The gall bladder was adherent to the duodenum by a broad band. To the left and below the stomach the adhesions were numerous. A posterior gastro-enterostomy, with clamps and sutures, was done, a few adhesions of the mesocolon near the pylorus being found.

The patient convalesced satisfactorily, and in three weeks was discharged, in good condition.

No. LXXXII. Male, fifty-eight, entered the Carney Hospital in February, 1904, with history of indigestion sixteen years previously, obliging him to stop work after two years.

Since then he had had a more or less sore stomach. For two years he had had spells of feeling pretty well, but as a rule, three hours after eating, he had violent pain in the stomach, relieved by enforced vomiting. The vomitus was excessive in amount, of a slimy fluid and very acid. Examination showed sclerotic arteries, a distended stomach filling the abdomen, with a capacity of over five quarts. There was general ptosis as well. At operation by Dr. Bottomley the pylorus was found normal, but surrounded by many adhesions. The gall bladder was normal but adherent to the omentum. The adhesions were freed and a posterior gastro-enterostomy, with clamps and sutures, was made.

The patient rapidly convalesced and in three weeks

was discharged, eating solid food without pain or distress and with relish.

Examination of the stomach contents before operation showed presence of hydrochloric acid.

No. LXXXIII. Female, twenty-five, had been well up to three weeks before entrance to the Carney Hospital, when she had pain in the stomach, with vomiting. For a week she was nauseated but did not vomit, then she went to bed, with a severe epigastric pain, vomiting, and much tenderness to pressure on the abdomen. Since then there had been much sharp pain in the epigastrium, relieved somewhat on lying down. She had not eaten solids for a week, but was able to take liquids.

Examination showed an anemic girl, tender in the epigastrium, with slight spasm over the pylorus. Operation showed at the pylorus numerous old adhesions to the colon and omentum, extending from an irregular scar on the anterior wall of the pylorus, both on the stomach and duodenal side. Close to the pylorus on the proximal side was a pouching of the stomach, with a slight contraction as in a beginning hour-glass stomach. The stomach was not dilated and the pylorus was open, although contracted to about half its normal diameter. The duodenum was mobilized and a gastro-duodenostomy was made by Finney's method and the wound closed.

For a day or two the patient had more or less vomiting, which then ceased, and she steadily gained, eating solid food without distress, and was discharged in two weeks, in excellent condition.

No. LXXXIV. Female, thirty-two years old, was referred by Dr. Hamblen of Maynard.

For three years the patient had been unable to work at her business as a dressmaker. The trouble started with a so-called attack of grippe, which lasted three months and from which she had never recovered, being in bed for several weeks at a time, off and on. She had been unable to take solid food from the first and had been troubled more or less with gas. In some of her attacks she would vomit, but after going to bed and living on liquids the trouble would stop, only to return after eating ordinary food. For over a year she had not eaten a good square meal, and had lost over twenty pounds. The pain would come about half an hour after eating, was worse when lying down, and would last until she vomited, with relief at once. She had vomited retained food and in excessive amount. The distress varied somewhat and was relieved at times by the various medicines for indigestion. She had been very constipated. Examination showed a slightly distended stomach with free hydrochloric acid, and poorly digested food. The lower edge of the stomach was an inch and a half below the umbilicus.

At operation at the Carney Hospital the stomach was found dilated, the upper edge being about an inch above the umbilicus. From the gall bladder a broad sheet of adhesions, thickened anteriorly into a stout band, passed to the anterior wall of the stomach to the proximal side of the pylorus. In addition there were diffuse adhesions over the duodenum. Most of these adhesions were separated and ligated. The pylorus was contracted spasmodically, but admitted the tip of the finger. There were no signs of ulcer. A posterior gastro-enterostomy, with clamps and sutures, was made. Posteriorly, near the pylorus, were some scar-like bands. The gastrohepatic ligament was shortened with catgut and the abdominal wound closed in layers.

The patient convalesced rapidly and was discharged in three weeks, eating solid food, and has remained perfectly well ever since.

*(To be continued.)*

# Medical Progress.

## REPORT ON DERMATOLOGY.

BY JOHN T. BOWEN, M.D., BOSTON.

### ETIOLOGY OF ALOPECIA AREATA.[1]

THIS subject was brought up in the French Society of Dermatology at the meeting in May, 1904. M. Jacquet, who is well known as an exponent of the theory that many cases of alopecia areata are connected with dental lesions, showed a patient who had suffered since 1902 with alopecia areata of the moustache on the left side. The lesion had started shortly after a severe pain in the teeth of the left side which necessitated the extraction of two molar teeth. There was also hyperesthesia of the left side of the face. The extraction of the teeth arrested the disease. The hair began to grow in, then stopped. The hyperesthesia and increase of temperature on the left side of the face continuing, Jacquet suspected that there remained a remnant of root or bone not eliminated. In point of fact, a small fistulous opening was found which was curetted under chloroform and exposed the extremity of the posterior outer root of the first large superior molar tooth.

During the eight following days, hair continued to fall very quickly, after which it began to grow in so rapidly that in five weeks the area was entirely covered; also the increased sensibility and increase of temperature disappeared immediately after the operation. The hairs, however, did not grow in vigorously, and the recovery could not be considered complete.

In sum, we have here a case of alopecia areata in which the permanence of troubles of sensation made it easy to diagnosticate the presence of an important bit of stump, and where the alternations of alopecia and of regrowth were associated with fluctuations of the deep lesions.

In the discussion, Darier said that since his attention had been drawn by Jacquet to the possible relationship of alopecia areata with dental lesions and other nervous troubles, he had always examined into the state of the teeth in such cases, and had been struck with the fact that in the large majority of cases dental lesions were found, of different varieties, but capable of causing nervous excitement. When there is a lack of dental lesions, there are often symptoms in the region of the trifacial nerve, or vasomotor disturbance. He admits, however, that in some of the cases all such conditions were absolutely wanting.

Brocq also asserted that he had observed an intimate relationship between the appearance of wisdom teeth and certain alopecia areatas. He took occasion to speak of the present rule according to which subjects of the disease under discussion are not allowed in offices and workshops. This is oftentimes a great hardship, particularly in view of the fact that there is no unanimity as to the question of the contagiousness of alopecia areata. For this reason, he proposed the

[1] Ann. de Dermat. et Syph., May, 1904.

appointment of a committee to examine carefully into all the new facts regarding contagiousness and epidemics.

At the same meeting MM. Gauchet and Lacapére presented to the society four cases of alopecia areata which appeared to have been produced by contagiousness. They bear upon the observations of epidemics of alopecia areata in schools and in barracks. Although thinking it probable that many of these had not been accurately studied, in the four cases reported, the diagnosis had been made by different dermatologists of the St. Louis Hospital.

The patient who first appeared was a member of the police force, who had been affected at the same time, or a little after, three other men who belonged to the same squad. These four men were in constant relationship with one another. Every other day they were on guard at the prefecture of police. In the intervals of these duties these men were accustomed to lie down upon the same bed.

Four months ago, one of them saw that his hair was falling. This man was twenty-eight years of age, had been subjected for some time previously to considerable anxiety, and it was soon after the termination of this that there appeared on the right side of the head a small patch of alopecia areata, the size of a fifty-centime piece. Two or three weeks later, two new plaques appeared at the occiput, and a month later the beard and moustache were affected.

About a month after the beginning of this case, the second case appeared in a man of the same squad. He exhibited a small patch on the apex, which rapidly improved under treatment.

Two months after the beginning of the first case, a third man, colleague and neighbor of the first two, developed a small patch of alopecia areata in the beard. This man had had a previous attack of alopecia nine years before, for which he was treated at the hospital.

The fourth case, that of the one who called attention to this little epidemic, had been affected for only five or six days. Eleven years previously he had had a similar lesion.

The conclusion is reached that it is impossible to attribute these four cases to any other cause than that of contagion.

Several of the members asserted that it was their custom to give certificates to persons affected with alopecia areata to the effect that the disease was only contagious by direct contact; and that a person could be received at a workshop or office provided the head was kept constantly covered.

Hallopeau asserted that people who constantly have their head covered do not generally have alopecia areata. None of the Sisters of Charity are affected in the hospitals, while members of the medical corps are not infrequently affected.

At the conclusion of the discussion, a commission was appointed to examine thoroughly into the question of the contagiousness of alopecia areata.

### LEPROSY IN BRITISH GUIANA.[2]

British Guiana is a territory which comprises an area of one hundred thousand square miles. The population is about three hundred thousand, of which one third are East Indians, about ten thousand aboriginal Indians, and the remainder Europeans, Portuguese, Chinese and negroes. It is believed that leprosy was introduced by negro slaves from Africa in the period of slavery. The only Indian tribe in Guiana that has been affected with leprosy is the Warraws. In an official report made in 1878, the writer gave a table showing an increase of 160% of cases of leprosy during the twenty years between 1858 and 1878, during which time 1,120 cases of leprosy were dealt with in the asylums. Of these 657 were negroes. The largest number of cases came from the parish which is situated in one of the healthiest parts of the country, so that the excess in the number of cases here could only be explained by the free communication with the surrounding neighborhood that was allowed these people.

The types of disease met with were similar to those in most tropical countries. Twenty-one per cent were of the tubercular type, 62% nerve leprosy, and 17% were mixed cases. About one in every two hundred and fifty of the inhabitants of Guiana suffered from some form of leprosy.

This paper is intended as a plea for leper asylums for these unfortunate people. Something has been done in Guiana in the line of improving the asylums, but they are still far from good. The writer thinks that cases of nerve leprosy should be dealt with much less strictly than cases of tubercular leprosy, and that every case of the latter type should be placed in a properly constructed asylum unless satisfactory arrangements can be made for home treatment and isolation.

### PAGET'S DISEASE OF THE UMBILICUS.[3]

The patient, who was shown on two separate occasions to the London Dermatological Society, was a sailor, sixty-five years of age. He had been previously well, with no family history of cancer. He exhibited in the umbilical region a round exanthematoid patch about two inches in diameter which had been gradually forming for about eleven years. The central part was ulcerated and exuding, covered over in parts by epithelium. There was a raised broad border, over which the cuticle was intact. There was considerable infiltration. The case proving rebellious to treatment, a bit of tissue was excised, which showed it to be an example of Paget's disease. The diseased skin was then removed surgically.

Histologically, there was great proliferation of the epidermis, the interpapillary processes extending deeply downward, but ending at about the same level in the corium. The cell inclusions, which were erroneously described by Darier as coccidia, were present throughout the epidermis. The corium was densely infiltrated with cells, which were especially numerous about the blood

[2] J. D. Hillis. Lepra. Vol. IV, fasc. 2. 1904.
[3] Brit. Jour. of Dermat. Feb., 1904. Fox and Macleod.

vessels. These were generally plasma cells, with a few leucocytes and connective tissue nuclei. The writers then presented a very good résumé of the literature of Paget's disease. It was in 1889 that Darier first noticed the remarkable changes which accompany the proliferation of the epithelium. He believed the peculiar bodies found in the epithelium to be coccidia, and the cause of all the trouble. All of the earliest cases affected the nipple so that the name of Paget's disease of the nipple became the customary one. In this situation it is diagnosticated by the age of the patient, mostly between forty and sixty, by its chronicity and slow progression; and it is distinguished from ordinary eczema by its bright red color, hard, raised border, and islands of epithelium in the diseased area. The precocious retraction of the nipple is also a marked feature.

Darier states that he has seen a dozen cases of epithelioma elsewhere than on the breast, with slow progression, well-defined borders, slight induration of the surface, and sometimes ulceration, which clinically differed very little from Paget's disease.

In 1889, Radcliffe Crocker described a case of a man of sixty who presented the disease at the root of the penis and scrotum; it spread rapidly over the whole of the left half of the scrotum, reaching the pubes. Other cases have been observed in France and England where the affection was situated about the anus and pubes, also about the female genitals. A case in this situation has also been reported by Fordyce in this country.

Remarking on the histology of the case reported, the writers conclude that the microscopic appearances were identical with those found in the typical cases situated on the nipple. There was no evidence of definite malignant change in the epidermis. They did not believe, as has been asserted, that the peculiar change in the epidermis is malignant from the first, any more than that ordinary warts or pigmented nevi are all malignant from the first. They may all be described as pre-cancerous lesions of the skin, which have a tendency to become malignant.

In this case a portion of Meckel's diverticulum was included in the center of the umbilicus, which may have been a coincidence, although it is a suggestive one.

The general histological appearances suggest chronic inflammatory disturbance, involving the papilli and leading to proliferation, edema, and degeneration of the epidermal cells and the formation of a resistant cellular infiltration in the upper layers of the corium.

The writers can throw no light upon the important question of the actual cause of this precancerous dermatitis and subsequent carcinoma. Although Darier's theory that the degenerated cells were coccidia and caused the disease has been abandoned by all, including its author, a parasitic origin would fit in very well with the clinical appearances and course of the disease.

Jungmann and Politzer,[4] in a very recent article, report a case of Paget's disease in which the axilla was the starting point of the process, and the nipple was not affected until thirteen years later. The woman was forty-six years old when the affection began in the left axilla as a small, red, oozing spot which greatly increased in circumference until, four years later, it had reached the size of the palm of a child's hand. At this time, she was seen at the Vienna Hospital, where the diagnosis was that of eczema. A long course of treatment had no effect upon the disease.

When taken into the hospital a second time, in 1903, the affected area extended on the left side of the chest from the axillary hollow as a center, on one side over the anterior half of the thorax, on the other side, behind, as far as the region of the scapular. It was also present on the inner surface of the upper arm. In the central, excoriated portion of the affected tissue, a hard infiltration of the deeper tissues was observed, and a fungous, ulcerated tumor of the size of a fig was situated on the anterior axillary fold. There was also a large nodule on the upper arm. The arm was lifted from the chest with so great difficulty that it was impossible to determine whether or not the deeper glands were affected.

On account of the favorable action of the x-rays on cancer of the skin, the patient was put under this treatment and with most gratifying results. After two or three weeks, there was a reaction of the first grade, after the subsidence of which the skin began to heal and the tumors to undergo involution. The general condition, also, improved continuously. At the time of writing, the parts were covered with solid epithelium and the tumors had practically disappeared.

Histologically, the appearances were those that have been shown to be characteristic of Paget's disease, and included the peculiar cell inclusions which have been described as coccidia.

The authors rightly protest against the retention of the name "Paget's disease of the nipple," inasmuch as the affection has been found in so many other localities.

[4] Dermat. Zeitsch., June, 1904.

### RADIUM IN CUTANEOUS AFFECTIONS.

At a meeting of the Berlin Medical Association on May 4, of the current year,[5] Lassar demonstrated patients and showed lantern slides illustrating the therapeutic action of radium. He said that during the last half year, he had treated a number of patients in this way, especially those afflicted with superficial tumors. It was demonstrated that this method of treatment was entirely harmless. When patients were daily treated for half an hour with one milligram of radium in small capsules bound down to the part treated by plaster, no inflammatory or necrotic results were produced. Numerous patients and pictures were shown illustrating the effect of this treatment on epitheliomata of the face. One case had been treated without success by various other methods and entirely healed by radium. It has been clearly shown that it is chiefly new

[5] *Ibid.*

growths that are healed by radium; and its great advantage over other similar methods is its easy application by an unskilled person. The cost is still high, but much less than that of the Röntgen apparatus, which requires also the services of attendants, etc. It also has a great advantage in that it is inexhaustible.

In regard to disagreeable occurrences, if there is the slightest sign of inflammation, redness, or swelling, the procedure should be interrupted. It is most important, however, that the physician should keep a personal supervision.

Other cutaneous affections were tried by this method. A case of obstinate, long continued psoriasis was completely relieved. The author is also able to record some favorable results in carcinoma of the breast. Naturally, this treatment does not take the place of surgery, and is applicable only to superficial lesions. Recurrent cancers may be satisfactorily treated in this way.

### LARVA MIGRANS.[6]

Lengtel and Delaunay reported the following interesting case which they saw at the Hôpital Broca. It occurred in a man thirty-nine years of age who had had, three weeks previously, a furuncle of the outer part of the calf. He treated it by a remedy of his own composition, namely, a poultice made from a dozen living snails, which he procured at the market. Shortly after this the furrows appeared.

When seen, he presented on the right part of the calf a plaque of lymphangitis as large as the palm of the hand, which bore in its center the scar of the original furuncle. Over this plaque were there numerous tunnels like enormous scabietic burrows, of reddish color at the border, white at the center, and flooded with sero-purulent matter which was collected here and there in droplets. These tunnels or galleries were irregular and tortuous. There was some intermittent pruritus. All attempts to find the parasite were vain, in spite of repeated examinations.

Histologically, the tunnel is seen situated in the upper layers of the rete, which is never destroyed in its lowest layers. The horny layer was almost intact, simply elevated by the exudation which filled the furrow. Parallel to the large furrow were numerous very small secondary furrows whose lumen opened into the central furrow. The writers conclude that the affection has all the appearances of a parasitic disease, and the eosinophilia which they observed about the furrows tended to confirm this theory. It is probable that the parasite, which they were unable to detect, is very small. The tunnel seems to be the effect of a process of digestion, a late reaction of epithelial tissue to the toxins, or dejections left by the larva. There is little in medical literature upon this subject, and no agreement in the results of different dermatologists. The disease is said to have been observed frequently in Russia, especially in the eastern part. There the parasite is thought to be of large size. The affection was named hyponomoderma by Kaposi. Lee described it as a creeping eruption, while Crocker and Stelwagon named it larva migrans. In Lee, Crocker and Stelwagon's cases, the parasite could not be found.

Some authors consider that the parasite is a larva of gastrophilus, which is transmissible from herds to man. Neumann, who was unable to find the parasite itself, thinks that it is due to an acarus. In the case described, it is assumed that the snails were the vehicle of infection.

On the whole, the parasite has never been found except by Russian authors. In other countries the most careful search has been unable to detect them. The patient was treated with applications of tincture of iodine, at first upon the central part. During this time the furrows at the periphery continued to increase, but no new tunnel started from the center. The applications of iodine were then extended to the whole of the affected territory, and under this treatment the patient rapidly got well, which they regarded as a proof of the superficiality of the parasite.

[6] Ann. Dermat. et Syph. Feb., 1904.

## Reports of Societies.

### AMERICAN SURGICAL ASSOCIATION.

PROCEEDINGS OF THE TWENTY-FIFTH ANNUAL MEETING, HELD IN ST. LOUIS, JUNE 14, 15, 16 AND 17, 1904.

(Concluded from No. 7, p. 194.)

#### A MECHANICAL DEVICE FOR GASTRIC AND INTESTINAL ANASTOMOSIS.

DR. F. B. HARRINGTON of Boston described a ring for the purpose of intestinal anastomosis.

The advantages of this ring were stated as follows:

"1. Safety and speed. A complete resection and suture can be easily done in fifteen minutes, and with as great speed as by any more protracted method.

"2. Cleanliness. Assisted by clamps, the purse-string sutures prevent even a mucous ooze, while the continuous stitch is being placed.

"3. The intestinal suture is more easily done over the ring than without it.

"4. It is safe to use a single layer of continuous stitches, since the ring allows a perfect approximation to be made, and afterwards protects the suture until adhesions have formed.

"5. The handle is very useful for holding the intestines in convenient positions for sutures.

"6. It is not necessary to sew up any of the layers, since a study of specimens from animals and human beings shows that the mucous membrane will slough in any case, and that repair is more rapid when the mucous membrane is not sutured.

"7. The presence of the ring guarantees a free opening at the site of operation.

"8. In case the continuous stitch should be improperly applied, the weak spots are protected by the ring itself, for at least three days, until the ring breaks down. This allows strong adhesions to form.

"9. After operation the ring holds the suture immovable, and acts like a splint. The weights of the individual segments of the ring vary, as most other appliances of a similar nature."

*Conclusions.* — The author drew the following conclusions:

"1. The process of repair is as rapid after the use of the segmented ring as after a plain suture.

"2. The time required for the operation is, on the whole, less than that required for a straight intestinal suture.

"3. Certain objections, such as weight, ulcer, difficulty of passage, etc., inherent in other mechanical contrivances, are minimized by the ring.

"4. The analogy between the experimental and human observations is so close as to show the propriety of the deductions made from animal experiments.

"5. The employment of the ring in human beings is safe and satisfactory."

In the discussion of Dr. Harrington's paper, DR. J. W. DRAPER MAURY of New York City, by invitation, stated that instead of using the elastic ligature at the laboratory of Columbia University, they had been employing twine. The specimen which he exhibited was made with the elastic ligature, put in by a square knot, thus differing from Dr. McGraw's technic; but for the last three months he had obtained as good results by using simple twine instead of the elastic ligature.

The method of introducing the twine might follow the McGraw technic, although the triangular stitch possessed a very distinct advantage over it. This stitch punched out as much tissue as might have been included in the triangle. As to time, it would cut through in less than three and a half days. It must be very tightly tied. This was the sole requirement to success.

Dr. Maury then demonstrated on a chart the technic of introducing the triangular stitch, and stated that he included about one third the circumference of the gut in the stitch. The gastric triangle should, as a rule, be made larger than the intestinal.

He then passed around photographs of specimens made by this method, and a preparation from the gut of a pig, which demonstrated how free an anastomosis might be established. He also showed a number of circular bits of twine, which had been used in executing the technic. They had cut the triangle out and had been recovered after their passage through the rectum.

### THE SUBTLE FORCE OF RADIUM.

DR. ROBERT ABBE of New York City narrated his experience with this new therapeutic agent, saying that radium had a powerful and seemingly beneficial effect upon cases of recurrent carcinoma. Cases were cited in point. He mentioned one case of virulent, typical carcinoma of the scirrhus type, in which the carcinomatous nodules were reduced to one third their original size by radiomization. The agent had been used in cases of lupus, superficial epitheliomata, carcinoma, rodent ulcer, superficial sarcomas, etc. In cases of superficial recurrent carcinoma of the breast, if radium was applied to the diseased area for a considerable time, say an hour, then the patient permitted to go, and the agent reapplied at intervals of two or three days, the carcinomatous masses would melt away in some cases. In other instances these masses would disappear under the use of the x-ray, still others would resist the action of the x-ray, while radium would act beneficially. Radium had an extraordinary power in inhibiting the growth of malignant cells in some cases.

DR. W. W. KEEN of Philadelphia said that one positive fact was worth a dozen negative ones. One could not get away from the facts presented by Dr. Abbe and others in regard to the use of radium. On the other hand, members of the profession ought to report their negative as well as positive results. He had had an experience now covering twenty-two cases in which radium was used. Whether his results were due to the quality of radium, to a difference in the character of the growths, to the method of using it, or what not, he did not know. But to sum up his experience, in not one single case had there been the slightest benefit, except in one feature, and that was as to pain. Unquestionably, in cases of carcinoma, patients had suffered less, and in a large number pain had disappeared. In one case of tic-douloureux of the lower jaw the man left the hospital at the end of a month practically well. In the course of six or eight weeks the patient wrote him that he had had a recurrence of the pain. Dr. Keen wrote him to return for treatment, but had heard nothing from him since, and whether the pain had disappeared or not, he did not know. He had used the German instead of the French radium. Some of his specimens had varied from 17,000 radio-activity up to a larger radio-activity, until finally he was able to obtain one specimen with 1,800,000 radio-activity. He regretted to say that his experience had not been satisfactory with the use of radium.

### GASTROSTOMY IN ESOPHAGEAL STRICTURE.

DR. JAMES H. DUNN of Minneapolis, Minn., said that cicatricial stricture was the most serious benign affection of the esophagus. Retrograde and through and through treatment of certain esophageal strictures had been recognized since the operation of Loretta, in 1883; but discoveries and improvements in operative technic had finally completely changed the situation, leaving surgeons in a position to approach one of these cases with a very safe and certain technic, and to fill the following indications: (1) A gastric fistula which would not leak, and close spontaneously. (2) To get a reliable guide through the canal with perfect safety and certainty. (3) To divide the scar tissue sufficiently. (4) Relative asepsis and rest of the wounded surface, prevention of stagnation of food, and for a time the irritation of its passage.

The value of the Stamm-Keder form of gastrostomy was generally understood, but it was only when one fully appreciated by experience that any esophageal stricture might be commanded perfectly and with precision by means now at hand, through very small gastric fistulæ, even the size of a No. 20 French catheter or less, that all the advantages of the method appeared. The steps of the operation were described. A modification of Dunham's wire and spindle bougies was suggested as somewhat simpler and more handy. The writer had not found it necessary to use guards to protect the epiglottis and stomach fistula from chafing. By this plan but one anesthesia was necessary in each case. The fistulæ had not leaked and had promptly healed spontaneously. A caliber admitting of free swallowing was reached in from one to three weeks, and an approximately normal caliber achieved in from two to four months, after which the tendency to relax had been imperceptible. The author reported three very severe cases, one in a girl, aged nineteen, following typhoid ulceration, and two in children, aged nine and two years, from the ingestion of concentrated lye. Repeated attempts had failed to reach the stomach through the mouth in all these cases.

### SURGERY OF NERVES; THE BRIDGING OF NERVE DEFECTS.

DR. CHAS. A. POWERS of Denver, Colo., said the difficulties in the way of preparing a satisfactory paper on this subject were due to the indefinite manner in which nerve suture was treated in medical literature, to the widely scattered and badly indexed material

collected and published by Chipault, to the fact that much of the material in the literature of the subject described operations upon animals, that a large proportion of operative cases in men were reported before the establishment of a permanent result, and to the fact that in case of failure it was not easy to say that a given bad result was due to a faulty technic in the operation itself as a similar result might have followed direct suture of the fragments.

The author reported in detail a personal case of transplantation of four inches of the great sciatic of a dog to the external popliteal of a man. Union was prompt. The fragments stayed in place, and the immediate result seemed to be encouraging, but the ultimate result was a total failure. Examination and report were made eight years after operation.

Cases of the bridging of nerve defects gathered from literature showed the following number: Grafting, 22; flap operations, 11; implantations (anastomosis), 10; resection of bone, 7; *suture a distance*, 3; tubulization, 1.

Analysis of these cases showed that grafting was a failure and should be discarded, while the results in flap operations and anastomosis were about the same, something over 50% of the cases being successful. While these last operations were not very promising, they seemed at present to be the methods of choice.

### FINAL RESULTS IN SECONDARY SUTURE OF NERVES.

Dr. Emmet Rixford of San Francisco, Cal., reported three cases of secondary nerve suture, of the ulnar at the wrist, of the musculo-spiral and the facial at the stylo-mastoid foramen, six, four and two years, respectively, after operation. In the first case the atrophic thenar, hypothenar and interosseous muscles regained their normal volume and function, save in so far as motion of the fingers was limited by adhesions, the result of fixation and chronic arthritis. In the second case the musculo-spiral nerve was sutured eight weeks after rupture complicating a fracture of the humerus. A defect of three centimeters was overcome by shortening the humerus that amount, and the result after four years was complete motor and sensory restoration of function, with slight atrophy, one-half centimeter difference in circumference in the forearms. In the third case the facial nerve was severed by a narrow tooth beneath the mastoid process. Complete facial paralysis. Suture at eight weeks after the injury. In order to secure tissue for the sutures, the mastoid process was cut away with the surgical engine, and the external wall of the Fallopian canal removed for five or six millimeters. Result after two years: Face symmetrical, when in repose; eye closes in sleep; may be closed at will; angle of mouth, tip of nose and chin can be drawn to the paralyzed side.

The prognosis in secondary suture was but little, if at all, inferior to the prognosis in primary suture. In the presence of infection, secondary suture was preferable to primary.

All scar tissue should be removed, including the whole of terminal neuroma of central segment, the nerve ends united by absorbable suture with the least possible traumatism. Defects, if not too great, could be overcome by stretching, which should be done before section of the nerve ends, or by shortening of the bone in certain cases.

### PRIMARY CARCINOMA OF THE LIVER.

Dr. Leonard Freeman of Denver, Colo., reported a case of primary carcinoma of the liver on which he had operated, with freedom from recurrence at the end of sixteen months. After dealing with the different methods of operating, he reported his case in detail.

### THYROIDECTOMY FOR EXOPHTHALMIC GOITRE, WITH REPORT OF 40 CASES FROM 128 OPERATIONS UPON THE THYROID.

Dr. Charles H. Mayo of Rochester, Minn., in a paper with this title, said the subject of goitre was still unsettled, both as regards etiology and treatment, although hundreds of articles had been written upon it. Recent investigations concerning the lymphatic system and ductless glands rendered the subject very interesting at this time. Exophthalmic goitre was a distinct type, with many symptoms, involving the mental, muscular, digestive and circulatory functions, the most common being the tachycardia without other cause. While the mortality was comparatively high, it was among those cases which had already run the gauntlet of most known remedies for the disease, and should not be entirely laid at the surgeon's door.

The surgical methods were exothyropexy, ligation of the thyroid arteries, removal of the cervical sympathetic ganglia, thyroidectomy, and the physiological effect of operations upon other regions.

The author and his brother had operated upon 130 goitres; 40 were of the exophthalmic type, and of these, 6 died as the result of the operation. In the first 15 there were 4 deaths due to lack of judgment in accepting almost moribund cases. There were but 2 deaths in the last 25 cases.

Very severe cases were subjected to x-ray exposures, and with belladonna given internally for a few days or weeks previous to operation.

Their own cases showed marked improvement in all who survived the operation. Of these, 50% made a very early recovery, especially of the severe symptoms, such as tachycardia, nervousness and tremor; 25% did so after several months, and 25% were improved, yet suffered from irregular recurrence of some of the major symptoms.

### GALLSTONES IN THE COMMON BILE DUCT.

Dr. S. H. Weeks of Portland, Me., read a paper on this subject, in which he considered the diagnosis and prognosis, and said that impaction of a gallstone in the common duct rarely caused marked distention of the gall bladder; it caused dilatation of the branches of the hepatic duct, and might result in pronounced and even fatal jaundice. Obstruction of the common duct was always accompanied by jaundice. The jaundice was intermittent or remittent where the calculus floated in an enlargement of the common duct, because the system would eliminate the coloring matter of the bile in the interval. The cystic duct might be occluded and give rise to grave symptoms without there being any trace of jaundice or any history of biliary colic. Jaundice with distended gall bladder not due to gallstones was presumptive evidence of malignant disease. Jaundice without distended gall bladder favored the diagnosis of cholelithiasis.

As to treatment, it was necessarily surgical.

Dr. A. F. Jonas of Omaha, Neb., read a paper on "Primary Splenomegaly, Accessory Spleens, Splenectomy," and reported an interesting case.

Dr. S. J. Mixter of Boston reported a case in which he removed the upper jaw for extensive osteosarcoma, with an excellent result, considering the formidableness of the operation.

Dr. Rudolph Matas of New Orleans, La., exhibited and described a new interdental splint which he had recently devised for the treatment of fractures of the jaw, particularly the lower jaw, without bandages.

Dr. Alexander Hugh Ferguson of Chicago exhibited a patient upon whom he had performed renal decapsulation for chronic interstitial nephritis three and a half months ago, with an excellent result.

OFFICERS.

The following officers were elected: President, Dr. George Ben Johnston of Richmond, Va.; vice-presidents, Dr. Emmet Rixford of San Francisco, Cal., and Dr. James Bell of Montreal; secretary, Dr. Dudley P. Allen of Cleveland, O.; treasurer, Dr. George R. Fowler of Brooklyn, N. Y.; recorder, Dr. Richard H. Harte of Philadelphia; councillor, Dr. N. P. Dandridge of Cincinnati, O.

San Francisco, Cal., was selected as the place for holding the next meeting, the date to be decided by the officers and committee of arrangements.

## ORGANIZATION MEETING; NATIONAL ASSOCIATION FOR STUDY AND PREVENTION OF TUBERCULOSIS, HELD JUNE 6, 1904, AT ATLANTIC CITY, N. J.

DR. WILLIAM OSLER called the meeting to order at 8.30 P.M. Fully two hundred persons were present. Dr. Osler spoke of the need of an organization that was representative of the medical profession, stated the steps that had been taken and asked Dr. E. L. Trudeau to read the constitution and by-laws as prepared and printed by the committee. Dr. Trudeau was greeted with much applause. Dr. Sternberg moved the adoption of the articles as read. Dr. J. Solis Cohen moved an amendment, so that changes in the by-laws might be proposed by the Association as well as by the Board of Directors. After discussion and acceptance of this and several minor changes, the constitution and by-laws were adopted.

Dr. Trudeau, in presenting the list of directors, said that they had been chosen in proportion to the number of men in each state actively interested in the subject. The following list was unanimously adopted:

Massachusetts, E. O. Otis, V. Y. Bowditch; Connecticut, Foster; New York, Knopf, H. M. Biggs, E. L. Trudeau, Mr. Devine; Pennsylvania, Flick, Ravenel, Anders, Pearson; New Jersey, Mr. Hoffman; Maryland, W. H. Welch, William Osler, H. B. Jacobs, Fulton; District of Columbia, G. M. Sternberg; North Carolina, Minor; Colorado, Solly; Illinois, Klebs, Babcock; Minnesota, Bracken; Missouri, Porter; Indiana, Hurty; Michigan, Vaughan; Ohio, Probst; California, Bridge; Texas, M. M. Smith. Public Health and Marine Hospital Service, Surgeon General Wyman; U. S. Army, Bushnell, Fort Bayard.

Dr. Osler opened an informal discussion of different aspects of the work by suggesting that meetings be divided into three sections: sociological, clinical, pathological and bacteriological. Dr. Barry, Louisiana, made an earnest plea for special attention to the study of tuberculosis among the negroes. He said that the disease had made alarming progress among them during the last ten years. Where the population was equally divided, the doctor would see twenty cases among the negroes to one among the whites.

Another suggestion was a Committee on Publicity to help on the education of the people in regard to tuberculosis through the lay press in addition to a special journal.

Mr. Devine of New York, editor of *Charities*, in a very earnest address spoke of the significance of the awakening of the lay mind to medical problems. He suggested that the Association needs first of all an efficient executive secretary. Practical articles were needed to educate physicians in regard to the details of management. Dr. Wells of Chicago said that tuberculosis is diminishing. That first the people must be reached through the lay press; second, the school teachers must be specially instructed, and third, the medical profession must be aroused to the importance of preventive measures.

DR. TRUDEAU was greeted by prolonged applause. He said that the dispensaries must give the patients directions and spit-cups; that hospitals were needed for the hopeless cases, as well as for the curable. He would have lectures given to physicians on the importance of early diagnosis; that the disease begins long before the bacilli are coughed up in the sputum. He spoke with feeling and gratitude of the increased interest in the subject since he first began alone in the mountains thirty years ago.

DR. HERMAN M. BIGGS of the New York Board of Health said that there were now in New York six special dispensaries for tuberculosis, with twenty-five trained nurses visiting among the patients. There were 1,600 beds available for advanced cases. The Board had recently provided several pavilions for cases removed by force, or vicious and insubordinate cases discharged from other institutions. About 400 cases are reported each week, and 16,000 in a year. If they are attended by a private physician, they are simply registered, and the physician is asked at the end of the year whether they are still under observation. Severe cases are visited by a nurse three or four times a month. Efforts are made to stimulate early diagnosis. The free examination of sputum has been a great help in this respect. When first established, only 400 specimens were sent in during a year. Recently on one day there were 178 specimens sent in. The death-rate in the last seventeen years has been reduced 40%, and in the next ten years it should be reduced at least 40% more.

DR. KNOPF said that no community is too small to have a committee on prevention of tuberculosis, consisting of physicians and interested laymen.

DR. HICKLING of Washington told of the organization of lectures in the public schools, at mothers' meetings, in kindergartens, and, through the Associated Charities, in various church parlors. Usually there were three ten-minute addresses at each meeting, one illustrated.

DR. HUBER of New York spoke of a journal for the Association, and on motion it was voted that "the sense of this gathering is that such a journal should be established."

A meeting of the directors was called immediately after adjournment.

## Recent Literature.

*A Guide to the Clinical Examination of the Blood for Diagnostic Purposes.* By RICHARD C. CABOT, M.D. With colored plates and engravings. Fifth Revised Edition. pp. 549. New York: William Wood & Co. 1904.

This latest edition of Dr. Cabot's well-known book is fully up to the standard of the previous editions. An extended review can only be a repetition of those of the past. As stated in the preface, about ninety pages of new matter have been added and about twenty pages stricken out. The most important changes are due to the introduction of the "Romanowsky" staining method for routine blood examination. A new set of colored plates prepared from specimens stained in this way has been added. Considerable additions have been made to the chapters on Infectious Diseases and Blood Parasites, and minor changes on almost every page in the book.

THE BOSTON

# Medical and Surgical Journal.

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## DR. OSLER AND OXFORD UNIVERSITY.

The announcement of the appointment of Dr. William Osler to the Regius professorship of medicine in Oxford University has been succeeded by the not unexpected news of his acceptance of the position, although his connection with the Johns Hopkins University will not be severed for nearly a year. Dr. Osler has for many years occupied a somewhat unique position in American medicine. Born a Canadian, a student of medicine at McGill University in Montreal and at Toronto, later a teacher in medicine at McGill University, and pathologist to the Montreal General Hospital, then elected to the chair of clinical medicine at the University of Pennsylvania, and finally to the chair of medicine in the Johns Hopkins University, he has had an experience as a teacher of medicine to which few attain. Well knowing his fondness for the country of his birth and all things English, he had so long identified himself with the United States, that it was with considerable surprise that we learned of his intention to end his immediate connection with this country, even for so tempting a field as that which now opens before him. Not only the Johns Hopkins University but the entire medical profession in America may well feel a certain pride in this choice for the Regius professorship at Oxford. That Dr. Osler is fitted by training and education for the position no one can gainsay. It is as little open to question that he brings to it a peculiar charm of manner, breadth of culture and broad-minded attitude toward medical problems which it would have been difficult to have found associated in any other single individual.

Experience no doubt has taught the Johns Hopkins Medical School to accept with equanimity changes in its faculty. Few institutions have provided men of capacity for positions of trust more widely than she. The departure within comparatively recent years of Councilman, Flexner, Barker and many others for other fields of work must have left places difficult to fill, but the going of Dr. Osler takes from the university one of the two men who have long stood in the very forefront of medical progress in this country, and means a loss which in the ordinary course of events can never be compensated.

It is interesting also to note the vast difference between the university he leaves and the university to which he is going. The Johns Hopkins University has long stood for the most modern method in medicine and the most progressive ideas, whereas Oxford, with a past of glorious traditions in many fields of knowledge, has often lagged behind in the march of medical science. Dr. William Collier, in the President's address at the recent meeting of the British Medical Association, drew attention to the revival in the teaching of medicine which has lately come to the University of Oxford. Twenty-five years ago the medical faculty had fallen from its previous high estate, and the university was no longer a definite factor in the training of physicians. In 1878 bitter complaint was made of the neglect of the study of medicine at Oxford, and there was no unanimity of opinion as to the possibility or desirability of reviving the interest which had lagged. The British Medical Association took up the matter, and following the attention excited thereby petitions looking to the establishment of a medical school, in the modern sense, were drafted and signed by many prominent persons. These efforts bore fruit, and in 1882 Prof. Burdon Sanderson was appointed to the newly founded chair of human physiology and histology, a first step toward the establishment of modern medical education in Oxford. In 1895 Sir Henry Acland retired from the Regius professorship and was succeeded by Sir John Burdon Sanderson, whose resignation now leads to the appointment of Dr. Osler. The gradual development of pathology, the controversy regarding vivisection and the various difficulties both financial and otherwise which the University Medical School has suffered do not here concern us. All these difficulties, it is hoped, are of the past, and Dr. Osler will assume his position under conditions which, though vastly different from those prevailing in this country, will nevertheless allow him the fullest opportunity to develop still further his extraor-

dinary powers as a teacher and leader of younger men. Twenty-two years ago the *British Medical Journal* commented on the appointment of Sir John Burdon Sanderson to the chair of physiology as follows:

"Dr. Sanderson has a grand opportunity. He has sacrificed much in order to take up the noble work of organizing a real school of medicine at Oxford. Success in such a work would be the worthy achievement of a lifetime. There will be a universal feeling of confidence that the man who has now put his hand to the plough will not turn back, but will finally surmount every difficulty to his own high honor and to the great gain of the profession of medicine."

This certainly does not apply with equal force to Dr. Osler. The lapse of time has made many definite changes which will not permit a return to the old regime. At the same time we may easily conceive that the opportunities for leadership will still not be lacking at the ancient university; that Dr. Osler will be equal to the task imposed upon him we have not the slightest question.

## THE SLAUGHTER OF ANIMALS FOR FOOD.

The British Committee appointed in January, 1904, "to ascertain the most humane and practicable methods of slaughtering animals for human food, and to investigate and report upon the existing slaughter-house system," has made its report to Parliament.[1] The word "animal" as used in this report includes only cattle, calves, sheep, lambs and pigs.

The committee consisted of Mr. Arthur Lee, chairman, Shirley F. Murphy, chief medical officer of health of London, and five others. The principal persons examined were the chief veterinary inspectors, master butchers, one member of the Prussian Government, Jewish rabbis and other experts in the slaughtering of cattle. In addition to the published minutes of evidence, an appendix contains full information as to the methods of slaughter practised in foreign countries, especially the well regulated systems in use in Denmark, Germany and Switzerland.

The committee states that it has clearly recognized from the first that it would be futile to recommend any methods of slaughter, however humane, which would be impracticable on the score of complication, time or expense, or which would in any way depreciate the utility or market value of the carcasses for human food. "To do otherwise would not only stultify their recommendations, but would do away with any justification for killing the animals at all. The Committee, therefore, makes no recommendations which, in its opinion, are not strictly business-like and which have not been clearly demonstrated to be practical." The report contains general recommendations, designs for slaughter-houses, detailed methods of slaughter, comments upon the Jewish method, and certain suggestions for proposed regulations.

The conclusions of the committee with reference to the Jewish methods are as follows:

*a.* The Jewish system fails in the primary requirements of rapidity, freedom from unnecessary pain, and instantaneous loss of sensibility, and it compares very unfavorably with the methods of stunning recommended by the Committee.

*b.* The preliminary operations of "casting"[2] and of forcing the animal's head into position for the cut, are difficult, painful and objectionable from a humanitarian standpoint.

*c.* The subsequent operation of cutting the throat is at best an uncertain method of producing immediate loss of sensibility, and frequently causes great and unduly prolonged suffering to the animal.

*d.* Until some method is devised and adopted for rendering the animal unconscious, previous to the "casting" and throat-cutting operations, the Jewish system of slaughtering cattle should not be permitted in any establishment under Government control.

The committee also suggest the following proposed regulations:

(1) All animals, without exception, must be stunned, or otherwise rendered unconscious, before blood is drawn.

(2) Animals awaiting slaughter must be so placed that they cannot see into the slaughter-house, and the doors of the latter must be kept closed while slaughtering is going on.

(3) The drainage of the slaughter-house must be so arranged that no blood or other refuse can flow out within sight or smell of animals awaiting slaughter, and no such refuse shall be deposited in proximity to the waiting pens.

(4) If more animals than one are being slaughtered in one slaughter-house at the same time, they must not be within view of each other.

(5) None but licensed men shall be employed in or about slaughter-houses.

[1] Report of the Committee appointed by the Admiralty to consider the humane slaughtering of animals, with appendix, presented to both houses of Parliament by command of His Majesty. London, July, 1904.

[2] As a result of the inquiries of the Committee, twenty-one rubber pavements were at once ordered for the slaughter-houses at Deptford, in order to break the fall of the cattle, when "cast" by the Jewish method.

## MASSACHUSETTS GENERAL HOSPITAL TRAINING SCHOOL FOR NURSES.

In our issue of June 30 we commented editorially upon a proposed change in the training of nurses at the Boston Children's Hospital whereby they were to receive a part of their instruction at the recently organized Simmons College. We are glad to note the fact that a somewhat similar arrangement has been planned for the nurses of the Massachusetts General Hospital. Hereafter, four months of the three years' course will be devoted to work at Simmons College on the subjects of chemistry, anatomy, physiology, bacteriology and sanitation and household arts. It is naturally neither expected nor desired that in the short time devoted to the study of these fundamental subjects more than an outline can be given. For example, in chemistry it is intended that certain of the common inorganic and organic compounds be described with particular reference to their practical application in the problems of nursing. In bacteriology a somewhat complete general knowledge of the distribution and morphology of bacteria is designed, with such practical matters relating to their modes of development, dissemination, cultivation and microscopic examination as may seem fitting for the nurse. Courses in anatomy and physiology are intended to provide knowledge of the general structure and function of the body as a whole and of its various parts.

The plan provides for knowledge which has heretofore been in great measure given during the actual course of training in the hospital. It is evident that such a plan conduces to the best economy of time and effort. The distractions of a hospital to the novice and the constant presence of the practical sides of her calling must stand in the way of a devotion to the fundamental branches, which should be mastered before the actual work of nursing begins. The equipment and methods of Simmons College will no doubt conduce not only to a readier means of acquiring this knowledge, but also to greater thoroughness. Another step in advance in this training school is the withdrawal of the money allowance heretofore granted student nurses. Hereafter, the students in the school will be required to pay in advance a tuition fee, although certain allowances by means of scholarships are made for those who actually require financial aid. Beyond the regular work in the wards of the hospital the work will hereafter include three months' training in obstetrics in maternity hospitals, three months in the details of private nursing at the Corey Hill Hospital at Brookline, and not less than one month as assistants in the operating rooms of the Massachusetts General Hospital.

## THE ST. LOUIS CONVENTION AND OVERSTRAIN.

The National Democratic Convention at St. Louis furnished a sad example of the disregard of the elementary rules of health, and should serve as a warning to the managers of future conventions. If it be alleged that the proceedings of the Republican convention were cut and dried beforehand, the Democrats went to the other extreme, and through lack of preliminary preparation and organization, subjected the delegates and a host of spectators to a physical and mental strain from which many will never recover.

Who knows how many hearts and kidneys which, though not perfectly sound, had been doing their work reasonably well, are now showing signs of failure as a result? Seventy-two hours of work by day and shouting by night, without sleep, must put a severe tax on even robust constitutions. If this sort of thing is made to be a part of the machinery of party organization, it is not surprising that there are citizens who hesitate about actively entering upon political duties.

Members of the medical profession know that men past middle life, and these are for the most part the counsellors and props of a political party, men whose organs have lost some of their pristine superabundance of vitality, cannot draw so heavily on their reserve as in their more youthful days without paying the cost in poor health, a shorter life, or both. Hard work seldom kills; prolonged worry and excitement, coupled with insufficient food and lack of sleep, to say nothing of impure air, may tax human endurance to the breaking point.

Although the science and art of medicine has no political leanings, cares for the rich or poor, high or low, good or bad, Democrat or Republican alike, it seems to us that the Democratic party managers are to be taken to task for so managing, or rather mismanaging, their convention as to imperil the health of a large number of men.

## MEDICAL NOTES.

Laboratory for Illinois State Board of Health. — The State Board of Health of Illinois is about to establish a laboratory with the best equipment for bacteriological and chemical

work. The laboratory is particularly needed because of the widespread campaign recently instituted against tuberculosis throughout the state. Heretofore laboratory investigations have in great part been carried on in Chicago, and the complete removal of this work to Springfield, where the laboratory will be located, will allow prompter reports and more economical management. The laboratory is to be open to the physicians of Springfield and its neighborhood.

SMALLPOX IN AND ABOUT CHICAGO. — According to the Bulletin of the Chicago Health Department, eight cases of smallpox were discovered and sent to the isolation hospital during the week ending Aug. 13. One of the patients had a history of doubtful vaccination, and the others had never been vaccinated. It is furthermore announced that in Zion City, presided over by Dowie, there have been 29 cases since June 1. An inspection by the health authorities recently showed sixteen cases in the isolation hospital, removed from the city. The cases were of a mild type and well cared for. Precautions are being taken, disinfection and isolation are carried out with intelligence, but vaccination is refused.

THE RIGHT TO SELL SMUGGLED DRUGS. — It is announced that litigation which has lasted since 1898, involving the right of the United States Government to sell copyrighted and patented goods smuggled into the country has been decided against the government. The dispute arose regarding a large amount of smuggled phenacetin, purchased by local agents from the government, who, when about to sell it, were prevented by an injunction procured by the German manufacturers, the latter claiming the sole right to the name since they had procured a copyright on the word. The manufacturers have finally been upheld, and the purchasers are obliged to return the drug in their possession, and may only recover their loss through a special act of Congress.

### BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon Aug. 24, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 32, scarlatina 12, typhoid fever 34, measles 7, smallpox 0.

MORTALITY IN WORCESTER, MASS., FOR JULY. — The Board of Health of Worcester reports that the number of deaths for July, 1904, was 148, as against 199 for the corresponding month last year, being a decrease of 51, which the Board rightly regards as an excellent showing. In June, 1904, on the other hand, the deaths numbered three more than for June, 1903.

BEQUESTS. — By the will of the late Thomas D. Walsh, bequests of $1,000 each are made to St. Mary's Infant Asylum and five other institutions of semi-medical character in Boston and vicinity.

GIFT OF FIVE HUNDRED DOLLARS TO THE BOSTON FLOATING HOSPITAL. — The managers of the Boston Floating Hospital announce the receipt of five hundred dollars from anonymous persons to be applied to the fund for the construction of a new hospital boat.

OUTBREAK OF TYPHOID FEVER TRACED TO ITS SOURCE. — It is reported that a number of cases of typhoid fever, which have recently appeared in different parts of Boston, have been traced to contaminated spring water in connection with the construction of a sewer in an outlying part of the city. Direct infection appears to have been caused by the carelessness of one of the workmen on this sewer who had recently had a mild attack of typhoid fever. Immediate steps were taken to prevent the drinking of this water, and there is no probability that further cases will develop from this source.

### NEW YORK.

APPOINTMENTS FOR STUDY OF PULMONARY DISEASE. — According to the *Journal of the American Medical Association* Dr. Darlington, health commissioner of New York, has selected a portion of the committee for the study of diseases of the lungs, for which recently $10,000 was appropriated. Among those appointed are Drs. Edward G. Janeway and T. Mitchell Prudden of New York, Drs. W. H. Welch and William Osler of Baltimore and Dr. Theobald Smith of Boston.

## Miscellany.

### THE WOUNDED IN THE NAVAL WAR BETWEEN JAPAN AND RUSSIA.

THE *British Medical Journal* in its issue of Aug. 13 published interesting notes from S. Suzuki, Deputy Inspector General of the Japanese Imperial Navy and Surgeon-in-Chief of the combined fleets, stationed on the "Mikasa," Admiral Togo's flagship, concerning the treatment of wounds on shipboard, of which the following are the conclusions:

(1) First aid dressings are very important if they are applied at all on the spots where men are injured, but nearly half or a little less of all the wounded are carried or come to the surgery without any dressing. The ambulance parties should be stationed at various parts of the ship. The practical and careful education

of ambulance parties is essential to future progress in the treatment of wounds.

(2) The first-aid packages used in navies of different countries are, it seems to me, folded too small, as the wounds inflicted by shell fragments are always larger than those made by small-calibre rifle bullets. These packages are intended chiefly for the army, where small size is essential for carrying purposes, but on board ship size does not matter much. In my experience 4-in. square sterile absorbent cotton wool with ¼-in. or a little more thickness covered with gauze and stitched in a few places around, is a convenient size. To this pad the middle part of a gauze bandage of 8 ft. in length and 4 in. wide should be stitched and kept aseptic as usual. With this we may dispense with the well-established triangular bandage.

(3) The modes of carrying the wounded must be various, as the size of ships varies as well as that of ladders and passages. As a rule, hand carrying is practised in small ships; in the battleships and first-class cruisers stretchers may be freely used if the surgeons impress on the bearers how to handle them quickly. We found a special stretcher made of bamboo and canvas, devised by Mr. Totsuka, of Sasebo Naval Hospital, very useful. No one form of stretchers, however ingeniously made, is suitable for all purposes on board ship.

(4) Choice of place for the surgeries. I believe it is generally accepted that a surgery on board war ships in action should be provided in more than one place. Even in cases where there is only one surgeon on board it is better to have two surgeries in different parts of the ship. It is desirable to choose a place below water line, but every ship does not allow surgeons to do this. I believe in the near future an ample provision for special surgery during action will be made by joint consultation of naval constructors and surgeons.

(5) Slight protection may save serious injury to the body. There are many examples to show that a pocket notebook, knife, etc., have saved men's lives from shell fragments. We have had a few examples in the present war. I dare say that in time every combatant on board war ships in action will wear some kind of protecting mask and jackets; a rifle-proof jacket was devised by the Germans some time ago. It is important to remember that in regard to the disposal of wounded men the non-firing side of a ship is more dangerous than the firing side, that is, the one exposed to the enemy, as the fragments of bursting shells are dispersed in a radiating manner.

(6) Strict observance of aseptic surgery is essential in military as in civil surgery, but the performance of serious operations on board war ships is incompatible with the good progress of cases; it is far better to transfer such cases as soon as possible to hospital ships. The surgeon-in-chief of fleets must take care to secure the fullest efficiency in the use of hospital ships, as non-combatant steamers are desired to be left as far as possible behind the actual seat of war.

## SANATORIA FOR CONSUMPTIVES IN GERMANY.

The German Imperial Board of Health [1] gives the following statement: "At the beginning of 1904 there existed in the German Empire more than ninety 'Lung-Sanatoria' with, altogether, 8,000 beds. Of these 2,500 are exclusively for female patients. If we calculate on the average four patients for every bed, in one year, it follows that about 32,000 patients can enjoy the benefits of these sanatoria at the present time. The expense of building and furnishing the sanatoria amounted, up to the present time, according to a moderate estimate, to more than forty million marks (nearly ten million dollars). Beside the existing sanatoria the building of new ones is planned, some of which are in condition to be opened this year. As a basis for building expenses five thousand marks for every bed were calculated. Models and plans for sixty of these sanatoria were exhibited at St. Louis in the German exhibit."

[1] Catalogue of Exhibit at World's Fair, St. Louis, 1904, p. 45.

# Correspondence.

## AMERICAN MEDICAL SOCIETY FOR THE STUDY OF ALCOHOL AND OTHER NARCOTICS.

Hartford, Mass., Aug. 20, 1904.

Mr. Editor: The American Society for the Study of Alcohol and other Narcotics was organized June 8, 1904, by the union of the American Association for the Study of Inebriety and the Medical Temperance Association. Both of these societies are composed of physicians interested in the study and treatment of inebriety and the physiological nature and action of alcohol and narcotics in health and disease. The first society was organized in 1870 and has published five volumes of transactions and twenty-seven yearly volumes of the *Quarterly Journal of Inebriety*, the organ of its association. The second society began in 1891 and has issued three volumes of transactions, and for seven years published a quarterly bulletin containing the papers read at its meetings. The special object of the union of the two societies is to create greater interest among physicians to study one of the greatest evils of modern times. Its plan of work is to encourage and promote more exact scientific studies of the nature and effects of alcohol in health and disease, particularly of its etiological, physiological and therapeutic relations. Second, to secure more accurate investigations of the diseases associated with or following the use of alcohol and narcotics. Third, to correct the present empirical treatment of these diseases by secret drugs and so-called specifics, and to secure legislation, prohibiting the sale of nostrums claiming to be absolute cures containing dangerous poisons. Fourth, to encourage special legislation for the care, control and medical treatment of spirit and drug takers. The alcoholic problem and the diseases which center and spring from it are becoming more prominent, and its medical and hygienic importance have assumed such proportions that physicians everywhere are called on for advice and counsel. Public sentiment is turning to medical men for authoritative facts and conclusions to enable them to realize the causes, means of prevention and cure for this evil. This new society hopes to meet this want by enlisting medical men as members and stimulating new studies and researches from a broader and more scientific point of view. As a medical and hygienic topic the alcoholic problem has an intense personal interest, not only to every physician, but to the public generally in every town and city in the country. This interest demands concentrated efforts through the medium of a society to clear away the present confusion, educate public sentiment, and make medical men the final authority in the consideration of the remedial measures for cure and prevention. For this purpose a most urgent appeal is made to all physicians to assist in making this society the medium and authority for the scientific study of the subject. The secretary, Dr. T. D. Crothers of Hartford, Conn., will be pleased to give any further information.

Truly yours,

T. D. Crothers, M.D.

## RECORD OF MORTALITY
FOR THE WEEK ENDING SATURDAY, AUGUST 13, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid Fever. | Diarrheal Diseases. |
| New York . . | 3,908,644 | 1,418 | 621 | 40.83 | 6.13 | 1.62 | 1.27 | 23.90 |
| Chicago . . . | 2,021,086 | 496 | 178 | 57.25 | 4.03 | .20 | 1.60 | 22.37 |
| Philadelphia | 1,407,968 | 441 | 155 | 37.40 | 5.44 | 1.13 | 2.48 | 18.81 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 216 | 94 | 39.82 | 2.78 | — | 4.63 | 21.76 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 127 | — | 34.64 | 7.08 | 2.36 | 7.08 | 20.47 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 92 | 32 | 33.69 | 4.34 | — | 1.08 | 22.83 |
| Boston . . . | 617,950 | 236 | 103 | 38.13 | 5.08 | 1.69 | .84 | 27.96 |
| Worcester . . | 136,925 | 36 | 14 | 27.77 | 5.55 | — | — | 13.88 |
| Fall River . . | 119,349 | 44 | 29 | 59.07 | — | — | 2.27 | 49.98 |
| Lowell . . . | 104,402 | 33 | 17 | 42.42 | — | — | — | 33.33 |
| Cambridge . | 100,998 | 23 | 14 | 43.48 | — | — | — | 30.43 |
| Lynn . . . . | 73,875 | 15 | 5 | 26.66 | — | — | — | 26.66 |
| Lawrence . . | 72,348 | 32 | — | 21.87 | 9.37 | — | 3.12 | 18.75 |
| Springfield . | 72,020 | 15 | 5 | 26.66 | — | — | 6.66 | 6.66 |
| Somerville . | 70,413 | 11 | 6 | 18.18 | — | — | — | 9.09 |
| New Bedford | 68,863 | 37 | 21 | 37.82 | 2.70 | — | — | 27.02 |
| Holyoke . . . | 50,538 | 18 | 11 | 55.55 | 5.55 | 5.55 | — | 33.33 |
| Brockton . . | 46,601 | 22 | 5 | 27.27 | — | — | — | 18.18 |
| Newton . . . | 39,310 | 8 | 2 | 37.50 | — | — | 12.50 | 12.50 |
| Haverhill . . | 39,061 | 9 | 4 | 44.44 | — | — | — | 22.22 |
| Malden . . . | 37,205 | 16 | 6 | 31.25 | — | — | — | 31.25 |
| Salem . . . . | 37,188 | 16 | 6 | 31.25 | — | — | — | 31.25 |
| Chelsea . . . | 36,499 | 17 | 5 | 11.76 | — | — | — | 5.88 |
| Fitchburg . . | 36,335 | 12 | 9 | 8.33 | — | — | — | — |
| Taunton . . . | 34,577 | 15 | 7 | 52.22 | — | — | — | 40.00 |
| Everett . . . | 30,209 | 6 | 3 | — | — | — | — | — |
| North Adams | 29,201 | 4 | 2 | 25.00 | — | — | — | — |
| Quincy . . . | 26,798 | 4 | 3 | 75.00 | — | — | — | 75.00 |
| Gloucester . | 26,121 | 7 | 2 | 14.30 | — | — | — | — |
| Waltham . . | 25,797 | 5 | — | 20.00 | — | — | — | — |
| Brookline . . | 23,576 | — | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | — | — | — | — | — | — | — |
| Medford . . | 21,956 | 6 | 4 | 16.67 | — | — | — | 16.67 |
| Chicopee . . | 21,692 | 14 | 7 | 42.85 | — | — | — | 35.71 |
| Northampton | 20,314 | 10 | 4 | 50.00 | — | — | — | 40.00 |
| Beverly . . . | 15,807 | 4 | 1 | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 5 | 2 | — | — | — | — | — |
| Adams . . . | 14,745 | 7 | 4 | 85.80 | — | — | — | 57.20 |
| Attleboro . . | 14,561 | 1 | 1 | 100.00 | — | — | — | 100.00 |
| Hyde Park . | 14,500 | — | — | — | — | — | — | — |
| Newburyport | 14,478 | — | — | — | — | — | — | — |
| Woburn . . . | 14,315 | 7 | 2 | 28.60 | 14.30 | — | — | 14.30 |
| Melrose . . . | 13,819 | 1 | — | — | — | — | — | — |
| Westfield . . | 13,809 | 1 | 1 | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 5 | 1 | 20.00 | 20.00 | — | — | 20.00 |
| Revere . . . | 13,609 | 7 | 5 | — | — | — | — | — |
| Framingham | 12,974 | 4 | — | — | 25.00 | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 2 | — | — | — | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 3 | 2 | 66.67 | — | — | — | 33.33 |
| Weymouth . | 11,350 | 8 | 4 | 37.50 | — | — | — | 37.50 |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,516; under five years of age, 1,397; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,447; acute lung diseases 172, consumption 349, scarlet fever 8, whooping cough 17, cerebrospinal meningitis 29, smallpox 2, erysipelas 6, puerperal fever 9, measles 13, typhoid fever 63, diarrheal diseases 814, diphtheria and croup 37.

From whooping cough, New York 4, Chicago 4, Philadelphia 3, Pittsburg 3, Boston 1, Holyoke 1, Northampton 1. From measles, New York 8, Chicago 1, Philadelphia 1, Pittsburg 2, Lowell 1. From scarlet fever, New York 2, Chicago 3, Baltimore 3. From cerebrospinal meningitis, New York 24, Worcester 2, Cambridge 1, Chelsea 1, Adams 1. From erysipelas, New York 4, Philadelphia 1, Pittsburg 1. From smallpox, New York 1, North Adams 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending July 30, the death-rate was 16.4. Deaths reported 4,793; acute diseases of the respiratory organs (London) 48, whooping cough 57, diphtheria 35, measles 156, smallpox 5, scarlet fever 33.

The death-rate ranged from 2.6 in Smethwick, to 29.8 in Liverpool; London 16.0, West Ham 22.1, Brighton 14.9, Southampton 12.1, Plymouth 15.6, Bristol 11.7, Leicester 10.9, Nottingham 20.1, Bolton 13.4, Manchester 20.9, Salford 18.7, Bradford 18.3, Leeds 18.5, Hull 16.4, Sheffield 13.4, Cardiff 11.8, Rhondda 24.7, Wigan 21.6, Merthyr Tydfil 13.6, West Bromwich 14.7.

## METEOROLOGICAL RECORD.

For the week ending August 13, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S.. 7 | 29.90 | 76 | 84 | 69 | 65 | 56 | 60 | W | W | 8 | 6 | C. | F. | 0 |
| M.. 8 | 30.01 | 70 | 76 | 63 | 88 | 65 | 76 | S | W | 16 | 16 | R. | F. | .02 |
| T.. 9 | 30.42 | 64 | 71 | 58 | 50 | 68 | 59 | N W | S | 8 | 9 | C. | C. | 0 |
| W..10 | 30.29 | 62 | 66 | 59 | 70 | 97 | 84 | S | E | 4 | 5 | O. | O. | .26 |
| T..11 | 30.00 | 72 | 82 | 61 | 88 | 70 | 79 | W | W | 7 | 8 | O. | C. | .17 |
| F..12 | 30.23 | 63 | 66 | 60 | 89 | 89 | 89 | N | E | 12 | 4 | O. | C. | 0 |
| S..13 | 30.14 | 63 | 70 | 56 | 86 | 59 | 72 | E | S | 3 | 9 | C.G. | F.G. | T. |
| ☞ | 30.15 | . | 74 | 61 | | | 74 | | | | | | | .45 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Mean for week.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING AUGUST 20, 1904.

A. FARENHOLT, surgeon. Detached from the "Concord" and ordered to the "Monterey."

C. H. T. LOWNDES. Detached from the "Chesapeake" and ordered to the Naval Academy.

V. C. B. MEANS, surgeon. Detached from the "Montery" and ordered to the "San Francisco."

R. G. HEINER, assistant surgeon. Detached from the Naval Hospital, New York, N. Y., and ordered to the "Southery."

H. B. FITTS, surgeon. Detached from the "Pensacola," and granted leave for thirty days.

## RECENT DEATHS.

ROBERT MILBANK, M.D., a well-known New York physician, died on August 4, at the age of fifty-six. Dr. Milbank had gone to Port Chester, on Long Island Sound, to visit a patient, his cousin, who was ill with typhoid fever, and while there, was attacked with cerebral apoplexy, which caused his death in a few hours. He was graduated from the medical department of the University of the City of New York in 1878, and afterwards served as interne in Bellevue Hospital.

ROMEO F. CHABERT, M.D., one of the most prominent physicians of Hudson County, N. J., died at his summer residence at Asbury Park, N. J., on August 1. He was born in London in 1828, and came to America when seven years of age. He had practised for forty-eight years in Hoboken, N. J., where he was the founder of St. Mary's Hospital. At the time of his death he was consulting physician to this institution, as well as to the Bayonne Hospital at Bergen Point, N. J. For many years he was also a member of the Board of Managers of the New Jersey State Hospital for the Insane at Morris Plains.

## BOOKS AND PAMPHLETS RECEIVED.

Appleton's Medical Dictionary. An illustrated Dictionary of Medicine and Allied Subjects in which are given the Derivation, Accentuation, and Definition of Terms used throughout the Entire Field of Medical Science. Edited by Frank P. Foster, M.D. Illustrated. New York and London: D. Appleton & Co. 1904.

The Principles and Practice of Gynecology. For Students and Practitioners. By E. C. Dudley, A.M., M.D. Fourth Edition, Revised. Illustrated. Philadelphia and New York: Lee Brothers & Co. 1904.

Diseases of the Stomach and Their Surgical Treatment. By A. W. Mayo Robson, F.R.C.S., and B. G. A. Moynihan, M.S. Lond., F.R.C.S. Second Edition. Illustrated. New York: William Wood & Co. 1904.

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, Neurology, Pediatrics, Obstetrics, Gynecology, Orthopedics, Pathology, Dermatology, Ophthalmology, Otology, Rhinology, Laryngology, Hygiene, and Other Topics of Interest to Students and Practitioners. By leading members of the Medical Profession throughout the World. Edited by A. O. J. Kelly, A.M., M.D. Vol. II. Fourteenth Series, 1904. Illustrated. Philadelphia: J. B. Lippincott Company. 1904.

# Original Articles.

## CLINICAL TOPOGRAPHY OF LYMPH NODES.

BY F. J. COTTON, M.D., BOSTON,
*Assistant Surgeon, Boston City Hospital.*

It is a matter of common recognition that most of the surgical affections of lymph glands are of infective origin and secondary to some local focus of infection. It is the writer's impression that we still pay too little attention to these sources of infection, and that we neglect such aid in locating the primary foci as may be obtained by applying our knowledge of the topography of lymph channels.

If we know and remember what region is drained by a given gland or gland chain we shall not only identify and properly treat local foci that might otherwise be overlooked, but may also obtain from the site and character of these foci much help in understanding the glandular conditions. In the case of neck glands in children, for instance, if we, aided by our anatomy, find one case to have an acute infection of the tonsil as the obvious primary cause, while another shows scalp irritation from pediculi, we shall be far less likely to class both cases as what used to be "scrofulous glands." Very often it is only by the aid of our anatomy that we can so identify the source of infection, only by considering this source in connection with the gland condition that we can properly weigh the diagnostic probabilities.

What we need may be called the practical anatomy of the lymphatics. Many of the details of lymphatic connections are so variable that they have hardly more than an academic interest; surgically, no one knows or cares much about them. On the other hand there is a correspondence of given drainage areas with certain larger lymph trunks, and of the latter with certain glands and gland chains, that is sufficiently constant to warrant our consideration.

This paper purports to present an outline of these anatomical facts, as described in the text-books,[1] checked and illustrated by brief notes of cases that have recently come under the writer's notice. Most of these case-notes are from cases seen within the past two months in the men's out-patient surgical department of the Boston City Hospital.

The gland groups will be considered regionally.

*Head. Preauricular gland:* A small gland, usually single, constant, the most superficial of the parotid group. It usually lies over the jaw-joint a finger's breadth in front of the ear, and receives afferents from the eyelids and orbit, from the root of the nose and from the forehead and the front part of the scalp. It is connected with the other lymph-nodes of the parotid region. It drains into the upper anterior portion of the deep cervical chain.

Case I. Furuncle over left eye. Left (and to less degree the right) preauricular lymph nodes enlarged. No other glands.

[1] Particularly well in Poirier and Charpy's Anatomy.

Case II. Burn of scalp (old and septic) on vertex to front and left. Left preauricular gland enlarged. No other glands except one or two behind angle of jaw — evidently at the top of the deep cervical chain.

Case III. Primary chancre of left lower eyelid. Several weeks' duration. Preauricular gland greatly enlarged; other parotid glands, and some anterior deep cervical glands somewhat swollen.

Case IV. Primary chancre of left upper eyelid. Has been under treatment. Left preauricular gland still large — also a couple of glands of the parotid group.

Case V. Tubercular suppurating neck glands — whole lymph system of left neck involved. Said to have been primary in submaxillary region. Preauricular gland now distinct though fluctuant — evidently involved by infection "against the current."

Case VI. Septic wound above outer edge of orbit. A small hard gland *above* the zygoma in front of the ear. No other glands. This case is of interest from the unusual position of the gland above, not below, the zygoma.

*Parotid group of glands:* Lymph glands are scattered on and in the parotid under the aponeurosis in some number. They share to some extent in the drainage area of the preauricular gland and also receive some afferents from part of the parietal scalp, from the external and middle ear, and perhaps from the back of the nasal fossæ. They drain into the upper end of the deep cervical chain.

Case VII. Boy of twelve. Shows an adherent node over the lower part of the right parotid. General glandular enlargement throughout the neck, especially the posterior glands and those of the supraclavicular chain. On the surface of the right sternocleidomastoid are two large glands. On the left are two suboccipital glands, one at the usual site, the other near an inch below it. Has a discharging chronic otitis on the right. Pediculi capitis (also large boggy tonsils).

*Mastoid:* Anatomically there are two or more glands. Clinically there is at least one situated constantly just behind the mastoid. It is the enlargement of this which, with the occipitals, is supposed to be so important a sign of syphilis. These glands drain the parietal scalp, and in part the ear and external auditory canal. The afferents run through and about the sternocleidomastoid into the upper end of the deep chain *at the back.*

Case VIII. Single gland behind mastoid with scar over it. Man of thirty-four. Old suppurative otitis in infancy.

Case IX. Fluctuant mass below and behind ear in boy of fourteen. Two months' duration. Was an abscess involving a gland in front of mastoid with enlargement of the upper glands of the deep cervical chain. Mild eczema of the scalp; seborrhea. No other cause found.

Case X. Young woman. Pediculi of scalp. Mastoids and suboccipitals on both sides swollen, especially a gland just on right mastoid process and behind it.

*Suboccipital glands:* One to three in number, on each side — one said to be always present — size small; situated under the aponeurosis just below the superior curved line at the edge of the trapezius on the complexus. Receive affer-

ents from the posterior portion of the scalp.[2] Efferents are divided between the upper posterior portion of the deep chain and the superficial posterior chain.

CASE XI. On the right side are two moderate-sized swollen glands at normal suboccipital site. Just above them an ulcer following the imperfect removal of a papilloma. Girl of eleven.

CASE XII. Ulcer of base of occiput (staphylococcia) in small child. Duration of one year. Suboccipital glands much enlarged.

CASE VII. Two suboccipital glands on left from pediculi (see above).

*Facial glands:* The facial glands are essentially inconstant. There appear at times

(*a*) Nasal and infraorbital glands.

(*b*) Buccal — on the external surface of the buccinator muscle.

(*c*) Supramaxillary. This group, like group (*b*), are likely to follow the line of the facial vessels. A gland of this group on or near the lower edge of the jaw is not infrequently palpable in normal individuals. All these facial glands drain to the submaxillary set.

CASE XIII. Syphilitic chancre of the upper lip on the left side; recent infection in young male of twenty-five. Enlarged glands at first only of the supramaxillary group along the facial vein: secondarily, the posterior glands of the submaxillary group became involved.

*Submaxillary:* There are three to six glands under the aponeurosis and platysma and external to the submaxillary salivary gland running from near the chin to the angle of the jaw. They receive drainage from

(*a*) The last mentioned group of glands.

(*b*) The external nose, cheek and upper lip (directly or through *a*).

(*c*) The gums and the fore part of the tongue.

The efferents run to the deep cervical chain — especially to a gland at the bifurcation of the carotids, but also to glands lower down.

CASE XIII. Woman of thirty. Chancre of right cheek; extreme swelling of submaxillary glands on the right.

CASE XIV. Man of thirty, malignant pustule (anthrax) of right cheek, two enlarged glands well back in the submaxillary set; no others.

CASE XV. Child of one. Swollen lymphatic gland, submaxillary, one only. Bad teeth and sore gums.

CASE XVI. Child of six. Alveolar abscess from right lower bicuspid, outer side. Distinct, tender lymph nodes on submaxillary salivary gland.

CASE XVII. Infected root cavity of bicuspid on left in girl of eighteen. Glands of left submaxillary set much enlarged. Removed under ether. Extend from angle of jaw forward. No other groups involved.

*Submental and suprahyoid:* These two groups are hardly separable. Between the digastrics near the median line are one to four glands. They drain the chin, the outside of the lower lip and part of the mouth. Their efferents run to the submaxillary glands in part, but especially to a gland in the deep cervical chain at the level where the omohyoid crosses the carotid.

CASE XVIII. Man of twenty-five. Stomatitis, especially severe between lower lip and gums. All glands of suprahyoid and submental chain swollen. No others. Subsided under treatment.

CASE XIX. Boy of eleven. Impetigo of lower lip near left corner of mouth. No glands except one small submental, and one anterior suprahyoid on left.

CASE XX. Man of sixty. Advanced cancer of whole lower lip. All suprahyoid gland chain enlarged; also a few of the anterior upper deep cervical chain.

CASE XXI. Cancer of lower lip. One submental gland.

*Lingual:* On the hyoglossus and genio-glossus muscles are a few small glands to which the trunks of the posterior third of the tongue drain. From here the channels run to the upper glands of the deep cervical chain.

*Internal maxillary:* In the pterygo-maxillary space at the side of the pharynx lie glands receiving the drainage of part of the nasal fossæ and the roof of the mouth. They empty into the deep cervical chain direct or through the parotid nodes.

*Retropharyngeal:* One or two glands lie behind the pharynx on the rectus capitis anterior. They drain part of the nasal fossæ and naso-pharynx and the Eustachian tube and empty into the glands of the deep cervical chain that lie *behind* the main vessels. These glands are the source of retropharyngeal abscesses.

*Subhyoid:* There are a few glands over the larynx and trochea, inconstant in distribution, including a group lying on or near the recurrent vessels. These last run down to the mediastinal glands, the others mainly out and down to reach the deep cervical chain low down.

In the neck proper there are three main groups of glands: the superficial, the supraclavicular and the deep group lying near the vessels. There are normally no glands on the nape (but see Case VII). The *superficial glands of the neck* lie in a general way *on* the sternocleidomastoid and more especially about the course of the external jugular vein; there is also a group of two or three along the anterior jugular vein. The superficial glands are especially found toward the upper region of the neck. Such is the book description, but as a matter of clinical fact, obvious superficial glands lie not only on, but perhaps even more often a little *behind* the sternocleidomastoid muscle, and are more often palpable in the middle of the neck than higher up.

These superficial glands drain in part the parotid region and the back part of the scalp. It seems clinically that more of the general posterior scalp area falls direct to their share than is drained through occipitals and mastoids. The efferent trunks run in part to the deep chain, in part to the supraclavicular glands.

The *supraclavicular* chain is likewise superficial and not definitely marked off from the last group. They lie in the supraclavicular triangle,

[2] Some part of the lateral and posterior surface of the scalp drains into trunks which run neither to mastoid nor occipital, but direct to the neck glands, both of the superficial and deep groups.

usually in a vertical chain, receiving drainage not only from the other superficial glands and trunks in the neck, but also efferents from the axillary glands. Their efferents in turn join with those of the deep chain to empty into the subclavian vein.

*Superficial cervical:*

Case XXII. Boy of six. Mass of acutely enlarged glands on the sternocleidomastoid close to the clavicle. On left, other superficial neck glands also enlarged. Many pediculi capitis.

Case XXIII. Man of twenty-four. Mass of glands on and behind the sternomastoid at middle of neck. Two or three glands above this and the whole supraclavicular chain moderately enlarged. Has many pediculi.

Case XXIV. Girl of ten. Irregular chain of glands superficial at back edge of sternomastoid on left. Few on right similarly placed. Many pediculi.

Case VII. General enlargement of neck glands. Two glands *on* sternomastoid (see above).

Case XXV. Colored male of twenty-five. Ulcerating tubercular glands of right side of neck. All chains involved but two gland masses are distinct *on* the sternomastoid just below the middle of the neck.

Case XXVI. Girl of eleven. Gland swellings (and cellulitis) all posterior to sternocleidomastoid in mid neck. Pediculi many. Subsided after killing pediculi after a little more than two weeks.

Case XXVII. Girl of nine. Glands all posterior to sternocleidomastoid; superficial abscess. Pediculi.

Case XXVIII. Boy of five. Suppurating gland at back edge of sternocleidomastoid, one month duration. Pediculi.

Case XXIX. Girl of fourteen. Glands under back part of sternocleidomastoid and in supraclavicular region — several months' duration. Pediculi many.

Case XXX. Boy of seventeen. Glands, unilateral, at back edge of sternocleidomastoid, suppurating for two weeks. Pediculi many.

Case XXXI. Girl of twenty. Like case, three months' duration. Glands of anterior deep chain also involved. Pediculi many.

Case XXXII. Girl of six. Glands at back edge sternocleidomastoid. Many pediculi. Cured by cleaning and poultice.

*Deep chain of neck:* These comprise the largest main chain of the neck and the most glands. They lie under the sternomastoid in a rather irregular plexus of freely anastomosing nodes extending from mastoid process to subclavian vein and backward to the supraclavicular triangle. There are from fifteen to thirty in all, mostly in the upper half of the neck and usually few or none below the omohyoid. They may be divided roughly into external and internal: The external group anastomoses with the supraclavicular and receives drainage mainly from the back of the neck and head. They are relatively small glands. The internal group lies on and about the internal jugular vein; it is composed of larger glands. There is one of especial size (palpable in any thin neck) at the level of the hyoid cornua, another rather large one just above the point where the omohyoid crosses the vessels. More or less glands — hardly a chain — lie internal to and beneath the vessels. As to the details of drainage — the trunks from the occiput and nape and the efferents from the posterior glands reach the external chain; those of tongue and nose and throat empty into glands of the internal set mainly at the level of the large gland opposite the hyoid or at a higher level. This chain also receives the drainage of the face and the efferents of the submaxillaries at about the same level.

The efferents join with those of the more superficial glands to empty with the thoracic duct on the left, to a trunk on the right that reaches the subclavian vein direct.

Case XXXIII. Boy of ten. Elastic swelling of the large gland below digastric, right and left. Other glands of deep chain very little enlarged. Tonsilitis two weeks ago.

Case XXXIV. Girl of eleven. Glands below digastric right and left greatly swollen; few other glands. Has subacute catarrhal tonsilitis.

Case XXXV. Girl of twenty. Carotid glands, right and left, swollen several weeks and growing. No other glands. Follicular pharyngitis. No other source.

*Deep chain, general anterior enlargement:*

Case XXXVI. Boy of seventeen. Acute, swollen glands on left, only. Deep cervical chain only. Whole mass involved, anterior perhaps more. Large, boggy tonsils — pharyngitis.

Case XXXVII. Child of one year. Deep cervical glands all large, especially anteriorly — one side only subacute. Obvious infection of gums around bad teeth on this side.

Several cases of advanced or operated generalized tubercular glands are not here noted.

*Lower glands of deep chain:*

Case XXXVIII. Man of fifty. Tonsilitis, follicular. On right side whole deep chain swelled, this subsided and there then developed a deep gland mass in the lower anterior chain within an inch and a half of the clavicle. Deep abscess; operation.

*Lymphatics of the arm:* There are typically no nodes below the elbow, but not infrequently there are said to be atypical glands, as in the following case:

Case XXXIX. Man of forty. Sepsis from slight wound on dorsum of second finger. There was a red line of lymphangeitis, running from the wrist through the bend of the elbow to the axilla. On this line four inches above the wrist on the dorsal side, externally, was a lymph-node the size of a pea; subcutaneous, movable, tender. The epitrochlear gland was not involved. In the axilla were three or four small tender glands of the pectoral or median chain, only.

*Epitrochlear gland:* This is the lowest lymph node in the arm usually. It lies superficially 3 to 4 cm. above the internal epicondyle on the fascia. There may be two, rarely three, glands in place of one. The general position of this gland is familiar from the examination for suspected syphilis; it is often missed, however, not always by students alone, on account of variation in position. Not infrequently it is much higher than we expect, rarely lower, almost always on or just in front of the edge of the intermuscular septum which is palpable in this region.

The tributary region the trunks of which pass to the epitrochlear includes the ulnar surface

of the forearm in its lower half and two or three fingers, with the ulnar border of the hand. This area is not constant, of course, in detail, and some of the cases which follow show both more and less than the usual areas transmitting infection to this gland.

CASE XL. Furuncles of the hand scattered on ulnar and radial side. Epitrochlear gland moderately enlarged. Lymphangeitis in a red line up from furuncle on radial side of wrist toward the axilla. Axillary glands much enlarged.

CASE XLI. Man of thirty. Superficial wound of little finger — slight sepsis. Secondary furuncle on ulnar side of wrist. Epitrochlear gland much swollen. One gland in axilla in middle (not humeral) chain.

CASE XLII. Man of twenty-five. Septic man-bite of knuckle of third finger. Epitrochlear enlarged. Soreness also in axilla, nothing palpable.

CASE XLIII. Man of twenty-five. Superficial skin sepsis of little finger. Line of red lymphangeitis to the greatly enlarged epitrochlear gland. Nothing in the axilla.

CASE XLIV. Man of twenty-four. Septic wound of the ulnar side of the wrist with cellulitis and ascending lymphangeitis. Slight enlargement of epitrochlear. Axillary glands swollen.

CASE XLV. Girl of eight. Wound of ulnar side of forearm half way up. Greatly enlarged and tender epitrochlear gland. Axilla negative.

CASE XLVI. Superficial sepsis of the dorsum of hand on *radial* side — red lymphangeitis around back of ulnar side, thence to a swollen epitrochlear gland. No axillary gland enlargement.

CASE XLVII. Male adult. Superficial sepsis of *index* finger. Vague red lines up the forearm. Epitrochlear gland greatly swollen and tender. Axilla negative.

Deep glands exist along the brachial vessels — few and inconstant. The delto-pectoral glands are present in 14% of cases (Grossman, quoted by Poirier). There are but one or two small glands lying at the shoulder in the groove between deltoid and pectoral. The writer has never seen any of these recognizably enlarged.

*Axillary glands:* The glands of the axilla lie under the aponeurosis, mainly well up in the axilla. They are usually classified in five groups.

The *humeral*, four or five in number, lying along the vessels on the inner side of and often on the vein. These are supposed to drain nearly all the arm.

The *thoracic* divided into an *upper* group, two or three at the second and third intercostal spaces under the pectoralis major, draining chest and breast, and a *lower* group at the fourth and fifth space lying along the external mammary artery. These drain the wall of the thorax and upper abdomen.

The *subscapular* group are a few nodes which lie about the dorsalis scapulæ and receive drainage largely from the lower part of the nape and the scapular region and the upper back. There is a set sometimes described as the intermediate chain, not a chain properly, but a set of glands interrupting the general anastomosis of the other groups.

The *subclavian* glands are a short chain of six to twelve glands between the axillary vein and the serratus magnus muscle and above the upper edge of the pectoralis minor. They receive little or no primary drainage but receive the efferents of nearly all the other glands of the axillary group. They anastomose also with the glands of the neck. Their efferent vessels empty into the subclavian near the external jugular.

See also Cases XXXIX, XL, XLI.

CASE XLVIII. Male of twenty. Sepsis of second finger, lymphangeitis red up through bend of elbow along inner biceps edge to inner axilla. Glands of pectoral group *only* are palpable.

CASE XLIX. Male of thirty-five. Burn of radial side of dorsum of hand. No epitrochlear. Axillary glands enlarged; median and humeral groups.

CASE L. Burn three inches above the wrist on ulnar surface. Epitrochlear not enlarged but glands in axilla swollen.

CASE LI. Incised wound of second finger on palmar side, lymphangeitis up the arm through bend of elbow along inner side of biceps. Glands in axilla on thoracic side *only* — two high up.

CASE LII. Late cancer of breast. Massive metastases in lower pectoral chain, but upper glands also found infected at operation.

CASE LIII. Drained septic empyema wound in mid-axillary line — ninth rib excision — glands in axilla of pectoral (lower) and intermediate chains.

*Glands of leg:* The lowest glands in the leg are the inconstant *anterior tibial* group, lying deep in on the upper part of the course of the anterior tibial vessels. The *popliteal* glands are the lowest constant ones. Even these are only exceptionally to be found enlarged. They are subaponeurotic, small and rather deep, and the relative frequency of bursal enlargements in this region renders a differential diagnosis not always easy.

There is usually a gland lying relatively near the surface, near the external saphenous vein, receiving drainage from the outer side of foot and ankle. The next deeper set receives the efferents from the anterior tibial ganglion and those accompanying the vessels, and the deepest glands drain the joint and its surroundings. The writer has not seen these deeper glands enlarged, the superficial one only twice. As a rule, superficial leg infections seem to give rise to inguinal enlargements, the lower glands being skipped.

*Inguinal glands:* The glands ordinarily referred to as inguinal are the superficial sets, including the horizontal chain along Poupart's ligament and the shorter vertical set in Scarpa's triangle. They lie in the deep layer of the superficial fascia along most of the length of Poupart's ligament, and down in front of the femoral vessels for about three inches. Beyond the division into horizontal and vertical groups there is no sharp division of groups.

The *vertical* inguinal or femoral chain drain the superficial tissues of the leg in the main. In the *horizontal* group the upper and inner glands drain the scrotum and the surface of the penis (except near the meatus) and receive some of the lymphatics from the perineum and anal region and usually those from the pubes and abdomen below

the umbilicus. The outer glands drain the buttocks and part of the perianal region. The glands of the superficial group drain in the main to the intrapelvic glands (external iliac, etc.) by way of the crural ring. They anastomose also with the deep inguinal glands.

*Inguinal and femoral:*

Case LIV. Male of forty. Slight sepsis over tibia. Inguinal glands swollen, vertical group *only* — none of horizontal chain.

Case LV. Varicose ulcer over lower tibia. Two large glands of saphenous chain. No swelling of horizontal glands.

Case LVI. Horse kick on front of thigh one week ago — slight local sepsis. Enlarged oblong gland (1) at femoral ring. Slight swelling of three or four of horizontal set.

Case LVII. Male of forty. Enlarged glands, right, especially of saphenous chain but also of horizontal. History of recent strain lifting. Careful examination shows no local primary lesions.

Case LVIII. Enlarged gland (1) of saphenous chain. Two small glands internal to this over pectineus and well below Poupart's ligament. Careful examination shows no primary lesion. History of bubo fifteen years ago.

Case LIX. Enlargement (acute) of scattered inguinal glands all just below Poupart's, belonging to the lower middle part of the horizontal chain. Primary focus a furuncle near anus on left.

Case LX. Furuncle on buttocks a hand's breadth from anus. Red lymphangeitis around buttock to outer upper glands of horizontal chain.

Case LXI. Eczema from pediculosis pubes. Enlarged glands both sides — of horizontal chain mainly at the inner end.

Case LXII. Scabies mainly limited to base of penis and pubes. Suppurating glands on both sides at inner end of horizontal chain. Other glands moderately swollen.

Case LXIII. Small scrotal epithelioma on the left side, of some years' duration. Hard gland masses of lower inner horizontal inguinal chain on left only; they belong to the superficial glands. Question of adhesions and involvement of deep femoral chain.

Case LXIV. Woman of thirty-five. Small septic abrasion on the front of the ankle. Suppurating bubo of the vertical femoral chain in the groin. Horizontal set not involved.

As to bubo infection from the penis and scrotum, the writer has not kept accurate notes of glands involved. Most of them seem dependent on ulcers of prepuce or just behind corona, and the upper inner superficial glands are those involved.

As to glands from urethral involvement, the writer has watched for years a series, certainly including twelve hundred cases of gonorrhea, and has seen gonorrheal bubo (except where there was local external cause, *e. g.*, associated ulcers or balanitis) in not over three or four cases. The ordinarily reputed "bubo from gonorrhea" is a myth, as much against clinical as anatomical evidence.

The *deep inguinal glands* lie under the crural group under the fascia. They are only two or three in number, small, and rarely to be identified clinically. Where a bubo involves the crural group and is adherent to the deep parts, we may be justified in inferring that this group is also affected. One of the glands (Cloquet's gland) lies in the femoral canal and derives clinical importance from this fact as its enlargement is said to cause pain and circulatory disturbances. These deep glands drain the deeper tissues of the leg, receiving also vessels from the glans penis and from part of the superficial inguinal glands, the efferents of which pass mainly by this route to the iliac chain.

The lymphatics within the pelvic and abdominal cavity are of little diagnostic importance; the anatomy may be dismissed with the statement that the lymph channels and glands follow the general course of the veins toward the receptaculum chyli. For clinical purposes it is important to remember that the external iliac group receive the efferents of the superficial inguinal group, as well as some direct drainage, urethra and glans for example. These efferent trunks reach the pelvis in part through the crural, in part through the inguinal ring. This is the only direct drainage; all lymphatics from the leg reach other glands before they reach the pelvis; the scrotum and perineum and all of the superficial surface of the penis except the glans drain to the inguinal glands of the superficial set; the testis drains with the cord through the inguinal canal direct to the lumbar glands of the lateral series, corresponding to the fetal position of the testis.

Case LXV. Malignant disease of scrotum — glands of superficial inguinal chain enlarged.

Case LXVI. Male twenty-four. Carcinoma of left testis. Glandular mass in abdomen to the left in the region of the left kidney. There is no discoverable enlargement of other glands than this lumbar set.

The urethra in common with the meatus drains direct to the glands of the iliac sets. This explains the clinical fact that adenitis from gonorrhea, uncomplicated with balanitis or sores, is a rarity, despite the usual clinical teaching. The writer has never yet seen a case of *suppurating* adenitis from urethral infection. Nor has he found the simple gland enlargement present in more than a trifling per cent of urethritis cases.

It is to be remembered that there is in the inguinal series a free cross-anastomosis from side to side taking place in front of the pubis.

Case LXVII. Man of twenty-five. Small, partly healed chancroid on left side of prepuce. Glands swollen in both groins but predominantly *on the right.*

No effort has been made to include in this paper the anatomy of such glands as are out of reach of surgical palpation, for only these palpable ones have any diagnostic value. The writer feels convinced of the practical value of a knowledge of such gland chains as are within reach of examination. It is not claimed either that the correspondence of glands with drainage areas is exact, or that ascertaining the anatomic source of infection will necessarily determine the character of the process. Of course, it cannot do this, but it can help. The writer is very sure

that a more exact attention to and some familiarity with the grouping of glands and their drainage areas will set us right in regard to:

(*a*) Many so-called "scrofulous" neck-glands in children which show up first in the posterior deep and superficial glands. Sometimes they are tuberculous; in nearly all cases, however, they are septic; in all cases they are traceable to primary scalp irritation, usually from pediculi. Remove the pediculi, make small incisions for the pus, and the great majority will get well promptly without the enucleation now so frequently carried out for these as well as the really tuberculous cases.

(*b*) Buboes of unknown origin, non-venereal, lying low in the groin, due to a septic focus on the foot or leg, which is often overlooked by patient and physician.

(*c*) True inguinal buboes, associated with a gonorrhea, but almost never due to it, but secondary to some septic process under the prepuce which should be but rarely is found.

Of the service of anatomical knowledge of neck and groin glands there is no doubt; elsewhere such knowledge is less obviously useful, but we are unlikely to grow too familiar with it.

This paper contains nothing new in theory or fact, and the cases appended are simply illustrative, but the writer hopes that the practical anatomy under consideration may be refreshed for others in the reading as it has been for him during the observation of this list of cases.

## SURGERY ON OLD MEN.

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THE hospital of the United States Soldiers' Home offers unusual opportunity for observing the effect of old age, with its accompanying disabilities, in reducing the chances of recovery from serious surgical operations, involving prolonged anesthesia; and, during my service here of about ten months, I have been a good deal impressed with the fact that old men are much better subjects than, I believe, is generally supposed.

The inmates of this Soldiers' Home are divided into three classes:

(1) Honorably discharged soldiers of the regular army of over twenty years' service.

(2) Men discharged on surgeon's certificate of disability, at any age, or after any length of service.

(3) Any man who has served in the regular army, and who has, subsequently to his discharge, become so far disabled as to be unable to earn his living.

Some of the inmates are veterans of the Mexican war; many of them were mature men at the outbreak of the Civil war, and most of the younger men are the débris of the Spanish war and the military operations in the Philippines. This clientele does not seem to offer a very promising field for surgery. Many of these men suffer from chronic alcoholism, general arterio-sclerosis very far advanced, chronic nephritis, cystitis, tabes, diabetes, syphilis or inoperable visceral cancer. Heart diseases (including neuroses, valvular defects and degenerations of the heart muscle) and chronic pulmonary tuberculosis, extensive emphysema and chronic bronchitis are very common. Indeed, it is the exception to find a man over sixty in the hospital entirely free from one or other of these diseases, and still many of them present indications for operation, almost mandatory, if what is left of their lives is not to be intolerable.

Out of 65 operations I have performed here of sufficient severity to require general anesthesia, 22 were done on patients averaging 70.4 years of age (the youngest being sixty-two, the oldest eighty-five) and, as it is these cases only that present anything of interest in this connection, the others will not be considered.

My experience having been for twenty-three years among an entirely different class of cases, soldiers on active duty, healthy, vigorous, picked men, in the prime of life, it was with considerable misgiving that I began operating upon the old, broken-down men who are treated in this hospital. It was very necessary, in the beginning, in order to secure and retain the confidence of these men (who have very little to occupy their minds, talk much among themselves about their ailments, and, I imagine, watch and criticise their doctors very closely), that the first cases should recover promptly, or my surgical usefulness at this hospital would be lost. I was fortunate in finding here an excellent first assistant and a very skillful and experienced anesthetist, with a record of 586 administrations at this hospital, without a death traceable to the anesthetic. There is also a surgical nurse who has had long experience in the preparation of instruments, suture-materials and dressings, and a very well-equipped operating room, clean, fairly well lighted and of good size. The governing board of the Soldiers' Home is wisely liberal in providing anything asked for that can be of any use in caring for the sick. The hospital accommodates 120 patients and will soon be enlarged so as to take in 70 more. The medical side of the hospital is the most important part of the establishment, but does not concern us at present.

The operations in the 22 cases under consideration comprised:

| OPERATION | | RECOVERED | DIED |
|---|---|---|---|
| Amputations, | 4 | 3 | 1 |
| Hernia, inguinal, | 8 | 8 | 0 |
| Hemorrhoids, | 3 | 3 | 0 |
| Exploratory laparotomy, | 2 | 2 | 0 |
| Ventral hernia, | 1 | 1 | 0 |
| Lithotomy (suprapubic), | 1 | 1 | 0 |
| Trephining and removal of depressed bone of skull, | 1 | 1 | 0 |
| Varicose veins, | 1 | 1 | 0 |
| Nephrectomy, | 1 | 1 | 0 |

These were performed in the following order:

| NO. | NAME | AGE | OPERATION |
|---|---|---|---|
| 1 | Sherborne, | 72 | Amputation, middle right forearm. |
| 2 | Tetzner, | 68 | Extensive internal and external hemorrhoids, clamp and cautery. |
| 3 | Kinsella, | 67 | Exploratory laparotomy, general plastic peritonitis, cause unknown. |
| 4 | Wilson, | 66 | Suprapubic cystotomy for stone. |
| 5 | White, | 65 | Left inguinal hernia. |

| NO. | NAME | AGE | OPERATION |
|---|---|---|---|
| 6 | Schmidt, | 75 | Cystic degeneration left kidney, nephrectomy. |
| 7 | Schaeffer, | 74 | Enormous scrotal hernia, left inguinal, partly reducible. |
| 8 | Mosher, | 69 | Amputation, thigh, two inches below trochanters, senile gangrene. |
| 9 | Roensch, | 64 | Amputation, middle finger right hand, Dupuytren's contraction. |
| 10 | Hoffman, | 84 | Hernia, right large scrotal with hydrocele. |
| 11 | Hough, | 69 | Extensive external and internal hemorrhoids. |
| 12 | White, | 65 | Right inguinal hernia. |
| 13 | Schantz, | 69 | Ventral hernia. |
| 14 | Nadin, | 65 | Inguinal hernia, right. |
| 15 | Cunningham, | 71 | Inguinal hernia, left. |
| 16 | Weissker, | 70 | Varicose veins, both legs. (12 resections in all.) |
| 17 | Scantling, | 78 | Trephining and removal of depressed bone of skull. |
| 18 | Clark, | 62 | Left inguinal hernia. |
| 19 | Schantz, | 69 | Exploratory laparotomy for acute intestinal obstruction, appendix removed, obstruction relieved. |
| 20 | Clark, | 62 | Right inguinal hernia and bunion right foot. |
| 21 | Blum, | 74 | Amputation, middle left leg, senile gangrene. |
| 22 | Kernan, | 85 | Extensive internal and external hemorrhoids. |

### Remarks, May 23, 1904.

No. 1. This man has symptoms of cancer of stomach, inoperable,

No. 2. This patient is a hemiplegic, apparently much older than age given.

No. 3. Some improvement followed operation.

No. 4. A very feeble man with weak heart, apparently much older than age given. Has symptoms of malignant disease of stomach.

No. 6. An unusually vigorous man for his age.

No. 7. Uninterrupted recovery, union *per primam.*

No. 8. Died on fifth day after operation, no circulation in flaps, obliterating endarteritis of all arterial trunks.

No. 10. Union *per primam,* recovery uneventful.

No. 11. Clamp and cautery.

No. 14. This man suffers from chronic pulmonary tuberculosis.

No. 17. Old depressed fracture of thirty years' standing, symptoms (incessant headache and frequent vomiting) relieved.

No. 19. Obstruction caused by appendix adherent at tip, gut slipping under it.

No. 20. Bunion cured by resection of proximal end of first phalanx of great toe.

No. 22. Clamp and cautery.

Many cases of enlarged prostate have come under observation, but there were only two in which operation was indicated, and these occurred in men slowly dying, one from chronic pulmonary tuberculosis, and the other from cancer of the pancreas, and as they could be kept comfortable by frequent catheterization, the prostatectomy was not performed.

The one case among the twenty-two that ended fatally (this man died on the fifth day after operation) was a case of amputation two inches below trochanters for senile gangrene of lower extremity. There was no oozing from the flaps, the femoral arteries were obliterated, no attempt at union resulted and the stump became gangrenous. This man had three years before lost the other lower extremity (amputated at about the same point) for the same cause. He was sixty-nine years of age and in general poor condition. The operation was done at the patient's earnest solicitation, to relieve intolerable suffering in the extremity.

The hernias were all varieties of inguinal, incomplete, complete, direct, indirect, and in two cases (7 and 10) enormous scrotal, only partly reducible. In all these cases plaited silk was used for the deep line of sutures, as in many of them the tissues were not very strong and a permanent suture material was necessary. I see no reason so far to regret using this material, and have since used it here in a number of cases among younger men not reported in this paper.

The anesthetic used in all these cases was chloroform, until the patient had passed the stage of excitement, followed by ether throughout the operation. In cases unusually debilitated a careful watch was kept on the blood pressure with a sphygmomanometer. In one case only (14) was it necessary to hasten the operation on account of threatened collapse of the patient. In this case an attempt had been made by some one, years before, to cure the hernia by injecting the sac with some irritant. This had resulted in producing tough adhesions of the contents to the wall of the sac, and the patient becoming very weak during the attempt to completely free these adhesions, which would have taken a long time, the separation was only partially completed, the sac was only partly removed, stitched up rapidly instead of being ligated, and returned. The patient made a good recovery from the operation, is still living after four months, and has had no symptoms referable to the hernia, which has shown no tendency so far to recur. In another case (12) (bilateral hernia) the patient's condition during the first operation was so poor, that operation on the other side was deferred until later. Both sides have now been closed. Case 7 presented an enormous scrotal hernia (eight inches long, five inches diameter) in a very fat subject, seventy-four years of age. The hernia was partly reducible, and the sac was found to contain about eighteen feet of small intestine, with a mesentery loaded with fat and no omentum. The internal ring had to be enlarged upward before this mass could be reduced. Six months later this patient had some symptoms of obstruction, but they passed away without necessitating laparotomy. The hernia after eight months has not returned, and the patient is now in good general health. Case 6 was of interest. The patient was seventy-five years of age. He presented a large, elastic tumor in the upper left abdominal quadrant. Laparotomy (incision in left semilunar line) disclosed a large cyst containing about 600 cc. of clear fluid. The case was treated like an ovarian cyst (partly emptied through canula and then brought out through incision) and proved to be a cystic degeneration of the left kidney, very little kidney tissue remaining; the entire mass was removed. This man, who was an unusually vigorous man for his age, made an uninterrupted recovery, and is now engaged as "range rider" at Fort Riley, Kan.,

making daily a trip over that large reservation, either on horseback or in a buckboard. He writes that he is entirely well. One case (12) developed a circumscribed apical pneumonia three days after operation, but his recovery from the operation was not materially delayed, the pneumonia remaining circumscribed, and clearing up rapidly after a typical crisis.

The only conclusion to be drawn from these cases is that we need not hesitate to operate even on very old men; that their chances are rather better than is generally supposed, and that in view of the record of the anesthetist at this hospital, who has been administering the anesthetics for fourteen years without a death (586 cases in all), it would appear that general anesthesia is not so dangerous for old people as we are led to believe.

The other forty-three operations being all among men below sixty years of age, are of little interest in this connection, except that their recovery without infection in any case shows that the technic followed here secures very fair results, and I believe that among old subjects with limited resistance, great care to secure asepsis is pre-eminently necessary, for I am sure that, once infected, the tissues of debilitated subjects would offer little resistance, and their destruction would be very rapid and extensive.

In every operation in this hospital, the operator, the first and second assistants and the assistant in charge of the instruments have worn rubber gloves, to which precaution I give the principal credit for the fact that no evidences of infection have been seen in any of the cases operated upon here.

It is not of course safe to draw general conclusions from such a limited number of cases, twenty-two, but the anesthetic record of this hospital (586 cases without a death), when we consider that 30% at least, and more, probably 40%, of these cases were men above sixty years of age, seems to me worth reporting. Spinal anesthesia was used in one case here before my arrival, but the results in that case were so alarming, and general anesthesia has been so apparently free from danger, that it has not been repeated.

Since writing this paper a case has come under observation here that is of interest in this connection.

John Saunders, late Co. F, 19th Infantry, aged eighty-nine, admitted to the Home, April 20, 1904, and immediately sent to hospital suffering from senile gangrene of both feet. This patient was in poor condition, weak and anemic. He suffered from occasional anginoid attacks, not very severe. Heart sounds very distant and feeble, pulse rapid but regular. Radial pulse imperceptible as the result of sclerosed condition of radial arteries. Both feet about equally affected, all toes becoming gangrenous, no posterior tibial pulsation. Popliteal pulse fairly good. This man suffered excruciating pain in the feet and legs. Anodynes had little or no effect, morphia hypodermically administered up to 1.5 grams in 24 hours did not afford relief, the patient seeming to have an idiosyncrasy for this drug, being apparently unaffected by it.

On his earnest solicitation on June 18, both legs were amputated simultaneously, at junction of middle and upper third, the house surgeon removing one and I the other, by circular operation. This man made a good recovery, is still living, August 26, and has complete relief from his suffering, which was very severe before operation. Union was by first intention in both stumps.

## MENTAL DEFECTIVES.

BY BERTHA C. DOWNING, M.D., LEXINGTON, MASS.,

*Past Supt. of School Department of New Jersey Training School for Feeble-Minded.*

IN July, 1848, Dr. H. B. Wilbur, a young physician who had been practising medicine in the village of Barre, Mass., opened a private school for idiots. Without knowledge of the experience of others to guide him, he had to study out his own methods and systems. His success in the work is so well known it needs no mention. This was the first school for idiots that was established in America.

Dr. S. G. Howe, Superintendent of the Perkins Institute for the Blind, opened a similar school for mental defectives, at South Boston, in October of the same year, known as the Massachusetts Institution for idiots. Dr. Howe's largest interest, however, lay in educating the blind, and the institution for idiots was not much heard of until it was moved to Waverley, where to-day it stands, with Dr. Fernald as its superintendent, with about 700 inmates and a waiting-list of 1300, Massachusetts having to-day in round numbers 5000 mental defectives of school age and less than 1000 cared for. On good authority, in the United States there are 100,000 of these defectives under twenty-one years, and less than ten per cent in any way looked after. There are twenty so-called " schools " supported or partly supported by states, where a conglomerate mass of defectives may be found, in most cases so badly classified that the name "school" is a misnomer; and in but one or two is the individual studied and developed according to its needs, as is done with remarkable results by Bourneville in France. England, or, rather, London, has special classes in connection with schools where much is done for the feeble-minded, 10% of the London school children are mental defectives. In Boston, the estimate is 1,000 such in our public schools; some put the number as high as 3,000. How many of our incorrigible girls and boys that we may find in houses of refuge, where they are half educated in letters and wholly unreached in morals, are sent into the community, later, the moral imbeciles they were in the beginning, only more powerfully armed for mischief? How many of our insane are really feeble-minded, wayward or neglected in their early training and at last conveniently housed in hospitals, after having wrought mischief, entered social relations, reproduced their kind, antagonized experts and lawyers, puzzled philanthropists, and in every possible way retaliated on their progenitors for their origin and on the community for their mis-

apprehension! And pauperism breeding other paupers, — what is it but imbecility let free to do its mischief? The brighter class of the feeble-minded with their weak will-power and deficient judgment are easily influenced for evil, and are prone to become vagrants, drunkards and thieves; how comes such a state of affairs?

The developing of mental defectives was conceived by a physician-educator who said, " Concerning the treatment of the feeble-minded, I would suggest that the experienced educator be called in, rather than the physician. The developing of the mind and the disciplining of the individual is more the province of the teacher than the physician."

Comparatively few physicians are educators; yet the work has fallen into the hands of the physician. In most of the institutions the school department is a secondary consideration; the *per capita* cost is a large factor, as to whether this or that institution is well run, — not what can we do for this individual child, regardless of cost.

The word " idiot " is misleading to the public at large, our latest medical authority classifying the idiot as a special form of insanity. Is it so? An insane brain, as I understand it, is a diseased brain, — not necessarily that of the idiot so-called. The words " feeble-minded " and " imbecility " are used to denote the idiot. Lately, " mental defectives " seems to be the favorite term. The public think of an idiot as a repulsive being to look at; " feeble-minded " and " imbecility " convey little idea to them, I find. Among the mental defectives, especially the high grades — who are by all means the most dangerous — may be found many attractive forms and faces, with real talent along certain lines. Did you ever hear of Blind Tom? He was feeble-minded in everything but memory, but he could hear the most complex music ever played and play it afterwards quite well; one could repeat the Lord's Prayer in Greek, and Blind Tom would repeat it right back and never know a word. At the New Jersey school, I knew a boy who had made a perfect model of a ship. You will be surprised at the results of many of these persons, if you comprehend what mind they have. Politics and a field for the physicians is a large factor in not allowing the work for mental defectives to be what it ought.

A word as to the causes of mental defect. Three thousand entrance blanks which I have gone over show tuberculosis to be the chief factor in the generation of idiocy. I find that the late Dr. Isaac N. Kerlin, in an essay on the " Classification and Causation of Idiocy," gives the histories of one hundred families, in each of which there was a case of idiocy. A careful examination of his tables shows that 145 members of these families, including parents, sisters, brothers and grandparents, were afflicted with pulmonary consumption. Statistics of the Royal Albert and Dareuth Asylums for mental defectives show that among the hereditary causes of 2,380 cases, consumption ranks the highest,— a percentage of 28.31, while insanity, epilepsy, intemperance, have a percentage of 16.47, 8.69 and 16.38, respectively. Dr. Langdon Down, physician to the Earleswood Asylum for Idiots, in his " Mental Affections of Childhood and Youth," says, " It appears to me that tuberculosis must be accepted as one important cause of idiocy; that it impresses special character thereon, while imparting a strong family likeness to the subjects of this class. It is no less clear to me that idiocy of a non-tubercular origin leads to tuberculosis. Whether this arises through the influences of the pneumogastric nerve, malassimilation of food, or defective innervation, it cannot be but regarded that the connection between these two troubles is by no means accidental, and that a due appreciation of this relation is necessary to those who would deal effectively with congenital mental lesions."

In a paper by Dr. Thomas J. Mays on pulmonary consumption in its relation to idiocy and imbecility, he says, "Any one who has made himself familiar with the history of feeble-minded children must have had his attention drawn to the prominent part which pulmonary consumption plays in the development of the diseases with which they are afflicted. Indeed, when one remembers that its influence in this respect is more conspicuous than that of insanity, epilepsy, or any of the other neuroses, one is forced to admit its exceeding intimate affiliation with the nervous system." " My own conviction, which grows with increasing experiences, is that consumption not only has a strong indirect relation to diseases which affect the nervous system, but is itself the result of a depreciated condition of the nervous system, and hence belongs to the family of disorders called the neuroses."

No one is surprised to find that insanity and epilepsy create a special liability to idiocy in the offspring, but it is certainly startling, especially in the light of its supposed bacillary origin, that consumption is more powerful in this respect than any other cause which is known to give rise to this trouble.

Exanthematous diseases furnish a rather high percentage in our tables of causation for feeble-mindedness.

A common condition with them is what used to be classed under that somewhat indefinite term, " scrofulous." The glands will become swollen very easily from comparatively slight irritative causes; they are subject to inflammatory eye diseases. Diseases, such as eczema, which is supposed to be non-contagious, will spread rapidly through a group of feeble-minded children. I know of two institutions where separate rooms had to be prepared and such cases isolated. They are very susceptible to cold, and will stand a high degree of heat, and, as I have shown, they readily fall victims of the bacillus of tuberculosis. Exanthematous diseases are generally more severe in their effect than in normal children. In an epidemic of measles, which took place in a large number of middle and lower grades of imbecility of which I had charge

in the wards some years ago, I was struck by the large percentage which developed complicating pneumonia and meningitis, as a rule fatal. Epilepsy very frequently complicates imbecility, sometimes preceding the development of mental weakness, more often occurring as an after-complication.

Deformities, sometimes due to paralytic contraction, sometimes not, are common. Various forms of cerebral paralysis (spastic palsies), accompanied often by choreiform and athetoid movements, are common among mental defectives, such cases falling into the large class constituting the paralytic type. Hearing is abnormally acute; they do not seem to see well, but training soon corrects this. The surgeon can do but little for the imbecile. The specialist finds a large field among this class. The removal of abnormal growths, as adenoids, the furnishing well fitted glasses, the orthopedic surgeon, may do much. Lack of muscular control calls for suitable muscular training. The military drill has met with excellent success. Speech-training is a very important factor in the development, calling for a specialist with a knowledge of laryngology, and also a well-trained elocutionist. Dr. Hudson McCuen, of the Polyclinic, at Philadelphia, has proven this with astonishing results, in a school I was connected with. Dr. A. W. Wilmarth, now superintendent of the Wisconsin Home for Feeble-minded, has probably made more post-mortem examinations on idiots than any other doctor in the United States, and has found that many cases of uneven mental development, where certain faculties seemed unusually developed, were due to small localized attacks of meningeal inflammation.

How is the idiot to be recognized? Judge Ashman of Philadelphia, in a paper on "A Medico-Legal Study of Idiocy," gives the best description of an idiot that I have seen. He says, "Hence an idiot [he uses this word to mean mental defect of all grades] while for all purposes of self-care may be absolutely impotent, may be taught to read and write. While the germs of all the human faculties are present, they operate on a minute scale, and when a careful training has educated them to the utmost, we still find that the balancing force is wanting, and that the idiot is hopelessly deficient in self-knowledge."

It is said, on good authority, that idiocy can be recognized in a new-born child by the lack of closing its hand firmly about any object laid in it. I have known this to prove true in thirty cases. Lack of co-ordination of the muscles, a peculiar gait apt to be like that of an old person, defective speech, lack of concentration, absence of the inquisitive sense, between the age of five and eight, a dull expression, lack of reasoning-power, speech may be wanting. Fernald says, "It is safe to assume that the child of six years without deafness or defect of the vocal organs who cannot talk is actually feeble-minded."

The diagnosis in the higher grades is not always quickly or easily made, while his capacity for self-care is greater, his capacity for public harm and his chance of danger and suffering is also greater.

The medical profession at large should be more fully convinced of the utility of education for these children. Such conclusion would save to comparative usefulness many helpless and hopeless lives. At present, even in families of means, imbecile infants are commonly allowed to grow to adult life in utter moral and mental neglect; and in many a case is the medical adviser responsible. The deaf-mute and the blind child enjoy increasing hospital and educational advantages; why not the mentally defective, peculiarly nervous and backward? Surely, with such results as are obtained by M. Bourneville, it is proven that more ought to be done for our feeble-minded.

I borrow from Dr. Eley's work, in which he has described at length the work of M. Bourneville in his medico-pedagogical institute at Vitry (Seine): Here are 250 children of the upper classes. The school embodies great comfort, healthfulness and convenience; it aims at the physical, intellectual and professional training of defective children; the methods have been borrowed everywhere from all schools, classical and special. He seeks "that which is"; "that which underlies in these children"; he will utilize his resources, however small, to train up most perfectly all the latent faculties he may find. The first principle is that the pupil is to be occupied continuously during waking hours with physical, hygienic and intellectual exercises, as many as will prevent idleness yet fall short of fatigue.

Through the influence of M. Bourneville, a special department numbering eight hundred was established at B——, where the same methods as at Vitry are carried out. At these schools a beginning is made with the education of sight and smell; walking and the muscular sense come next; then the larger object of awakening the attention and developing the instinct of preservation, the absence of which two signs makes a marked clinical symptom of idiocy. In the pedagogical work, the exercises are mutual and collective. The individual attention is appealed to, also the imitative faculty. Physical training — fencing, dancing, military exercises, gymnastics — is carefully adapted to each pupil's needs.

The surgeon finds his field in correcting deformities, and the physician administers his drugs for the ailments all children are heirs to. The proper medical work in these schools should simply follow the modern lines of specialization, and that physician called in who best knows how to reach the given defect or disease.

The best institution for the feeble-minded is not the one where the *per capita* cost is the least. That appeals to legislatures, because they do not understand the needs; and how can they, when affairs are as we find them in our legislatures to-day? Let public charity and state aid combine and give us schools for these least of God's

little ones, and thus aid greatly to stamp out crime, immorality, poverty, disease.

A few superintendents of our public schools are awakening to the fact that they have a duty to these peculiar children; that they need special training. Providence (R. I.), Philadelphia, Boston, and possibly one or two other cities, are slowly weeding their mentally defective children from those of normal minds, sending the unteachable ones to the state institutions to be cared for, and establishing schoolrooms for the teachable ones with small classes. Let them multiply. It is a step in the right direction. With time the types will be classified and home schools founded. Then progress will be made. One public school superintendent said to me, "This work calls for money, and where is it to come from?" The parents, state aid and public charity have a duty here.

The only justification for the expenditure of public money is the public good. That is, the good of the whole mass of the people. Any other theory of the expenditure of public money leads not only to extravagance and corruption, but necessarily to the confiscation of property. The assistance which we render to our fellow-man is charity. The assistance which the state renders is humanitarian; it is based solely on the good of society. It is the object of government to promote general welfare. We create and provide boards of health and make regulations to guard against disease. We quarantine a contagious disease, that the healthy may not suffer from contact; we have laws regulating employer and employed, governing workshops and factories, in order that the safety and well-being of our operatives be promoted; and upon the same principle which prompts the state to throw these safeguards around its citizens, it should protect them against the mental defectives. No state can afford to neglect a strict censorship over all classes which are mentally defective and are therefore likely to do harm. We live in an age of close contact, we all touch elbows, we are a part of a great social organism, and if one of us is ailing or defective, that whole organism is thrown out of joint.

There is not, to my mind, a more important problem before the public to-day than this of its mental defectives. Our dependent classes, through no fault of their own, infect the community in which they live, and infect society down along the generations to come; and society, whose duty it is to protect the general welfare, cannot neglect its obligation in this direction. I am of the opinion that every child (because the prevention of dependency must begin by treating the dependent in youth) should be examined by a competent commission, under state supervision, and if found to be mentally defective should at once become a ward of the state for proper training and care. This, surely, is more humane and merciful than to permit this child to suffer unnecessarily himself and to cause suffering to his fellows.

The feeble-minded which we have we must keep with us until they die, but they need not be allowed to bring other feeble-minded into the world. The fact that feeble-mindedness often is inherited supplies a solid foundation upon which to base restrictive and preventive measure.

## OPERATIONS ON THE STOMACH, WITH REPORT OF CASES.

BY JOHN C. MUNRO, M.D., BOSTON,
*From the Surgical Clinic, Carney Hospital, Boston, Mass.*

(Concluded from No. 8, p. 216.)

No. LXXXV. Female, twenty-eight years old, referred by Dr. McGrath of Beverly, entered the Carney Hospital in December, 1903.

Two years ago she had complained of gas in the stomach and intestines, with distention relieved by eructation. These attacks came on irregularly and apparently had no reference to the food taken. At times there was nausea, but without vomiting or blood. There were pain and soreness in the epigastrium and she was badly constipated. Examination showed poorly digested food, a dilated and prolapsed stomach, with hydrochloric acid present.

At operation, by Dr. Bottomley, a sagging, dilated stomach was found, with normal pylorus. The mesocolon was adherent to the posterior wall. A gastro-enterostomy, with clamps and sutures, was made and the wound closed.

Patient was discharged in about three weeks, in good condition.

No. LXXXVIII. Female, thirty-five years old, referred by Dr. Dewis. She had had a pelvic operation of some sort six years before. Stomach trouble began about two years ago and was marked by the inability to eat any but the simplest form of food. After eating she complained of a lump in the epigastrium with pain lasting several hours. These attacks would be severe if she attempted to eat a hearty meal. There had never been vomiting. She complained much of eructation of gas one or two hours after eating. She had not lost weight. There was no history of blood in the stools. She was always constipated and had suffered from asthma for a number of years. During the attacks of gastric trouble she would shut off all food except a very small quantity of simple liquid, until she grew weak from starvation, when she would return to ordinary diet. Then at the end of two weeks or so the cycle would be repeated. Examination showed a sagging stomach, with the upper border a little above the umbilicus. Examination of the stomach contents showed complete achylia with prolapse and dilatation.

At operation, at the Carney Hospital, in May, 1904, there was found adherent to the lower abdominal scar a stretched-out prolongation of the omentum dragging the stomach downwards. This adhesion was ligated and cut. The stomach was found U-shaped and prolapsed; the lesser curvature lying one inch above the umbilicus; the pylorus, as well as the remainder of the stomach, appearing normal. The right lobe of the liver was prolapsed, with its edges nearly at the level of the umbilicus, the diaphragm being flattened and resting on the dome. A posterior gastro-enterostomy, with clamps and sutures, was done, the gastrohepatic omentum shortened, lifting the edge of the stomach nearly to its normal position. The slack round ligament of the liver was sutured to the under surface of the diaphragm, supporting the liver. Abdominal wound closed in layers.

No. LXVIII. Female, fifty-eight years old, transferred from the medical side of the Carney Hospital April, 1904.

She had had stomach trouble off and on for seven years, vomiting blood, without pain, the attacks coming on about every year. Three weeks before entrance she was troubled with gas, especially after eating, and distress. She had lost twenty-five pounds in the last year. She had been twice in an asylum with some mental trouble. In the epigastrium there was some tenderness on deep pressure. She had limited herself to the most simple diet for a number of years.

At operation the pylorus showed old scar tissue on the anterior wall and towards the duodenum. The opening was much narrowed and without induration. The patient was very fat and instead of doing a gastro-duodenostomy it seemed safer to do a posterior gastro-enterostomy in the usual way, with clamps and sutures. The wound was closed in layers. The patient did only fairly well after the operation, persisting in vomiting small amounts whenever attempts were made to feed her as the usual gastro-enterostomy patients are fed. So three weeks after the first operation the abdomen was reopened and the anastomotic opening was found free, easily admitting three fingers, but at the left angle there was a small point of adhesions between the stomach and the distal loop, close to the sutured edge, pulling the gut a little forward and making a slight kink, but apparently not sufficient to close the lumen even to a slight extent. The proximal loop was not edematous nor swollen. There was no sign of its being obstructed. Measurement showed that the distance from the edge of the suture to the jejunal origin was six inches, and as the gut lay in position there was no sign of loop or kink. The distal loop was negative. Palpation of the retroperitoneal portion of the duodenum showed no evidence of obstruction. The opening in the stomach was at the lowest level. The lumen of the pylorus was still narrow. Nothing elsewhere was found to account for the persistence in vomiting other than the small kink at the distal edge. However, entero-enterostomy was made, with clamps and sutures, and the wound closed. She made a good recovery, and in a short time was discharged in good condition, without having vomited, and gaining steadily and rapidly in every way.

No. LXXXIX. Male, fifty-five years old, was seen with Dr. Deacon of Milltown, N. B., in May, 1904.

Twenty years ago he had a severe attack of so-called inflammation of the bowels, since which time he had had a delicate stomach and had suffered much from dyspepsia. In the winter of 1902–03 he was ill for a long period. Cancer of the stomach was suspected from the symptoms. Hydrochloric acid was found present, and under careful treatment the patient improved and was fairly well during the summer. Relapse followed during the past winter, and an operation was advised. He had rarely vomited and only once or twice had there been any excessive amount. The abdomen had been tender in one spot in the pyloric region. He complained more of distention and gas than anything else, and at times, especially at night, the pain from this gas would be so severe that he was obliged to rest on his hands and knees. He had been very careful of his diet for years, and when the pain returned he would fast until he starved. He had lost weight and for years had been badly constipated.

At operation, at the Chipman Memorial Hospital, N. B., a moderately dilated stomach was found, while at the pylorus and adherent to the posterior abdominal wall was a tumor the size of a large horse-chestnut, extending along the duodenum for over an inch and a half, so that it did not seem practicable to attempt a pylorectomy. No lymph nodes were felt in the omentum or retroperitoneal space. A posterior gastro-enterostomy was made, with clamps and sutures, and the wound closed in layers. Towards the close of the operation he vomited some blood, and during operation the stomach showed some digested blood within its cavity.

A few weeks later the patient was in good condition and convalescing satisfactorily.

No. XCII. Male, fifty-five years old, referred by Dr. Wilder of Medfield.

For several years patient had had dyspepsia, with much gas and eructation, coming on in spells, lasting a month or more, with intervals when he would be free for a long period. The eructations came specially after drinking water. He had never vomited, but if he attempted to eat a full meal he would have pain, nausea and marked increase in gas formation. He had never vomited blood nor noticed black stools. He was very constipated and had lately had several attacks of typical mild appendicitis. Distress from the food would come quickly, with a feeling of fullness in the epigastrium, not always relieved by eructation, and even if expulsion of the gas did relieve the acute pain there would be a dull persistent ache. Recently he had lost a good deal of weight and had pain and soreness in the right hypochondrium.

Examination showed well-marked tenderness over the appendix, dilated stomach, with poorly digested food, hydrochloric acid, and slight tenderness over the pyloric region.

At operation, at the Carney Hospital, the stomach was found dilated, with a pylorus nearly closed, probably from an old ulcer, although that could not be established. There were no signs of malignant growth in any region. The gall bladder contained a calculus the size of a buckshot, but otherwise appeared healthy. A posterior gastro-enterostomy, with clamps and sutures, was made; with a short jejunal loop, and the abdominal wound closed. Through a second incision the appendix, which was obliterated through three quarters of its length, was removed. As there seemed to be no indications of trouble from the gall bladder it was left alone.

No. XCIII. Female, twenty-three years old, had had stomach trouble two years ago, lasting six months, pain coming on about one hour after eating and relieved by vomiting. Gastric pain not severe when the stomach was empty. She vomited blood once or twice in this attack. Eight weeks ago there was a similar, less severe attack. Four weeks ago there was epigastric pain again with vomiting, and three weeks ago she vomited fresh blood. As in the early attacks, the pain was relieved by vomiting.

At operation in May, at the Carney Hospital, a dilated, prolapsed stomach was found, the lesser curve being two inches above the umbilicus. Pylorus was slightly thickened and nodular at the upper anterior portion, but the lumen was patent. Enlarged lymph nodes were felt along the greater curvature. There were some adhesions found in the duodenum extending from the region of the bile ducts, but the gall bladder appeared normal. The duodenum was freed and a gastroduodenostomy (Finney) was done. Examination of the inner surface of the pylorus showed a small pin-head ulceration with some surrounding induration. Elsewhere the abdomen was negative. Abdominal wound closed in layers.

No. XCIV. Male, twenty-nine years old, referred by Dr. Deacon, of N. B. Six years bfeore I saw him in May, 1904; he had had indigestion with much vomiting lasting for six months. Eighteen months later he had a second attack lasting for ten

days, characterized by epigastric cramps and vomiting but without blood, or retained food. The vomiting persisted more or less up to a year ago. Never had been much gas from the first. In February, 1903, he vomited a little blood and was ill for four months. There was much vomiting three to four hours after his midday meal, consisting for the most part of bile. Since then he had had no severe attack, but considerable epigastric pain, gas and more or less vomiting and he had lost weight.

Examination showed the capacity to be two pints, some residue nearly digested after five hours, and the lesser border one inch above umbilicus.

He had derived no benefit from medical treatment at various places.

At operation at the Carney Hospital a dilated, prolapsed stomach, with the lesser curvature one inch above the umbilicus, was found. The liver was prolapsed to the level of the umbilicus. The gall bladder was found adherent to the deep portion of the duodenum, with a broad sheet of adhesions holding it against the posterior abdominal wall. The pylorus felt indurated and nodular as from a cicatrix, but the lumen was not much contracted. Enlarged lymph nodes were felt on the greater curvature. A gastroduodenostomy (Finney) was made. At one area on the mucous lining of the pylorus there was free bleeding whenever touched by the sponge. This area lay on the thickened portion of the pyloric ring, but there was no definite ulceration. The gall bladder, which was otherwise normal, after being freed, was sutured to the edge of the liver and the round ligament was sutured to the anterior wall to prevent further prolapse. Abdominal wound closed in layers. Discharged in good condition.

No. LXXXVII. Female, fifty-nine years old, referred by Dr. Dewis.

Ovariotomy seven years before I saw her. For four years she had had stomach trouble with temporary relief at intervals. For a year there had been burning in epigastrium and loss of weight. At the beginning of her dyspepsia for a space of six months all food except liquids caused distress.

Examination showed absence of hydrochloric acid, retained undigested food after eighteen hours, dilatation and prolapse.

At operation at the Carney Hospital in May, 1904, a moderately dilated stomach with the border two inches above the umbilicus was found. The omentum was firmly adherent by broad bands to the scar of the former operation, apparently tending to pull the stomach downwards. Pyloric opening normal. A gastroduodenostomy (Finney) was made. Examination of mucous membrane failed to show any ulcers. Gall bladder region normal. The omental adhesions were so extensive and deep that it seemed wiser not to attempt to disturb them. Abdominal wound closed in layers. Discharged in good condition.

No. XCV. Female, thirty years old, referred from the medical side, Carney Hospital, in June, 1904.

Before Feb. 12, 1904, at the time of her injury the patient had never been ill a day. On that date she was crushed and trodden upon in a crowd and was unconscious for three days. The day following injury she vomited bright blood and passed blood in her stool. For two months she was confined to bed and kept on very limited diet, vomiting blood nearly every other day besides passing blood several times in her stools.

Since April she had had many hemorrhages, coming on after pain in the lower lumbar region. When lying on her right side she complained of pain in the epigastrium.

While in the hospital she vomited coffee grounds and mucus, the vomiting containing free hydrochloric acid.

In addition to her abdominal injury she had various other injuries on the head, lower extremity, etc. There was also a marked element of neurosis present.

At operation the stomach was of about normal size and without visible evidences of ulcer. The pylorus felt normal and nothing abnormal in the duodenum or elsewhere could be found.

A posterior gastro-enterostomy, with clamps and sutures, was made, digested blood being found in the stomach. Abdomen closed in layers. Patient in hospital at time of report.

In conclusion, I should like once more to emphasize the fact that these cases have been collected and written up with only one or two main objects in view, namely, to present their clinical histories as they can easily be obtained by the general practitioner, and to illustrate, so far as can be done briefly, the gross pathological conditions as seen at operation. The paper has been written for this society, a large majority of the members of which are general practitioners, or at least not operating surgeons. To include the data that would appeal to the surgeon as well, would involve a much longer and a more tedious paper. Later, when the number of cases is larger, when the end results are better known, and after longer trial with the different operations, a more complete and satisfactory analysis can be made and the indications and contradictions with regard to surgical treatment can be more clearly demonstrated in the various types of lesions.

When we stop to consider that the cases reported in this paper represent those seen in one clinic, and referred by a small number of consultants, at a time when both the profession and the laity appeal to surgery as a last resort, we are justified in hazarding the belief that there must be a very large number of people in this part of the country who should at least be allowed to have surgical advice with regard to their symptoms of gastric and intestinal disorder.

But, as we have said before, how much surgery can do, and for what types of gastric and duodenal lesions it is the best treatment, time alone will tell.

## Discussion.

### OPERATIONS ON THE STOMACH.

Dr. E. P. Joslin of Boston: The accompanying chart shows the results of operations upon benignant disease of the stomach at the Boston City Hospital and Massachusetts General Hospital, Jan. 1, 1898, to Jan. 1, 1904. It is taken from a paper now in course of publication by Dr. F. B. Lund and Dr. F. T. Murphy and myself. At a meeting of the Surgical Section of the Suffolk District of the Massachusetts Medical Society, held last winter, the question of operation upon benignant gastric diseases was discussed, and at its conclusion the suggestion was made that the results of these operations at the two large hospitals be combined and published. The writers are indebted to the chairman of the Surgical Section, Dr. F. B. Harrington, and the secretary, Dr. E. A. Codman, who arranged the meeting, for permission to use the Massachusetts

General Hospital statistics, and to the surgical staff of the Boston City Hospital for consent to record their cases. The writers further wish to express their appreciation of the kindness of Dr. Arthur T. Cabot, who read the manuscript before it was sent to the printer.

The reason for the publication of this chart at the present time is the firm conviction of the writers that gastric surgery is making such rapid progress in Boston that it is unfair to embarrass future statistics with those of the six pioneer years in this branch of surgery. Moreover, not long ago the medical aspect of ulcer of the stomach at one of these hospitals was critically studied by a physician and surgeon, and it seemed fitting that the surgical side of the question should be as impartially treated. The above paper showed that the immediate success attending medical treatment of ulcer of the stomach in Boston was far below that usually given in the literature. Fifty-five per cent of the patients were discharged well from the hospital in contradistinction to Leube's seventy-four per cent cured. The ultimate results were still worse and demonstrated that fifty-six per cent of the ulcer patients were either dead or had had stomach trouble referable to the ulcer since their discharge from the hospital. It is with *patients similar to this fifty-six per cent of medically unsuccessful cases that this paper deals.* While the results are not as favorable as have been elsewhere reported, they represent the facts. Furthermore they show the condition of the patient some time after the operation and not the immediate result alone.

The conclusions of the paper are as follows:

1. Results of operations in benignant disease of the stomach at the Boston City Hospital and the Massachusetts General Hospital.

JANUARY 1, 1898, TO JANUARY 1, 1904.

| | Number of Cases | Deaths | Well | Relieved | Not Relieved | Secondary Operations |
|---|---|---|---|---|---|---|
| Hemorrhage, | 10 | 10 | 0 | | | 1 |
| Perforation, | 18 | 13 | 5 | | | 2 |
| Chronic Ulcers, | 21 | 5 | 7 | 4 | 5 | 8 |
| Pyloric Obstruction, | 21 | 5 | 9 | 3 | 4 | 2 |
| Acute Dilatation, | 1 | 1 | 0 | | | |
| Total, | 71 | 34 | 21 | 7 | 9 | 13 |

2. Surgical intervention in gastric hemorrhage should be considered even before it is urgent, and the surgeon should jointly with the physician watch the course of the patient. Cases of gastric hemorrhage entering the accident room should be seen, as a rule, by a physician as well as a surgeon.

Operations upon females under thirty years of age should be most conservatively advised, since death under medical treatment is rare. This generalization, however, should not unduly influence consultants in a case of repeated hemorrhages threatening life, even in a patient below this age.

3. Mortality in operations for perforation of the stomach is chiefly dependent upon the length of time intervening between perforation and operation and the virulence of infection. To lessen the mortality house officers should report suspected cases simultaneously to the physician and surgeon on duty, or their substitutes, and should obtain permission for a possible operation from the patient or friends.

4. Patients with chronic ulcers of the stomach or strictures of the pylorus should be jointly watched by the physician and surgeon. The surgeon should know the patient before being compelled to operate. Postponement of operation after it is indicated is dangerous, owing to the possibility of hemorrhage, perforation and exhaustion.

5. Errors in surgical technic occurred, which in subsequent operations will presumably be avoided. Methods of operation were chosen, which in the light of the exeprience of to-day would be considered unsuitable. Together, these classes of cases account for about half of the deaths.

6. The seventy-one cases were operated upon by twenty-five different surgeons — an average of one case to each surgeon in twenty-five months. It is reasonable to conclude that the mortality would have been less if each surgeon had had more experience.

DR. F. B. LUND of Boston stated that it was a privilege to hear such a paper as that Dr. Munro had read, upon a subject of so much importance in the medical and surgical world. It seemed to him that, in this field, the greatest and most important advances in surgery at present are being made. Our knowledge of diseases of the stomach, and our ability to help, by surgical means, patients hitherto incurable, are rapidly advancing.

In regard to the table, of which Dr. Munro had spoken, he agreed with him that this table gave a very false impression of the mortality from diseases of the stomach. These operations were the early cases of a large number of men who were acquiring their experience in this class of surgery. With the knowledge of the pathology and surgical technic which the experience of these cases has brought, a greatly diminished mortality is to be expected in the future. It is easy, in reading the history of these cases, to detect errors in the interpretation of conditions, and in the technic of operations performed.

It has been pretty generally conceded by a large number of operators of experience, that the posterior gastro-enterostomy, as performed by Moynihan, and Finney's operation of pyloroplasty, are the methods which give the greatest relief with the lowest mortality in these cases.

The question of choice of methods to be used in individual cases is a broad one. The speaker's experience, and his study of the cases entering into this table, have led him to the general conclusion that, in cases where the pylorus is completely occluded by scar tissue, and is likely, therefore, to remain occluded, posterior gastro-enterostomy is the operation of choice. In cases where the obstruction of the pylorus is due to spasm from the presence of chronic ulcer, perhaps at some distance from the pylorus, cases in which, with a gastro-enterostomy, the pylorus would be likely to expand, allowing the gastro-enterostomy to contract, until a condition of things results from which the stomach gets proper drainage neither way, Finney's operation is perhaps indicated. However, the question of the best operation for various conditions is still *sub judice.* The question of the excision of the pyloric or ulcer-bearing area of the stomach, for ulcer of the stomach, is one that is interesting the surgical world to-day.

Dr. Lund then spoke of three cases of subacute perforation of the stomach. These occasions were signalized by epigastric pain, tenderness and spasm, soon subsiding, and not going on to general peritonitis, thus in contradistinction of perforation into the general peritoneal cavity. In these cases posterior gastro-enterostomy has been done without separating the adhesions which walled off the perforating ulcer or peritoneal cavity. By this procedure one avoids the difficult process of infolding a thickened and inflamed area of the stomach wall. Infection is avoided. The freest kind of drainage is provided, and the after history of these cases demonstrated that the ulcers healed rapidly under the internal drainage provided by the gastro-enterostomy, and the adhesions under the same conditions did not do any harm.

This technic, in the speaker's opinion, for every reason should be greatly preferred to the separation of the adhesions, thus opening up the ulcer, and infolding by suture of the perforations.

Dr. H. F. Hewes, of Boston: There can be no doubt that, in the advance in gastric surgery, medicine has become possessed of a new and very practical therapeutic measure for use in a very common branch of disorders, the diseases of the stomach. I am perfectly aware when I say this that the results in regard to gastric surgery are not yet all in. Most of our reports upon the subject are from surgeons who are apt to think more of the immediate result of the operation than of the ultimate result. Also time has not yet elapsed sufficient to test the mass of gastro-enterostomies which have been reported in preliminary records. Enough however has been proven to convince the medical mind that in gastric surgery we have a useful and fairly safe therapeutic method with a great future.

When and where to use this method is of course always a matter of judgment for the individual cases, but that it has a use, and that such possible use must be borne in mind by the physician in the consideration of each and every one of his cases of stomach disorder, is a fact which to-day admits of no doubt. When we consider the actual use of this new therapeutic method up to the present, we cannot but conclude, I think, in reviewing the field of fact and opinion, that the tendency is, for the physician, where the judgment rests with him, to use it too little or too late, for the surgeon under the same circumstances to use it too often and too soon. This of course is meant as a very general statement. There are many men in both ranks who are at one on the subject. This variation between the two branches is due, in fact, I think, to the difference in the experience of the two. The physician sees many more stomach cases than the surgeon — the mild and severe — and a great majority, 90% or so, get well under medical care. He looks upon a laparotomy as a dangerous operation, and rightly to a certain extent, and he prefers to take the chance of his case being among the 90%, unless the evidence is very strong against it.

The surgeon, on the other hand, sees as a rule only the serious cases, the 10% of uncured cases; he has not quite the same fear of a major operation as the physician, and he is for operation in a given case of doubtful character according to this experience. As a matter of fact, however, the fault with both physician and surgeon lies principally not in the difference of training or experience, but in an insufficient consideration in regard to diagnosis in the routine of cases which come to them.

If a full appreciation of the possibilities of diagnosis by the use of thorough methods, and a habit of applying these methods in all cases existed generally, a considerable number of cases which are now kept too long under medical care would come to the surgeon at an earlier date, and many cases with no indication for operation, save a doubt as to diagnosis due to ignorance of conditions present, would be spared unnecessary operation.

There is at some hands a tendency to decry expert diagnosis in stomach conditions, owing to the fact that the old rules promulgated before all facts were in, in regard to the association of absence of HCl, with carcinoma, have proved not to be infallible. The facts of the chemistry of the gastric contents make but a small part of the results of expert examination, and in connection with surgery, as a rule, a secondary part of very secondary importance. The facts which have the most bearing upon surgery of the stomach are those in connection with the motility of the organ, its size and the condition of its orifices. And these facts can always be determined by applying proper methods of diagnosis, and they should always be determined in every stomach case, however mild or however severe its type.

The findings may not always affect the question of operation in a given case, but they will frequently do so, and at all events we are in a better position in regard to treatment, medical or surgical, the more facts we have in. The number of cases treated medically in ignorance of the real conditions present would alone serve as an excuse for impressing this fact upon the physician, without the additional argument offered by the cases of carcinoma or ulcer which come too late to surgery. And the number of cases which I have myself seen operated upon without previous thorough investigation, where operation showed no condition present for which operation was indicated, serve as an excuse for impressing it upon the surgeon.

Dr. C. L. Scudder of Boston: It is a principle with which we all agree, that any surgical procedure must be done with precision and with speed and be adapted to the case in hand, in order that it may prove efficient. There is no procedure in surgery which demands such accuracy of technic as does the operation of gastro-enterostomy. Faulty technic may mean death of the patient.

I have been very much interested in the various operations upon the stomach which have been developing during the past few years. I have been interested in these operations from a physiological as well as from a purely surgical point of view. In a recent visit to the clinics of several surgeons in England and upon the Continent, for the purpose of learning the technic in use there in gastric surgery, I was very much impressed by the simplicity of most methods, but especially by the fact that, save in one clinic, the routine procedure in gastro-enterostomy is the posterior operation. As my contribution to this discussion of Dr. Munro's extremely interesting paper, I will describe and illustrate by means of lantern slides the various steps in the technic of a posterior gastro-enterostomy.

Dr. Scudder showed some lantern slides illustrating the various steps in the operation of a posterior gastro-jejunostomy, emphasizing the important details as the slides were shown.

## Medical Progress.

### REPORT ON OBSTETRICS.

BY FRANK A. HIGGINS, M.D., BOSTON.

#### TO PROMOTE LACTATION.

Zlocisti [1] argues that the infant after birth is as much dependent on the maternal organism for nutrition as during its fetal existence. It needs the milk as it needed the placental circulation before. He has applied to women the experience of stock raisers in regard to the value of cotton seed as a milk-producing substance for milch cows. The pulverized cotton seeds were given to nursing women when the milk seemed to be diminishing in quantity or quality, and the way the infants thrived on the milk produced in abundance afterward testified to the lactagogue efficacy of the "lactagol," as the powder is called. He urges the collection of statistics,

[1] Jour. Am. Med. Assn., Mar. 12, 1904, p. 744: Berl. klin. Woch., xli, No. 5.

showing the proportion of bottle-fed infants who have tuberculosis or cancer later, suggesting that the lack of breast nursing may prepare the soil for these diseases.

CICATRICES OF BREAST AND LACTATION.

In two[2] cases described, the breast had been the site of extensive burns previously. Lactation, however, proceeded normally in one patient, although the cicatricial areola was hard and inflexible, requiring softening and massage before the babe could nurse properly. The other patient did not nurse her infant, and as the milk was secreted, the breast became very painful. Under appropriate measures, lactation was suppressed as under normal conditions, without inflammation or gangrene of the burned breast.

The results in the first case correspond with the experience of the reporter, that even when the breasts are the site of old cicatrices, a child of a subsequent pregnancy may be nursed if the breasts are carefully attended to and given frequent massage to relax the adhesions.

PREGNANCY DURING LACTATION.

Church [3] says that the evil results of the overlapping of these two conditions are not generally known. He believes that were an inquiry made into the conditions arising from it, it would probably be found (1) that the suckling was or became a delicate child, that he at one or other stage of his development suffered from some affection of the nervous system, and that he was the mentally weak one of the family; (2) that during lactation the embryo was prematurely expelled from the uterus, or if it reached full time, that it, in many cases, did so with lowered vitality, and handicapped in some way or other for the race of life; and (3) that the mother's health was generally undermined for a longer or a shorter time. Seldom would it appear that the mother had blood and strength enough for the welfare of the trio.

INJURIES TO THE CHILD'S HEAD DURING DELIVERY.

Jardine [4] found that depressions of the skull caused by labor occurred in contracted pelves, and are caused by pressure of the promontory, but that they may also occur in normal pelves. Fracture may occur during delivery, and yet there may be no depression evident on a casual examination. Other serious injuries may occur, such as cortical or meningeal hemorrhage, traumatic keratitis, hemorrhage into the optic nerve, or anterior chamber of the eye. Subconjunctival hemorrhages are exceedingly common, even in normal labors, but they are of no consequence. If cortical and meningeal hemorrhages do not cause death, there is liability of permanent injury to the brain. Very little can be done in hemorrhages but to leave them to nature. If there is fracture, a trephine may be used, but in some cases where there is no fracture or depression, it is difficult, and, at times impossible, to locate the hemorrhage. In high forceps delivery one blade of the instrument usually lies over or near one of the eyes, and occasionally the eye is more or less injured. In difficult deliveries, the eye may be enucleated.

TREATMENT OF CRANIAL DEPRESSION IN THE NEWBORN.

Baumm [5] reports four cases, in all of which this condition was the result of difficult labor because of narrow pelves, the pressure of the promontory in three cases producing deep impressions in the skull, and in the fourth case causing fracture of the frontal bone. In the first case he thought of a corkscrew, and after sterilizing the instrument, bored into the bone, gave a pull, and suddenly the skull was rounded out, and the child's breathing and heart action improved for a time, but it soon died. Subsequent section showed no injury to the brain, but an internal cranial hemorrhage. The second case was a repetition of the first; in the third, however, the child lived and became healthy and strong. In the fourth case, as the skull was fractured, the corkscrew was more easily inserted, the skull was more readily restored to its normal shape, with complete recovery of the infant. In these cases it may be said that the child would have lived without the operation, but it is probable that there would have been permanent deformity, with defective brain action. Hence Baumm feels justified in recommending the use of the simple procedure mentioned in cases not too difficult, and always to strive for the removal of any skull depression.

PLACENTATION IN A UTERUS BICORNIS.

Herzog [6] obtained a bicornuate uterus removed at operation, with an early pregnancy in the right side. He was able to demonstrate from the specimen that the syncytium is of fetal origin, and that it is not developed from uterine epithelium. In the left half of the specimen he found that there was a fully developed decidua, in every respect identical with the decidua of the pregnant right side, so far as true decidual structures are concerned, with a distinct differentiation into a decidua compacta and a decidua spongiosa, and with the former containing enormously enlarged capillaries (blood sinuses), which were everywhere closed and not opening into intervillous spaces. Sections of the cervix showed that the muscularis was hypertrophied, with the individual fibres of the same size as the fibres of the muscularis of the body. A great tortuosity of the vessels was manifest by a great number of vascular lumina, seen everywhere in the cervical tissues. The mucosa showed a moderate degree of glandular hypertrophy with the surface of the mucosa thrown into folds. But the surface and the glandular epithelium were of the type found in the non-pregnant uterus. The interglandular connective tissue was quite

[2] L'Obstétrique, vii, No. 6: Jour. Am. Med. Assn., July 16, 1904, p. 228.
[3] Edinb. Med. Jour., Sept., 1903, p. 199.
[4] Jour. of Obstet. and Gyn., Brit. Emp., June, 1903.
[5] American Medicine, July 4, 1903, p. 40: Zentralb. für Gynäk., May 9, 1903, p. 569.
[6] Am. Jour. of Obstet., June, 1904, p. 729.

vascular, and the interglandular connective tissue cells were fusiform and markedly enlarged in size, though not approaching the very large size of the true decidua cells, as found in the decidua on either side of the uterus duplex.

### HYGIENE OF INFANCY.

Pinard [7] reviews the regulations decreed by the mayor of Villiers-le-Duc in regard to the hygiene of infancy by which the mortality has been reduced to zero. Every child born in the community during the last ten years is alive and well-to-day. The mortality had been 20 to 30.8% of the births during the previous decades for a century, with the exception of a single decade, during which the present mayor's father — likewise a physician — had been the incumbent, and devoted much attention to infantile hygiene. The regulations include one to the effect that every needy pregnant woman, married or not, must inform the mayor of her condition before the seventh month, and state the name of the midwife whom she wishes to have attend her. The midwife is then sent by the mayor to examine the woman, to ascertain that there is no albuminuria, no fetal or maternal dystocia, nor vicious presentation. She is paid from the public funds for each visit. If the midwife finds anything abnormal, the mayor is notified, and he sends a physician selected by the pregnant woman, o take charge of the case. Every parturient assisted by the community receives twenty cents a day during ten days after the confinement if she remains in bed. This amount is paid to her at the end of the ten days. If she gets up before this limit, she forfeits this sum. Other regulations specify points in regard to the feeding, fortnightly weighing of the infant, etc., and one promises a reward of forty cents a month, which is paid to every woman who has brought up a child to the age of one year in good condition, breast or bottle fed. This sum is paid to her at that time, computed for every month during the year that the infant has been in her charge.

### THE INFLUENCE OF DIET IN PREGNANCY ON THE WEIGHT OF THE OFFSPRING.

Paton [8] says that it became evident in a study of the diets of the families of the poorer laboring class in Edinburgh, that poverty and the resulting deficiency in diet tell most severely in the early years of married life, when a number of young children have to be provided for, and he brings up these questions: How far does malnutrition of the mother during pregnancy influence the growth of the child? Do the children of the poor and badly nourished start life at a lower level than the offspring of those who are better fed? He cites Prochownick, who concluded that by restricting the diet of the mother, the size of the child may be markedly diminished, and his forty-eight cases in which, as a result of such regulation, the average weight of the child was: in 24 males, 2,960 gms., and in 24 females, 2,735 gms., the male children being 11% under the average, and the females, 14%. It seemed to Paton that the investigation of the question in the human subject is unsatisfactory, since so many disturbing factors come into play during pregnancy, and since it is difficult to determine whether the diminished size of the child is the result of less complete growth, or simply the result of premature labor.

Paton made a similar test with guinea pigs, one series of seven being fully fed and another kept on a low diet. The average weight of the offspring of the latter was 28% below that of the normal animal, and 10% less per gm. for the weight of the mother. He says that the observations, though few in number, are so concordant that they warrant the conclusion that the size of the offspring depends very directly upon the diet and nutrition of the mother during pregnancy. While this explains the easy labors among the healthy lower classes, and confirms Prochownick's conclusion that by dieting the mother, the children of rickety women may be so reduced in size as to be viable, it also probably helps to explain the very high infant mortality among the very poor. The infant starts life at a low level and readily succumbs to the hardships to which it is too often subjected. The nourishment of the maternal tissues seems to take precedence over the nutrition of the fetus. Had the embryo the prior claim to nourishment, we should find that in badly nourished mothers each gram would produce a greater proportionate weight of young than in well-nourished mothers. This is exactly the reverse of what occurs. The mother thus appears to pass on the surplus nourishment to the fetus, and the better the nutrition of the maternal tissues, the greater is the growth of the young in utero.

### SUTURE OF RUPTURED PERINEUM.

Zweifel [9] says a medical man in Germany can be fined and imprisoned, besides having to pay compensation to the patient, for neglecting to suture a ruptured perineum. He mentions an actual case in which a medical man was charged with this neglect. He does not regard the position of the general practitioner as being worse in this respect than that of any other man, since there is no suggestion that he is responsible for the rupture. He is, however, responsible for the discovery of the rupture, and for an attempt to rectify it. The defence in this form of case may rely on an opinion that ruptures are capable of healing spontaneously. Zweifel says that he, at all events, has never seen a ruptured perineum heal up, that is, the torn surfaces were never approximated in those cases in which the healing was left to nature. Dealing with ruptures of the third degree, he say that every one will have the same opinion that spontaneous repair is impossible. Since the law will not allow for any lack of knowledge in a practitioner, this defence must

[7] Jour. Am. Med. Assn., Apr. 16, 1904, p. 1053: Bulletin de l'Académie de Médecine, lxviii, No. 11.
[8] Lancet, July 4, 1903, p. 21.
[9] Brit. Med. Jour., Jan. 16, 1904, Epit. p. 11: Deut. med. Woch., Jan., 1903, p. 10.

fail in the court. The next possible defence is that exhaustion on the part of the practitioner, or severe flow of blood, which could occlude the view of the parts might hinder the suture, but this is no excuse for not suturing it the next day. Another excuse offered in the particular case was that the practitioner did not feel justified in giving an anesthetic by himself, and he could not obtain the services of another practitioner. Zweifel points out that the injection of a 1% solution of cocaine will overcome the difficulty. The last defence offered was that an attempt to repair a rupture of the third degree would have been unsuccessful, and therefore he thought it wiser to advise the patient to have the repairing operation performed by a specialist after she had got over her lying-in. Zweifel thinks that there is good reason to advise primary suture, since this is much more likely to lead to good results than the second operation. He admits that it is frequently a failure on account of faulty methods, and to avoid this disappointment he gives a clear account of what he regards to be the best method of performing the operation, and of conducting the after-treatment.

### PREMATURE DETACHMENT OF THE PLACENTA.

Gruning [10] says the precipitate detachment of the placenta at its normal site is a rare and dangerous complication of labor, ending almost invariably in death of the child, and often jeopardizing the life of the woman. The first indication of the trouble is usually a small hemorrhage which cannot be accounted for by a placenta previa or by laceration. The bleeding is followed by a profound anemia, out of all proportion to the slight external loss of blood. The uterus increases in size and assumes a round form. It is elastic, and makes palpation of fetal parts impossible. Death of the fetus takes place. The labor pains are feeble and favor further hemorrhage. As to treatment, the author is inclined toward active interference. In his five cases the forceps was used once, version once, in two the bag of waters was punctured, and dilatation by means of Braun's colpeurynter was resorted to in the last. Four children were born dead, two in a macerated condition. The one extracted after version survived. All mothers recovered.

### BLOOD CHANGES AS AN INDICATION FOR INTERRUPTION OF PREGNANCY.

Mace [11] establishes an average standard for the blood findings in pregnancy, and then shows that variations from this standard may be an indication for the interruption of the pregnancy. The average of three healthy women, in at least the eighth month, was hemoglobin, 8%; red corpuscles, 4,493,000; whites, 9,640. Variations from this standard he has found are of serious import for the fetus as well as the mother. Besides pernicious anemia, the anemia from recurring hemorrhages entails serious injury to the blood. Pronounced polynucleosis indicates commencing infection, frequently starting in the uterus and causing the expulsion of the fetus sooner or later. It is not necessary to wait for this, if the condition is recognized early by the blood findings. Under the influence of slight but recurring hemorrhages, reds are swept into the circulation, immature and deformed.

[10] American Medicine, Oct. 17, 1903, p. 644: Journal Akousherstwa, April, 1903.

[11] L'Obstétrique, viii, No. 6: Jour. Am. Med. Assn., July 16, 1904, p. 228.

### EVIL RESULTS OF DEEP INCISION OF CERVIX DURING DELIVERY.

Hofmeier [12] remarks that voices have been raised in protest against the danger of hemorrhage from Dührssen's incision of the soft parts to facilitate delivery. No one, however, has published anything in regard to the remote evils of the procedure. In two cases recently, a subsequent childbirth proved fatal in one case, and without prompt intervention would have proved fatal in the other. The rigidity of the site of the former incisions resulted in rupture of the uterus wall just above the cicatrix. One patient had passed through two normal childbirths between the incisions and the last fatal birth. If the Dührssen incisions are deemed absolutely necessary, at least they should be made on the front and rear aspects, and not on the sides, near the large blood vessels.

*(To be continued.)*

[12] Jour. Am. Med. Assn., Mar. 5, 1904, p. 687: Münch. med. Woch., li, No. 3.

## Reports of Societies.

## AMERICAN LARYNGOLOGICAL ASSOCIATION.

ANNUAL MEETING AT ATLANTIC CITY, NEW JERSEY, JUNE 2, 3 AND 4. 1904.

FIRST DAY — THURSDAY, JUNE 2.

THE meeting was opened with a reception to guests, followed by the usual address of greeting by the president, DR. J. H. HARTMANN of Baltimore, Md., and then the association proceeded to the scientific session.

### A CONTRIBUTION TO THE STUDY OF THE SECRETING MECHANISM OF THE NOSE.

By DR. J. L. GOODALE of Boston: After reviewing the literature of the subject, the writer called attention to two arrangements in the nasal mucous membrane for producing the nasal fluid, viz.: the glands and the intercellular spaces of the epithelium and the underlying basement membrane. Up to the present time it had not been determined whether serous glands were present in normal nasal mucous membrane, in addition to the mucous glands, or not; and the writer found that in normal cases the mucous membrane of the respiratory portion of the nose contained both serous and mucous glands in association. He then called attention to the changes produced in the glands of the mucous membrane, and in the canals of the basement membrane, in different pathological conditions, such as chronic inflammations characterized by increase of secretion, chronic atrophic inflammations and vasomotor rhinitis.

Chronic inflammations with increased secretion showed a heightened activity of the mucous glands, irrespective of the secondary changes in the other con-

stituents of the tissues. Atrophic inflammations, with tenacious fetid secretion, showed a complete disappearance of the canals of the basement membrane, while the mucous and serous glands showed a much diminished, but still distinct, degree of activity. In the vasomotor rhinitis there was found a striking increase in the looseness of structure of the epithelium, and in the number and size of the canals of the basement membrane, — an alteration distinctly out of proportion to the moderate increase in the mucous and serous glands.

The normal secretion of the nose consisting, as it does, of mucus and serum from the glands and a large quantity of watery fluid coming by transudation through the canals of the basement membrane and the intercellular spaces, we can readily understand the changes in the character of the secretion in the above-mentioned conditions by the changes found in the secreting organs, that is, the glands and the canals of the basement membrane.

### NASAL HYDRORRHEA; REPORT OF A CASE.

By Dr. J. Edwin Rhodes of Chicago, Ill.: The writer detailed the differential diagnosis between the cerebrospinal rhinorrhea and nasal hydrorrhea; defined the latter as a copious flow of watery fluid from the nasal mucous membrane, continuous or intermittent, usually unilateral, though sometimes bilateral, accompanied by other symptoms, such as headache, insomnia, cough, sneezing, and other nervous phenomena. Of the two generally advanced theories as to cause, — (1) that it is a neurosis of the trifacial nerve in the nasal mucosa, and (2) that it is one of the symptoms of a general neurasthenic condition, — the writer inclined to accept the latter.

He then detailed a case in which many different therapeutic measures were tried with no effect, until nitrate of silver was used, 60 gr. to the ounce, after which the discharge ceased in three or four days, with no return. The application caused a violent headache, lasting four or five days.

In discussion, Dr. Swain of New Haven gave it as his opinion that *any* agent, used to the required degree, would have given the same result, as it was the violent systemic disturbance and reaction which caused the cure.

### OBSERVATIONS ON THE THERAPEUTIC VALUE OF MEDICATED OINTMENTS IN CERTAIN AFFECTIONS OF THE NASAL CHAMBERS.

Dr. A. W. MacCoy of Philadelphia read a paper with the above title, in which he deprecated the too free use of washes in the nose as inconvenient, unpleasant and often harmful, and made a plea for the use of oils, and especially thin or soft ointments, as menstrua for administering medicaments to the nose, preferring petroleum in some form to anything else.

### SOME REMARKS ON THE INTRA-NASAL SURGERY OF TO-DAY.

Dr. J. N. Mackenzie of Baltimore read a paper with this title. The general tenor of the paper was that of protest against many of the radical methods now in vogue. He thought that they were pursued by some operators with a most indiscriminate zeal, and were calculated to bring the modern surgery of this region into disrepute.

One reason for this *furor secandi* was the fact that the interior of the nose would stand a great deal of mutilation without dangerous reaction; but this was no justification of the course so often followed.

The author believed in thoroughness when operations were justified, but he could not accept as valid some of the arguments advanced to justify many of the operations done at the present time on the nose and accessory sinuses.

He felt that relief from the present condition of affairs must come through a better education of the rising generation of laryngologists.

### THE ETIOLOGY AND DIAGNOSIS OF OZENA, AND ITS RELATION TO PULMONARY TUBERCULOSIS.

Dr. Clement F. Theisen of Albany, N. Y., read a paper with the above title, a continuation of a paper on the same subject, published in January, 1904, in the *Albany Medical Annals*, with reports of forty cases. He discussed the usually accepted points of diagnosis, *i. e.*, presence of decomposing, foul secretions and crusts, and atrophy of the mucous membrane, and considered the etiology, particularly with reference to sinus disease and acute infectious diseases, such as measles, scarlet fever and diphtheria, and then its relation to pulmonary tuberculosis. His conclusions may be summarized as follows:

(1) Sinus disease probably causes ozena in a certain percentage of cases, or at least may be considered a strong predisposing cause.

(2) Suppurative processes in the accessory sinuses, as shown by Pearce's investigations, are frequently present in certain of the infectious diseases of childhood, particularly scarlet fever, measles and diphtheria, and for this reason these diseases must be considered as at least possible etiological factors of ozena.

(3) That while a certain percentage of cases *are* caused by sinus disease, this is not sufficient to explain the pathogenesis of the whole clinical picture of ozena.

(4) The large number of ozena patients having pulmonary tuberculosis would certainly point to the nasal condition as a strong predisposing cause for the development of the tuberculous condition.

In discussion of the paper, Dr. T. J. Harris of New York said that in a considerable number of cases of ozena he had found a very small percentage with any sinus complication; and in regard to the relation between ozena and tuberculosis, he had found in twelve cases only one tubercular case, that being a tubercular larynx. He referred also to Hamilton's statistics as very different from those of Dr. Theisen, showing very few cases of tuberculosis in conjunction with ozena.

Dr. C. G. Coakley of New York also stated that he had found the association of sinus disease and ozena very rare.

Dr. J. Payson Clark of Boston spoke of the large number of cases of ozena and atrophic rhinitis found in a series of one hundred cases of tubercular laryngitis which he had examined, as compared with the same conditions in a similar number of cases coming to the clinics with other conditions not tubercular.

Dr. J. E. Newcomb of New York referred to a series of cases, seventy in number, of tuberculosis, with not one case of ozena.

Dr. H. L. Swain of New Haven said that he had not found any concurrence of sinus disease and ozena, but that he considered it reasonable that tuberculosis should be associated with ozena, since the latter condition presents such a good chance for the growth of all kinds of bacilli.

Dr. William E. Casselberry of Chicago expressed the opinion that a conclusion on this subject could not be reached until the term "ozena" was either abandoned or more exactly defined, with which opinion Dr. Theisen, the author of the paper, in closing, thoroughly agreed.

A STUDY OF THE FATAL RESULTS OF OPERATIONS UPON THE NOSE AND THROAT.

DR. FRANCIS R. PACKARD of Philadelphia regarded it as surprising that so few fatalities followed in this class of operations, considering the frequency with which they were done. He presented tabulated lists of the fatalities recorded in literature. He found 26 fatalities from anesthesia, — 24 from chloroform, one from a.c.e. mixture and one from ether, the last apparently from bronchitis. Chloroform deaths occurred with special frequency in those patients who presented the "status lymphaticus." Of deaths due to causes other than the anesthesia, he found 22. Of these, fourteen were from hemorrhage after removal of tonsils and adenoids. Other causes were meningitis, from use of perchloride of iron for epistaxis; purulent lepto-meningitis following operation by external incision for the removal of nasal polypi and orbital tumors; meningitis following cauterization, with galvano-cautery of the middle turbinate; meningitis following probing and injection of the lachrymal canal; meningitis after removal of an exostosis, and sepsis and exhaustion following tonsillotomy.

FOUR UNUSUAL TUMORS IN THE NASO-PHARYNX.

This paper, by DR. WALTER F. CHAPPELL of New York, was a report of four cases of tumor, all remarkable for their size, and one for its character and source. One was a very large polyp, projecting into the naso-pharynx; two of the others were very large pharyngeal tonsils, filling the whole naso-pharynx and extending down into the pharynx, and the fourth a large pedunculated growth springing from the left tonsillar region, near the Eustachian tube. In character, as stated by Dr. Jonathan Wright, it was "essentially nothing more than an enormous exaggeration of the so-called mulberry hypertrophies, very frequently seen, in a less advanced stage, at the posterior end of the inferior turbinated bodies. The most remarkable and unique feature of this growth, in this situation, is the occurrence of lymph nodes."

The operations for removal were all through the mouth, and simple.

*(To be continued.)*

## ANNUAL MEETING OF THE MAINE MEDICAL ASSOCIATION

WALTER E. TOBIE, M.D., SECRETARY, PORTLAND, MAINE.

THE fifty-second annual meeting was held in Portland June 1, 2 and 3, in the Common Council Chamber, of the City Building. The President, Dr. Augustus S. Thayer of Portland, presided over the three days' sessions which were largely attended.

The treasurer, Dr. Arthur S. Gilson of Portland, read his report showing a balance in the treasury of $1,696.85, this amount being about half as much as was shown in the report of 1902. Dr. Gilson called attention to several large sums paid out within two years, notably $1,000 appropriated to the Maine Sanatorium for Consumptives and over $800 expended for the semi-centenary celebration. Dr. Gilson felt that the financial condition was on the whole satisfactory, and with the increasing membership looked for a still better showing next year.

DR. BIGELOW T. SANBORN, superintendent of the Maine Insane Hospital at Augusta, read a paper on the "Care of the Feeble-Minded." Dr. Sanborn made a strong plea for the establishment of a school for the feeble minded in Maine. He spoke of the courtesy shown by the Massachusetts authorities, in receiving patients from Maine at the Waverley Institution, but showed that the small number accommodated there was but a fraction of the total number who should receive this form of training.

The following resolutions were presented and adopted by vote of the association:

"*Resolved*, that the members of the Maine Medical Association believe it to be for the interest of the people of Maine that children and young adults who are feeble-minded should be, so far as possible, segregated, instructed, and diverted by useful employment. For this end, the experience of other states has demonstrated the value of state schools for the feeble-minded. Therefore, it is further

"*Resolved*, that the establishment of such a school in Maine is commended to the attention of our state legislature."

DR. WALTER E. TOBIE gave notice of a proposed change in the Constitution abolishing the office of corresponding secretary, and showed that it was a useless office inasmuch as all of the work was done by the recording secretary.

FIRST DAY — AFTERNOON SESSION.

DR. F. L. DIXON of Lewiston, first vice-president, acted as chairman while the president, Dr. Augustus S. Thayer, delivered his address.

DR. THAYER extended a hearty welcome to the members and reflected pleasantly on the semi-centenary celebration of last year. Commenting on medical education he said: "Much hard and good work has been done, and much has been accomplished, but often after long years of waiting. Reforms are usually slow in coming and require persistent and long continued effort. By this persistent effort, largely due to this association, medical education has made rapid strides in our state. Fifty years ago our medical school had five professorships, and these five professors gave what instruction was given in the school. Three years of study, including two courses of lectures of three months each, was required for graduation. Now the school has fourteen professors, six instructors and four demonstrators. Four years of study is required, including four courses of lectures of eight months each. By this persistent effort we now have on our Statute Book a law enabling those teaching anatomy and surgery to pursue their courses without becoming criminals. But to accomplish this it took over forty years."

Regarding reorganization: "The committee to whom was referred the subject of organization of the profession throughout the state upon the general plan proposed by the American Medical Association will make its report. I anticipate that this report will favor the new plan, but whatever this report may be, it must come before you for final action. I trust you will all be prepared to give it that careful consideration that the importance of the subject demands. Should the report favor the new plan, and should the association vote to ratify the same, it would mean a complete reorganization of our association. Let us not forget that under our present organization this association is an independent body, subject to no dictation from outside sources. What it may become, should you decide to make the change, is an important matter for you to consider."

DR. THAYER urged that action be taken toward securing legislation making vaccination compulsory, and recommended that a committee be appointed for that purpose.

DR. WALTER E. ELWELL of Togus presented the report of the Committee on Legislation regarding Victims of Drug Habits. The committee presented a

proposed law for voluntary commitment, which required that general hospitals receiving aid from the state should be obliged to receive such patients and maintain for this purpose a suitable room or rooms.

The report was accepted and a committee appointed to secure, if possible, the proposed legislation.

Dr. James E. Keating of Portland read a paper on "Fallacious Kidney Disease." Dr. Alfred Mitchell, Jr., of Portland read a paper on the "Treatment of Prostatic Hypertrophy." Dr. George H. Coombs of Waldoboro read a paper on "Appendicitis in Country Practice." Dr. James A. Spalding of Portland read a paper on "Medical Mistakes."

### First Day. — Evening Session.

Dr. H. L. Bartlett of Norway presented the report of the visitors to the Maine Insane Hospital. Dr. Wellington Johnson of Augusta read a paper on the "Three Stages of Labor." Dr. George P. Morgan of Dover, N. H. read a paper on "Neurasthenia."

### Second Day. — Morning Session.

Dr. Seth C. Gordon of Portland read the report of the Committee on Organization in accordance with the plan proposed by the American Medical Association. The report favored the plan and called attention to its advantages, but after a lengthy discussion it was not adopted. The feeling seemed to be that the present organization was so satisfactory that no change was indicated, but in order that the members might act intelligently, it was voted that the committee be continued, with instructions to furnish the details of the plan to each member.

The objections presented were: That the State Association would lose, to a great extent, its independence; that it would greatly increase the amount of clerical work and add expense; and that county societies might admit members ineligible under the present code of ethics of the state association.

Dr. Galen M. Woodcock of Bangor read a paper on "Rectal Alimentation." Dr. Langdon T. Snipe of Bath read a paper on "Life Insurance Examinations." Dr. W. M. Spear of Rockland read a paper on "Sub-Acute Intestinal Obstruction."

### Second Day. — Afternoon Session.

Dr. G. M. Woodcock of Bangor read the report of the visitors to the Eastern Maine Insane Hospital.

The election of officers then took place as follows: President, Dr. F. L. Dixon, Lewiston; 1st Vice President, Dr. R. D. Bibber, Bath; 2d Vice-President, Dr. A. H. Stanhope, Dover; Corresponding Secretary, Dr. A. H. Sturtevant, Augusta.

Censors: Drs. H. F. Twitchell, Portland; D. M. Hayes, Henderson; S. P. Warren, Portland; C. E. Williams, Auburn; George C. Parker, Winthrop.

The following officers were previously elected for a term of years: Recording Secretary, Walter E. Tobie, Portland; Treasurer, Arthur S. Gilson, Portland.

Dr. Walter E. Tobie read his report as necrologist, recording thirteen deaths within a year, including two charter members.

Dr. Walter E. Elwell of Togus read a paper on "The Oblique Incision and Single Flap Method of Inferior Chiloplasty." Dr. Elwell's paper was illustrated by diagrams, and he presented for inspection two patients on whom he had operated by this method. Dr. H. B. Palmer of Farmington read a paper on "Some Surgical Diseases which the Physician must Recognize." Dr. B. L. Bryant of Bangor read a paper on "Leucemia with Special Reference to the Spleno-Medullary Form," which was illustrated by charts.

Dr. C. C. O'Brion of Groveton, N. H., was introduced as delegate from the New Hampshire Medical Society.

The session adjourned at 4 o'clock for the annual dinner at Riverton.

### Second Day. — Evening Session.

Dr. A. K. P. Meserve of Portland, secretary of the State Board of Registration, presented a paper on the "Medical Registration Law," which was read by Dr. Chauncey R. Burr of Portland. After reviewing the results of registration in Maine and commenting on the reference to reciprocal registration: "Under the rules resulting improved conditions," Dr. Meserve said, "as adopted and approved July 31, 1901, any person who has been examined and registered by this board, can register in New Jersey, Illinois, Michigan, Ohio, Wisconsin, and probably in New Hampshire and Texas, without further examination if they are graduates of accepted schools.

"Thus it will be seen that reciprocal registration in other states is made possible for those examined and registered by state boards, but in what status does it leave the survivors of the 1,021 graduates of medical schools, who were practicing in the state when the law went into effect and who embrace the foremost physicians and surgeons of the state to-day? Should any of us desire to move to another state, an examination stares us in the face, not an easy nor pleasant grind for one who has been out of school for ten or fifteen years and engaged in busy practice.

"To meet this class most of the states mentioned have adopted another rule which reads: 'That a certificate of registration, or license issued by the proper board of any state, may be accepted as evidence of qualification for reciprocal registration in any other state, provided the holder of such certificate had been engaged in the reputable practice of medicine in such state at least one year, and provided that the holder thereof was, at the time of such registration, the legal possessor of a diploma, issued by a medical college in good standing in the state in which reciprocal registration is sought, and that the date of such diploma was prior to the legal requirement of the examination test in such state.' This qualification the Maine Board has not yet voted to accept. But ought we not to do it? It seems to me that with the proof of good moral character and professional standing required by our rules for all reciprocal registration, that no possible harm could come to the people of the state or the profession thereby."

It was voted that the chair appoint a committee on legislation as regards registration to confer with the State Board of Registration.

The Committee on President's Address reported favorably on the recommendation that restrictions be placed on the payment of money for purposes, other than the legitimate running expenses of the Association, and the recommendation that steps should be taken to secure legislation governing the control of water supplies, but took no action on the recommendation regarding compulsory vaccination.

Dr. Frederick C. Shattuck of Boston delivered the annual oration, the subject of which was "Anomalies of Thyroid Secretion.[1]"

The Association extended a vote of thanks to Dr. Shattuck.

### Third Day. — Closing Session.

The closing session was devoted entirely to business.

The Board of Censors made its final report recommending:

That the next annual meeting be held in Portland,

[1] See Journal, June 30, 1904, p. 689.

on the first Wednesday, Thursday, and Friday in June, 1905.

That the election of orator be left to the next Board of Censors, with power.

That the president and secretary have power to fill vacancies occurring in delegations to other State Societies.

That applications for membership received this year and not acted upon be referred to the next Board of Censors.

The president appointed as a Committee on Medical Registration: Drs. F. C. Thayer, Waterville; W. P. Giddings, Gardiner; B. L. Bryant, Bangor; F. W. Searle, Portland; George R. Campbell, Augusta.

The Committee on Legislation relative to Venereal Diseases was continued for another year.

The Association voted thanks to the President, Business Committee, Entertainment Committee and City Government.

## Recent Literature.

*Le Malattie dei Paesi Caldi, Loro Profilassi ed Igiene; con un' Appendice, la Vita nel Brasile.* Dott, Carlo Muzio. p. 562. Milano. 1904.

This volume is one of the Hoepli series of scientific manuals, and contains the collated experience of Surgeon C. Muzio of the Royal Italian Marine, with reference to the diseases of hot climates. In addition to the many cuts with which it is illustrated, there are several geographical charts showing the prevalence of the plague, malaria, beri-beri, leprosy, anchylostomiasis, and other diseases.

The following general classification of diseases is adopted in the work:

General diseases, localized diseases (including those in which the presence of a specific germ has been proven, those in which the existence of such a germ though alleged, is not accepted, and those in which the cause is unknown), diseases and lesions produced in man by animals and parasites of hot countries, poisons, common infectious and other diseases, and sunstroke. To these the author adds a chapter upon the hygiene of hot climates, having special reference to clothing, food, water, habitations, etc.

An appendix is added in which are presented the author's observations upon those plants, insects, reptiles, and other objects which are in any way related to health and life in Brazil.

*Surgery of Paralysis.* By A. H. Tubby and Robert Jones. London: Macmillan & Co.

That the writers have been able to present to the public such an excellent little book as this, written upon a large subject with so succinct and clear statements of the methods of treatment of the paralytic affections, is due to their thorough familiarity with the subject as well as to their sound judgment and excellence of good sense. The book is not only the best in the English language upon the subject, but the form is admirable, the subject being well presented and in a way interesting to the general practitioner as well as to the surgeon. The progress in many branches of surgery is now so rapid that the printer's ink is hardly dry in a publication before newly collected facts often necessitate the revision of the statements of any writer. The recent evidence presented by German surgeons, Lange and Hoffa and others, of the value of subperiosteal transplantation as well as the use of silk sutures (referred to in the work under consideration) need at present more full consideration than seemed necessary when the work was first written.

*Aseptic and Antiseptic Preparation and Treatment of Emergencies after Abdominal Surgical Operations.* By George Wackerhagen, M.D., Ex-President Brooklyn Surgical Society, etc., etc. New York: E. R. Pelton. 1904.

This brochure of forty-four pages has been prepared by its author for the purpose of obtaining a ready reference hand-book for the use of junior assistants and nurses. It is not claimed that it suggests anything new as regards symptom or treatment; it is rather a practical system of preparation for abdominal operations, and an outline of treatment of possible post-operative emergencies. Among these, nausea, vomiting, tympanites, secondary hemorrhage, intestinal obstruction and peritonites are considered.

The book is so classified that specific details can be referred to by number, thus avoiding the necessity of writing full directions for a nurse or assistant each time such directions are required. The character of the text is personal and local, but the design of the book is excellent, and it is clearly, concisely and systematically presented.

*Fatigue.* By A. Mosso, Professor of Physiology in the University of Turin. Translated by Margaret Drummond, M.A., and W. B. Drummond, M.B., C.M., F.R.C.P.E. New York: G. P. Putnam's Sons. London: Swan Sonnenschein & Co., Ltd. 1904.

In this volume of the Science Series Professor Mosso of the University of Turin offers a somewhat popular exposition of his theory of fatigue, the book now appearing in English for the first time, translated by Margaret Drummond and W. B. Drummond of Edinburgh. The text, which occupies 334 pages of small octavo form, is entertainingly written in a style so popular that it may be read intelligently by persons wholly unacquainted with the scientific aspects of the subject. The book is already known to students of physiology, and it is, therefore, not necessary here to enter into detail regarding the subject matter beyond drawing attention to the fact that it takes up the various physiological theories of fatigue largely on an experimental basis, and makes certain practical applications to school work and matters of ordinary hygiene in a way which should commend it to persons interested in educational matters as well as to physicians.

THE BOSTON

# Medical and Surgical Journal.

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## PROTRACTED AND RECRUDESCENT INFECTION IN DIPHTHERIA AND SCARLET FEVER.

One of the most perplexing questions with which physicians and health officers have to deal in the management of infectious diseases is that of "return" cases of scarlet fever, and diphtheria, many of which appear at first sight to be due to the return of cases from isolation hospitals to their families.

One of the ablest of English health officers has contributed a very carefully prepared paper upon this subject, in which he gives the results of ten years' experience in an English town.[1] Some of the most important points in connection with this inquiry are stated in the following summary:

1. Cases of protracted and recrudescent infection are relatively infrequent, and represent only a small percentage of the total cases of these two diseases.

2. Such cases are oftenest associated with nasal and aural discharges, though not always. Accurate and detailed statistics on this point are wanting. "In my experience the proportion in which there are no mucous discharges is small, but their occurrence is undoubted."

3. The absence of this information indicates the necessity for more accurate records of cases of protracted and recrudescent infection, and for this purpose Newsholme presents a model form of record.

4. The occasional occurrence of such "return" cases emphasizes the necessity for post-isolation supervision of patients, whether treated at home or in hospital. This supervision must be medical and should be carried out officially. In Brighton scarlet fever patients are not allowed to return to school until four weeks, and diphtheria patients not until six weeks, after they have been released from home or hospital isolation.

5. A study of the "return" cases enumerated in Dr. Newsholme's paper indicates that in most instances the rhinorrhea, which is oftener than any other morbid condition associated with protracted infection, was already present when the patient was first isolated, or appeared soon afterward. This fact has an important bearing on the origin of "return" cases. It suggests the belief that a condition determining protracted infectivity may have been similarly present from the first in the infecting patients, in whom no obvious mucous discharge occurred.

6. If it be assumed that a morbid condition of the naso-pharynx is a necessary condition of protracted infectivity, do this morbid mucous membrane and its crypts act as a continuing incubator of scarlatinal or diphtherial germs originating from those which caused the patient's illness, or do they act merely as a suitable storehouse for germs derived from other acute patients in the same room — a storehouse which can only be emptied by one or more weeks' absence from acute patients? The author believes that the specific micro-organisms of these diseases remain in crypts of the naso-pharynx, which act as active "incubators" of them. This applies to cases continuously infectious. In those cases in which infection temporarily disappears, to recur under the influence of a catarrh or some traumatism, etc., it may be supposed that the specific micro-organisms have been lodged, and at least partly incarcerated in the follicles, and possibly in deeper lymphatic tissues or glands.

7. There is definite evidence that in some instances infection has become dormant, to be again roused into activity by various circumstances, as by the disturbance caused by the cessation of isolation, possibly in connection with baths at the time of discharge, or at a later period by a catarrh or other means tending to lower personal resistance.

8. Observations show a close analogy between the phenomena of protracted and recrudescent infection in scarlet fever and in diphtheria. In both diseases infection is occasionally exceptionally prolonged. From a clinical standpoint it must still be regarded as an open question whether protracted infectivity is more common in one of these diseases than in the other. In both diseases infection occasionally recrudesces.

[1] Protracted and recrudescent infection in diphtheria and scarlet fever. By A. Newsholme, M.D., F.R.C.P., Medical Officer of Health, Brighton, England. Public Health, Aug., 1904, p. 690.

This may occur either in the form of a definite relapse, having all the clinical features of the disease in question; or, more commonly, the only accompaniment of recrudescent infection is the recurrence of a mucous discharge, and even this indication of the possibility of recrudescence may be absent.

Newsholme considers the long accepted view of the profession, that the desquamating period is the most infectious stage of scarlet fever, as erroneous. "We now know," he says, "that desquamating patients may, as a rule, safely be sent home in the sixth, or even the fifth, week of their attack of scarlet fever, if they have no mucous complications. Some other cause must, therefore, have given rise to the widespread conviction that cases of scarlet fever were frequently infectious to the very end of desquamation. Such cases really occurred, or the conviction would not have arisen. Doubtless they were the cases of persistent or recrudescent infection which now exercise our minds in relation to hospital administration. But when this conviction was formulated, there were no isolation hospitals for scarlet fever."

## THE SEWING-MACHINE AND GYNECOLOGICAL AFFECTIONS.

SOME twenty years ago we were told impressively by the most eminent teachers of the diseases of women that the sewing-machine was the root of much gynecological evil; woman could use her legs for any other purpose without danger to her health so long as she did not run a sewing-machine. Of late years the profession has heard less and less of this theory which has finally become, as is so often the case with the decadent theories of the profession, the property of the laity.

Now comes Nussbaum with an article [1] on the influence of sewing-machine work on health, in which he undertakes to show from statistics and his own experience that the position at the machine and the constant use of the legs are liable to cause congestion and consequent inflammation of the female genitalia.

When a plausible theory has once secured a firm place in the mental *armamentarium* of the unprogressive it often requires a severe shock to dislodge it, and, failing that shock, it remains to serve as a guide to thought and action for many a day. That uterine diseases are common among women who use the sewing-machine is an undoubted fact; that they are less common in the large shops where the machines are operated by steam or electric power than in those where the motive power is the foot or in the shops without machines where women sit working all day in constrained attitudes has not been demonstrated.

Bicycling, playing the organ or pianola, running, walking, swimming, dancing and tennis, in all of which the legs come into play vigorously, are generally admitted to be beneficial to pelvic disorders. No facts have been adduced to prove that the troubles attributed to the sewing-machine are not in reality due simply to prolonged sedentary occupation without proper exercise to offset it.

Reasoning from *a priori* grounds it would seem as if the movements of the muscles of the lower extremities would bring blood to the legs and feet and to that extent away from the pelvis; surely this is the province of exercise of the body as a whole, to increase the activity of the heart, quicken the circulation, and send the blood to the muscles and extremities and away from the internal organs. Sitting in one position for hours at a time, often in unhygienic surroundings and with tight clothing, is conducive to a sluggish circulation, and to passive congestion.

We may advise our patients to rise and change their positions as frequently as possible, to loosen their corsets, to sit erect and breathe deeply, and, most important of all, to take active exercise in the open air, if only a little gymnastics, for a short time before and after meals; at least, let us relegate the sewing-machine bogey to the limbo of disuse.

[1] Wiener Klinische Rundschau, xviii, No. 17, 1904.

## A HEALTH EDUCATION LEAGUE.

AN organization with the foregoing title has recently been formed, with its office in Boston, and having as its object "the prevention of avoidable disease by the education of the people to high standards of personal and public health." The president of the society is Dr. D. A. Sargent of Cambridge; vice-president, Dr. H. S. Pomeroy; secretary, Rev. George H. Cate; treasurer, A. L. Darrow. Among the directors are several well-known instructors in sanitary science and members of sanitary organizations.

A primary object of the League appears to be to supplement the teaching of hygiene in professional and technical schools by education of the people, since "sanitary progress depends upon society's appreciation of health rather than upon technical knowledge of disease."

Much of the work already done in public hy-

giene is neutralized by the ignorance of the people as to what constitutes pure air, pure water, pure food, and healthful environment, and hence the indifference of the public as to the importance of enforcing public sanitary measures. The League seeks to reach the people through the public schools, the churches, clubs, gymnasiums and other institutions, if suitable lectures, booklets and circulars are provided.

There is undoubtedly a wide field of usefulness for such an organization, and it is to be hoped that it will receive hearty support. Its first publication, a tract entitled "Hints for Health in Hot Weather," is a decided success. It is not only an up-to-date publication scientifically considered, but also a sample of terse, intelligible Anglo-Saxon, absolutely freed from technical terms, and well adapted to popular requirements.

The League is in urgent need of funds for conducting this important educational work and for publishing its literature, not only in English, but in other languages, also for securing competent persons to arouse and instruct the people in the most needy places, and for other similar purposes. It appeals especially to the medical profession, since it is more closely in touch with the people than any other profession or class. Physicians have exceptional opportunities for observing the habits and social condition of the people with regard to sanitary matters, and can materially aid the society, not only with financial aid, but with intelligent co-operation.

Contributions may be sent to Mr. A. L. Darrow, treasurer, 113 Devonshire Street, Boston, who will promptly receipt for the same.

## MEDICAL NOTES.

Cameron Prize. — It is stated that the Cameron prize of Edinburgh University has been given to Professor Finsen of Copenhagen for his work in practical therapeutics.

Appointment to Chair of Tropical Diseases. — It is announced from Washington that Surgeon P. A. Lovering has been ordered to Washington to take the new chair of tropical diseases at the Navy Medical School. This chair has been founded in view of the duties in tropical countries now more and more devolving upon the navy and marine corps.

Medical Department, University of California. — Hereafter the medical department of the University of California is to be closely affiliated with other departments of the university. This progressive step is in line with the general tendency observable throughout the country of bringing medical instruction into the same category as other departments of education.

Bequests. — By the will of Alexander C. Hutchinson, whose death occurred in New Orleans Dec. 7, 1902, an estate of nearly one million dollars was left for charitable and benevolent purposes. It has recently been announced that the Eye, Ear, Nose and Throat Hospital, St. Ann's Asylum and the House of the Good Shepherd, all of New Orleans, have received $20,000 each. The remainder of the property has been left to the medical department of Tulane University.

A Centenarian. — Dr. C. F. H. Wilgohs died Aug. 26 in Akron, Ohio, at the reputed age of one hundred years and eight months. He was born in Denmark in 1803. His father was a physician and served in the German army, and the son for a time did likewise. He also enlisted in the war for Polish independence and was many times wounded. Later he came to America, and for the greater part of his life has practised medicine in Ohio.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon Aug. 31, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 51, scarlatina 11, typhoid fever 47, measles 1, smallpox 0.

Anthrax at Burlington, Vt. — It is reported that anthrax is prevalent on a farm in Burlington, Vt., a number of cattle having died of the disease. A case has also appeared in a man who had to do with these cattle, and his condition is regarded as serious. It is suspected that the origin of the anthrax was Australian wool used in the neighborhood.

Boston Mortality Statistics. — The number of deaths reported to the Board of Health, for the week ending Aug. 27, was 152 against 180 the corresponding week last year, showing a decrease of 28 deaths, and making the death-rate for the week 12.90. The number of cases and deaths from infectious diseases was as follows: Diphtheria, 35 cases, 2 deaths; scarlatina, 9 cases, no deaths; typhoid fever, 42 cases, 1 death; measles, 4 cases, no deaths; tuberculosis, 41 cases, 16 deaths; smallpox, no cases, no deaths. The deaths from pneumonia were 7, whooping

cough none, heart disease 14, bronchitis 1, marasmus 5. There were 16 deaths from violent causes. The number of children who died under one year was 51, under five years 61, persons over sixty years 30, deaths in public institutions 60.

NEW YORK.

A SMALL BABY. — As an offset to the enormous infant recently born to a young Italian woman in Manhattan, we now hear of the smallest baby ever received in any like institution, which on Aug. 7 was brought to Dr. Couney's incubator at Coney Island by Dr. C. S. Patterson of Brooklyn. This remarkable infant, a male, weighed, it is stated, just one pound and six ounces and measured eleven and a half inches in height, and it is claimed that no record exists of a child of its size having lived more than a few hours. In addition to having the most vigilant care, it is being given frequent inhalations of oxygen, on account of the feebleness of its circulation, and Dr. Couney regards it as having a fair chance of living.

REDUCTION OF INFANT MORTALITY. — The New York Health Department has formulated, according to the *Medical News*, the following instructions regarding ordinary nursery hygiene and sanitation, in the hope that thereby the infant mortality may be decreased:

*First* — Nurse the baby, and nurse it regularly, about every three hours. If you cannot nurse the baby, consult your own physician or send to the Department of Health for a physician. *Second* — Do not give the baby condensed milk. *Third* — Never use the loose milk sold in grocery stores as food for the baby. *Fourth* — Never give the baby raw milk in warm weather. *Fifth* — Use only bottled pure fresh milk, properly prepared and sterilized, and feed the baby at regular intervals, about every two and a half or three hours. *Sixth* — In the morning prepare and sterilize enough milk to last the baby during the day and until the next morning. Cover each bottle and place on ice after sterilization. *Seventh* — See that the nursing bottles and nipples and all dishes used to hold the milk are kept absolutely clean. Wash these utensils in hot soap suds and then rinse in scalding water each time before using. *Eighth* — The water that is used to dilute the milk must be boiled. *Ninth* — Send to the Department of Health for a circular telling just how the milk should be prepared and how the baby should be fed and cared for, or notify the Department of Health that you want a trained nurse to show you how to prepare the food. *Tenth* — Send at once to the Department of Health or for your own physician if the baby becomes ill. Stop giving milk during the illness of the child, and give the milk only when the physician directs it.

## Obituaries.

### PROF. KARL WEIGERT.

IN the recent death of Prof. KARL WEIGERT of Frankfurt a. M., Germany loses another of her most brilliant and productive medical men. The night before his death he was apparently in his usual condition of health, and evidence of serious illness had not been suspected. The cause of his death proved to be disease of the coronary artery with thrombosis.

Weigert was born at Münsterberg in Schlesien on the 19th of March, 1845. His parents kept the first inn of the town, which became in its way a center for the region round about. Weigert never lost interest in the remembrance of these early days and the simple life associated with them. Later he studied in Breslau, particularly under the physiologist Heidenhain, and later in Berlin where DuBois, Virchow, Langenbeck, Traube and other distinguished men were teaching. His first assistantship, which was interrupted by the Franco-Prussian war, was in 1868 in the Breslau Pathological Institute. After the campaign he worked in Lebert's medical clinic and devoted his time to the study of practical internal medicine until Cohnheim offered him the position of first assistant in the department of pathology at Breslau. Thereafter he became a devoted follower of Cohnheim, and in 1878, when Cohnheim was called to the professorship of pathology in Leipsic, Weigert soon followed as "extraordinary" professor. At Cohnheim's death, which occurred about six years after his assumption of the Leipsic professorship, although fully fitted for the position through work already accomplished and through capacity for further research, Weigert was denied the succession, owing to his race. This was a period of much discouragement, and, as one of his biographers has said, for a time it appeared that he might be obliged to return to the "misery of general medical practice." In 1885, however, he was called to Frankfurt as director of the Senckenberg Institute, where he has since carried out the investigations which have placed him in the front rank of his calling.

Weigert's earliest important publication was on the subject of the staining of bacteria, published in 1871, and later supplemented by a similar article in 1875. Later, an important article on "Nephritis" appeared from his pen, and also one on "Vein Tuberculosis and its Relation to Miliary Tuberculosis." After his call to Frankfurt his attention was more particularly turned to problems relative to the nervous system, and especially to methods of staining. The myeline sheath stain, published in 1885, followed by his fibrin and elastic fiber stains, and finally his monograph on a new method of staining normal human neuroglia, mark a progress in the study of the nervous system and in microscopic technique in general which few other men have accomplished. In 1896, he read an important paper on new attitudes towards pathological anatomy, and since that time, although not

publishing widely, has kept in closest touch with the advances in pathological anatomy. It was proposed this coming spring, on the occasion of his sixtieth birthday, to collect his widely scattered publications as a memorial volume.

In personality Weigert was genial and endeared himself to the students who gathered at his laboratory from various parts of the world, and particularly from the northern countries of Europe. Many Americans also found a hospitable welcome and opportunities for work under his general direction. Unlike many of his contemporaries he seldom entered into controversy. He wrote only when he felt that he had some special message to convey; he had small patience with the many attempts to modify his methods under the guise of originality, and in general preserved the broad-minded and dignified attitude toward his work and his profession which in this time of competition is not always attained. His loss will be deeply felt, not only at the institute in Frankfurt which he had done much to develop and to whose reputation he had materially added, but also to the wider circle of investigators throughout the world who have been indebted to him for methods of research which have made possible many valuable contributions to medical literature.

### WILLIAM RICE PRYOR, M.D.

Dr. William Rice Pryor, a well-known New York surgeon, died in St. Vincent's Hospital, New York, on Aug. 25. He was the youngest son of Roger A. Pryor, ex-Justice of the New York Supreme Court, and at the time of his death was in his forty-sixth year. Dr. Pryor was graduated from the College of Physicians and Surgeons in 1881. Since 1884 he has been professor of gynecology in the New York Polyclinic Hospital, visiting gynecologist to St. Elizabeth's, and consulting gynecologist to St. Vincent's Hospital. He wrote copiously on medical subjects, was a member of many medical associations and enjoyed a large practice. He is said to have been particularly considerate of the poor and to have extended his charity to them with liberality and wisdom.

## Miscellany.

### MEDICAL WOMEN IN RUSSIA.

By an imperial ukase recently promulgated in St. Petersburg, according to the *British Medical Journal*, women who wish to practice medicine are placed on exactly the same footing as men. The way is freely opened to them to obtain not only a license to practice, but the degree of Doctor of Medicine. Women who have obtained the title of doctor at a foreign university are admissible at once to the Russian state examination. For admission to the Institute for the Education of Medical Women, the possession of a leaving certificate of a recognized girls' school and the passing of a "not too severe" entrance examination are required. The candidate must not, however, be a Jewess, and she must not be less than nineteen nor more than twenty-eight years of age. A Jewess can be admitted only if the number of co-religionists in the Institute does not exceed three per cent of the whole number of students. Applicants for admission to the Institute who have neither home nor relations in St. Petersburg will be compelled to live in a hostel specially established for the purpose.

### AN ANTIVACCINATIONIST ANSWERED.

In one of Dr. William Everett's entertaining contributions from England to the Boston *Transcript* (Aug. 27), he narrates the following anecdote, which was told him by an English physician:

A "conscientious objector," being brought before a magistrate to account for refusing to have his child vaccinated, pleaded that he was conscientiously opposed to the process. The magistrate, in a blustering way, insisted on his detailing the grounds for his objections. "Why," said the objector, "I had one of my elder children vaccinated and he has turned out pretty nearly an idiot." "Well," said the justice, "I never heard that vaccination operated to prevent hereditary complaints."

### THE REGIUS PROFESSORSHIP OF MEDICINE AT OXFORD.

The *Lancet* comments as follows upon Dr. Osler's Oxford appointment:

Prof. William Osler has been appointed by the King, Regius Professor of Medicine in the University of Oxford in succession to Sir John Burdon Sanderson who has recently resigned the post. We heartily congratulate the Crown upon their choice and no less heartily do we felicitate the University upon adding to the number of their professors so brilliant an exponent of science. It will be remembered that at a meeting of Oxford medical graduates which was held in London on Jan. 5 a resolution was passed, "that in the opinion of this meeting the Regius Professor of Medicine should be a physician who is representative of medicine in its widest sense." Everyone will allow that the new Regius professor fulfills this requirement to the uttermost. As a teacher Professor Osler has had a very wide experience, having filled the chair of medicine at McGill University, Montreal, his first *alma mater*, at the University of Pennsylvania, and at the Johns Hopkins University, the position which he now quits for Oxford. He is the author of the best textbook of medicine of the day, one which enjoys a large circulation among practitioners and students alike, and he is universally recognized as one of the foremost exponents of modern medicine. It is an open secret that there promised to be some difficulty in filling the chair vacated by Sir John Burdon Sanderson, and at the meeting of Oxford medical graduates to which we have referred it was held by resolution that the Regius professor "ought to be a man who could be accepted as the leader and representative in Oxford of the medical graduates and one to whom they would with all confidence give their loyal support." Oxford has now obtained just such a man. In Professor Osler's hands the University may be sure that the medical school will progress upon learned, practical and dignified lines.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, AUGUST 20, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid Fever. | Diarrheal Diseases. |
|---|---|---|---|---|---|---|---|---|
| New York . . | 3,908,644 | 1,291 | 570 | 39.58 | 8.46 | 2.01 | 1.54 | 22.69 |
| Chicago . . . | 2,021,086 | 437 | 155 | 42.09 | 5.72 | 1.14 | .91 | 24.71 |
| Philadelphia | 1,407,968 | 420 | 155 | 36.42 | 5.24 | 1.42 | 2.62 | 17.85 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 201 | 81 | 41.86 | 6.40 | — | 4.92 | 21.67 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | — | — | — | — | — | — | — |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 61 | 22 | 36.05 | — | 8.19 | 1.64 | 18.02 |
| Boston . . . | 617,950 | 217 | 90 | 41.00 | 5.52 | — | 2.30 | 24.38 |
| Worcester . . | 136,925 | 35 | 11 | 8.51 | 5.71 | — | — | 5.71 |
| Fall River . . | 119,349 | 62 | 35 | 43.55 | 4.84 | — | — | 37.10 |
| Lowell . . . | 104,402 | 38 | 22 | 47.35 | 7.89 | 7.89 | — | 34.20 |
| Cambridge . | 100,998 | 12 | 5 | 50.00 | — | — | 8.33 | 41.65 |
| Lynn . . . . | 73,875 | 22 | 10 | 27.27 | 4.54 | — | — | 27.27 |
| Lawrence . . | 72,348 | 23 | 11 | 47.82 | — | — | — | 47.82 |
| Springfield . | 72,020 | 23 | 6 | 17.39 | — | — | — | 17.39 |
| Somerville . | 70,413 | 16 | 4 | 12.50 | — | — | — | 6.25 |
| New Bedford | 68,863 | 36 | 26 | 51.81 | — | — | 2.73 | 43.63 |
| Holyoke . . . | 50,538 | 16 | 11 | 56.25 | — | — | — | 56.25 |
| Brockton . . | 46,601 | 14 | 7 | 28.57 | — | — | — | 21.42 |
| Newton . . . | 39,310 | 6 | 3 | 33.33 | — | — | 16.67 | — |
| Haverhill . . | 39,061 | 11 | — | 9.09 | 9.09 | — | — | — |
| Malden . . . | 37,205 | 15 | 8 | 33.33 | 20.00 | — | — | 26.66 |
| Salem . . . . | 37,188 | 17 | 10 | 52.93 | — | — | — | 46.05 |
| Chelsea . . . | 36,499 | 9 | 3 | — | — | — | — | — |
| Fitchburg . . | 36,335 | 1 | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 13 | 6 | 38.50 | 7.70 | — | — | 38.50 |
| Everett . . . | 30,209 | 5 | 2 | — | — | — | — | — |
| North Adams | 29,201 | 8 | 3 | 12.50 | — | — | — | 12.50 |
| Quincy . . . | 26,798 | 5 | 1 | 20.00 | — | — | — | 20.00 |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 17 | 1 | 29.41 | — | — | 11.76 | 17.64 |
| Brookline . . | 23,576 | 6 | 1 | 33.33 | — | — | — | 16.67 |
| Pittsfield . . | 22,870 | 3 | — | 33.33 | — | — | — | — |
| Medford . . | 21,956 | 2 | 2 | 50.00 | — | — | — | 50.00 |
| Chicopee . . | 21,692 | 6 | 5 | 33.33 | — | — | — | 33.33 |
| Northampton | 20,314 | 10 | 4 | 40.00 | — | — | — | 30.00 |
| Beverly . . . | 15,807 | 1 | — | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 3 | 2 | — | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | — | — | — | — | — | — | — |
| Newburyport | 14,478 | 4 | 0 | 25.00 | — | — | — | 25.00 |
| Woburn . . . | 14,315 | 6 | — | 33.33 | — | — | — | 33.33 |
| Melrose . . . | 13,819 | 7 | 2 | 28.60 | — | — | 14.30 | — |
| Westfield . . | 13,809 | 3 | 2 | 33.33 | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 2 | — | 50.00 | — | — | — | 50.00 |
| Revere . . . | 13,609 | 5 | 1 | 20.00 | — | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | — | — | — | — | — | — | — |
| Southbridge . | 11,716 | — | — | — | — | — | — | — |
| Watertown . | 11,575 | 3 | 1 | 66.67 | — | — | — | — |
| Weymouth . | 11,350 | 3 | 0 | — | — | — | — | — |
| Plymouth . . | 11,139 | 3 | 1 | — | — | — | — | — |

Deaths reported, 3,097; under five years of age, 1,279; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,202; acute lung diseases 194, consumption 310, scarlet fever 10, whooping cough 18, cerebrospinal meningitis 29, smallpox —, erysipelas 5, puerperal fever 7, measles 11, typhoid fever 57, diarrheal diseases 710, diphtheria and croup 45.

From whooping cough, New York 2, Chicago 7, Philadelphia 5, Baltimore 1, Boston 3. From measles, New York 7, Philadelphia 1, Baltimore 1, Boston 2. From scarlet fever, New York 5, Philadelphia 4, Baltimore 1. From cerebrospinal meningitis, New York 24, Baltimore 1, Boston 1, Worcester 1, Somerville 1, Watertown 1. From typhoid fever, New York 20, Chicago 4, Philadelphia 11, Baltimore 10, Providence 1, Boston 5, Cambridge 1, New Bedford 1, Newton 1, Waltham 2, Melrose 1. From erysipelas, New York 1, Chicago, 1, Providence 1, Boston 2.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending Aug. 6, the death-rate was 19.8. Deaths reported 5,785; acute diseases of the respiratory organs (London) 54, whooping cough 95, diphtheria 46, measles 118, smallpox 7, scarlet fever 20.

The death-rate ranged from 6.5 in Southampton to 37.6 in Liverpool; London 19.6, West Ham 30.7, Brighton 12.4, Plymouth 14.6, Bristol 11.9, Leicester 17.4, Nottingham 23.5, Bolton 15.1, Manchester 25.5, Salford 23.5, Bradford 21.2, Leeds 21.7, Hull 23.4, Sheffield 20.0, Cardiff 13.3, Rhondda 23.0, Wigan 22.4, Merthyr Tydfil 17.2, Smethwick 7.7.

## METEOROLOGICAL RECORD.

For the week ending August 20, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S..14 | 29.84 | 68 | 73 | 62 | 85 | 87 | 86 | S W | S | 8 | 9 | O. | F. | .06 |
| M. 15 | 29.92 | 72 | 82 | 63 | 76 | 65 | 70 | W | N E | 7 | 2 | C. | C. | 0 |
| T..16 | 29.92 | 73 | 81 | 65 | 73 | 90 | 82 | W | S | 4 | 5 | C. | O. | .03 |
| W .17 | 29.81 | 75 | 84 | 66 | 81 | 54 | 68 | W | W | 9 | 8 | F. | C. | 0 |
| T..18 | 29.98 | 69 | 79 | 59 | 74 | 48 | 61 | W | N W | 8 | 18 | O. | C. | 0 |
| F..19 | 30.23 | 63 | 70 | 55 | 58 | 60 | 59 | N W | S | 10 | 8 | C. | F. | 0 |
| S..20 | 29.97 | 68 | 75 | 61 | 89 | 82 | 86 | S E | S W | 15 | 26 | R. | R. | .79 |
| ☞ | 29.96 | | 78 | 62 | | | 73 | | | | | | | .88 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for week.

## RECENT DEATHS.

JOHN MCCLARY STEELE, M.D., M.M.S.S., died in Worcester, August 1, 1904.

ALONZO CARTER WEBBER, M.D., M.M.S.S., died in Cambridge, August 5, 1904, aged seventy-eight years.

HARRIET RAWSON GOODRICH, M.D., M.M.S.S., died in Salem, August 23, 1904, aged thirty-five years.

## SOCIETY NOTICES.

NEW YORK AND NEW ENGLAND ASSOCIATION OF RAILWAY SURGEONS. — The fourteenth annual meeting of the New York and New England Association of Railway Surgeons will be held at the Academy of Medicine, New York City, Nov. 17, 18, 1094, under the presidency of Dr. C. G. J. Finn, of Hempstead, Long Island.

NORTHERN NEW YORK MEDICAL ASSOCIATION AND THE ST. LAWRENCE COUNTY MEDICAL SOCIETY. — These two associations will hold their meeting Oct. 18, 1904, at Ogdensburg, N. Y., the Northern New York Medical Association holding session during the afternoon and the County Society during the evening of the same day.

QUARTERLY MEETING, RHODE ISLAND MEDICAL SOCIETY.— The Quarterly Meeting of the Rhode Island Medical Society will be held in the Hall of the Y. M. C. A., Providence, on Thursday, Sept. 1. Meeting of the House of Delegates at 10 o'clock. General session at 11 o'clock.

AMERICAN ROENTGEN RAY SOCIETY. — The fifth annual meeting of the American Roentgen Ray Society will be held at the Louisiana Building, 911 North Vandeventer Ave., St. Louis, Mo., Sept. 9, 10, 12 and 13.

TRI-STATE MEDICAL SOCIETY OF ALABAMA, GEORGIA AND TENNESSEE. — The sixteenth annual session of the Tri-State Medical Society of Alabama, Georgia and Tennessee will be held at Chattanooga, Tenn., Oct. 12, 13, 14, 1904, under the presidency of Dr. F. B. Sloan of Cowan, Tenn. The headquarters will be at the Read House.

Addresses will be delivered by Dr. William J. Mayo of Rochester, Minn, and Dr. A. J. Ochsner of Chicago.

## BOOKS AND PAMPHLETS RECEIVED.

Clinical Urinology. By Alfred C. Croftan, M.D. Illustrated. New York: William Wood & Co. 1904.

Annual Report of the Board of Health of the Department of Health of the City of New York for the Year ending December 31, 1902. New York: Martin B. Brown Co. 1904.

The Practice of Obstetrics. Designed for the Use of Students and Practitioners of Medicine. By J. Clifton Edgar. Second Edition, Revised. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1904.

A Practical Treatise on Genito-Urinary and Venereal Diseases and Syphilis. By Robert W. Taylor, A.M., M.D. Third Edition, Thoroughly Revised. Illustrated. New York and Philadelphia: Lea Brothers & Co. 1904.

Friedberger & Fröhner's Veterinary Pathology. (Authorized Translation.) Translated and Edited by M. H. Hayes, F.R.C.V.S. With Notes on Bacteriology by Dr. G. Newman, D.P.H. Vol. I. London: Hurst & Blackett, Ltd. Chicago: W. T. Keener & Co. 1904.

# Original Articles.

## WHAT SHALL WE DO WITH PATIENTS HAVING PULMONARY TUBERCULOSIS?*

BY FREDERICK I. KNIGHT, M.D. BOSTON,

*Consulting Physician to the Massachusetts General Hospital, to the Sharon Sanatorium and to the Free Home for Consumptives.*

The modern method of treatment of pulmonary tuberculosis may be said to have had its inception more than fifty years ago. It then began to be appreciated that great benefit came to certain consumptive cases by a generous diet and outdoor life; and horseback, camp and other outdoor means came to be quite generally recommended by the profession. While the results were good in some cases, they were not usually curative, because the gravity of the condition was, as a rule, recognized late, and also because no restriction was put upon the amount of physical exercise which the patient should take, and many a one rode or tramped himself to death.

The plan of keeping patients under control in an institution was carried out as early as 1839 by Dr. George Bodington of Warwickshire, England, who took a house near his own for this purpose, and gave practically the same treatment as is in vogue to-day, including fresh air day and night. He was followed by Brehmer in 1859, and later by Detweiler, the latter of whom insisted on the importance of rest rather than exercise in most cases. Koch's discovery of the bacillus gave a decided encouragement and impetus to the treatment of pulmonary tuberculosis, inasmuch as it showed that many cases, cured in their incipiency, were really tuberculous, which might otherwise have been considered doubtful.

We may consider the modern method of treatment to be fresh air, generous diet, often complete rest, and expert supervision, the latter being especially important.

How can we best secure these to our patients?

In considering this question it will be well to divide the patients into three financial classes: (1) Those who are abundantly able to pursue any course recommended without regard to expense; (2) those who can afford only limited time and money; (3) those who must depend entirely on charity.

It will be well also to divide the cases, somewhat arbitrarily, of course, into three pathological classes: (1) The incipient, (2) the somewhat advanced, and (3) the far advanced, and to consider the question what to do with a patient of either of the three financial classes according as he falls into one or other of the pathological classes. I will not attempt to draw a strict line of classification in either regard; the majority of cases will fall naturally into one class or another financially and pathologically, and it would be impossible to discuss at this time those which may fall near the border line.

We will consider first the patient who has incipient pulmonary tuberculosis, and who is abundantly able to do anything or go anywhere to recover his health. Now in such a case it is not necessary to be positively sure of the diagnosis of a pulmonary affection by the crucial test, *i. e.*, the discovery of Koch's bacillus in the sputum; of course we examine for it, but those cases which are, in my opinion, doubtful, only suspicious, may for the sake of safety be treated as if the diagnosis was positive. These cases which are doubtful may be briefly mentioned here. They may show debility, and may or may not cough, with or without expectoration (if present, free from bacilli), but on examination of the chest, there may be found localized at the apex of the lung a few râles. These are, perhaps, the most suspicious of the doubtful signs, and if we know they have developed recently in connection with cough and perhaps fever, they are pretty sure to prove tuberculous, due, perhaps, if there is no sputum, to tuberculous pleuritis, as was long ago insisted by Leaming. Then there are the various slight modifications of the percussion note and respiratory murmur. Of course, it is not necessary to tell the expert that slight relative dullness at the apex of the right lung is normal, yet it is not infrequently pointed out to me by physicians as important.

A great deal of stress is laid upon the variations in respiratory murmur, the prolonged expiration (it must be strictly borne in mind also that the expiratory murmur at the right apex is relatively considerably longer than at the left in health), and the interrupted or deferred inspiratory murmur, but these signs are not enough for a positive diagnosis, neither is the shadow or impaired expansion, as shown in the x-ray picture, or any other sign indicative of slightly increased density; they are suspicious, but not diagnostic. The tuberculin test, even if it could be relied on to denote the presence of tubercle in the body, does not show that it is pulmonary. It may be asked if it makes any practical difference, if tubercle is present in the body, where the process is located. It certainly does, for tuberculosis of the respiratory tract is usually much more serious and requires more prompt and radical treatment than that of other parts; in fact, in some other regions it seems frequently to remain latent for a lifetime. I am willing to concede a probable diagnosis of tuberculosis of the respiratory tract from a combination of early signs and symptoms, but I do not think we are justified in classifying such cases as positively tuberculous without the presence of Koch's bacillus in the sputum. I think they should be put into a class by themselves as "probable incipient cases." Be it understood, however, that I approve of treating such doubtful cases as tuberculous.

There is another class of cases, seldom met, perhaps, but which does exist, and which may be mentioned in this connection. I refer to patients who present no clinical signs or symptoms of respiratory tuberculosis, yet in whose expectoration, tubercle bacilli are accidentally discov-

* Read at the meeting of the American Climatological Association at Philadelphia, June, 1904.

ered. If this condition is persistent, I do not hesitate to say that patients having it should be put at once on restorative hygiene. I recall one such case in which my advice was rejected, in which after a few years the patient, one of the first financial class, abundantly able to take care of himself, broke down with serious pulmonary tuberculosis.

What shall we do with a patient with incipient disease who is willing and able to pursue any course we recommend?

I have said that the essentials of modern treatment are fresh air, day and night, generous diet, often complete rest, and expert supervision. Shall we try to give him these at home? Even if his home is well situated in the country, it is better not to do so, in fact it is well-nigh impossible to carry out the fresh air treatment at home. He may sit on the piazza for an hour or two, but very few will be found to sit out alone all day while the family are gossiping around the fireplace inside. Then, of course, the temptation to do business or other things, now prejudicial, is ever present. Such a patient should go to a community of such patients, where a hygienic mode of life is the rule. Here he can have his own house and family if he likes, but the general tone of the place will make him follow the directions of the physician, and he will find plenty of company in the outdoor life. Many of these communities have started up about sanatoria because the location of the sanatorium is supposed to be especially selected for its salubrity, and because patients can here have the advice of the experienced physicians of the institution. As a rule, a patient of the first financial class can have more comfort and luxury in his own house, but occasionally we meet one whom it is hard to control, and who will do better in a sanatorium. When he has learned the habits of such a place, he may, if he recovers, carry out many of them in his own home.

It is not my purpose at this time to consider special climatic conditions with reference to bronchial irritability or the general nutrition and vitality of the patient, though this is important, very important in some cases, but not entitled to so much consideration since it has been shown that tuberculous patients may recover by means of outdoor life in any climate. Still, the same climatic conditions do not suit all patients, and when possible they must be considered with reference to each individual case.

Of transcendent importance, however, is skilled supervision. Many a life has been sacrificed of patients dispatched to a climate where outdoor life is pleasant, who followed their own inclination in everything, and thought their mere presence in the region was all that was necessary, even if half their time was spent in hotel barrooms, and though they did ride horseback with a body temperature of 103° F.

In the present state of our knowledge we should commit our patient, if possible, to an expert of sufficient experience and wisdom to refrain from unnecessary medication, especially vaunted specifics, but who has sufficient knowledge of general medicine to discover and treat underlying conditions which may have predisposed to the disease, and which may still be aggravating it.

The same course should be pursued with a patient of the first financial class who comes in the second pathological class, though, of course, he must plan for a much longer stay. If a patient of the first financial class falls into the third (or far advanced) pathological class, the question will be whether he should be made as comfortable as possible at home, or make a new home in a better climate for the rest of his life. This depends a good deal on the temperament of the patient, his love of home and old ties, his sensitiveness to temperature changes, and also on the possible existence of an irritable bronchitis, which may be constantly aggravated in a harsh climate, and be very much soothed in a milder one.

I shall never forget the gratitude of one patient who went away knowing he would not return, but grateful for the comparative comfort of his last days.

What shall we do with a patient of the second financial class (of moderate means) and of the first pathological class (incipient)?

It is hardly necessary to repeat that all incipient cases are better treated away from their homes. A good private sanatorium is the best place for most patients with incipient disease who fall into the second financial class. It would usually be well that it should not be very distant from home, in order that the patient may be visited by his family occasionally, and also return at times, with the consent of the authorities, for necessary business. A patient of moderate means with far advanced disease, as a rule, had better husband his resources for comfort at home.

And now comes the question, the most important, perhaps, for the welfare of the community: What shall we do with the third financial class, the patients dependent on charity? Sanatoria and hospitals are what is needed for these patients, of all classes pathologically, and the institutions should be absolutely free and not hampered with small fees, or a declaration of poverty. A beginning has been made, but the ideal condition will not be realized until a poor tuberculous patient in any stage of the disease can have free hospital accommodation. And I believe that the isolation and control and treatment of all such patients, often ignorant and careless, will be an economy, as has been often pointed out before, to the state or city which provides for them.

If the poor are obliged to remain at home on account of lack of accommodation in our institutions, it is of the utmost importance that they should be visited repeatedly at their homes until the family become thoroughly familiar with the hygiene and prophylaxis of the disease.

And now again I must say a parting word on medication: Judicious medication can do so much good, and routine, injudicious medication, so much harm. No medicine, be it cod liver oil

or creosote, or any other supposed specific, is to be encouraged for a minute if it impairs the appetite or digestion of food. The patients who come to us consultants suppose we know the treatment to which we commit them when we send them away from home, and I think perhaps we have been too careless in not knowing more about it than we often do. I was much impressed by what was once told me by a distinguished alienist, — that he never sent a patient to an institution that he did not visit him regularly. In this case he felt a continued responsibility for his patient's restraint, which would differ from the responsibility in our case, of course, but we should have a pretty good general idea, not only of the locality to which our patient goes, but of the treatment to which he is to be subjected.

## THE INTERRELATION OF MEDICINE AND SURGERY IN THE TREATMENT OF GASTRIC ULCER.*

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But a comparatively short time ago gastric ulcer, both in its acute aspects and in its chronic complications, was regarded as a purely medical disease, and ten years ago, to advise operation for chronic ulcer would have been to assume a grave surgical responsibility. The now famous statistics of Joslin and Greenough, however, called attention to the fact that the medical treatment of gastric ulcer was far from satisfactory. They showed that while the immediate mortality under medical treatment was not large, yet the ultimate mortality from the disease was very much higher than had been supposed, and that medical treatment could not be expected to permanently cure a very large percentage of the cases. These observations served to draw attention to the very notable work of Mr. Mayo Robson and his colleague, Moynihan, and to the extensive statistics of Mikulicz. From these it appeared that the mortality of surgical operation for this condition was less than the mortality under medical treatment, if the ultimate result in both cases was taken into account. The general feeling, especially in this community, was that the risk of operation was unwarrantable, and the profession was little prepared to offer for surgical treatment any cases except those which were obvious failures under medical treatment and which were too advanced to yield good results in the hands of the surgeon. Within the last two or three years, however, much attention has been paid to the surgical aspects of this question, and many cases have recently been operated upon with excellent results. It seems that the medical conservatism of the past has been extreme, and one is tempted to hope that the surgical activity of the future may be kept within reasonable bounds.

At the outset it may be admitted that the acute and subacute varieties of dyspepsia and acute gastritis are distinct medical conditions, and surgery is little likely to invade this domain. On the other hand, perforating ulcer of the stomach is, and long has been, a distinct surgical condition and one in which cure can only result from surgery.

### ACUTE BLEEDING ULCER.

Acute attacks of hemorrhage from the stomach due to gastric ulcer are in the vast majority of cases to be treated medically. Under rest, morphia and nutrient enemata the hemorrhage can, as a rule, be controlled, and the tendency to recur within a short interval is in most cases slight. On the other hand, cases are sometimes seen in which, in the hands of the very elect, control of the hemorrhage by medical means cannot be obtained, and the patient will inevitably be lost unless surgical aid be sought. In a patient reduced by severe acute or long-continued moderate bleeding the conditions are most unfavorable for operation. With a low hemoglobin, as, for instance, in the vicinity of 50%, these patients show a very poor resistance to shock and are much more readily infected than under normal conditions. The mortality from operations upon the stomach is largely due to these two causes, and the mortality will increase immensely with the lowering of the patient's vitality. If, then, operation is to be advised it must be done at the earliest possible moment, when it can be shown that medical treatment has failed or is likely to fail. The indications for surgical intervention may be formulated as follows: Operation is to be advised,

(1) After failure of good medical treatment to promptly stop acute hemorrhage.

(2) If, though the acute hemorrhage has been controlled, slight but frequently recurring hemorrhage persists.

(3) If after the control of a large acute hemorrhage a second hemorrhage occurs within a short time.

All these three indications are based upon one general proposition: That in acute bleeding ulcer the failure of medical treatment must be early anticipated and that it is not wise to wait until the patient is so far reduced as to render the risk of surgical operation very great. The following case illustrates the point we wish to emphasize:

Mrs. D., patient of Dr. A. N. Broughton, to whom we are indebted for the history of the previous condition. Patient had a history of three attacks of hemorrhage during the past three years. On Jan. 2, 1901, there was a profuse hemorrhage of about a pint of bright blood. On Jan. 3, she collapsed without obvious cause and required vigorous stimulation with salt solution and strychnia, in order to tide her over this emergency. For the next week she gained steadily on nutrient enemata and was without hemor-

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rhage. At this time she was seen by an able surgeon, who advised against operation. Patient's condition was at that time not thoroughly good. She was much blanched, though less so than a week previously. Pulse was good, temperature was normal. On Jan. 21, nineteen days after the first hemorrhage, mouth feeding, milk and lime water, half a dram each, was begun, and following this within a few hours a severe hemorrhage occurred. The question of operation was again considered, and she was seen by another surgeon who considered the condition too unfavorable for surgical intervention. The hemorrhage continued and the patient died three days later. Autopsy showed a duodenal ulcer lying directly beneath the abdominal wall in a very accessible position. There was much chronic thickening about the pylorus and the bleeding vessel was identified in the center of this mass.

This case is one which might have been saved by operation promptly undertaken. In deciding the question of hemorrhage it is not safe to rely upon blood vomited as an early indication. It must be remembered that a considerable proportion of so-called gastric ulcers are really duodenal, and a considerable amount of the blood may go into the intestine and not appear until some time after the bleeding has taken place. The two surest guides are the per cent of hemoglobin and the pulse. A sudden rise in the pulse rate or a tendency to continued, though slight, increase in rate must be regarded with suspicion, unless fully accounted for upon other grounds. If under medical treatment the hemorrhage once controlled does not recur, the clear indication is to wait, but we then come face to face with the question of whether we shall advise operation later, with a view to preventing the recurrence of hemorrhage. Recurrent hemorrhage is particularly characteristic of gastric ulcer, and while we are not in a position to postulate that hemorrhage having once occurred will recur, it is certainly true of a large number of cases. The situation is somewhat similar to that of chronic recurring appendicitis, a question upon which the medical community was long divided but upon which it is now largely in accord. We have come to regard a well-marked attack of appendicitis as so likely to be followed by another that operation in the interval is distinctly to be advised. This position has been achieved by pressure in two directions. First, it has been shown conclusively that the probability of recurrence is very great, and, second, the mortality of the interval operation is so low as hardly to be a serious consideration. But we cannot claim the same clearness in regard to gastric ulcer. Recurrence is not so common, and the mortality of the operation is, even in the most skillful hands, much greater than that for appendicitis. We are not, therefore, prepared to urge the treatment of gastric ulcer by surgical operation in the interval between hemorrhages, but there comes a point at which the tendency to recurrence is so marked and the probability of future immunity is so slight that operation will present the lesser evil of the two. The following case illustrates operation for recurrent hemorrhage:

Mr. C., thirty-three years old. At the age of fifteen began to have trouble with his stomach, frequently vomiting after meals. At this time he was a student, with irregular habits of eating. Attacks of vomiting occurred at irregular intervals, until April, 1901, when he vomited blood. In January, 1902, he vomited half a basin of bright blood and had tarry stools. At this time he was put upon nutrient enemata, which he says were continued for three months. In April, 1902, four months after his last attack, he again vomited half a basin of bright blood and for a time passed blood by rectum. During this time he had a good deal of fermentation and was washing his stomach with the tube with relief. He continued until June, 1903, when he again vomited blood in considerable quantity. During the five weeks previous to Oct. 23, 1903, he had much severe epigastric pain, especially after eating, relieved by vomiting. Examination showed a thin, but well-developed man; weight 91 pounds; best weight 135 pounds; pulse small and easily compressible. Examination negative except for the abdomen, which was moderately tender just below the xiphoid cartilage, and in the region of the stomach succussion could be obtained four hours after taking a glass of milk. Hemoglobin, 55%; skin dry and harsh, urine much diminished in amount, alkaline, without albumin or sugar. Examination with the tube showed much stasis, hyperacidity with hypersecretion. The stomach, in the morning, contained a considerable quantity of gastric juice with excessive hydrochloric acid, when nothing had been taken since the washing on the previous evening. The upper border of the stomach was in normal position, lower border one inch below the umbilicus. He was kept upon medical treatment, with nutrient enemata and careful feeding, with washing before supper and breakfast, for four weeks, when his hemoglobin had increased to 70%, his weight from 91 to 108 pounds. He was taking a moderate amount of food by mouth without distress. At this time he was operated upon. The pylorus was found to be adherent to the liver and thickened and indurated to the size of a pigeon's egg; the duodenum was sharply kinked and adherent to the stomach. Posterior gastro-enterostomy was done without difficulty. Four weeks later he was up and about, taking food freely without pain; the stomach contents were normal. Examination with the tube, six weeks after operation, showed the stomach normal in position and size. The contents left the stomach at about the normal time and was of entirely normal consistency. While it is too early to speak of the results as permanent, this seems to show one of the more brilliant possibilities of stomach surgery in carefully selected cases. Four months after operation he wrote that his weight was 135 pounds and that he was in excellent condition, without gastric symptoms.

The difficulty will come in deciding just what cases are suitable for an interval operation. We might formulate the indications somewhat as follows. We should operate:

(1) Upon cases in which the tendency to recurrent hemorrhage is well marked.

(2) Upon cases in which, though the recurrence of hemorrhage is not a prominent feature, yet the persistence of dyspeptic symptoms renders the patient unfit for an active life.

(3) Upon cases in which a long train of dyspeptic symptoms culminates in an attack of hemorrhage.

We should persist in medical treatment:

(1) In cases of acute hemorrhage not preceded by a train of dyspeptic symptoms and not showing marked tendency to recurrence.

(2) In cases in which acute hemorrhage is followed by apparent complete recovery, and in which the patient is free from serious annoyance from dyspeptic symptoms.

### CHRONIC ULCER AND ITS SEQUELAE.

At the outset of any consideration of chronic ulcer we must disabuse our minds of the idea that hemorrhage is a constant symptom of gastric ulcer. The number of cases in which exploratory operations upon the stomach have been done is now so large that we are in a position to show definitely that in many cases hemorrhage either does not occur or is so trivial as to be entirely overlooked both by the patient and his physician. It can readily be demonstrated that chronic ulcer may exist for years without symptoms, or appear merely as a chronic dyspepsia, and that very extensive permanent damage may be done to the stomach and neighboring viscera. A considerable proportion of cases of hour-glass stomach are not preceded by hemorrhage; many cases of dilatation of the stomach due to pyloric obstruction are also free from hemorrhage; and yet in both these cases the permanent injury to the stomach is so great that the necessity for surgical operation is evident. We may divide the cases of chronic ulcer into more or less definite classes, according to the symptoms, and under these headings discuss their treatment.

(1) Cases of severe chronic dyspepsia without marked dilatation of the stomach. These cases have long been supposed to belong peculiarly to the physician, and certainly, in many cases, chronic dyspepsia is a medical disease and under proper treatment may be, if not cured, at least sufficiently palliated to make life tolerable. There are, however, cases in which, in spite of prolonged careful medical treatment, no considerable improvement is obtained, and these patients are practically invalided. More and more cases are accumulating in which these symptoms are proven to be due to chronic ulcer amenable to surgical treatment. They are obviously cases which will remain long in the hands of the medical men before the question of operation is considered, and it is entirely proper that they should so remain, but the point we wish to urge is that, if medical treatment fails to effect marked improvement of the symptoms, surgical advice should be sought and the question of operation carefully considered.

Miss T., thirty. History unimportant until 1899, when she began to have gastric pain after eating, with tenderness in the epigastrium and in the back over an area corresponding to the stomach. Vomiting frequent, never of blood. Diet consisted largely of bread and tea. Physical examination showed thin, pale woman, evidently in pain. Examination negative except for a very tender point just below the tip of the xiphoid cartilage; a corresponding point of tenderness in the back. Hemoglobin was 85%. She was at this time under medical treatment for three months, with much improvement in her general condition. Three years later, in August, 1903, she again came under treatment, having been practically an invalid during this time, unable to do any considerable amount of work without severe dyspeptic symptoms. Physical examination was practically as at previous visit. Because of persistent painful dyspepsia, due, probably, to ulcer, an exploratory operation was advised and eargely accepted. An attempt was made to wash the stomach, previous to operation. This resulted in very severe pain and collapse and therefore no data in regard to the size or position of the stomach could be obtained. Operation showed an hour-glass stomach, with a constriction about four inches from the pylorus, and the opening contracted to the size of a lead pencil. A double plastic operation like the pyloroplasty was done upon the anterior and posterior surfaces of the stomach. Convalescence was complicated by a sharp attack of pleurisy, but was otherwise uneventful. The patient is now eating a free diet such as she has not taken for years and is very comfortable. Three months later had gained thirteen pounds and was looking for work.

A certain number of such cases, at first apparently of chronic dyspepsia, will ultimately show the condition known as hour-glass stomach. This condition can be diagnosed only when well marked with distinct constriction forming two or more pouches. Robson and Moynihan have together and separately collected a very interesting series of these cases, in many of which the diagnosis was made before operation, but there must be a very large proportion of the cases which ultimately become hour-glass stomach which for many years are nothing but chronic dyspepsia and cannot properly be diagnosed as anything else. These must, under treatment, fail to show the improvement which might reasonably be expected, and should be operated upon before they have developed the extensive organic changes seen in true hour-glass stomachs. That in this attempt to relieve chronic dyspepsia which does not yield to medical treatment a certain number of errors will be made, must be generally admitted.

As illustration, a patient with mucous gastritis and colitis, operated upon for supposed gastric ulcer.

Mrs. G., twenty-eight. Seen in March, 1901. Three years before began to have pain in the abdomen, variable in position and character. One year ago persistent nausea and vomiting, retained very little food, pain in the epigastrium, worse after taking food. Vomitus is said to have been streaked with blood, but no great quantity of blood ever vomited. Urine scanty. At this time she began to take morphia for pain, in spite of which the vomiting continued. She had been in bed for the last six months. During the summer the urine was very scanty and was at times thought to be suppressed. Just previous to coming under our care she was operated upon for pelvic pain, with removal of the left ovary, but without relief of symptoms. When first seen she was much emaciated. Examination negative except for the abdomen, where visible peristalsis could be seen at almost any time, most marked in the region of the umbilicus. On the left side at

about the level of the umbilicus was a very sensitive area as large as the palm of the hand, without muscular resistance; no tumor could be felt. This tenderness extended into the left flank, where the left kidney could be felt. The examination of the stomach contents showed catarrhal gastritis. Inflation of the stomach showed the lower border three inches below the umbilicus, the upper border three inches below the ensiform — a somewhat dilated, markedly prolapsed stomach. As a positive diagnosis could not be made, exploratory operation was advised and accepted. The examination of the stomach at operation showed it to be normal. Upon opening the stomach the pylorus was found to be narrow but without organic disease. Examination was otherwise negative. A wide pyloroplasty was done for possible spasm of the pylorus. The immediate result was magical. Patient from having taken a half to three quarters of a grain of morphia a day was made perfectly comfortable and remained so for six months, when she again came under treatment, with symptoms quite similar to those before operation. The washing of the stomach showed an enormous increase in the amount of mucus, upon removal of which, with continued washing for a few days, the symptoms disappeared. About a week later she passed a most perfect mucous case of the large intestine, thus justifying the diagnosis of mucous gastritis and colitis. A more careful study of this case in the light of our present knowledge might have avoided an operation.

Unless more delicate methods of diagnosis are developed an absolute opinion will in many cases be impossible and a certain number of cases must be operated upon, upon presumptive evidence solely. Many practitioners will undoubtedly look with disfavor upon the possibility of operating upon cases in which, after the abdomen has been opened, no lesion can be demonstrated sufficient to justify surgical treatment. It must, however, be remembered that none of the great operations upon which we to-day rely as the main stay of surgical brilliancy have won their present position without a certain amount of unnecessary operating, and it is not probable that we shall arrive at knowledge sufficiently definite to enable us to operate only upon the proper cases without, in the preliminary stage, operating upon a certain number of improper ones. It does not seem, therefore, unduly radical to urge that physicians should be willing to advise investigation in cases of persistent chronic dyspepsia, with the full knowledge that occasional errors will occur, and an exploratory operation will be done without finding sufficient justification for further intervention. Without in any way underestimating the gravity of exploratory operations upon the stomach, we believe that it is well within the facts to state that the mortality from operations of this type should be but a small fraction of 1%, and that such a mortality need not weigh adversely against the extreme amount and long duration of the suffering which many of these chronic dyspeptics undergo. If we are to wait for absolute certainty of diagnosis before advising operation, we shall probably succeed in relieving but a small proportion of people who might have definite relief.

(2) Cases of chronic dyspepsia accompanied by dilatation of the stomach. In a certain proportion of cases of chronic dyspepsia examination by means of the stomach tube will show marked dilatation, and this is frequently regarded as of the atonic variety. It seems probable, in the present state of our knowledge, that the diagnosis of atonic dilatation has been considerably overdone and that many of these cases are due to obstruction at the pylorus of organic origin, due either to ulcerative processes in the pyloric region of the stomach or in the adjoining portion of the duodenum, or to perigastric adhesions originating either from ulcers of the stomach or duodenum, or to inflammatory conditions originating in the biliary passages. Experience in operations for the removal of gallstones shows a considerable number of cases of obstruction of the pylorus, and this is a condition which should always be considered in the attempt to diagnose a case of dilatation of the stomach. The main point at issue in this discussion is what we shall regard as sufficient evidence to prove the diagnosis of atonic dilatation and upon what indications we shall advise surgical investigation. That atonic dilatation is a very real condition is not for a moment to be disputed. It may result from a great variety of conditions tending to general debility, and it is probable that if the stomach tube were more used it would be found to exist more frequently than is now supposed to be the case. But if the dilatation be due to general and not to local causes, it must be demonstrable that the condition is relievable by medical treatment, and this relief must be permanent and not temporary. Thus, if dilatation, however great, can be cured or largely relieved by the proper use of the stomach tube and by general medical and hygienic treatment, the diagnosis of atonic dilatation seems justified. If, on the other hand, these measures fail to produce anything more than temporary relief, we must seek the cause elsewhere. It must be remembered that particularly in women with relaxed abdominal walls and a general tendency to ptosis of the abdominal viscera, sufficient sagging of the stomach may occur to produce more or less obstruction at the pylorus, provided always that the ptosis does not affect the liver and that the adhesions of the pylorus to the under surface of the liver are sufficient to keep it fixed in that relation. Under these circumstances we may have considerable dilatation of the stomach, together with a certain amount of hypertrophy, without any organic disease, and without, therefore, presenting any indication for operation. But under these circumstances proper medical treatment, coupled with an efficient abdominal binder, will generally give sufficient relief to enable us to exclude the presence of organic disease. On the other hand, in organic stricture the history will in many cases be important as tending to show previous acute inflammation either in the biliary passages or in the stomach itself. Such a suggestive history, coupled with present dilatation which

resists medical treatment, may be regarded as evidence of pyloric stenosis and justifies exploratory operation. This is illustrated by the following cases:

Mr. L., thirty. First seen in October, 1902. For five years has had dyspepsic symptoms consisting of pain (worse after meals), gas, but never nausea or vomiting. Constipation. Heavy feeling in the abdomen, with occasional heart-burn. Appetite is good; diets carefully on account of pain. This pain is in the epigastrium close to the tip of the xiphoid and a little to the right, where he says there has been tenderness. No blood ever seen.

Examination was negative except for slight tenderness in the epigastrium. After three months' medical treatment his condition was essentially the same. A diagnosis of gastric ulcer was made. On the 30th of December he came to the clinic writhing with pain, which had come on three or four hours previously without apparent cause. Examination of the abdomen showed the stomach to be much distended, with visible peristalsis and much tenderness. The stomach tube removed 1,500 cc. of partly digested food, with disappearance of the pain, distention and rigidity. One and one-half hours later the pain returned and 1,000 cc. were again removed with the tube. Chemical examination showed hyperacidity. When seen the next morning examination was totally negative and he was discharged in excellent condition. In spite of careful dieting he had, six days later, another similar attack, during which he is said to have vomited four quarts. The diagnosis of pyloric stenosis from ulcer was made, and operation was advised. A median incision was made and the pylorus was found high up, surrounded by a mass of adhesions and adherent to the lower surface of the liver. The whole pyloric region appeared to be a mass of scar tissue without evidence of malignancy. No attempt was made to dig the pylorus out of these adhesions. A posterior gastro-enterostomy was done, with complete relief. One year after operation he had increased fifteen pounds in weight, was in excellent health, eating freely of ordinary diet without pain. Inflation of the stomach showed it normal in size and position and all tenderness had disappeared. This case was one of complete, or nearly complete, pyloric stenosis due to an old contracting ulcer; and it is notable that, though the symptoms of ulcer dated back over five years, no blood was ever seen. There was no evidence of stenosis until Dec. 30, when it became suddenly complete.

Mr. H., thirty. First seen Dec. 15, 1902. For eighteen months had suffered from dyspepsia, gas, pyrosis, nausea and frequent vomiting. Vomitus bitter, often in large quantities and containing remnants of food eaten days before. Never vomited blood or passed any by rectum. Very costive. Examination at this time showed a much dilated stomach, marked stasis, and hyperacidity. Later he entered the Massachusetts General Hospital, and when discharged was advised to follow a carefully planned diet and to wash his stomach daily. A year later he again came under treatment being in miserable health in spite of careful and intelligent carrying out of instructions. He was much weaker and had lost a good deal of weight. He could work but two or three hours a day. The diagnosis of pyloric stenosis, probably due to ulcer, was made and operation advised, but refused. Three months later, in every way worse, he sought help, and eagerly accepted operation. At this time his weight was 108 pounds, his best having been 138.

Examination: Much emaciation and pallor. Hemoglobin 85%; pulse 82, of poor quality, otherwise negative save for abdomen. Epigastrium prominent, splashing easily obtained, no tumor or tenderness made out. Stomach capacity two and one-half quarts. Upper border normal, lower border two and one-half inches below navel. Hydrochloric acid excessive. Marked stasis. Urine normal, but scanty.

Under medical treatment he continued to lose ground, little if any food leaving the stomach.

March 13, 1904, operation showed much hypertrophied and dilated stomach. Contracted scar near the pylorus entirely occluded the opening. Posterior gastro-enterostomy. Uneventful recovery. May, 1904, is entirely free from symptoms. Weight, 128 pounds.

Mr. T., fifty-two, first seen in December, 1900, well illustrates the temporary character of medical relief. Has had "spells of indigestion" for forty years, which consist of pain in the stomach followed by a longing for food, often by nausea, occasionally by vomiting. Three years ago vomiting became more frequent, and at times amounted to from one to two quarts, often containing much old food. Has lost weight and strength. Two years ago, as the result of a vacation, was much improved, but on resuming work ran down hill again. Four months ago, gave up his work on account of ill health. Three days ago says he drank twenty glasses of water and a few hours later vomited two quarts. No blood at any time. Examination shows a much emaciated man, weak, hardly able to walk, with dry, rough skin; otherwise negative except for the abdomen, which is prominent, with marked fulness below the umbilicus, with visible peristalsis and splashing. Hemoglobin, 70%.

Examination with the tube showed that the stomach held nearly four quarts, with very much diminished hydrochloric acid, no lactic acid. Under medical treatment he improved very much. At this time a diagnosis of pyloric obstruction due to ulcer was made. Operation advised and refused. He was seen again about a year later, in much the same condition. During this interval he had carefully and intelligently followed the instructions given him regarding his diet and the use of the tube. He had kept at work and in fairly good health. The daily use of the tube was necessary, however, once, twice, or even three times, to prevent severe dyspeptic symptoms. In the following year he lost ground rapidly from starvation, developed pulmonary tuberculosis, and died. Autopsy showed an immense dilated stomach, with a healed ulcer at the pylorus causing almost complete stenosis.

This case was one particularly suited to operation and would in all probability have given as brilliant a result as the case above described. It is against the withholding of operations from cases of this class that we would particularly advise. The development of pulmonary tuberculosis is not uncommon in these neglected cases.

Before closing we wish to draw attention to the close relation which should exist between the physician and the surgeon in the treatment of these cases. Neither alone can do justice to his patient, and only when they work together and in thorough harmony can the best results be expected. All stomach cases are primarily in the province of the medical man, but it is coming to be believed that many of them ultimately become surgical, and if this is the case

the medical man who has more or less constant relations with a surgeon is likely to allow fewer cases to slip through his fingers and is more likely to be in a position to avail himself promptly of the possibilities of surgery. On the other hand, we are strongly of the opinion that few surgeons are in a position to deal with these cases alone; few are sufficiently skilled in medical diagnosis to come to sound conclusions with any degree of certainty, and they ought, for the best interests of their patients, to avail themselves of the services of a medical man both for diagnosis and treatment. In fact, the part the surgeon will play is comparatively small, and the treatment both before and after operation is in the vast majority of cases clearly medical. Thus, by the intelligent co-operation of both physician and surgeon the best results will be obtained in a large series of cases, and he who attempts to combine in his own person the functions of these two will be certain in the long run to obtain inferior results. We may sum up the indications for surgical treatment as follows:

(1) Perforating ulcers of the stomach.

(2) Bleeding ulcers in which the hemorrhage either cannot be controlled by medical means, or, having been controlled, tends to recur, thus placing the patient's life in immediate danger.

(3) Cases with a long history of dyspepsia culminating in hemorrhage, after the hemorrhage has been controlled by medical means and the patient put in proper condition for operation.

(4) Cases of intermittent recurring hemorrhage which, though individually small in amount, tend by their persistency to produce a profound anemia.

(5) Cases of chronic dyspepsia without dilatation, which fail to yield to proper medical treatment.

(6) Cases of chronic dilatation of the stomach which fail to yield to medical treatment and are not due to a general visceral ptosis.

## SPINDLE-CELL SARCOMA OF FOOT. AMPUTATION. RECOVERY. LUNG METASTASES. DEATH. AUTOPSY.

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*Surgeon to the Massachusetts General Hospital, Boston, Mass.*

A. R. L. A medical student about twenty-two years old.

Apr. 30, 1903, he fell down stairs, twisting the right foot. He was unable to walk on account of the sprain, and has used crutches since that time. The foot and ankle have been treated by massage, active and passive motion, and for a short time by immobilization of the ankle. He complained in July, 1903, of a dull, throbbing pain in the foot. He has gained in weight recently, and has been feeling particularly well.

*Examination.* — The right foot is swollen on the dorsum and inner side of the sole; the dorsum is edematous. There is some tenderness along the first metatarsal bone. The superficial veins are somewhat enlarged and distinct in the sole of the foot. Movements of the ankle are about normal. Enlarged lymphatic glands are to be felt in the groin.

First operation July 29, 1903. An incision into the sole of the foot evacuated a large quantity — of two or three ounces — of apple-tapioca-pudding-like material, mixed with blood. The cavity containing this material occupied the whole sole of the foot. The calcaneoscaphoid joint was bared. The bones appeared intact. The wound was partly closed by suture, and drained by a wick of gauze. The material removed at this operation was examined and a report made of sarcoma.

Laboratory No. 37–116. July 29, 1913. *Pathological Report upon Material Removed from Sole of Foot.* — Microscopical examination showed bundles of closely-packed spindle cells running in all directions. The nuclei were small and oval, and the cytoplasm not well marked. There were many small and very thin-walled vessels.

Spindle-cell sarcoma.

(Signed) CHANNING C. SIMMONS, M.D.

Second operation, Aug. 5; the glands in the groin were removed. The pathological report stated that these glands were not malignant.

Third operation Aug. 8; the leg was amputated eight inches below the tuberosity of the tibia.

Laboratory No. 38–43. Aug. 7, 1903. *Report from Examination of Amputated Foot.* — Microscopical examination of the tissue from the internal malleolus showed in places closely packed bundles of spindle-shaped cells with oval nuclei. These cells merged in some parts of the section into loose myxomatous tissue, largely necrotic. In other places the cells were nearly round in shape. The growth was intimately connected with the tendons and muscles, and was surrounded by inflammatory connective tissue. Examination of the nodules at the base and head of the metatarsal bones showed the same type of cells in varying proportion, but largely necrotic. The periosteum was normal. The growth apparently originated from the muscles and tendons.

Diagnosis: Spindle-cell sarcoma.

(Signed) CHANNING SIMMONS, M. D.

The boy recovered well, the stump healed satisfactorily, and he went back to the Medical School, and in the fall was planning to get an artificial leg. He caught cold during November, 1903, and had a severe cough which required the services of a physician. He entered the hospital Dec. 26 with evidences of an intrathoracic lesion. He died Dec. 30, 1903.

An autopsy was had and it was found that he died from sarcomatous metastases in the lungs.

*Partial report of final autopsy by Dr. Jones of Lowell, Mass.* — Left lung greatly enlarged, extending beyond the median line, crowding the right lung, pushing the heart forward to the median line, and pushing the diaphragm markedly downward.

The tissue of the lung had lost any distinctive appearance, and was replaced by soft white masses the size of a hazel nut, surrounded by a softer semi-gelatinous substance.

Distributed through these areas were dark-colored clots of blood the size of an ordinary white bean, slightly larger.

The left pleura was adherent to the parietes and the diaphragm by firm adhesions.

The right lung was much less diseased, but contained masses similar to those in the left lung. The tissues were much firmer in texture than those of the left side.

*Report from the pathological laboratory upon a specimen of lung tissue forwarded from the autopsy.* — A microscopical section of the lung was furnished by Dr. Jones and showed spindle-cell sarcoma.

(Signed) DR. J. H. WRIGHT.

This case of spindle-cell sarcoma, originating in the soft parts of the sole of the foot, is extremely interesting, because it has been possible to follow the disease from its apparent beginning until death. It was the appearance of this patient at my clinic at the Massachusetts General Hospital last year which suggested the study of the relative malignancy of the sarcomata of the long bones.[1] At the time that the boy was admitted to the service, it was thought that the disease originated in the bones of the metatarsus. Subsequent examination has proved that the origin of the disease was in the soft parts next the bone. The very great malignancy of this spindle-cell sarcoma is evident. From the initial sign of the spraining of the foot to the time of the boy's death, there were only eight months. The question arose in connection with this case: At what point is it best to amputate? Amputation was done at about eight inches below the tubercle of the tibia. It was thought that if metastases had already taken place, a higher amputation would be of no advantage, and certainly if metastases had not taken place, a higher amputation would probably not have availed against metastases. I believe that exploratory incision into malignant growths, whether sarcoma or cancer, is unwise. There are cases recorded in which it would seem that the exploratory incision was the occasion of subsequent metastases. In this particular instance the question may very properly be raised: Did the incision into the sole of the foot, with subsequent curetting and laceration of veins, contribute in any way to the metastases? Certainly, a very thorough examination of the body of any individual with sarcoma of the extremities should be made, to determine, if possible, the existence of metastases before any radical operation is attempted.

## Clinical Department.

### BOSTON CITY HOSPITAL CLINICAL MEETING.

April, 1904.

Dr. F. B. Mallory in the chair. Dr. L. R. G. Crandon, secretary.

There were sixty in attendance, and cases and reports were presented as follows:

I. STRANGULATED FEMORAL HERNIA, RELIEVED BY ABDOMINAL OPERATION. II. REYNAUD'S DISEASE; GANGRENE OF FOREARM.

BY J. B. BLAKE, M.D.

Case I. N. H., female, thirty-five, married, entered Boston City Hospital Mar. 14, 1904.

Family history, negative. In Boston City Hospital several years ago for same trouble. No operation. Seven children; no miscarriages.

Two days ago, severe pain in abdomen. Vomiting and abdominal tenderness to marked degree. Bowels constipated. No jaundice. General examination negative. Locally a small mass in left groin below Poupart's ligament; freely movable, not painful, no impulse; marked tenderness and spasm in left lower abdomen.

Mar. 14, 1904, operation, Dr. Blake.

Abdominal incision, four inches long, in median line below umbilicus. Intestines dilated and reddened. Fluid in peritoneal cavity. Knuckle of gut caught in femoral canal. General traction failed to relieve this, so ordinary operation for strangulated femoral hernia was done. On opening sac, considerable fluid escaped. About three inches of dark purplish gut found. No omentum. Stricture of gut removed by incision up towards abdomen. Color and peristalsis returned under hot salt solution, and gut was returned to abdomen, resection being unnecessary. Owing to patient's condition radical operation for cure of hernia not attempted. Skin closed with silkworm gut. Small wick through femoral canal. Abdominal incision closed with silkworm gut. One wick down in pelvis, brought out at lower end of wound. Corrosive dressing. Bandage and swathe. Shock, enema.

Mar. 18. Patient made only fair recovery from ether. Moderate shock. Temperature normal. Now fairly comfortable. Bowels move well with enemata and calomel. Wicks removed and replaced to-day. Comparatively slight discharge. Mar. 22. Temperature normal. Full diet. Mar. 26. Some redness about femoral wound now going. Sinuses closing. Temperature normal. Bowels move well. Apr. 14. General condition has steadily improved. Patient up and about. Apr. 22. Wounds practically healed. Swathe. Discharged relieved.

*Pathological report:* No organism in smear from peritoneal fluid.

*Urine:* High; acid; 1,026. Mar. 14, 1904. Albumin, $\frac{1}{8}$%; sugar and bile, 0; sediment. Few free blood corpuscles; few hyaline and finely granular casts. Occasional leucocyte; few epithelial cells.

Case II. I. B., female, thirty-eight years old, entered hospital on Apr. 10, 1904.

Family history, negative. Rheumatism ten years ago. Typhoid pneumonia two years ago. For past twenty-seven years fingers have been numb and white at times.

Six days ago, slight injury to hand while working. Hand painful next day. Three days ago fingers became discolored and black. Line of discoloration has gradually moved up arm. Very painful and tender. Unable to sleep for past three nights. Three days ago struck left hip against door and now has blackened tender area over site of injury.

Well developed and nourished. Tongue dry and coated. No glands felt. Heart and lungs negative. Abdomen negative; knee jerks normal. Gangrene of right thumb and first three fingers extending two thirds way to elbow. Veins injected.

Apr. 18. Requires morphine for pain. Line of demarcation forming about middle of forearm. Fingers dry and parchment-like. Blood culture shows moderate number of streptococci in blood. Apr. 27. Operation. Amputation. Dr. Blake. Esmark. Ether. Amputation one and one-half inches above demarcation line. Muscles grayish in places and not healthy looking. Very little bleeding. Skin sutured with silkworm gut. Rubber dam wick each end incision. May 1. Dressed twice since operation. Some bloody serum pressed out of stump. Clean. Temperature slightly elevated after operation. Dropped to normal after first dressing. May 5. Temperature normal. Comfortable. Dressed daily. *Urine:* Negative throughout.

*Pathological report:* Arterio-sclerosis. Clinical diagnosis, Reynaud's disease.

[1] See "A Study of Certain Cases of Sarcoma of the Long Bones from the Massachusetts General Hospital Clinic." Boston Medical and Surgical Journal, June 2, 1904.

I. LARYNGOTOMY AND REMOVAL OF ONE CORD FOR BENIGN TUMOR OF LARYNX. II. OPERATION FOR "DROPPED KNUCKLE."

BY F. J. COTTON, M.D.

CASE I. The patient, a man of sixty, first showed dyspnea a fortnight before entrance to the hospital. He was sent in from the throat department as a case of either malignant or specific disease, having an immobile right cord and thickening about the posterior part of the cord without ulceration. Potassium iodide was tried but the dyspnea increased, coming on in night paroxysms so alarming that a preliminary tracheotomy was done on Mar. 2. For a day or two there was some inhalation of liquids and a consequent severe bronchitis. After waiting for this to subside, a median laryngotomy was done under ether with a sponge wrapped tracheal canula with the necessary later aid of adrenalin and cocain in the larynx. The pathologist's immediate report of the tissues removed was non-malignant, and the operation of partial laryngectomy which was expected was given up; the soft tissues of the whole right inner side were cut and gorged out and the larynx lightly packed. Except for a fleeting phlegmon of the neck on the second and third day recovery was uneventful. The tube was finally removed at eight days.

The patient now has a practically closed wound. He breathes normally and has a very tolerable though of course hoarse voice, which seems to be still improving. There is still some difficulty in swallowing semi-solids; solids and liquids cause no trouble.

CASE II. Man of forty-four; fractured the metacarpal bone of the first finger just behind its head, in a fall. He was treated as an out-patient, but after three weeks showed an unsatisfactory result. There was a marked "dropped knuckle" and an inability to flex the knuckle for more than a third the normal range — the limitation being apparently fibrous. An x-ray taken showed considerable displacement of the distal fragment up and forward toward the palm. Dr. Lothrop sent him in for operation, and on Mar. 31, under ether, an incision was made on the radial side of the metacarpal and an open osteotomy of the bone was performed, approximately along the line of fracture. The distal fragment was pried into place with a little trimming of bone and the finger put up in flexion. The wound was closed tight. The hand now shows no dropped knuckle at all. There is some excess of bone (callus?) at the site of fracture. Full flexion is possible; as to extension it is impossible to say as yet it should be good. The case is shown as an example of a class of cases that should be operated often; they seem trivial, but if good results are not obtained by ordinary treatment of these fractures, the disability is serious. They call for the best efforts we can give.

TABES DORSALIS, WITH SURGICAL COMPLICATIONS.

BY ABNER POST, M.D.

The patient entered the hospital with retention of urine. A catheter was easily passed and was tied in. It was said, by the patient, to occasion very severe pain which kept him awake and caused him to scream out. A careful examination showed that there was no mechanical difficulty with the water passage and disclosed the presence of a tabes which was evidenced by a loss of knee-jerks and by fixity of the pupils. During this examination attention was attracted to a long scar on the right side of the abdomen which the patient explained was made about two years before. He gave the following history: Between two and three years previous he had had abdominal symptoms, of which pain was the most marked, which raised a suspicion of gastric ulcer. That suspicion was later set aside and he was suspected of an appendicitis. The symptoms were somewhat indefinite, but so severe as to call for an exploratory operation. The appendix was found to be normal but was removed and the incision was extended so as to allow of the examination of the gall bladder and its vicinity. This further examination disclosed nothing abnormal. Paroxysmal pains had continued during these two years and persisted after his admission to the hospital. These pains were evidently the so-called crises of tabes and at the present time they occur with considerable frequency during the night and cause the patient to cry out so violently as to compel his isolation. An additional symptom in this case is the marked difficulty in emptying the rectum.

The patient was seen a little later by Dr. J. W. Courtney who confirmed the diagnosis of tabes and discovered in addition certain difficulties of speech which raised the suspicion of beginning general paralysis.

I. ACUTE APPENDICITIS, GANGRENE, PERFORATION, GENERAL PERITONITIS, RECOVERY. II. GENERAL SUPPURATIVE PERITONITIS, TOXEMIA, ADRENALIN, INFUSION, RECOVERY. III. INTESTINAL OBSTRUCTION FROM STRICTURE DUE TO ADENO-CARCINOMA, RESECTION OF COLON, RECOVERY. IV. PHLEBITIS OF THE VENA CAVA FOLLOWING TYPHOID. V. SUPPOSED TUBERCULOUS TUMOR OF THE PONS CEREBRI. VI. SENILE GANGRENE OF THE LEG, AMPUTATION OF THIGH, RECOVERY. VII. REYNAUD'S DISEASE.

BY H. W. CUSHING, M.D.

CASE I. The patient, a boy of nine, was convalescent from an extremely severe attack of appendicitis in which the onset was sudden. Gangrene, perforation and general peritonitis followed in four days. On the sixth day of the attack he was admitted to the hospital in a marked condition of toxemia. Immediate operation by Dr. Cushing. The intestine was found more or less adherent, with collections of pus between the loops throughout the abdomen and in the pelvis. The distal half of the appendix was gangrenous. The appendix was removed, the abdomen irrigated with salt solution and drained in the appendix region, the flanks, and the pelvis with gauze wicks. The patient left the operation table in a bad condition and for twelve days was very dangerously ill. For the first five days of this period a fatal result was constantly threatened. There was the "peritoneal" expression of the face, slight cyanosis, dark colored vomitus and more or less delirium for twelve days. On the eleventh day the temperature was 103° F., pulse 115, and there was a friction rub in the left lower chest. After the twelfth day the patient began to improve and gradually recovered. The drainage was gradually discontinued and the wound is now (eight weeks after operation) nearly healed. The boy is practically well.

The points in this case which attract attention are the following:

(1) The severe type of the disease, general suppurative peritonitis due to a mixed infection of streptococcus pyogenes, staphylococcus aureus, colon bacillus and another micro-organism not specified.

(2) The treatment: In this, the following things seem to have influenced the result;

The thorough irrigation of the abdomen with hot salt solution; thirty-three to thirty-six pints were used. Every pocket of pus which could be found among the adherent loops of intestine was gently opened during the irrigation, some

being found even in the splenic region, and the washing was continued till the return current from the external wound flowed out clear.

The gauze drainage was extensive. Next, the post-operative effect of subcutaneous infusion of adrenalin and salt solution. During the first few days following the operation when the patient's condition was so critical, the injections would be followed in one half to three quarters of an hour by a marked change. The skin would lose its cyanotic tinge and become flushed. The surface from cool and moist would become warm. The facial expression change from that of a patient "*in extremis.*" The respiration became fuller and stronger. The pulse regular, stronger in volume and slower in rate. The injections[1] were repeated every twelve hours for twelve days and seem to have had an important influence on the recovery of the patient.

The theory on which it was used was that the action of the heart would be improved, that the toxins in the blood would be diluted and that the resulting diuresis would more rapidly excrete the products of the infection toxemia. The actual observation of the patient and a study of his "graphic" record seems to corroborate this idea.

| DAY. | WHITE BLD. COUNT. | TEMP. A.M. | TEMP. P.M. | PULSE. A.M. | PULSE. P.M. | TREATMENT. |
|---|---|---|---|---|---|---|
| Operation | 8,800 | | 98.6 | | 114 | |
| 1 day after | | | 100.8–100.0 | | 120–120 | Delirium. |
| 2 days „ | | | 98.6– 99.5 | | 94–100 | General appearance bad. „ |
| 3 „ „ | 14,400 | | 100.0–100.0 | | 114–110 | Adrenalin, 2 doses. „ |
| 4 „ „ | 17,400 | | 98.6– 99.0 | | 120–110 | „ 2 „ „ |
| 5 „ „ | 17,200 | | 100.2–100.2 | | 120–105 | „ 2 „ „ |
| 6 „ „ | 15,400 | | 100.0– 97.8 | | 100–120 | „ 2 „ „ |
| 7 „ „ | 15,000 | | 98.6–100.2 | | 86–108 | „ 2 „ „ |
| 8 „ „ | | | 98.6– 99.8 | | 80–113 | „ 2 „ „ |
| 9 „ „ | 13,600 | | 98.6–101.2 | | 100–100 | „ 2 „ „ |
| 10 „ „ | 10,000 | | 100.2–101.2 | | 100–100 | „ 2 „ „ |
| 11 „ „ | 9,600 | | 102.0–103.0 | | 108–118 | „ 2 „ „ Friction rub in l. lower left chest. |
| 12 „ „ | 7,800 and marked iodophilia reaction | | 101.5 | | 101.0 110–110 | „ 2 „ „ |
| 13 days after | 7,100 | | 100.5–101.5 | | 112–105 | „ 2 „ „ Delirium gone. |
| 14 „ „ | | | 98.6– 98.6 | | 100–100 | „ 2 „ „ |
| 15 „ „ | 10,000 | | 99.2– 99.4 | | 100–100 | „ omitted. |
| 19 „ „ | 19,000 | | 98.6– 98.6 | | 96–100 | |
| 21 „ „ | 20,000 | | 99.0–100.0 | | 82– 86 | |
| 23 „ „ | 18,300 | | 99.6–100.4 | | 82– 88 | |
| 24 „ „ | 17,000 | | 99.6–100.0 | | 100– 97 | |
| 26 „ „ | 16,600 | | 98.8– 98.8 | | 96– 70 | |
| 28 „ „ | | | 98.8– 99.5 | | 86– 98 | |
| 32 „ „ | 11,100 | | 99.8– 99.4 | | 100– 90 | |

Case II. This case illustrates the effects of adrenalin infusion in repeated doses. This patient, a boy nine years old, was also a case of general suppurative peritonitis due to a perforation appendicitis with fecal concretion and gangrene. This case was not so acute as the one just described and the patient was not so dangerously ill for so long a period; and the peritoneal cavity was not so generally infected, but at one time his approach to a moribund condition was closer. The appendix was removed by Dr. George H. Monks. The abdomen was drained in the appendix region, the pelvis and the flanks by gauze strips through a median and a right iliac, oblique incision. The culture from the abdomen showed streptococcus pyogenes and colon bacillus. On the second day after the operation the patient almost died. The temperature fell to 95.5° F. Pulse was scarcely perceptible, intermittent and rapid. The face, especially the nose, the ears and finger tips were cyanotic. The pupils dilated. The respiration was shallow, the skin cool and moist. There was marked muscular relaxation and the appearance, the listlessness, of extreme exhaustion.

The patient at this time received 200 to 250 cc. of adrenalin and salt solution in the same manner and of the same strength as has been previously described. The effects were noted in one-half to three-quarter hour later. The respiration improved, the cyanotis disappeared, the skin regained its normal color, then became somewhat flushed. The pulse which at times could not be felt at the wrist began to increase in strength and volume and to become slower in rate. The temperature rose to 98. The patient then gradually reacted, was severely sick for a number of days and eventually recovered. The injections were repeated once and twice daily for seven days. The wound healing was delayed by a fecal fistula which closed spontaneously in twenty-three days.

In both these cases which were cases of marked infection the low leucocytosis at the time of operation attracts attention; 8,800 in the first and 7,400 in the second. This increased after operation to 17,000–18,000 in the first and 13,350 in the second. This record seems to correspond with the present idea of the relation of leucocytosis to acute infection. The graphic record is appended.

[1] The injection consisted of slowly injecting by gravity 200 to 250 cc. of the adrenalin and salt solution into the subcutaneous tissue of the front of the chest. The temperature of the solution was about 105° F. It took to inject this amount from 15 to 20 minutes. It was repeated every 12 hours. The solution was, R Adrenalin Chloride Sol. (Parke, Davis & Co. Adrenalin 1 pt. Normal Salt Sol. 1,000 parts ℈ Chloretone 5%,) 10. cc. Salt Solution (BCH. R = Sodium Chloride [Na Cl] 9.0%. Calcium Chloride [$Ca\,Cl_2$] 0.30. Potassium Chloride [KCl] 0.10. Distilled Water [1,000.00 cc.]) 500 cc. This makes a 1 to 50,000 Solution of Adrenalin.

| DAY. | WHITE COUNT. | TEMP. A.M. | TEMP. P.M. | PULSE. P.M. | PULSE. A.M. | TREATMENT. |
|---|---|---|---|---|---|---|
| Operation | 7,400 | | 99.4 | 115 | | |
| 1 day | Collapse | 97.2– | 99.5 | 122 | 118 | Adrenalin, 1 dose. |
| 2 days | | 97.5 | 98.0 | 122 | 120 | ,, 2 doses. |
| 3 ,, | | 98.0 | 99.0 | 122 | 122 | ,, 2 ,, |
| 4 ,, | | 99.0– | 99.2 | 118 | 100 | ,, 1 dose. |
| 5 ,, | 13,800 | 99.0 | 99.0 | 100 | 125 | ,, 1 ,, |
| 6 ,, | 8,200 | 98.6 | 99.0 | 98 | 100 | ,, 2 doses. |
| 7 ,, | 11,400 | 98.6 | 98.6 | 80 | 92 | ,, 1 dose. |
| 8 ,, | 10,000 | 98.8 | 99.0 | 100 | 102 | ,, discontinued. |
| 10 ,, | 11,000 | 99.2 | 100.0 | 98 | 104 | |
| 11 ,, | 10,000 | 99.4 | 100.0 | 112 | 110 | |
| 13 ,, | 13,350 | 98.6 | 98.8 | 100 | | |
| 16 ,, | 10,700 | 98.6 | 98.6 | 88 | 92 | |
| 19 ,, | 9,000 | 98.6 | 98.6 | 80 | 82 | |

The history of the case was as follows:

CASE III. This case was a man forty-eight years of age in whom the colon had been resected at its junction with the sigmoid flexure for intestinal obstruction due to cancer.

The history of the case was as follows: The patient was well till fifteen years ago. He then had an attack similar to the present one, but less severe. For ten to twelve years past there has been habitual constipation requiring the more or less constant use of cathartics.

Feb. 10, 1904. Severe intermittent cramp-like pains in the abdomen and vomiting occurred. For three days there was no dejection. The vomiting continued. The abdominal pain almost disappeared. Feb. 15. The patient entered the Boston City Hospital still vomiting. The ascending colon was apparently quite distended throughout its entire length forming a cylindrical tumor about four inches in diameter and extending from the liver to the iliac region. With the exception of a large scrotal hydrocele the physical examination was otherwise negative.

For a few days the patient under treatment was more comfortable. Then on Feb. 20, the vomiting became more frequent and fecal in character. The abdomen became distended and quite tympanitic. Ether was given and the abdomen explored to find and relieve the cause of the obstruction. A six-inch incision was made in the linea alba extending from the navel to the pubes. The small intestine, much distended, at once prolapsed through this opening. Exploration of the abdomen was so impeded by these distended prolapsed loops of intestine that an attempt was made to empty them. The gut was incised in two places and about 500 cc. of liquid feces evacuated. These intestinal incisions were then sutured. It was then possible to explore the abdomen, but not easily. It was still filled with distended intestine. Nothing was found except the distended ascending colon which was fully four inches in diameter. On account of the patient's condition becoming alarming and also the failure to find any cause of obstruction, an incision was made through the abdominal wall obliquely over the cecum. The cecum was sutured to the wound and opened. Two litres or more of liquid "pea-soup-like" feces were drained off. A rubber tube was now fastened into the colon wound by two superimposed "purse-string" sutures. As further exploration seemed likely to kill the patient the median incision was closed by "through and through" silkworm gut sutures and the operation ended.

There was marked shock, but the patient recovered from the ether and gradually reacted under treatment. The intestine gradually emptied itself through the tube in the colon into a bottle at the bedside and the obstruction was temporarily relieved.

Feb. 24. The tube was removed. The vomiting and pain had ceased. Mar. 7. The patient had regained strength and was in good general condition. The fecal fistula was still open. The median wound had healed. It was then noticed that unless the intestine was emptied by laxatives and enemata the symptoms of intestinal obstruction again recurred. It was therefore determined to operate again and to make an attempt to locate and relieve the obstruction which was now supposed to be a neoplasm situated in the wall of the intestine and filling its lumen. On account of the distention of the colon ending at the hepatic flexion the obstruction was thought to be probably located at this point, and on Apr. 13, after careful feeding and preparation, a second operation was done.

Under ether the abdomen was incised in the median line above the umbilicus and explored. Careful examination of the transverse colon and vicinity failed to find anything abnormal. Finally, after exploring the whole abdomen carefully without result, suddenly a small, hard, movable mass was by chance felt with difficulty in the left iliac region. An oblique incision four inches long was now made in the left lower quadrant of the abdomen and through this wound the mass was with difficulty protruded.

It proved to be a tight, narrow, annular stricture of the intestine at the juncture of the descending colon with the sigmoid flexure. With considerable difficulty the growth was isolated by clamps and two inches of the intestine with its adjacent mesentery resected. No glands were found. The intestine was then closed by an "end to end" union. This was done by a "right angle," continuous, fine silk suture reinforced at one or two points by interrupted "Lembert" sutures. The abdominal wounds were sutured without drainage. The difficulty of the operation was much increased by the slight mobility of the growth and by a very thick, fat mesentery or meso-colon.

The operation lasted one and one-half hours. There was considerable shock. Examination of the tumor by the Pathological Department of the hospital showed the resected mass to be an adeno-carcinoma which had so occluded the lumen of the intestine as to leave only an opening 2 to 3 mm. in diameter.

After the first day following the operation the patient's condition steadily improved, and on the fifth the temperature and pulse reached normal and remained so. The highest temperature, 101.8, was on the night following the operation. The highest pulse rate, 120, was on the evening of the next day after the operation. The wounds healed by first intention.

There was a spontaneous, normal dejection on the seventh day after the operation. The artificial anus closed spontaneously on the eleventh day after the intestine was resected and the obstruction re-

moved. The fecal discharge from it ceased much earlier. The patient at the time of discharge from the hospital was apparently well.

The points in the case to which especial attention is directed are as follows:

(1) The importance of operating in such a case in two "sittings." If an attempt had been made to find and resect the intestine at the first operation the patient would have died of shock. The artificial anus relieved the obstruction, emptied the intestine; the patient had an opportunity to regain his strength and the second exploration was made with an empty intestine instead of with a semi-paralyzed one full of stagnant feces and ptomains.

(2) The multiple wounds of the abdomen. The two wounds in the median line overlap so that the resulting scar extends almost from the sternum to the pubes. Then there is the four-inch oblique incision in the left iliac region through which the colon was resected and the three-inch oblique one in the right iliac region which served for the temporary artificial anus. These at present are firmly healed and show no tendency to herniæ.

(3) The difficulty of making an extended exploration of the abdomen through a median incision, and also resecting an intestine through an incision in the left iliac region with a discharging fecal fistula in close proximity to these wounds without infecting the peritoneum.

(4) The rapidity with which the artificial anus healed as soon as the necessity for its presence ceased.

The resected portion of the colon containing the adeno-carcinoma was shown and also a microscopic section of the neoplasm, which was prepared by the Pathological Department under the direction of Dr. F. B. Mallory. The specimen showed the extreme narrowing of the intestinal lumen by the growth. The histological examination showed that the resection of the intestine had been made well beyond the limits of the disease.

Case IV. A patient, a man forty-three years of age, a clerk by occupation, who was admitted to my service for a periphlebitis and varicose eczema of the left leg, with superficial ulcer. This condition was relieved by the usual treatment in two to three weeks. On examination a marked varicose condition of the veins of both lower extremities was found, and also an extreme dilatation of the superficial veins of the abdomen, especially in the lower half. The patient stated that this condition had been present for nine years, and that the distention of the superficial veins was first noticed near the groin. That it had appeared here before the varices of the legs were noticed. A thorough physical examination failed to show any cause for such extensive venous obstruction. The examination of the chest and abdomen was negative and no cause for this extensive superficial venous dilatation was suggested till attention was called to an attack of typhoid fever thirteen years previous, which was complicated by a phlebitis of the lower portion of the vena cava causing obstruction to the venous circulation below that point, and the subsequent development of the collateral superficial venous circulation of the abdomen and the dilated veins of both lower extremities. Dr. George G. Sears, who first called attention to this diagnosis, commented on its great rarity, and showed a patient from his service convalescent from typhoid, who apparently illustrated this condition of abdominal phlebitis in an acute stage. The diagnosis could not be so definitely made in this case as in my patient, in that the cord-like vein was not actually felt and the patient was not ill so long; but it is difficult to explain the clinical picture presented by any other hypothesis.

Case V. The patient, a girl, nineteen years old, presented the following history: When a child she fell, striking her head in the frontal region. Her history is otherwise negative till two years ago, when her present illness began.

The first symptom noted was intermittent headache which has persisted. Next appeared vomiting. First, eighteen months ago, now a marked symptom. One year ago trouble with vision caused her to visit the Massachusetts Eye and Ear Infirmary and for the past nine months she has worn glasses. Five months ago appeared difficulty in writing, in articulation, facial paralysis, and loss of vision of the left eye; one month ago she discontinued her occupation and the vision of the right eye was lost. Two weeks ago inco-ordination of the right eye was noted. Since then she has slowly grown worse. The urine shows nothing abnormal. The temperature and pulse are not especially affected. There is no loss of memory or intelligence. There is ptosis of the right eyelid. The left eye cannot be closed; the pupils in both are dilated and do not react to light or distance. Dr. Greenwood reports that the discs are affected in both eyes, are elevated, the left checked, the right showing beginning atrophy. There is deafness in the left ear. The left facial nerve is paralyzed. The tongue protrudes to the right. The patient talks slowly and articulation is difficult. The patella reflexes are normal. There is no ankle klonus, no Babinski or Kernig reaction. Some inco-ordination of the upper and lower extremities is present. The patient walks slowly and carefully. She staggers slightly. Examination of sensation of the trunk and extremities shows nothing abnormal. Vomiting at irregular intervals, vertigo and frontal headache are the present chief symptoms.

Case VI. A case in which gangrene involving the foot and leg nearly to the knee had occurred.

The patient was a woman, age seventy-eight, who in January, 1904, noticed pain in the left foot. The foot soon became red and swollen. In two weeks the great toe became gangrenous. There was no history of trauma. The process of dry gangrene slowly extended until it reached nearly to the knee. Dr. Cushing amputated the limb at the junction of the middle and lower third of the thigh. The femoral artery at the point of section was very rigid and almost occluded. It was again resected one and one-half inches above the first point of division. The patient bore the operation well. There was very little shock following it. The stump healed by "first intention" without drainage under one dressing.

The dissected amputated limb was shown. The popliteal artery was occluded by a clot throughout its entire length. In its proximal portion the wall was so calcareous that it could scarcely be cut with a scalpel. The gangrenous area involved the foot and leg nearly to the knee. The black color of the surface was marked and the characteristic appearances of "dry" gangrene were well shown.

Case VII. In connection with the case of senile gangrene of the leg a case was shown in which gangrene of the fingers resulting from Reynaud's disease had occurred. The third finger of the right hand was first affected, then the fifth and finally the fourth. This patient was a man, thirty-two years old, a Russian

Jew and a tailor by trade. There was no history of traumatism. There was marked pain, spasmodic, referred to the fingers. There was no pulsation in the radial artery at the wrist. The fingers were amputated. The arteries were found occluded by a thrombus. The pain, which had caused a great deal of discomfort to the patient, disappeared after the removal of the fingers. No cause for the radial obstruction has been discovered.

Another fact of interest is that the amputation wounds have healed. The phenomena of local asphyxia or syncope have not been noted in this case.

*(To be continued.)*

## Medical Progress.

### REPORT ON OBSTETRICS.

BY FRANK A. HIGGINS, M.D., BOSTON.

(Concluded from No. 9, p. 246.)

#### PREVENTION OF VISCERAL PROLAPSE AFTER PARTURITION.

GALLANT[13] believes that women should not, on getting up after the puerperium, suffer from muscular weakness, abdominal distention and ptosis, or uterine displacement and lacerated parts. To prevent displacement, he insists that his patients shall not be allowed to lie on the back, but must be kept on the side; he tampons the uterus for two or three weeks after the fundus is below the brim, and finally he fits a pessary to be worn from three to six months. For muscular weakness, he advises massage with passive and active exercises begun within a few days after labor, and in addition the patient is gotten out of bed as soon as possible, usually on the ninth day. For abdominal distention and ptosis, in addition to the above, he advocates a snug binder while in bed, and when the patient gets up, a specially fitted corset is worn, which is always applied while the patient is recumbent, and with the hips elevated.

#### COAGULATION OF BLOOD IN ECLAMPSIA.

Douglass[14] examined the blood of twenty-two eclamptic patients, and from his observations there is little difference in the coagulation time of healthy pregnant and puerperal women, and of eclampsia before and after delivery, and that there is nothing, as far as a study of the coagulability of the blood goes, to support the contention that the thrombi found in certain organs in fatal cases of eclampsia are due to an increased coagulability.

#### TREATMENT OF SEVERE POSTPARTUM HEMORRHAGE.

Fritsch[15] describes a method which he has used successfully for thirty years. In cases where the hemorrhage is due to atony of the uterus after expression of the placenta, he inserts his hand between the recti muscles, and grasping the uterus, he presses it forwards with both hands into a position of anteflexion over the symphysis. He then packs the space behind with cloths and towels, holding them tight with a roller bandage or binder around the abdomen, allowing it to remain in place for twelve hours. The body of the uterus rests on and above the symphysis, and its bleeding walls are pressed so firmly together that there is no opportunity for further hemorrhage. All the manipulations are extravaginal, and therefore require no preliminary disinfection. When the hemorrhage is due to lacerations, his method is to close the labia with one hand and push the vulva vigorously upward, exerting counter-pressure with the other hand on the fundus for half an hour.

#### THE DIMINISHING BIRTH-RATE AND WHAT IS INVOLVED BY IT.

In an address, Taylor[16] shows that in the birth-rate of the United Kingdom compared with that of other countries during the last twenty years, no other nation has sustained so great a loss. The marriage rate in the United Kingdom during the same period was found to be slowly rising, so that the "birth loss" was necessarily due to causes operating in the married life of the population, and not simply due to celibacy.

He says the cause may be traced to the deliberate prevention of conception, and he takes the view that this is not only destructive to the future life of the nation, but seriously injurious to those who practice it. The child reared in greater comfort or comparative luxury, with no brothers or sisters of similar age to rub off its angles and selfishness, was ill-prepared for the succeeding battle of life, and it was very frequently the child of the larger family and poorer parents who pushed his way in front of him and elbowed him to the wall.

Attention was drawn to the present condition and statistics of France where, for fifty years, the birth-rate had been falling until the population had become stationary, or even less than stationary. During the last fifty years criminality had trebled in France, that of children and young people being specially remarkable, and particularly so regarding crimes of lust and prostitution. It was pointed out that after half a century of trial with an increasingly limited population, France showed more and more a lowered and still falling moral average, a lessening virtue or strength, and an increasing national neurasthenia which seemed to crave and to need the help of constant stimulation in order to face the ordinary routine of life. The future danger of this under a democratic form of government was considered and insisted on. So long as the race progressed, the people could be trusted with the powers of government, but when decadence had been going on for years, and even ages, what could be the final outcome of such democracy but anarchy and confusion?

The birth loss in the United Kingdom must be due to causes operating in the married life of its

[13] American Medicine, May 14, 1904, p. 783.
[14] Brit. Med. Jour., Mar. 26, 1904, p. 711.
[15] Deutsche med. Woch., xxx, No. 1: Brit. Med. Jour., Mar. 5, 1904, p. 39, Epit.
[16] Brit. Med. Jour., v. 1, 1904, p 427.

inhabitants. Therefore there was no reason to fear any high ideal of chastity or continence, and especially when this was associated with the care of those forces which go for the defence of the nation, and that child life which was its future hope. On the other hand, there was every reason to fear that debased ideal of married life, which was secretly and insidiously working for the ruin of the nation's power and for the destruction of its hope.

Insisting on the necessity of arousing the public conscience, and of aiming at a truer and braver conception of life, Taylor concluded by saying that he must confess when he heard of thoughtful men among the Boers in South Africa, military authorities in St. Petersburg, and Japanese in far Japan noticing and counting on their own racial increase, and comparing this with our own comparative stagnation, he would like, if he could, to sting his fellow countrymen into some proportionate sense of shame and duty.

### RETROVERSION OF THE GRAVID UTERUS.

Herman [17] denies that retroversion of the gravid uterus brings with it dangers of abortion. He says when the uterus is large enough to become incarcerated under the sacral promontory, the patient has gone past the time for abortion. If retention of urine is allowed to go long unrelieved, so that cystitis and pyelitis are present, and the patient dying of uremia, abortion will probably precede death. If the uterus is roughly handled in violent attempts at replacement, such misusage may bring about abortion. But retroversion of the gravid uterus is not itself a cause of abortion, and causes no ill effects on the organ itself. The danger of retroversion of the gravid uterus comes in the fourth month from its causing retention of urine, and its only importance arises from its effect upon the bladder; its only dangers are those which directly or indirectly spring from retention of urine, as cystitis, peritonitis, rupture of bladder, pyelitis, and uremia. The one necessary treatment is the catheter, which, if used in time, is sufficient to relieve symptoms and prevent danger. Keep the bladder empty and the patient recumbent, and in over 90% of cases the uterus will right itself. If it does not, pregnancy will still go on, the uterus will enlarge, its anterior wall rising in the abdomen to accommodate the growing fetus. After a few days the bladder, urethra, and cervix uteri gradually accommodate themselves to their altered position, and retention of urine ceases.

He has never seen a case of retroversion of the gravid uterus that could not be pushed up. In such cases, after the bladder has been emptied, the uterus can be pushed up through the vagina, or under anesthesia with two fingers in the rectum. He sees no reason for abdominal section, as it can be beneficial only when the uterus is fixed by adhesions in a position for retroversion, a rare complication of pregnancy.

[17] Brit. Med. Jour., Apr. 16, 1904, p. 878.

### ICHTHYOL IN PUERPERAL FEVER.

MacPherson [18] has used ichthyol in five cases of puerperal fever, three of which were desperate, and with excellent results in all. In these cases the uterus was first thoroughly irrigated with a bichloride (1 in 4,000) solution, and then packed with gauze soaked in equal parts of ichthyol and glycerine. In two of the cases, instead of ichthyol gauze, two drams of a 50% ichthyol watery solution were injected into the uterus. The improvement was very noticeable in each case. The irrigations and ichthyol applications were repeated in some of the cases, but the improvement which followed was attributed to the beneficial influences of ichthyol. He believes it is a valuable remedy.

He states the objection may be made that the packing had as much to do with the patient's improved condition as the ichthyol, but in two of the cases reported, no packing was used, and the drug was simply injected into the uterine cavity after free irrigation. One case of severe depression following the application of ichthyol to the cavity of the uterus has been reported, but no such untoward symptoms appeared in any of these cases. These patients were well stimulated with strychnine and ammonium carbonate at the time. Instead of any unpleasant symptoms arising, exactly the opposite were observed, the drug acting like a specific. Not only were the pulse and temperature reduced, rigors ceased, and discharge lessened, but patients had a feeling of well-being following the use of ichthyol, which was a pleasant contrast to the appearance of mental and physical suffering which one often witnesses in these cases.

### PUERPERAL SEPSIS, NEW OPERATION FOR.

Chandler [19] recommends the following operation, which he says he has been performing for the past six years:

He makes an incision posteriorly to the cervix in the posterior vaginal wall, then passing a pair of long, blunt-pointed forceps, slightly curved, into the cervical canal, and up into the cavity of the uterus, he punctures the posterior wall of the uterus in the center, near the top of the uterus, and introducing with two fingers a piece or strip of iodoform gauze through the posterior vaginal opening previously made, he clasps the gauze with the forceps, drags it through the uterine wall and out through the vagina. He repeats this by puncturing the uterus on each side, but posteriorly and just above the middle of the body of the same, drawing the gauze through the openings as in the first.

He admits that it causes injury to the uterus, but says we do not hesitate to open other organs when infected, and experience in this operation is similar to operation in other parts. He claims that it is conservative, easily performed by the experienced, and that the mortality is lowered by the procedure.

[18] Med. Rec., Sept. 12, 1903, p. 414.
[19] N. Y. Med. Jour., June 4, 1904, p. 1088.

BIOCHEMISTRY OF PREGNANCY.

Some interesting experiments have been conducted in this field by Opitz.[20] By the injection of human placental tissue freed from blood, into animals (rabbits, goats, heifers and horses), he secured a serum, which he calls "syncytiolytic," and which he applied in several cases of eclampsia. It was found to display an antitoxic power against the assumed syncytiotoxins, which the author believes are circulating in the blood in eclampsia and form one of its etiological factors. This process he explains as follows: As soon as the maternal blood penetrates the trophoblasts, cells from the periphery of the ovum find their way into the maternal blood and are carried away into various organs. These deported cells are destroyed sooner or later, under the action of cytolysins formed in the blood of the mother, and their disintegrated particles have a toxic action as foreign bodies. To neutralize these, another substance is produced in the blood, the "antisyncytiotoxin." Opitz has succeeded in reproducing this process in animals by injection of placental tissue, and their serum acquires the properties of an antisyncytiotoxin. The results of the application of this serum in eclampsia have encouraged the author to advise the preparation of this serum in marketable quantities. It has proven absolutely harmless, and the details of its action will be given in a later communication.

ECLAMPSIA.

Hirst [21] believes strongly in the nephritic origin of eclampsia. He says it is not true that women with nephritis are not predisposed to eclampsia. The reasons why a comparatively small percentage of them actually arrive at the convulsive stage are that abortion, miscarriage and premature death of the fetus is the rule in the nephritis of gravid women, and that the signs of toxemia appear so early and are so marked as often to call for the artificial termination of pregnancy.

Among the premonitory signs of eclampsia, there is nothing comparable to the presence of albumin in considerable and increasing quantities in the filtered urine. It is true that a certain proportion of cases occur without precedent albuminuria, but their proportion is not nearly so large as one would infer from the report of sporadic cases. It is a clinical rule, with few exceptions, that albuminuria precedes the other signs of gestational toxemia, that the gravity of the woman's condition can be measured by the steady increase in the amount of albumin in spite of treatment, and that a steady and rapid increase of albumin is the most certain and constant premonitory sign of eclampsia that we possess at present.

The preventive treatment is based by every one on the theory of kidney inadequacy. It consists, as we all know, of a milk diet, diaphoresis, diuresis, and catharsis, with extra precautions against chilling the skin. The use of thyroid extract as proposed by Nicholson is still on trial. He does not believe in too rapid evacuation of the uterus, nor in cesarean section. He prefers to bring on labor slowly than resort to forced delivery, employing actively the elimination treatment. For convulsions, eliminate the poison and quiet the nervous irritability. It is generally agreed that normal salt injections, sweating and purgatives are the most reliable eliminants. Venesection may be classed among these, but he rarely uses it now. He thinks opium interferes with elimination, and a large dose may cause fatal poisoning in view of the inactivity of the kidneys. For the relief of arterial tension, he would use veratrum viride. He closes by urging the advantages of hospital treatment for such cases, as the mortality is less than one half what it is in private practice.

THYROID TREATMENT IN ECLAMPSIA.

The success of thyroid treatment in two cases reported confirms Nicholson's [22] statements in regard to the efficacy of thyroid extract in this affection. Baldovsky found that the convulsions abated under its influence, while it also regulated the eliminating functions of the kidneys. The urine increased in quantity, and the proportion of albumin rapidly diminished. He used narcotics in combination with it, and recommends this practice, as they keep the convulsions in check. His dosage was the same as Nicholson's, a .3 gm. tablet of thyroidin three or four times a day. The albumin nearly vanished in the first case within four hours of the second dose, which had been given two hours after the first one, dropping from more than 4 to a proportion of less than .5.

IMMEDIATE DELIVERY THE BEST TREATMENT IN ECLAMPSIA.

Bumm [23] says that his observations for the last two years have produced the conviction that in the treatment of the eclamptic soon after the first attack, while the pulse is good and the lungs intact, we shall obtain the best results as a rule by the immediate emptying of the uterus, and that through following this principle of treatment, the mortality, varying under other methods from 12% to 30%, may be reduced to 5%. A considerable proportion of his patients were brought to the hospital in coma, due in at least a third of the cases to the do-nothing policy and the old morphine therapy. If the eclamptic poisoning has already caused necrotic changes in the liver and kidneys and apoplectic effusion of the brain, or if in the course of long-enduring coma, severe lesion of the lungs has occurred, delivery can bring no help. For which reason he all the more insists upon immediate delivery before it is too late.

SPINAL PUNCTURE FOR ECLAMPTIC CONVULSIONS.

Helme [24] agrees that eclampsia is probably due to the presence of toxic material in the blood, and

[20] Medical News, Vol. 2, 1903, p. 892: Deut. med. Woch., No. 34, 1903.
[21] Therapeutic Gaz., Feb. 15, 1904, p. 74.
[22] Jour. Am. Med. Assn., Mar. 19, 1904, p. 809: Vratch. Gaz., xi, No. 1.
[23] American Medicine, July 25, 1903, p. 165: Münch. med. Woch. May 26, 1903.
[24] Brit. Med. Jour., May 14 1904, p. 1131.

that the first indication in treatment is to prevent accumulation and to assist elimination. He suggests, however, that eclampsia may be due to increased cerebrospinal tension, as the clinical aspect of a case indicates intracranial pressure, and convulsions increase the pressure by causing congestion of the cerebral vessels. For relief of this condition he suggests tapping the spinal canal in the lumbar region, and reports one successful case done under chloroform. A drachm and a half of cerebrospinal fluid escaped rapidly, as if under considerable pressure, and not drop by drop, as in health. He suggests that the treatment should be tried in suitable cases, and has only brought it up now because of the importance of the subject.

## Reports of Societies.

### AMERICAN LARYNGOLOGICAL ASSOCIATION.

Annual Meeting at Atlantic City, New Jersey, June 2, 3 and 4, 1904.

(Continued from No. 9, p. 248.)

First Day — (Continued).

FACIAL ASYMMETRY AS A CAUSE OF DEFORMITIES OF THE NASAL SEPTUM.

Dr. Henry L. Swain of New Haven, Conn., presented this paper as a sequel to or continuation of his paper read at the last annual meeting on "The Arch of the Palate," which last paper gave the results of a search for some possible relation between the shape of the skull and the arch of the palate, the whole study being prompted by his doubts as to the importance of the influence of adenoids, and the consequent nasal obstruction, upon the narrowing and arching of the palate.

The present paper was the result of much work in the way of measurements of the vertical and horizontal diameters of the posterior cloacae, and observations on the asymmetry of the two sides of the face and head in certain races and individuals, most of the work being done on Hawaiian and Flathead Indian skulls.

His conclusions, briefly, were that adenoid obstruction does not always and may never cause over-arching of the palate; that over-arching of the palate does not always produce bends of the septum; that over-arched palates and bent septa often occur together, and each is more frequent in skulls which are leptoprosopic; that leptoprosopic skulls and faces almost never exist in a marked degree without some distortion or over-arching of the palate and changes in the nasal cavity; that in a young child about to develop into marked leptoprosopia, pronounced nasal stoppage by adenoids cannot fail to *add* to the degree of deformity; that if the first teeth are removed early and the dental arch disturbed, then the palate will move easily, become narrowed and pointed in its own arch; and that the whole tendency is more often inherited than acquired.

INTRATRACHEAL INJECTIONS.

Dr. Thomas Hubbard of Toledo, O., read a paper with the above title, awarding the claim of priority to Botey of Barcelona for putting the method upon a practical basis, although much had been done by others before Botey, notably Dr. Howard Green of New York. After detailing the history of the development of the procedure, the author spoke of the technique and the indications for its use. The intratracheal injections must not be used in the acute hyperemic stage of any inflammation, but must be withheld until the acute symptoms have subsided and the general systemic conditions are favorable to recovery, *e. g.*, in convalescence from acute bronchitis, taking the place of the usually administered "stimulating expectorants," and thus also relieving the gastro-intestinal tract of the disturbing influence of cough mixtures in syrups "*ad nauseam*." The idea of treatment is essentially local; absorption for systemic medication is not the object of the method at all. He mentioned oil as the best menstruum, and the best medicaments to be used are guaiacol and menthol, in 1 to 3% solutions. In chronic bronchitis, bronchial asthma, bronchiectasis, fetid bronchitis, and in tuberculosis, the injections are very useful, but of course not to be urged to the exclusion of general treatment, only as valuable adjuvants. The injections are made by means of various cannulæ and tracheal syringes, and the utmost care must be used not to touch the epiglottis; if that is avoided, the injections are well tolerated by most patients. If possible, they should be made with the aid of a laryngeal mirror.

THE COMPENSATORY ACTION OF CERTAIN OF THE LARYNGEAL MUSCLES SEEN IN CASES OF VOCAL DISABILITY.

Dr. Clarence C. Rice of New York read this paper, and gave many interesting facts about the results, in young voices, of overuse, or misuse, of some muscles of the larynx by faulty methods of instruction in singing, and the compensatory action of other muscles in doing the work of the damaged ones. His results may be stated in summary as follows:

(1) There exists throughout the entire muscular system of the body the intention and habit of one group to render assistance to any other group of muscles which may be temporarily or permanently inefficient.

(2) That such compensatory service is more readily appreciated in the larynx than elsewhere, because its technique may be observed with the laryngeal mirror.

(3) That the weaker of the laryngeal muscles are very easily fatigued by too rapid training or by over training, and that it is the habit of the stronger muscles immediately to offer their assistance.

(4) That although this compensatory action is wonderful from a physiological point of view, it is unfortunately accomplished at the expense of any great success in singing.

SEQUEL OF THE CASE OF LARYNGEAL PERICHONDRITIS AFTER TYPHOID, REPORTED TO THE ASSOCIATION IN MAY, 1903.

Dr. Emil Mayer of New York reported the above case in full at the last annual meeting, at which time the patient was wearing an intubation tube, which had been put into the larynx after a previous emergency tracheotomy.

With the tube in place the patient had made a trip to Europe, and after four months' continuous wearing it was removed; a few days later there was some dyspnea, and a small tube was inserted and left in for one week and then removed. Since then nine months have elapsed with no dyspnea, no discomfort, full return of voice, though of deeper pitch than before, and in all respects a return to normal conditions in the larynx. The author believes this to be the first case of the kind cured by intubation.

Discussion of Neuroses of the Upper Air Tract, Exclusive of Those due to Diphtheria and to Organic Disease.

"Neuroses of the Nose," by Dr. G. Hudson Makuen, Philadelphia; "Neuroses of the Pharynx,"

by DR. F. E. HOPKINS, Springfield; "Neuroses of the Larynx," by DR. EMIL MAYER, New York.

NEUROSES OF THE NOSE.

DR. MAKUEN presented this paper in the discussion, dividing the neuroses into two classes, the sensory and the reflex, giving a full list of the usual well-known conditions included under each class.

In regard to the second class the author expressed himself as somewhat skeptical, and felt that many rhinologists had perhaps "found what they most desired to find" in very many cases. But he still felt that there were some undoubted cases of reflex symptoms due to nasal irritation, and thought that the operative measures suggested for their cure were such as to add to the comfort and happiness of the patient in other ways, even if they did not cure the neuroses. After speaking of the commonly described "reflex arc" and its action, he said that a "pathological reflex always presupposes one of two things: either a disturbance in some portion of the reflex arc, or some unusual peripheral irritation; and a disturbance in the reflex arc renders the nervous system unstable, a condition known as hysteria, or as neurasthenia." He then emphasized the fact that, while a peripheral irritation in the nose may be the origin of a pathological reflex, we must keep in mind the fact that sooner or later we have to deal with an unstable nervous system.

The reflex neuroses of undoubted nasal origin he stated as sneezing, cough, spasm of the glottis and asthma, the most important being cough and asthma.

NEUROSES OF THE PHARYNX.

Dr. F. E. HOPKINS of Springfield read this paper, classifying the neuroses as: Abnormalities of sensation, neuralgia, reflex neuroses, spasmodic disturbances, vascular neuroses. He discussed anesthesia, hyperesthesia and paresthesia, and referred to that rare condition, chorea pharyngis, citing Lambert Lacke's typical case, published (*Laryngoscope*) in June, 1898.

He noted that nearly all the patients exhibiting these neuroses are neurasthenic, and while advising some treatment of the local lesions when found, felt that most reliance must be placed upon treatment of the general health.

NEUROSES OF THE LARYNX.

DR. EMIL MAYER of New York read this paper classifying the neuroses under the following heads:

(1) Motor disturbances of a hyperkinetic nature: The spasmodic affections of the larynx.
(2) Stammering.
(3) Status lymphaticus and sudden deaths.
(4) Motor paralyses.

The author merely mentioned, without discussion, the various sensory disturbances, such as anesthesia and hyperesthesia. Under the spasmodic affections he described at length laryngismus stridulus, congenital stridor, spasm of the glottis, chorea of the larynx, laryngeal nystagmus, laryngeal vertigo and dysphonia spastica. Stammering, the author claimed, to be entirely an acquired defect, not congenital nor hereditary, and its treatment a process of most careful, patient, painstaking *education*.

He spoke particularly of the "status lymphaticus" and its connection with the sudden death caused at times by spasm of the larynx, especially in explanation of the deaths from anesthesia in operations for adenoids, in which cases the "status lymphaticus" is practically always present. With his description of the various motor paralyses, he strongly advocated electricity in the treatment.

ESOPHAGOSCOPY AND BRONCHOSCOPY. KILLIAN'S OPERATION. REPORT OF TWO CASES.

DR. E. FLETCHER INGALS of Chicago, Ill., read this paper, speaking first of the recent development of the two procedures, as demonstrated by Killian in 1902. The author stated that, although "the ease with which foreign bodies can usually be removed from the trachea and often from a main bronchus, after tracheotomy, makes the latter operation preferable in most cases, when the diagnosis is in doubt or when the foreign body has passed into one of the divisions of a bronchus, bronchoscopy affords a means not only of diagnosis, but of successful operation, infinitely superior to transthoracic bronchotomy." In connection with any of these procedures, the location of the foreign body by the x-rays is, of course, desirable. The author detailed two interesting cases, illustrated by radiographs, one of an ornamental pin in the esophagus, and the other a long, straight pin in a branch of a bronchus, both successfully extracted by means of Killian's instruments.

(*To be continued.*)

## Recent Literature.

*Obstetric and Gynecologic Nursing.* By EDWARD P. DAVIS, A.M., M.D., Professor of Obstetrics in the Jefferson Medical College and in the Philadelphia Polyclinic. 12mo. volume of 402 pages, fully illustrated. Second edition, thoroughly revised. Philadelphia, New York, London: W. B. Saunders & Company. 1904.

Besides the usual chapters on obstetric and gynecologic nursing, this edition of Dr. Davis' book contains chapters on the disorders of infancy, on cancer, on mental diseases complicating pelvic disorders, and on venereal or specific disease; the appendix having a useful dietary and an article on the preparation of surgical supplies.

The author has had the advantage of assistance by the chief nurses of the Jefferson Maternity and the Philadelphia Hospital and the dietician and directress of the Jefferson Medical College Hospital, so that although the subject is treated from the standpoint of the physician instructing nurses there are many practical suggestions which originated in the experience of the nurse instructor.

The nurse is told not only what to do under given conditions but also what the physician does and why he does it. Excellent advice is given as to the responsibilities which should not be assumed by the nurse, *e. g.*, "a vaginal injection before labor should never be given without the precise order of the doctor," and "the nurse is not to prescribe an infant's food."

The use of such terms as "sapremia" and "hypodermoclysis" call for a glossary, which the book does not have, and we think it would be an improvement if there were a chapter on the administration of anesthetics, as nurses are so frequently called on to anesthetize at least part of the time, both during labor and in gynecologic operations.

Not only nurses but recently graduated medical men could learn a great deal by a perusal of this book; it is to be highly recommended.

THE BOSTON

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## SUPPLY AND DEMAND IN MEDICAL EDUCATION.

That a condition of equilibrium has not yet been reached in educational matters in this country is apparent. It has been the experience in most of our large institutions of learning that each year sees a greater number of students than the preceding, and, although there may be a certain fluctuation in the various departments, the tendency has constantly been toward increased numbers of matriculants. This is no doubt natural in a country, the resources of which are far from complete development, with the population of its large cities constantly augmenting. As a consequence of these facts the extension of university facilities has likewise developed with great rapidity in an attempt to keep pace with the increasing demand. It must, however, be recognized that the time is coming when a more definite equilibrium will be attained, and each succeeding year will see a smaller increase of students.

The tendency to medical education of late years has been to extend to a quite extraordinary degree the facilities for instruction, with the apparent expectation that the influx of students would go on increasing in like proportion. Whether or not this will be the case we do not predict, but it is evident that all over the country, following in a measure each other's example, our larger universities have extended the medical facilities to such a degree that opportunities for the completest medical education are prepared for a long time to come. The leading universities throughout the country are recognizing the position which medical instruction should take in the general university curriculum. Funds have been provided from various quarters and buildings erected, it sometimes appears, rather regardless of their actual need. The development of laboratory instruction has, in a measure, made this demand, but we are convinced that in all our larger medical centers there is at the present time laboratory opportunity which is frequently in excess of the demand.

It is evident that our medical schools must have students, and that the foundation of medical instruction lies with those now entering upon the study of this profession. It is, therefore, worth considering that, for example, out of last year's graduating class at Harvard about twenty men signified their intention of studying medicine, whereas about six times that number had decided upon the study of law. This showing is certainly somewhat surprising, especially in view of the widening scope of medical education and the very great competition in the practice of law. We are under the impression that the disparity between those taking up the law and medicine, certainly in this community, is increasing to the detriment of medicine. The reasons for this are no doubt subtle and far-reaching; we have no intention of discussing them at length at this time, but it behooves those interested in medical education to bear the facts in mind, and to realize that medical schools of the very first order are being developed in various parts of this country which are likely, with their present equipment, to fill the requirements for many years to come. In our enthusiasm for one department of learning we are apt to ignore the fact that many other departments and many other spheres of usefulness are likewise opening for men about beginning their careers, and that medicine must compete for its students as do other callings. In the meantime the balance between facilities for study and the students demanding such facilities must be maintained with skill and caution.

## THE INFLUENCE OF HYSTEROPEXY ON FUTURE PREGNANCIES.

At the recent meeting of the French Congress of Gynecology the important question of the influence of hysteropexy on future pregnancies was lengthily discussed both by the members and in the report of Oui. Considering the large number of procedures employed for fixation of the uterus, statistics are of little avail, but by attentively studying the way in which abdominal or vaginal fixation acts one may arrive at some conclusions.

The first question to solve is the influence of anterior abdominal hysteropexy on the duration of pregnancy. The observations of Laroyenne, Condamin, Sinclair, Negri, Terrier, Pinard, Routier and LeFort show beyond all doubt that complete fixation of the uterus is perfectly compatible with the evolution of pregnancy. To what extent such or such procedure of fixation or of suture of the uterus to the anterior abdominal wall may be held responsible for the interruption of pregnancy is a question difficult to elucidate. Demelin believed that Olshausen's technique is the one most likely to produce miscarriage on account of the implantation of the sutures in the neighborhood of the vasculonervous pedicles, and the same may be said of the procedures with buried sutures on account of the greater solidity which they give to the uteroparietal adhesions. According to Oui the greatest danger to the evolution of pregnancy is in those cases where the fundus uteri is firmly fixed to the anterior abdominal wall.

As to the influence of hysteropexy on the presentation, the following figures are of interest. Out of ninety-four labors in patients having previously had a hysteropexy done, Demelin found ninety-four vertex presentations, three shoulder and one breech presentation, while Kustner reports three abnormal presentations out of a total of ninety cases.

These figures would appear to show that hysteropexy does not have any marked influence on the presentation, but on the other hand Pinard in 1899 observed one breech and three shoulder presentations out of six labors in patients who had had hysteropexy performed. The only astonishing thing is that faulty presentations are not more frequent after anterior fixation of the uterus when one recalls the importance of defective engagement of the fetus in the genesis of shoulder presentations. In some cases, the physiognomy of the labor is distinctly changed and delivery difficult.

Some statistics show the great frequency of normal labors. Schwartz has had seven patients who had nine pregnancies, seven of which went to term and were delivered spontaneously, while Richelot records two, Leguen three, Dickinson two and Jarman three normal labors after hysteropexy. Grandin reports two normal labors, but the uterus was again found retroflexed after the labors.

Besides rigidity of the cervix and the possible obstruction of the superior strait by the anterior abdominal wall or hypertrophied fundus uteri, one should remember that rupture of the uterus may occur, due both to the resistance met with by the fetus during its passage and the great thinness of the posterior uterine wall; three such instances were reported at the New York Obstetrical Society in 1901.

Generally speaking, it may be said that in the great majority of cases hysteropexy has no ill effect on the evolution or progress of the labor, but, as has been pointed out by Pinard, all abdominal hysteropexies do not give the same result and do not have the same consequences as far as future pregnancies and labors are concerned. Thus one sees certain operative procedures give rise to a large number of serious dystociae, while others, on the contrary, are quite inoffensive.

Certain procedures appear to possess inconveniences peculiar to them. The fixation of the fundus, especially when made near the pubic bone, is particularly bad because it places the uterus in an exaggerated anteversion, causes an extreme development of the posterior uterine parietes and may occasionally produce an obstruction of the superior strait by the anterior wall or the hypertrophied fundus uteri. It is also to be remarked that in those cases where the adhesions have remained solid, an indirect fixation by a pedicle formed by the adnexa has been known to produce a torsion of the gravid uterus on its longitudinal axis. From these facts it would appear indicated to place the uteroparietal sutures only in the anterior wall of the organ below the line of the tubes and not to include too much surface of the uterine wall.

As to vaginal hysteropexy it may be said that it frequently gives rise to pain and disturbances in the micturition. Vaginal fixation appears to have an unfavorable influence on pregnancy, and of ninety-five pregnancies followed to their end, Demelin observed nineteen miscarriages, or about 22%. These statistics were reported in 1896, and during the same year Kustner reported eighteen miscarriages out of a total of forty-eight pregnancies, making 37%, one of which was followed by retention of the placenta. It is quite true that since the above statistics have been published Dührssen has made public the marvellous record of seventy pregnancies occurring after his latest method of vaginal hysteropexy all of which, with one exception, ended favorably. Dührssen's statistics are the only ones that have ever been published with such an excellent showing, both as regards pregnancy and labor.

The prognosis of vaginal hysteropexy would

consequently appear distinctly less favorable as far as pregnancy is concerned when compared to abdominal fixation, and it is certain that in the former the anteversion and flexion are far more pronounced than in the latter condition. It is also quite certain that more serious cases of dystocia are met with in Germany, where vaginal hysteropexy has become the ordinary procedure.

The last statistics of Dührssen may perhaps induce some to adopt his technique, but it is probable that many operators will find the means of fixation too weak in this method, and the result may be that more solid fixation will be looked for, which is obtained in other techniques, and serious dystocia will ensue.

## MEDICAL NOTES.

Sir John Simon's Estate. — The late Sir John Simon's estate, valued at upwards of $130,000, after certain annuities and a life interest are paid, reverts to St. Thomas's Hospital, London.

Paris Academy of Medicine. — Recent elections as foreign corresponding members of the Paris Academy of Medicine are Major Ronald Ross of Liverpool and Dr. Weir Mitchell of Philadelphia.

Arrival of Professor Wassermann of Berlin. — A recent arrival from Europe was Professor Wassermann of Berlin, whose reputation rests chiefly on his work on immunity. He is to deliver a certain number of lectures in St. Louis, and also to serve as one of the judges of the medical exhibit.

Death of William Weightman. — William Weightman, of the well-known firm of manufacturing chemists of Philadelphia, has recently died at the age of ninety. His interest lay chiefly in the manufacture of quinine and morphine, and it is stated that the foundation of his ultimately great fortune was laid by the sale of quinine to the Union and Southern armies during the Civil War.

Hospital Development. — The proposed new Bellevue Hospital, plans of which have been offered, bids fair to take second place if the design for the new hospital in Vienna, which has already been begun, be carried to completion. It is stated that there will be thirty-two separate sub-hospitals within the general enclosure, and eighteen separate pavilions, with 2300 beds for patients. *American Medicine* states that in the clinics for infectious disease the possibility of infection will be reduced to a minimum by the separation of the instructor and students from the patient by glass partitions. It is estimated that the cost will be eight million dollars.

Infrequency of Typhoid in Chicago. — According to the *Bulletin* of the Chicago Health Department, one of the most gratifying features, next to the continued low mortality among infants and children, is the infrequency of typhoid fever in that city. This disease always shows a seasonal increase, beginning in July and culminating in October. The increase has averaged for thirty years more than 63% in August over the rate of the first six months of the year, which would make the typhoid deaths for this month about 47. During the twenty-seven elapsed days there have been but 26 deaths from typhoid fever reported, and the total for the month is not likely to be more than 31 or 32. In August, 1903, there were 51 deaths from typhoid.

Prof. Oscar Hertwig, Director of Medicine and of Philosophy, Director of the Anatomico-Biological Institute and Member of the Academy of Sciences, according to the *British Medical Journal*, has been elected Rector of the University of Berlin for the coming year. Of the ninety-five rectors of that seat of learning, he is the sixteenth who has been chosen from the Faculty of Medicine. Professor Hertwig was Dean of that Faculty in 1894–95. The Dean of the Medical Faculty for 1904–05 is Prof. Johannes Orth, the successor of Rudolf Virchow in the Chair of Pathology.

Fourth Pan-American Medical Congress. — President Amador of the Republic of Panama has appointed the following officers of the Fourth Pan-American Medical Congress, to be held in Panama the first week in January, 1905:

Dr. Julio Ycaza, President; Dr. Manuel Coroalles, Vice-President; Dr. Jose E. Calvo, Secretary; Dr. Pedro de Obarrio, Treasurer. There will be but four sections: Surgery, Medicine, Hygiene and the Specialties, to which the following officers were appointed: Surgical Section: Maj. Louis LaGarde, President; Dr. E. B. Harrick, Secretary. Medical Section: Dr. Moritz Stern, President; Dr. Daniel R. Oduber, Secretary. Section on Hygiene: Col. W. C. Gorgas, President; Dr. Henry E. Carter, Secretary. Section on Specialties: Dr. W. Spratling, President; Dr. Charles A. Cooke, Secretary.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon Sept. 7, 1904, there were reported to the Board of Health of Boston

the following cases of acute infectious diseases: Diphtheria 43, scarlatina 10, typhoid fever 50, measles 3, smallpox 0.

STRIKE AT HARVARD MEDICAL SCHOOL BUILDINGS. — Owing to the common cause of the employment of a non-union mason, it is stated that a certain number of bricklayers have struck, who were at work on the new buildings of the Harvard Medical School. Owing to the dependence of other workmen upon these, temporary cessation of the work has been necessitated.

SMALLPOX IN NORTH ADAMS, MASS. — It is stated that the Board of Health of North Adams, Mass., has closed schools and other much frequented buildings because of the existence of smallpox in the city. Upwards of thirty-five cases have been reported and stringent measures have been taken looking to disinfection of mail matter.

A CENTENARIAN. — It is stated that Mrs. Betsy Dodge of Everett, Mass., has recently died at the age of one hundred and one years. For ten years past her general condition of health has been poor.

CHANGE IN COURSE FOR NURSES, MCLEAN HOSPITAL. — Beginning Oct. 1, 1904, there will be a change in the training school for women nurses, at the McLean Hospital, Waverley, Mass.

The length of the course will be increased from two to two and a half years, more instruction will be given and the nurse will have more time for study. She will be given courses in anatomy, physiology, hygiene, bacteriology, urinalysis, hydrotherapy, electrotherapy, massage, physical exercise, the dispensing of drugs, housekeeping, cookery, general nursing, and the nursing of cases of nervous and mental disease. Instruction will be given by means of textbooks, lectures and, where practicable, by demonstrations and actual work in the dispensary and the laboratories, as well as in the wards of the hospital.

During a half of the first school year the pupil will be given no more work on the wards than is necessary to put in practice the demonstrations received in the course of instruction, — perhaps two hours daily. For this time it will be practically a boarding school for the pupil nurse.

The change will necessitate the employment of more nurses and will be an additional expense to the hospital, notwithstanding a reduction of $5 in the monthly pay.

The length of the course for men nurses will continue for the present to be two years.

NEW YORK.

BEQUEST. — The new Amsterdam Eye and Ear Infirmary is reported to be the recipient of $10,000 by the will of the late William H. Crawford who died recently in New York.

ST. LOUIS MEDICAL REVIEW UNDER NEW EDITORSHIP. — Dr. Kenneth W. Millican has resigned his position as associate editor of the *New York Medical Journal*, which he has held since April, 1898, in order to assume the editorship and entire charge of the *St. Louis Medical Review*.

A NEW HOSPITAL. — A new hospital, to be known as the Brooklyn Samaritan Hospital, is shortly to be established at Fifteenth Street and Fourth Avenue in that borough. This institution is the outgrowth of the dispensary work of the Fifteenth Street Baptist Church, but it will be nonsectarian in character.

VEREINIGUNG ALTER DEUTSCHER STUDENTEN IN AMERIKA. — The union of Old German Students in America will give a "Commers" in honor of the German scientists who will visit the St. Louis Congress of art and science. Most of the guests are medical men. The date which has been fixed upon is Oct. 8, at the Arion Hall in New York.

INTERNATIONAL SOCIETY OF CHEMICAL INDUSTRY. — The first annual meeting in America of the International Society of Chemical Industry is being held this week, Sept. 7 to 12, at the Chemists' Club and Havemeyer Hall, Columbia University. The president of the society, Sir William Ramsay, K.C.B., the eminent English chemist, and a party of fourteen other noted foreign scientists arrived by the steamship "Baltic" on Sept. 1 to attend the meeting.

REPORT ON "SLOCUM" DISASTER. — On Aug. 31, the committee appointed by the mayor to administer the funds subscribed for the relief of the sufferers from the "Slocum" disaster of June 15 made a report of its work. The total contributions amounted to $124,205.80, and with the exception of $20,000 set apart for the future needs of those who were made to a greater or less degree dependent, the funds have now been expended. Among the expenditures was the sum of $1,264 for medical attendance and supplies furnished to 38 families. The list of dead is officially placed at 958. In all, 897 bodies were identified and 61 were buried without identification. There were represented on the "Slocum" on the day of the disaster 590 families, and

three fourths of these, or 437 families, were aided by the committee. The committee buried 705 persons belonging to 388 families, at an expense of $81,280. The report gives the first authentic information of the losses by various families. One hundred and twenty men lost their entire families. Of these, ten lost wife and three children; three, wife and four children, and one, wife and five children. There were twelve families in which orphan children were left, the number of orphans being 27 in all.

Official Interpreter at Bellevue Hospital. — Ermenegeldo Zordan, a professor in the University of Padua who is now in New York on a two years' leave of absence from the University, has been appointed official interpreter at Bellevue Hospital, an office that has been needed for many years. He is stated to be one of the most accomplished linguists who ever came to America, speaking English, German, Italian, Spanish, Polish, Yiddish and modern Greek as well as he does French, which is his native tongue. Professor Zordan has been engaged for seven years in writing a work on the literature and customs of the leading nations of the world, and, not being wealthy, finds it necessary to have some employment while pursuing his American studies.

August Mortality Report. — The mortality reported in the city during the month of August represents an annual death-rate of 18.63, as against 21.86 in July. This is an excellent showing for the season, though not equal to that of August, 1903, when the death-rate reached the low figure of 17.28. The corrected death-rate for August of this year, excluding non-residents and infants under one week old, is 17.84. Among the diseases in which there was a diminished fatality were the following: The weekly average of deaths from diphtheria and croup decreased from 29.75 in July to 26.75 in August; the weekly average from scarlet fever, from 7.75 to 2.75; from measles, from 10.75 to 6; from whooping-cough, from 4.75 to 3.5; from epidemic cerebrospinal meningitis, from 26 to 20.75; from pneumonia, from 53.75 to 43.5; from broncho-pneumonia, from 46 to 43.75; from acute bronchitis, from 15.25 to 14; from pulmonary tuberculosis, from 152 to 144; from diarrheal diseases, from 467.25 to 318; from diarrheals in children under two years of age, from 427.25 to 286; and from Bright's disease and nephritis, from 113.5 to 97. Among the diseases which showed an increased mortality were the following: The weekly average of deaths from typhoid fever increased from 11.25 to 19.5; from cancer, from 48 to 49.75; and from organic heart diseases, from 75.25 to 87.75.

## Obituary.

### HENRY TUCK, M.D.

Dr. Henry Tuck of New York died at his summer home, Seabright, N. J., on Sept. 2, in the sixty-third year of his age, from Bright's disease. He was born at Barnstable, Mass., the son of a physician, and was graduated from the Harvard Medical School in 1867. Before taking his degree Dr. Tuck served as Acting Assistant Surgeon in the army in 1865, during the campaign preceding Lee's surrender at Appomattox. After his graduation he pursued his studies in Europe, and on his return practiced for ten years in Boston. Dr. Tuck was a well-known authority on life insurance. In 1878 he removed to New York, having been appointed one of the Medical Directors of the New York Life Insurance Company. In 1883 he was made second vice-president of that company, and in 1885, first vice-president, a position which he held up to the time of his death. He was twice married, his first wife being a daughter of William H. Beers, president of the New York Life Insurance Company, and his second, Miss Eleanor Hammond of Chestnut Hill, Mass., who, with several children, survives him.

## Miscellany.

### DR. WALTER REED AND THE PANAMA SANITARY OUTLOOK.

In the current number of the *Medical News* the editor remarks upon the sanitary outlook in Panama, and pays the following tribute to the late Dr. Walter Reed. After commenting in some detail upon the question of yellow fever and malaria, and the work which has led up to their etiological relationship to the mosquito, the editor closes as follows:

"All this looks simple enough now. The very favorable outlook, however, is due entirely to the work of one man, Dr. Walter Reed, who, in his quiet, unassuming way, accomplished as much for medicine as did Jenner, Lister or Pasteur. His greatest monument will undoubtedly be the fact that the canal at Panama will be finished without the awful loss of life that would otherwise be unavoidable. It is only proper and befitting his position as an American medical man that another and more formal monument to him should proclaim to admiring countrymen how much the fellow members of his profession appreciate the work that was so successfully accomplished by this compatriot whose untimely death cut off one of the most distinguished physicians of his generation, but whose memory will remain for all time as one of the glories of American medicine."

## RECORD OF MORTALITY
FOR THE WEEK ENDING SATURDAY, AUGUST 27, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid Fever. | Diarrheal Diseases. |
|---|---|---|---|---|---|---|---|---|
| New York . . | 3,908,644 | 1,335 | 543 | 38.64 | 7.94 | 1.87 | 2.02 | 21.42 |
| Chicago . . . | 2,021,086 | 472 | 163 | 37.06 | 6.78 | 1.27 | .64 | 21.60 |
| Philadelphia | 1,407,968 | 422 | 137 | 34.82 | 5.69 | .95 | 1.90 | 14.92 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 200 | 72 | 37.50 | 2.00 | 1.50 | 2.00 | 20.50 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 120 | — | 39.98 | 3.33 | 1.67 | 11.66 | 19.16 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 70 | 27 | 28.60 | 4.29 | 2.86 | 2.86 | 18.59 |
| Boston . . . | 617,950 | 152 | 61 | 33.55 | 5.26 | 1.32 | .66 | 21.05 |
| Worcester . . | 136,925 | 33 | 16 | 36.36 | 6.06 | — | — | 21.21 |
| Fall River . . | 119,349 | 45 | 23 | 53.32 | 4.44 | — | 2.22 | 33.33 |
| Lowell . . . | 104,402 | 47 | 26 | 44.66 | — | 4.25 | 2.13 | 27.65 |
| Cambridge . | 100,998 | 27 | 8 | 18.51 | 11.10 | — | — | 11.10 |
| Lynn . . . . | 73,875 | 15 | 2 | 20.20 | 6.67 | — | — | 6.67 |
| Lawrence . . | 72,348 | 26 | 15 | 53.84 | 11.54 | — | 3.85 | 42.30 |
| Springfield . | 72,020 | — | — | — | — | — | — | — |
| Somerville . | 70,413 | 21 | 7 | 23.81 | — | 4 76 | 9.52 | 9.52 |
| New Bedford | 68,863 | 45 | 28 | 44.44 | 4.44 | — | 2.22 | 40.00 |
| Holyoke . . . | 50,538 | 8 | 5 | 37.50 | — | — | — | 37.50 |
| Brockton . . | 46,601 | 7 | 4 | — | — | — | — | — |
| Newton . . . | 39,310 | 13 | 6 | 23.10 | — | — | — | 15.40 |
| Haverhill . . | 39,061 | 7 | — | — | — | — | — | — |
| Malden . . . | 37,205 | 10 | 4 | 20.00 | — | — | 10.00 | — |
| Salem . . . . | 37,188 | 12 | 3 | 33 33 | 16.67 | — | — | 16.67 |
| Chelsea . . . | 36,499 | 10 | 5 | — | — | — | — | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 18 | 5 | 50.00 | 11.10 | — | — | 38.88 |
| Everett . . . | 30,209 | 4 | 1 | — | — | — | — | — |
| North Adams | 29,201 | 5 | 2 | 20.00 | — | — | — | 20.00 |
| Quincy . . . | 26,798 | 7 | 4 | 28.60 | — | — | — | — |
| Gloucester . | 26,121 | 5 | 2 | 20.00 | — | — | — | — |
| Waltham . . | 25,797 | 8 | 1 | — | — | — | — | — |
| Brookline . . | 23,576 | 3 | 1 | 33.33 | — | — | — | 33.33 |
| Pittsfield . . | 22,870 | 5 | 3 | 20.00 | — | — | — | 20.00 |
| Medford . . | 21,956 | 4 | 1 | 50.00 | — | — | — | 25.00 |
| Chicopee . . | 21,692 | 6 | 2 | 16.67 | — | — | 16.67 | — |
| Northampton | 20,314 | 7 | 4 | — | — | — | — | — |
| Beverly . . . | 15,807 | 4 | 4 | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 2 | 1 | — | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 5 | 3 | 40.00 | — | — | — | 20.00 |
| Newburyport | 14,478 | 4 | 0 | — | — | — | — | — |
| Woburn . . . | 14,315 | 4 | 2 | 50.00 | — | — | — | 25.00 |
| Melrose . . . | 13,819 | — | — | — | — | — | — | — |
| Westfield . . | 13,809 | 6 | 4 | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 5 | 0 | 20.00 | — | — | 20.00 | — |
| Revere . . . | 13,609 | 4 | 2 | — | — | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 5 | 1 | 60.00 | — | — | 20.00 | 20.00 |
| Southbridge . | 11,716 | 2 | 1 | 100.00 | — | — | — | 100.00 |
| Watertown . | 11,575 | 1 | 0 | — | — | — | — | — |
| Weymouth . | 11,350 | 5 | 1 | 60.00 | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,216; under five years of age, 1,200; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,179; acute lung diseases 198, consumption 344, scarlet fever 7, whooping cough 15, cerebrospinal meningitis 22, smallpox —, erysipelas 3, puerperal fever 8, measles 6, typhoid fever 74, diarrheal diseases 653, diphtheria and croup 37.

From whooping cough, New York 6, Chicago 2, Philadelphia 2, Baltimore 1, Pittsburg 4. From measles, New York 4, Philadelphia 1, Pittsburg 1. From scarlet fever, New York 2, Chicago 2, Baltimore 2, Pittsburg 1. From cerebrospinal meningitis, New York 17, Baltimore 1, Pittsburg 1, Worcester 2, Weymouth 1. From typhoid fever, New York 27, Chicago 8, Philadelphia 8, Baltimore 4, Pittsburg 14, Providence 2, Somerville 2, Boston 1, Fall River 1, Lowell 1, Lawrence 1, New Bedford 1, Malden 1, Chicopee 1, Marlborough 1, Gardner 1. From erysipelas, New York 1, Philadelphia 1, Worcester 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending Aug. 13, the death-rate was 22.1. Deaths reported 6,482; acute diseases of the respiratory organs (London) 47, whooping cough 74, diphtheria 47, measles 122, smallpox 3, scarlet fever 28.

The death-rate ranged from 6.8 in South Shields, to 37.7 in Liverpool; London 21.4. West Ham 30.6, Brighton 12.8, Plymouth 13.7, Bristol 15.2, Leicester 17.4, Nottingham 28.1, Bolton 13.1, Manchester 23.6, Salford 28.0, Bradford 18.3, Leeds 23.9, Hull 31.2, Sheffield 21.2, Cardiff 16.6, Rhondda 31.1, Wigan 35.7, Merthyr Tydfil 22.2, Southampton 15.3.

## METEOROLOGICAL RECORD.

For the week ending August 27, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. Daily mean. | Thermometer. Daily mean. | Maximum. | Minimum. | Relative humidity. 8.00 A.M. | 8.00 P.M. | Daily mean. | Direction of wind. 8.00 A.M. | 8.00 P.M. | Velocity of wind. 8.00 A.M. | 8.00 P.M. | We'th'r * 8.00 A.M. | 8.00 P.M. | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S.. 21 | 29.98 | 72 | 78 | 65 | 72 | 67 | 70 | N W | E | 16 | 3 | C. | C. | .01 |
| M. 22 | 30.06 | 72 | 81 | 62 | 90 | 81 | 87 | S | S W | 11 | 12 | O. | C. | 0 |
| T.. 23 | 30.20 | 66 | 72 | 60 | 59 | 59 | 59 | N | E | 14 | 2 | C. | C. | 0 |
| W . 24 | 30.20 | 70 | 81 | 58 | 69 | 79 | 74 | W | S W | 4 | 11 | C. | C. | 0 |
| T.. 25 | 29.96 | 72 | 82 | 61 | 80 | 77 | 78 | S W | S W | 10 | 15 | C. | C. | 0 |
| F.. 26 | 29.92 | 66 | 76 | 57 | 63 | 60 | 62 | W | N | 12 | 9 | O. | C. | 0 |
| S.. 27 | 30.18 | 62 | 73 | 52 | 60 | 70 | 65 | N W | S W | 5 | 11 | C. | C. | 0 |
| ☞ | 30.07 | | 78 | 59 | | | 71 | | | | | | | .01 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for week.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING SEPTEMBER 3, 1904.

J. E. PAGE, past assistant surgeon. Detached from the "Montgomery" and ordered to the "Puritan," then home and granted leave for one month.

H. T. NELSON, JR., acting assistant surgeon. Ordered to duty at the Naval Hospital, Washington, D. C.

J. J. SNYDER, past assistant surgeon. Detached from the "Maine" and ordered to the "Kearsarge."

F. W. BRECK, pharmacist. Appointed a pharmacist from May 20, 1904.

J. FLINT, assistant surgeon. Detached from the Naval Hospital, Boston, Mass., and ordered home, and resignation as an assistant surgeon in the navy accepted, to take effect September 6, 1904.

N. T. MCLEAN, assistant surgeon. Detached from the Naval Recruiting Station, Buffalo, N. Y., and ordered to the Naval Hospital, New York, N. Y.

## RECENT DEATH.

ELBRIDGE GERRY SIMONS, M.D., of Ripley, Chautauqua County, N. Y., was killed on September 1, at Glenville, a suburb of Cleveland, Ohio, by being struck by a Lake Shore freight train.

## BOOKS AND PAMPHLETS RECEIVED.

The Meaning of a Modern Hospital. By W. Bruce Clarke, M.A., M. B. Oxon., F.R.C.S. New York, London and Bombay: Longmans, Green & Co. 1904.

On the Local Application of Solutions of Saline Purgatives to the Peritoneal Surfaces of the Intestine. By John Bruce MacCallum. Berkeley: The University Press. 1904.

University of California Publications. Physiology. On the Action of Saline Purgatives in Rabbits and the Counteraction of their Effect by Calcium (Second Communication). By John Bruce MacCallum.

Manual of Intragastric Technique. Practical Lessons in the Use of Apparatus for the Diagnosis and Treatment of Diseases of the Stomach. By George Herschell, M.D. Lond. Illustrated. London: Henry J. Glaisher. Chicago: W. T. Keener & Co.

The Health Scholarship Prize Essay on The Development and Anatomy of the Prostate Gland, together with an Account of its Injuries and Diseases and their Surgical Treatment. By W. G. Richardson, M.B., B.S., F.R.C.S. Illustrated. London: J. & A. Churchill. 1904.

Radiotherapy and Phototherapy, including Radium and High-Frequency Currents, Their Medical and Surgical Applications in Diagnosis and Treatment. For Students and Practitioners. By Charles Warrenne Allen, M.D., with the co-operation of Milton Franklin, M.D., and Samuel Stern, M.D. Illustrated. New York and Philadelphia: Lea Brothers & Co. 1904.

The Medical Epitome Series. Surgery. A Manual for Students and Practitioners. By M. D'Arcy Magee, A.M., M.D., and Wallace Johnson, Ph.D., M.D. With an Appendix on X-ray Work in Surgery. By Edward O. Parker, A.M., M.D., Series edited by V. C. Pedersen, A.M., M.D. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1904.

# Original Articles.

## OBSTRUCTIVE RENAL RETENTION WITH ANURIA, AND ITS TREATMENT.*

BY FRANCIS S. WATSON, M.D., BOSTON.

This communication deals with those forms of renal retention only with which anuria is associated, and which originate in complete closure of the ureter or of the outlet of the renal pelvis.

As used here, anuria is intended to denote the reduction of the urinary secretion to a few drops in the course of each twenty-four hours; that is to say, the anuria which is termed *absolute*.

The phenomena which are observed in the kidney when its urinary outflow is completely obstructed are as follows:

(1) Increased intrarenal pressure.

(2) Congestion and edema of the organ under the influence of which it becomes enlarged.

(3) Rapid diminution of the urinary secretion and change in its chemical character; the latter consisting in a marked reduction of its solid constituents.

After the obstruction has existed a few hours, the urinary secretion is almost absolutely suppressed, a few drops only being secreted in the course of each twenty-four hours. Owing to this latter fact, hypernephrosis in a marked degree is seldom seen in connection with complete, continuous obstruction. The enlargement of the organ is almost wholly due to congestion, and the urinary accumulation plays but a secondary part in its production.

(4) When the obstruction has existed for forty-eight hours or so, destructive changes begin in the renal epithelium and in the glomeruli. Once begun, they advance until the obstruction is removed. Their extent is therefore proportionate to the length of time during which the obstruction is present. If the latter lasts long enough, total destruction of the organ results.

(5) If the kidney is infected, the destructive changes take place more rapidly than when it is not infected.

(6) The degree of functional capability that is retained by an obstructed kidney cannot be determined by the thickness or thinness of the cortical substance that is found when operation is performed upon it, for the essential changes upon which the future of the kidney depends are histological in character. Thus there may be in one case a very thin layer of the secreting substance which has not been invaded by the destructive changes to such an extent as to prevent its performing useful service for many years after the renal obstruction has been relieved, while in another instance in which there is a comparatively large amount of the renal parenchyma left, its working capacity may have been practically destroyed by the changes which have taken place in it of a destructive nature.

(7) The only means of estimating the future functional capability of the obstructed kidney is by examination of the urine that comes from it after the re-establishment of the urinary secretion. This, however, cannot be determined from the urine passed *immediately* after the removal of the obstacle, for there are intervals of considerable length — sometimes from four to six months — during which the urine continues to be poor in solid constituents, and yet, at the end of this time, it may show such improvement as to indicate that the organ is doing useful work.

The above is a bare outline of the more important changes that take place in the kidney under these conditions. The essential things to be remembered in connection with them are: The longer the kidney remains obstructed, the greater is the extent of the injury done to it, and correspondingly, the greater is the patient's danger; that the destructive changes in the organ begin within a few hours after the establishment of the obstruction, and that they progress more rapidly when the kidney is infected than when it is not.

*Anuria.* — It is customary to assert that the anuria seen in connection with these cases does not occur if the kidney of the other side is normal, and that in order to have it produced, one or another of the following conditions must be present concomitantly: (1) Absence of the other kidney, or disease of it sufficiently serious to have destroyed or greatly injured its functional capability. (2) Simultaneous obstruction of the ureters of both kidneys or closure of the single channel made by their fusion, such as is seen in connection with certain renal anomalies.

In other words, that reflex influence is not capable of suppressing the urinary function of the other kidney when the latter is normal or but moderately diseased.

That this is not absolutely the fact is shown by two or three post-mortem observations in which the unobstructed kidney *was* found to be normal or very nearly so. Further evidence in support of the occurrence of reflex suppression under such circumstances is supplied by two clinical observations and by some recent experiments of Götzl.

The former consisted in having found the opposite kidney to all appearance normal, in a case in which it was cut down upon and incised after a primary operation on the other kidney, the second operation having been done because of the persistence of the anuria after the first one, and in another case in having drawn normal urine from the opposite kidney by a ureteral catheter after the re-establishment of the urinary secretion.

In the experimental work of Götzl, he succeeded in producing complete suppression of the urinary secretion of one kidney by increasing the intrarenal pressure in the other, in two of twelve dogs which were used in the experiments.

It is to be noted, however, that similar experiments performed by others have not yielded the same results as those of Götzl.

* Read before The Massachusetts Medical Society, June 7, 1904.

I have dwelt upon this feature of the subject because of its possible importance with relation to the surgical treatment of those cases in which the anuria persists in spite of the relief of the obstructed kidney afforded to it by a nephrotomy. For it suggests that there may be a reasonable chance of re-establishing the urinary secretion in such instances by exposing and incising the other kidney, should the anuria persist for twenty-four hours after the nephrotomy has been done on its fellow, when the former and if the former is normal or but moderately diseased and its function suppressed by reflex influence only. That these conditions are rare is undoubtedly true.

The most striking feature of obstructive anuria is the length of time it may last without giving rise to uremic symptoms and without causing death. These are the characteristics which serve to distinguish it from the anuria which occurs in connection with other conditions.

In order to determine various points in connection with this subject, I have collected and analyzed two hundred cases published by different writers. These cases are derived from the following sources:

Morris (Surgical Diseases of the Kidney and Ureter. 1902).

Schenck (Johns Hopkins Hospital Reports. 1902. Vol. x, p. 447).

Tenney (BOSTON MED. AND SURG. JOUR., Feb. 4, 1904).

In addition to the above are twenty-four cases, as follows:

| | | |
|---|---|---|
| Loumeau, | 2 cases. | (Compte rendu de l'Association Francaise d'Urologie, 1896–97, p. 194.) |
| Pousson, | 1 case | (Ibid., 1898, Vol. 3, p. 370.) |
| Vignard, | 1 " | (Ibid., 1898, Vol. 3, p. 378.) |
| Albarran, | 1 " | (Ibid., 1898, Vol. 3.) |
| Escat, | 1 " | (Ibid., 1898.) |
| Chevalier, | 1 " | (Ibid., 1896–97, p. 485.) |
| Begouin, | 1 " | (Ibid., 1896–97, p. 187.) |
| Chevalier, | 1 " | |
| Duret, | 1 " | |
| Desnos, | 1 " | (Ibid, cited by Begouin.) |
| Championniere, | 1 " | |
| Bazy, | 1 " | |
| Nicholich, | 1 " | (Ibid, 1903–04.) |
| Cabot, | 2 cases | (Annals of Surgery, 1903, October.) |
| Fairchild, | 1 case | |
| McKay, | 1 " | (Montreal Med. Jour., 1903, Vol. 32, p. 641.) |
| McArthur, | 1 " | (Annals of Surgery, 1903, Vol. 37, p. 294.) |
| Bevan, | 2 cases | (Annals of Surgery, April 5, 1903.) |
| Grohe, | 1 case | (Arch. fur klin. Chir., 1902, Vol. 66, p. 178.) |
| Watson, | 2 cases | (Jour. Cutan. and Gen.-Urin. Dis., Vol. 9, and present communications.) |

*Duration of Anuria.* — One hundred and ten cases treated expectantly. Thirty recoveries. Eighty deaths.

In twenty of the cases in which recovery took place the duration of the anuria was as follows:

| DAYS | CASES | |
|---|---|---|
| 1 | 1 | |
| 3 | 1 | |
| 5 to 10 | 11 | (The larger number of these cases had anuria from 5 to 7 days.) |
| 11 | 1 | |
| 13 | 1 | |
| 14 | 2 | |
| 15 | 1 | |
| 15 plus | 2 | |
| | 20 | |

The duration of the anuria in 42 fatal cases in which its length is stated was:

| DAYS | CASES | |
|---|---|---|
| 4 | 1 | |
| 5 to 15 | 25 | (The larger number were between 5 and 8 days.) |
| 15 | 2 | |
| 16 or more | 14 | (23 days was the longest period. There were remissions in a few of these cases.) |

Ninety-five cases treated operatively. The duration of the anuria prior to operation was stated in 39 of these cases. Of these, 26 recovered and 13 died. In the 23 cases in which recovery followed operation, duration of anuria was:

| DAYS | CASES |
|---|---|
| 1 | 2 |
| 2 | 2 |
| 3 | 2 |
| 4 | 2 |
| 5 | 2 |
| 6 | 7 |
| 7–8–9 (1 each) | 3 |
| 11 | 1 |
| 12 | 1 |
| 13 | 2 |
| 14–15 (1 each) | 2 |
| | 26 |

Fatal cases 13. Duration of the anuria was:

| DAYS | CASES |
|---|---|
| 2 | 2 |
| 4–5 (1 each) | 2 |
| 6–7 (2 " ) | 4 |
| 8–9 (1 " ) | 2 |
| 12 | 1 |
| 4 | 1 |
| 5 | 1 |
| | 13 |

"*Period of Tolerance.*" — The time after the beginning of the anuria during which the patient remains free from uremic symptoms, is called the "period of tolerance." Its duration was stated in 62 cases. In the larger number of these it was from four to seven days. In 4 it was twenty-four hours or less. In 2 it was two days, and in 14 it was from ten to sixteen days.

To what is to be ascribed the remarkable immunity to uremic intoxication displayed in some of these cases? The most plausible explanation seems to the writer to be that which is afforded by assuming it to be due to the so-called "*internal secretion*" of the kidney.

The theory with regard to this distinctive functional office of the kidney may be expressed briefly thus:

Beside the separation of urea and other excretory products from the blood, with which we know the kidney is concerned, it has another functional duty, namely, that of secreting certain principles of unknown nature, which are returned to the blood through the renal vein, and which have a value in preserving the general nutrition and health of the organism and which, moreover, inhibit in some degree the action of the uremic toxins.

In support of this theory may be cited the experiments of Vitzou recently published. One of a large number of similar ones made by him will serve as an illustration of all of them.

Vitzou removed both kidneys from two dogs, from the renal vein of which he had previously drawn a certain quantity of blood, in such a way as to have it keep sterile. This blood was defibrinated, filtered, and placed in sterile glass jars until it was required.

One of the dogs was allowed to die without interference. The second one was given subcutaneous injections of the blood of the renal vein prepared as above described. The first animal died in thirty-four hours after its kidneys had been removed, presenting characteristic uremic symptoms. The other dog lived for nearly seven days, or 130 hours longer than the one which had not received the injections of blood from the renal vein. Moreover, it was seen that the first appearance of the uremic symptoms could be delayed for a good many hours if the renal vein blood was injected in anticipation of their manifestation, and also that they could be made to cease and their reappearance delayed for a considerable interval if the subcutaneous injections were given as soon as they were manifested and repeated between that time and before the next manifestation occurred. In order that this theory may become applicable to the cases which we are considering, we must assume that the "internal secretion" has not been arrested by the influences which have led to the suppression of the urinary secretion, and that it continues to supply those elements which inhibit the action of the uremic toxins, or which increase the resistance of the organism to them.

Other points which may be noted with regard to the anuria and uremic manifestations are as follows:

If the kidney which is obstructed is already hydronephrotic, the life of the patient and the period of tolerance are prolonged as compared with the cases in which hydronephrosis is not present.

Another feature that should be remembered is, that during the period of tolerance, the patients are frequently to all appearance in good health, and that in some instances death has occurred suddenly without any uremic manifestations whatever, and not long after the beginning of the anuria. I can, however, find no instance in which this has been the case after a period of anuria of twenty-four hours or less.

No one can foresee at what moment uremia may occur, and Morris has well said that in these cases "uremia is always imminent."

*Treatment.* — In considering the treatment, we may separate the cases into two groups: (1) Those in which the symptoms are not sufficiently characteristic to enable us to recognize the nature of the trouble, or in which it is difficult to determine on which side the obstruction is located, and (2) Those in which the diagnosis can be made with reasonable or entire certainty.

Belonging to the first group are patients who have pain on both sides, or who have had it previously, but who do not have it when seen by the surgeon; or again, such as have pain on one side and tenderness or spasm of the abdominal muscles on the other, etc., etc.

Under these circumstances, if the patient's condition is such as to permit it, the use of the x-ray, the ureteral catheter and the cystoscope may render valuable service. Otherwise, the two latter are both unnecessary and useless in this class of cases.

In cases in which there has been pain on both sides, but in which it no longer exists when the patient is examined, and in which we are obliged to operate without delay, we should choose the side on which the pain was located last.

If we cannot determine which of the two sides is the seat of the trouble, it is better to take the chance of operating on the wrong one than not to operate at all; and if it is found that we have operated on the wrong side we should not hesitate immediately to expose and incise the other kidney.

In the other group of cases, viz., those in which there are *characteristic* symptoms, one or more of the following conditions are presented: Enlargement of the obstructed kidney, tenderness or pain of it; spasm of the abdominal muscles of that side, and, in the cases in which the kidney is infected, probably also chills or rigors, and nausea and vomiting.

Assuming that we have a case in which the diagnosis is reasonably assured, what is the treatment to be?

Apart from the surgical treatment, the following measures are available:

Subcutaneous injections of saline solution, with a view to delaying or mitigating uremic symptoms.

In cases of calculous obstruction, hot hip baths, and manipulation to aid the passage of the stone. The latter has often been successful.

Some surgeons advise the employment of anesthetics for the purpose of relaxing spasm of the ureter. Theoretically this is unsuitable in cases of anuria. Practically it has seemed to be beneficial in some of the cases reported.

When the obstruction is due to a kink of the ureter produced by movable kidney, the patient's hips should be raised, the abdomen relaxed, and the effort made to replace the organ in its normal position.

*Operative treatment.* — Other than the above methods of treatment, there are two courses that

may be pursued: (1) To treat the case expectantly. (2) To treat it operatively.

The decision as to which of these to adopt is not difficult in any case in which the diagnosis is reasonably clear. The evidence upon which this statement rests is: (1) The knowledge that we have of the changes that occur in the kidney when it is completely obstructed. These have been already detailed in the first part of this paper. (2) The results of clinical experience. The latter is shown by the analysis of the 200 cases which are the basis for some of the conclusions arrived at in the course of this study.

Of the total number of 205, there were 110 patients treated expectantly, and 95 who were subjected to operation.

The mortality of those treated expectantly was 72.7%. That of those treated operatively was 46.3%.

It was also seen that the longer the operation was delayed after the beginning of the anuria, the higher the death-rate became. Again, that a comparatively small number of the patients who had exhibited well marked uremic symptoms recovered under any form of treatment, and that of those who did survive under such circumstances far the larger part were treated operatively.

Further, it was found that there have been a few instances in which patients survived who had profound uremia at the time at which the operations were performed, and who had also had long periods of anuria. Such cases are reported by Chevalier, Duret, and Desnos. They serve to show that we should never refuse to operate even under such unfavorable conditions.

Other determining factors are these: We know that if the obstruction is not relieved, the patient will die in a comparatively short time. We know that death may occur suddenly and soon after the beginning of the anuria without the patient having had uremic symptoms. We know that uremic manifestations may occur at any moment during the anuria, and that once they have appeared, death follows with but few exceptions within three or four days at most.

No one is capable of foreseeing at what time these things may happen. No one can assert that the obstruction will be relieved spontaneously in any given case.

The fact that there have been some cases in which the obstruction has been relieved spontaneously after long periods of anuria and of tolerance, and that recovery has followed, does not justify us in delaying operation because of the hope or the expectation that the same experience will be repeated in any other case.

The conclusion, so far as the choice of treatment is concerned, is inevitable, and it is this: That in every case in which the obstruction has not been relieved by the end of the first forty-eight hours at most, operation should be performed. If uremic symptoms should appear before that time, operation should be done at once.

The delay of forty-eight hours is justified in some cases of calculous anuria, because we know that the destructive changes in the kidney will not have advanced to an important extent before that time; because very few patients have died after periods of anuria of such short duration as that, and finally, because the calculus may pass at any time within that time.

In other words, so long as the kidney is not suffering injury of consequence and there is a fair chance of the obstruction being relieved spontaneously, there is no serious objection to waiting, but at the expiration of this time, delay is no longer permissible. The line which separates the one from the other of these periods may be drawn at the end of the first forty-eight hours, at the furthest, from the beginning of the anuria.

*Choice of Operation.* — Having decided as to the kind of treatment to be adopted in a general sense, there remains to be considered the choice of the operative method.

In a few cases of calculous anuria the cystoscope has detected the stone projecting from the mouth of the ureter, and it has been removed from within the bladder by the finger or by instrument.

When a calculus is situated close to the lower end of the ureter, it may sometimes be dealt with advantageously from within the bladder also.

Occasionally a calculus is so large that it can be felt through the abdominal wall, and it can be better approached by a more direct route than that offered by lumbar nephrotomy.

The limits of such a communication as the present one do not permit me to enter into the question of locating calculus in the ureter, the relative frequency with which the different parts of the ureter are the seat of calculous impaction, etc. Moreover, these matters have been very fully dealt with by Israel, Tuffier, Morris and others abroad, and in this country by Schenck of Johns Hopkins, and by Dr. Tenney here, in two admirable articles already referred to.

I shall therefore confine myself to the consideration of some of the more general features connected with the choice of operative method.

One broad proposition underlies and applies to the surgical treatment of all these cases. It is this: The essential point by surgical intervention is the re-establishment of the urinary secretion by supplying a free avenue for the escape of the urine from the obstructed kidney by whatever operation will accomplish it most speedily and with the least shock.

There is no question that these requirements are best fulfilled by a quickly performed lumbar nephrotomy.

It goes without saying, that if at the same time the cause of the obstruction can be removed without thereby increasing the severity or prolonging the time of the operation to an important extent, it should be removed. Cases in which this can be done without too much risk, are those in which a calculus is impacted in the renal pelvis or in the upper third of the ureter, from which positions it may be removed usually without too much loss of time. Again, the time lost in

anchoring a movable kidney which has caused a kink of the ureter and its occlusion is usually not of enough consequence to deter us from doing it and thus preventing the recurrence of the trouble.

Of course, it is understood that failure to remove the obstacle at the time of doing the nephrotomy, makes the establishment of a renal fistula much more probable. The evils of even a permanent renal fistula depend in large measure upon the ability to have it properly cared for, the patient's surroundings, his occupation, etc. It is by no means an unmitigated evil when the above factors are favorable.

I have a patient at this moment who has worn a bottle attached to his back for ten years, and for the past year a second one as well. The urine of each kidney has been delivered into these receptacles respectively by tubes which are placed in the renal fistulæ in the two loins.

During the entire time he has been in excellent health; not a drop of urine leaks around the tubes; he soon became accustomed to them and suffers no discomfort whatever from their presence. He has been in active business all the while and no one has been aware that anything was the matter with him. The renal fistulæ have kept this patient not only alive but in perfectly good health all this time. To-day the kidney operated upon one year ago has a percentage of urea of from 1.60 to 1.90. That of the kidney operated upon ten years ago —1.30 to 1.70% of urea The latter has not varied from the time of the operation, in the sense of diminishing the percentage of urea found to be present.

The safety of the patient lies primarily in relieving the obstructed kidney. His future comfort may be imperilled by failure to remove the obstacle, but his life may depend upon not attempting to do so in the first instance.

The nature of the operations done in the ninety cases was as follows:

| | Cases | Deaths | Recoveries | Mortality |
|---|---|---|---|---|
| Lumbar Nephrotomy, | 65 | 9 | 56 | 15.2% |
| Ureterotomy, | 15 | 3 | 12 | 20.0% |
| Pyelotomy, | 5 | | | |
| Abdominal exploration and passage of calculus by manipulation, | 2 | | | |
| Exposure of kidney and incision of capsule, | 3 | | | |
| | 90 | | | |

*Immediate closure of the nephrotomy incision.* — The temptation is strong to close the kidney incision immediately, when we are sure that the obstacle has been removed, and when the organ is not infected. It has been successfully done several times. But it should be remembered that it is the very fact of maintaining the opening in the loin, for a time at least, that allows the kidney to resume its function in whatever degree it is capable of doing. We know that this resumption is not immediate upon the removal of the obstacle, and, finally, it is possible, even in cases in which the obstacle has been removed, that we may invite a repetition of, or aid in maintaining, an abnormal degree of intrarenal pressure by immediate closure of the renal wound On all these accounts it would seem wiser, therefore, to leave it open. In the instances in which the obstacle has been removed its healing will not be seriously prolonged by so doing.

If it is known that the patient has but one kidney, or that the function of the one which is on the side opposite to that which is obstructed is destroyed, this fact is a reason for operating sooner rather than later.

In this connection may be mentioned some of the cases of this sort which have been published:

*Auvray.* — Calculous anuria — destruction of the kidney of the other side by obliteration of the ureter. (Bull. et mem. de la Soc. Anat. de Paris. 1899, vol. 74, pp. 597–600.)

*Loumcau.* — Calculous anuria. Nephrectomy done on the other kidney one year previous. Patient refused operation, and died uremic on the 5th day. (Compte rendu de l'Assoc. Franc. d'Urologie. 1896–97, p. 194.)

*McArthur.* — Calculus removed from right kidney by nephrolithotomy. Nephrectomy done on same kidney later. Anuria. Nephrotomy upon the remaining kidney. Recovery. (Ann. of Surgery, Phila. 1903, xxxvii, pp. 294–296.)

*Nicholich.* — Calculous anuria. Nephrotomy on the 15th day. The kidney was tuberculous as well as obstructed. The other one had been removed for tuberculous disease some time before. Recovery followed the second operation. (Assoc. Francaise d'Urologie. 1903–04, vii, pp. 639–642.)

*McKay.* — Pyonephrosis of left kidney. Nephrectomy. Subsequent calculous anuria from obstruction of remaining kidney. Nephrotomy. Recovery. (Montreal Med. Jour., 1903, xxxii, pp. 641–648.)

*Ferguson.* — Nephrectomy. Anuria from blocking of other ureter. Nephrotomy, and finally suprapubic cystotomy. Recovery. (Jour. Amer. Med. Assoc., 1903, pp. 8–10.)

*Chevalier and Mauclaire.* — Anuria of four days in a patient having but one kidney. Nephrotomy. Recovery. (Assoc. Francaise d'Urologie. 1896–97, p. 485.)

Two other cases which have not been published have come within my personal knowledge. In both there was but one kidney. In both, the periods of anuria were comparatively short. They were thirty-eight hours and three days, respectively. Both patients recovered; one under expectant treatment, and one after nephrotomy and the removal of a calculus from the upper end of the ureter. In both cases nephrotomy had been done at some time previously upon the other kidney.

As has been said, speed in the performance of the operation is of the highest importance; often it will have the character of an emergency; and as we know, even such of the patients as do not show evidence of uremia or of being seriously ill, have all of them been accumulating toxic elements, and are not in condition to resist surgical operation well.

Any device, therefore, which will enable us to shorten the time of the operation is a most welcome addition.

I have derived the greatest assistance from the use of the "Kidney Operating Table" devised by Dr. J. H. Cunningham of Boston, in the performance of all lumbar renal operations. It is, I think, far the best means at our disposal for the purpose, and I take pleasure in commending it to your favorable notice. I have asked Dr. Cunningham to demonstrate it here this afternoon, and I will not anticipate what he will have to say about it himself.

BIBLIOGRAPHY.

The following 22 cases are taken from the tables of Schenck and of Tenney, to which references have already been given in the body of the article:

| | | Cases |
|---|---|---|
| Bardenheuer | 1882 | 1 |
| Bergmann | 1887 | 1 |
| Ceci | 1897 | 1 |
| Deaver | 1902 | 1 |
| Ferguson | 1903 | 1 |
| Hind | 1894 | 1 |
| Israel | 1888, 1896 | 4 |
| Kirkman | 1889 | 1 |
| Kadian | 1894 | 1 |
| Lagarosse | 1892 | 1 |
| Lucas | | 1 |
| Legueu | 1894, 1895, 1895 | 3 |
| Medoza | 1903 | 1 |
| Morris | | 1 |
| Morrison | | 1 |
| Pousson | 1894 | 1 |
| Ralfe and Godlee | 1889 | 1 |
| | | 22 |
| To these are to be added the 24 cases collected by the writer and quoted in the body of the paper | | 24 |
| The rest of the series of 205 is made up of the 49 cases noted by Morris as being treated operatively, and 110 cases treated expectantly | | 49 |
| Operative cases | | 95 |
| Expectantly treated | | 110 |
| Total | | 205 |

Albarran: Communication upon the renal function. (International Congress, Madrid, 1903.)
Bevan: (Annals of Surgery, 1903, Vol. 37, p. 575.)
Cabot: (Annals of Surgery, October, 1903.)
Israel: (Chir. Klin. der Nierenkr. Berlin, 1901.)
Merklen, Pierre: (1881 Paris Treatise.)
Albarran: (Renal Retention.—Assoc. Francaise d'Urologie, V. 1, 1896.)

DISCUSSION.

DR. BENJAMIN TENNEY of Boston said that he had had an opportunity of seeing two types of anuria in the same patient on whom he operated. Some of these attacks before the operation lasted for eighteen hours. Fifteen months after the ureteral calculus was removed, the patient slipped and fell in a sitting position. This was followed by considerable pain on the operated side, and one month later he was called to see the patient who had been working on her feet for several consecutive hours.

On examination a tender swelling the size of a child's head and movable was felt on the left side. Within an hour after lying down with hips elevated the swelling entirely disappeared, and the patient's bladder had been filled and emptied twice.

The earlier attacks were due to the presence of the calculus, and the last to a kink in the ureter, caused by the slipping down of a large kidney. A second operation may be necessary to keep the kidney up in place.

Dr. Tenney agreed with Dr. Watson that anuria was frequently connected with a mechanical obstruction. In all the cases which he has looked up in connection with the article to which Dr. Watson referred, there was evidence of such obstruction.

In the twenty-one cases of anuria which appeared in the combined tables of Dr. Schenck and Dr. Tenney, there was an operative mortality of 52%. Morris speaks of forty-nine cases operated upon with a mortality of 49%, and compares this with the mortality of 80% in cases not operated.

The speaker believes that draining the pelvis of the kidney through the loin added so little to the risk of an already grave condition that it was the only treatment to be considered where the anuria had lasted more than thirty-six hours.

DR. PAUL THORNDIKE of Boston: In the first part of his paper Dr. Watson called our attention to the well-known fact that if the renal outlet is partially occluded for a longer or shorter interval there results a hydronephrosis, while if the obstruction is complete and sudden the renal function practically ceases with equal suddenness and the organ begins to degenerate. If there be an infection as well, the destructive process is so much the more rapid.

Now if the renal function is so interfered with that the unobstructed kidney ceases to functionate (from reflex causes) we get a more or less complete anuria, and if operation upon the obstructed kidney fails to re-establish the renal secretion it is conceivable that a second operation upon the other (unobstructed) kidney might be indicated. This has never come within the range of my experience and I should like to ask Dr. Watson what degree of suppression of urine would indicate the necessity for such an operation and how long he would wait after the first operation before cutting down upon the second kidney?

I wish to add my word of commendation for Dr. Cunningham's table. It has several times enabled me to explore kidneys and remove stones from them without the delivery of the organ on to the loin, and that is something which I have rarely been able to accomplish before.

## REMARKS UPON THE GENERAL PRINCIPLES OF MANAGEMENT OF PULMONARY TUBERCULOSIS.*

BY S. G. BONNEY, A.M., M.D., DENVER, COL.

DESPITE the vast interest attaching to the review of the tuberculosis problem, its present status must be regarded as somewhat unique in the diversity of opinion entertained by medical men concerning the rational management of the disease. This appears remarkable in view of the fact that the consensus of opinion among all qualified observers relates solely to the consideration of out-of-door life, rest, superalimentation and a suitable régime, as the all important factors. It is difficult to understand how there can exist such widely differing inter-

* Read before the American Climatological Association, Philadelphia, June 3, 1904.

pretations of the application of these basic principles, as to permit the resulting multiplicity of ideas and divergent methods of practice, where uniformity of thought and action reasonably might be anticipated. Yet there is being promulgated from numerous sources bearing the stamp of authority and conveying perfect honesty of purpose, the endorsement of several distinctive methods of treatment which appear unalterably opposed to each other. These differences pertain to the various constructions placed upon the relative value of the above mentioned essential principles. A more or less partisan appreciation of their comparative merits is developed by the immediate environment and special opportunities of the observers. Thus is to be explained the repudiation in some quarters of the advantages of climatic change for any case, and in others the advocacy of several totally differing localities for nearly all classes and conditions. In like manner is noticed the strenuous insistence by some upon a rigid disciplinary régime within a closed sanatorium, as applicable to all cases of consumption regardless of many vitally important considerations, and at the same time an equally unyielding adherence by others to the alleged superiority of the conditions rendered possible at home. Unfortunately the picture sometimes is painted in its most dismal colors by ardent opponents. The invalid, in the mournful contemplation of banishment to a distant clime, incarceration within the walls of an institution for consumptives, or seclusion upon his back porch, and perhaps in an unsightly yard, often may wonder which fate can possess the least terror.

It does not necessarily follow, that because one of these methods is rational in certain instances, that the others are necessarily inapplicable for other cases. Manifestly each has much of merit according to the individual conditions imposed, and through the exercise of an intelligent discrimination on the part of the medical adviser may be utilized for the material aid of an appropriate class.

Conceding that each case is a law unto itself and must be judged solely upon the intrinsic merits of its many component factors, is it not time that preconception of fixed ideas as to the management of consumption gives way to a just recognition of the valid and established claims of several methods. The application of the various principles of treatment to an individual constitutes a responsible trust, the satisfactory fulfilment of which can be afforded only through a sufficient appreciation of its true character.

It is not the most complete interpretation of a single element no matter how important that is to accomplish the best results, neither is it the most radical conception of several thoroughly accepted principles if at the obvious expense of remaining factors perhaps not so well recognized yet entirely pertinent to the invalid in question. The fullest measure of success in management is to be obtained only by the wisest possible grouping of all the favorable influences pertaining to the case itself. This imposes an obligation towards a painstaking regard for detail, necessitating a vast amount of study as to the special needs and requirements in each instance. This personal effort directed to the critical analysis of all the phases of each case, historical, physical, temperamental, financial, domestic, social, recreative, industrial, etc., is absolutely essential in order to afford not only a wise preliminary guidance, but also to facilitate subsequently the continued adaptation of the consumptive to a proper environment. Thoughtful study and alert vigilance must be maintained throughout the entire period of observation, in order to provide such mode of life and surroundings as are especially appropriate to changing conditions, and in harmony with the varying needs of the patient. This direct personal attention to detail constitutes the first cardinal feature in the management of pulmonary tuberculosis applicable alike to all climates and all methods.

The next consideration relates to the question of climatic change.

There should be no argument concerning the great value of such an influence in the treatment of consumption, provided there is instituted a proper selection of cases and a conjoined attention to mode of life. Desire to exploit the virtues of any particular climate herewith is disclaimed. Such practice as little becomes the medical residents of favorable localities as does the flaunting renunciation of climatic truths those who are pleased to indulge in such vagaries. May it not be asserted, however, that a consistent regard for the very principles upon which depend opposing claims necessarily carries with it an almost incontrovertible argument in favor of climatic change for a large number of cases. If out-of-door life constitutes a desirable feature of treatment at home, why is it not infinitely better when practiced in such localities as permit its more complete fulfilment? If fairly satisfactory results in early cases may be obtained by virtue of certain features of regimen without other beneficial influences, is it not reasonable to expect still better results and among a larger class of cases by means of the same watchful observation with the added opportunities for outdoor air, sunshine, warmth and dryness incident to favorable climates? It would appear that only in such localities could the fullest conception of a proper method of living satisfactorily be conducted.

It must be insisted, however, that there is something in climate distinctly and entirely apart from these factors of sunshine and outdoor air. Reference is made to the influence of altitude in wisely chosen cases, as producing vesicle dilatation, increase of hemoglobin and red blood corpuscles, and improvement in the vigor of the circulation involving digestive and nutritional changes of vast import. Aside from such considerations as the foregoing, may be mentioned the value of the psychic element involved in all changes of residence. This can react for good or evil according to the degree

of intelligence and sagacity displayed by the medical attendant. Admitting a proper selection of cases and a sufficient personal interest and effort on the part of the adviser to provide suitable environment, there may develop factors of no little value in the novelty of new surroundings, change of food, scenery, custom, companionship, the relief from cares and responsibilities of home and all the interest that attaches to a new country with its stir and energy. Can we afford, also, to entirely disregard the fact that certain climates exist where tuberculosis is very rarely indigenous in spite of the existence of some factors that reasonably might have been expected to produce an increase of native cases? Are there not offered to imported cases better opportunities to gain in the midst of these influences which have prevented the development of the disease in others than when exposed to the same conditions that have been conducive to its origin and spread?

This course of remark is not presented as a plea for health resorts, but merely as an appeal for an impartial consideration of the subject in the interests of the invalid alone. The contention simply is made, that while many cases may be expected to do well under proper supervision even if deprived of the advantages of climate, and that others, reference to which has been made in previous papers, are by no means appropriate for climatic change, yet there does remain another class entitled to receive it by virtue of every consideration, including the results of scientific research, of clinical observation and the instincts of humanity. It is hardly necessary at this time to define in detail the character of cases embraced in this class. A somewhat broad and comprehensive grouping of those for whom some climatic change is justly indicated includes,

*First:* All those with moderate infection who are not prevented from leaving home by financial embarrassment or other equally cogent reasons.

*Second:* Those in a similar physical condition, though with but a meagre monthly allowance, provided sufficient accurate information is obtained in advance concerning suitable accommodations at an expense within their limits.

*Third:* Those admittedly dependent upon their own efforts for support, but, nevertheless, with such slight pulmonary involvement as to permit the performance of out-of-door work in some favorable region where employment may be assured.

*Fourth:* Those with considerably more advanced trouble but favored by a cheerful, sensible temperament, affluence, determination to succeed, an abiding hope with desire for climatic change, a ready compliance with instructions and an apparent, easy adaptation to new surroundings.

That this grouping of cases, subject only to qualification according to modifying individual factors, is reasonably correct, is shown by the substantial facts of experience in favorable localities, where exceedingly remarkable results frequently are obtained in even very advanced cases and among those with most limited resources.

It thus follows that upon the basis of actual results an assuring welcome may be extended to at least some of those no less worthy if less fortunate than their fellows in their equipment and opportunities. It must not be understood, however, that those hopelessly ill or utterly impoverished should be encouraged for a moment to seek climatic change. For these state and municipal sanatoria provision along lines elsewhere suggested, becomes not only obligatory from a moral sense, but, as well, practical and economic.

As regards the large class with moderate infection, who, though much handicapped by lack of means yet not absolutely impecunious, and the associated group of those with very incipient trouble but dependent upon themselves alone, the decision of climatic change is fraught with much responsibility. The question must be reviewed plainly with the patient and family in all its phases according to the individual conditions in force and is hardly subject to generalization. The real solution of the problem for these people consists in the opportunities at their disposal in favorable regions.

The consumptive poor, while equally entitled with those more favored financially to every aid that consistently can be offered, are at the same time necessarily subject to entirely different processes of thought. The interests of such a class are in no wise subserved by sending to a far country to battle against great odds among strangers and amidst perhaps grossly unfavorable surroundings. A recognition of their inherent claims for assistance by virtue of promptings of human interest and a justification for advising a journey to a distant clime is found only by the definite knowledge of the ready facilities for their proper reception within the bounds of their limited resources. Admitting such provision there would be no greater obligation upon society and the profession than to offer reasonable opportunities for such a class to secure a restoration of health and a resumption of earning power.

As regards the cases embraced under the first division, the somewhat sweeping assertion, that all those with moderate infection in the absence of financial or other important reasons should be permitted to enjoy the benefits of climatic change, is based upon the fundamental principle that such patients possess an inviolable right to receive that early unrestricted consideration and advice which an actual experience has demonstrated to be the safest and the most conservative.

" An enormous class who are intensely anxious to avail themselves of every rational opportunity to recover from their disease, appeal to their medical advisers for nothing less than that which offers the greatest and most reasonable assurance of ultimate arrest. Cases such as these, willing to enter the lists engaged in the prolonged struggle, destined so frequently to be a trial to their patience and a test to their endurance, fortitude and bank account, with their own

existence and the happiness of near ones as the issue, surely deserve such preparation and fortunate choice of battle ground as will insure the greatest probability of final success. The obligation of the physician is not fulfilled by advising merely what is admittedly good, but is satisfied only by urging what is actually the very best for the individual case. It is not a question of the advisability or even the probability of securing arrest at home, but whether such an environment of itself is the method most likely to accomplish this result. Should not the physician in assuming to direct the destinies of his well-to-do patients make a practical application of the condition to himself and advise in accordance with the course he would himself pursue under similar circumstances?" [1]

Another consideration pertaining to the management of consumption relates to the question of the closed sanatorium. Its great practical utility in certain carefully selected cases, and its nonadaptability to other equally defined groups, have been discussed at some length in a previous paper. For several distinct classes sanatorium management was described as actually being demanded. For others institutional treatment was thought to remain *sub judice*, and for still another division it appeared to be contraindicated.

Waiving at this time any consideration of its rationale and scope for the differing classes at home, its peculiar advantages and the great good it has accomplished, it is sufficient for present purposes to consider only its field of usefulness in favorable regions.

Paradoxical as it may appear, the proposition is advanced based upon the results of a practical every-day experience, that residence within a closed sanatorium offers the best possible conditions to be offered in health resorts to a class of cases, and at the same time that a summary recourse to complete institutional régime distinctly is prejudicial to the best interests of others. These differences pertain to such determining individual factors as the financial status, temperamental peculiarities and domestic conditions. Other considerations which justly may obtain are the possible accommodations other than institutional, and the character of the medical counsel to be obtained either within or without the sanatorium. It may be asserted that the special advantages accruing from a properly conducted sanatorium are not altogether inherent to the institution itself. An ample porch accommodation with wise provision for private balconies and perfect heating and ventilation of rooms, all with sunny exposure and a generous tempting cuisine, of transcendent importance though they be, none the less are to be secured in many instances outside of closed sanatoria. Their attainment frequently is most difficult and imposes a serious tax upon the time, energy and perseverance of the medical attendant, yet in most communities the accomplishment of these latter conditions by no means is impossible through the interested personal attention of physicians who are willing to recognize their responsibilities with reference to such details.

There does remain, however, the problem as to the relative degree of success possible to be attained in the maintenance of a system of strict disciplinary régime. Upon this feature depends to a great extent the usefulness of closed sanatoria. Assuredly, there is afforded opportunity for a more absolute and autocratic control than is permitted elsewhere. This continued vigilant supervision is sometimes necessary for the well-being of certain cases, while an equal amount of surveillance not only is quite unfortunate, but even detrimental, to the best interests of others. Furthermore, a perfectly successful supervisory direction depends, either within or without an institution, almost entirely upon the personal influence of the physician himself. As is stated in another paper: "It is almost purely a question of personal equation, and demands a certain aptitude for the peculiar requirements of the position and devotion to the work for its own sake, an interested and solicitous regard for the slightest welfare of the patient, a degree of sympathy, tact and enthusiasm which may almost be said to constitute a form of genius. This may be exercised without an institution as well as within, the sanatorium itself being in most instances a most beneficial accessory to this result rather than as a *sine qua non*. It is the man, not the institution that determines the degree of co-operation and hearty good-fellowship between physician and clientele which alone insures a proper disciplinary régime." By as much as it is not the sanatorium alone but also the attending physician that determines to a degree the influence for good, by the same token must it be remembered that it is not the disease to be solely considered, but the invalid himself.

This presupposes the consideration of other factors than its purely medical or sociologic aspects. For the consumptive the question of success or failure depends frequently upon his ability to adapt himself to unusual conditions, and in this quality he is frequently found deficient. The wisdom of an intelligent modification or adjustment of the immediate environment to satisfy properly the demands of his peculiar requirements is readily apparent. It would seem that the patients for whom such institutions were most particularly appropriate, although by no means exclusively so, were those with such limited finances as to preclude the acquirement of satisfactory conditions without the benevolent aid of partially endowed sanatoria. Were it not for the truly philanthropic agency of such institutions in providing excellent accommodations at a minimum of expense, there could remain for those partaking of its benefit but slight justification for the original climatic change. As regards others, however, experience has taught that the medical adviser, if he so elects, may devote a sufficient supervisory attention to his patients outside an institution, and

[1] "The Sanatorium Treatment of Consumption" by the author.

through the exercise of some painstaking effort may provide accommodations eminently suitable and adapted to their particular needs. There may be instituted proper methods of living in such abodes somewhat along the same lines as in well regulated sanatoria. The same well recognized principles may be enforced, if they desire, upon a smaller scale and sometimes upon a less restricted basis, and frequently more to the actual advantage of the pulmonary invalid. All sanatoria either are or are not conducted solely for incipient cases. In the former case it is hard to see how the favored few with incipient infection and without complications actually can require upon their merits that degree of personal medical attention that necessitates living under the same roof. As regards those sanatoria receiving the average of consumptives as they come, requiring only as a matter of fact such credentials as the stipulated price of admission, it would appear that the social and physical conditions could scarcely be such as would best promote the happiness and contentment of the invalids. Aside from such considerations as these, which surely are more substantial than sentimental, may be mentioned the value of the psychic element to be observed from occasional judicious change of residence and immediate surroundings. This potent influence for good scarcely is obtainable to the same extent under the fullest interpretation of institutional régime.

Let it not be understood that there is implied the slightest reflection upon the very great utility of closed sanatoria even in health resorts. The thought is presented merely in question of their invariable necessity of applicability for all cases.

The views herein expressed are based upon the results of somewhat extended opportunities for observation through the personal management of consumptives in a favorable climate. Fairly accurate records have been preserved in a series of over fifteen hundred private cases that have come under my supervision. The clinical study involved in the effort to recognize essential facts, to analyze experience, summarize the various combinations presented, to apply established principles and to effect a mutual inter-adaptation of individuals to special conditions has resulted, perhaps, in as close personal contact with consumptives and the varying confronting problems that inevitably result, as could have obtained from the more or less routine observation with a corps of assistants in an institution. Those familiar with the nature of such work can readily appreciate the exacting character of the demands necessarily imposed. The conclusions that have gradually assumed shape in the absence of preconceived ideas have been subject only to the molding influence of stubborn facts and a sternly real experience. Statistical deductions are avoided as unnecessary to this inquiry. Such have been included in several previous reports embodying results of clinical observation. As illustrative of methods employed and opportunities afforded, it is not inappropriate to allude in passing to the experience of a recent single year.

During 1902 there were under observation, of whom records were kept, 302 cases. One hundred and thirty-eight of these had lapsed over from preceding years, yet more or less actively under treatment. One hundred and sixty-four were new patients during the year. Of the total number 167 were provided with accommodations to the best of my ability outside of any institution. Seventy-nine resided for varying periods at the Oakes Home for Consumptives without nursing and without hospital facilities other than relate to an excellent location, immaculate cleanliness, scrupulous disinfection of apartments and clothing, ample outdoor facilities, excellent table, sunny rooms, well heated and ventilated. The institution is decidedly unique and without a parallel in its peculiar scope, is open to any practicing physician, and, therefore, without any definite or fixed system of medical régime. There is permitted to any medical attendant, however, the exercise of such supervisory control for his own cases as he sees fit to institute or has the power to maintain. Thirty-nine additional were privileged to occupy rooms in the hospital addition with special facilities to secure outdoor air conjoined with rest by reason of private balconies, and also enjoy the benefits derived from constant skilled nursing. During the last four months of the year there was constructed, through the charity of Mr. Charles L. Adams, an annex to the institution, which provided for the most excellent accommodation of forty people with limited means at a nominal expense. During these four months 25 of my patients resided in this building, each enjoying the advantages of a large private porch opening from the bedroom. None of the above mentioned patients could be said to be contained within the walls of a closed sanatorium proper, yet by virtue of special opportunities and surroundings were permitted to partake of many of its essential advantages with such restrictions concerning mode of life as appeared necessary in individual instances. Of those who resided elsewhere a conscientious effort was made to secure adequate accommodations and to enact a fitting régime according to the varying conditions in force.

The selection of a residence, meeting all known requirements as regards location, sunshine, porch room, frequently outdoor sleeping accommodations, the wise grouping of a chosen few with reference to congeniality, temperamental peculiarities, tastes, stage of the disease and financial ability, the presence of a competent housekeeper, or occasionally a nurse as well, and finally a continuous, if often indirect, medical oversight, has afforded a combination sufficient to produce satisfying results which cannot be here elaborated.

Recourse to occasional change in residence was made from time to time to suit the inclinations and satisfy the apparent needs of those for whom a rational diversion was indicated to

break the unceasing monotony. With the advent of warm weather all for whom a possible justification was found in their condition were urged to avail themselves of the facilities presented for the enjoyment of the benefits of country life and mountain air. Appropriate accommodations at an altitude no higher than Denver were offered at an attractive mountain resort, special arrangements annually being made by me for those whose physical conditions would scarcely warrant sojourn at increased elevations. Thus fifty-two spent the summer at Welch's Resort, near Lyons, upon the banks of one of the finest trout streams in the state. A trained nurse was in constant attendance, more as insurance against accident than because of actual need. Special nurses were employed as necessity demanded.

For the benefit of those for whom a residence in a still higher altitude during the summer months seemed plainly indicated, a careful provision was made, as is my custom each year, at Estes Park, at an altitude of seventy-five hundred feet. All available and properly located cottages were engaged in advance, and finally proportioned among the patients according to the various groupings of the improvised families. Competent persons were employed to assume the responsibilities of housekeeping, and not infrequently trained nurses were retained either by individuals or by several jointly. Nineteen participated in the joys of housekeeping at the Park. For others numbering fifty, comfortable hotel accommodations were retained early in the season.

It is not inappropriate to add that from among the very large number of cases sent to Estes Park during the past six or seven years there has resulted but one hemorrhage and one death, and that in the same individual, resulting from an obvious palpable indiscretion. All patients at these two mountain resorts were seen by me at regular intervals (once a week), with such precautionary advice and admonition as appeared called for by the exigencies of the situation in each instance.

Brief allusion may be made to the conditions which justify sending patients home. This has been advised definitely for all who could be embraced fairly under the category of hopeless cases, unless considered inexpedient for good and sufficient reasons. During the past few years permission to return home for a temporary period at a suitable time of year has been accorded frequently to special cases responding favorably to climatic change, yet not strictly reaching the stage of arrest. A permanent return for those who have secured ultimately an apparent arrest of the tuberculous process is offered upon the basis of the degree of risk and responsibility the patient personally is willing to assume. The invalid is made to realize that in spite of his great improvement a certain element of danger must attend his return. It rarely has been my practice to indorse more than a temporary return save after a six months residence in Colorado following the physical and constitutional evidences of total arrest. It has been my custom to make the consumptive understand, if possible, that once the tubercular infection has become clearly active or extensive, no matter how complete the subsequent arrest, his life necessarily becomes changed in many of its essentials in any climate, and that a continued residence in a favorable region imposes finally less of sacrifice and suffering.

## THE GYNECOLOGICAL ASPECT OF MENTAL OVERSTRAIN AT PUBERTY, AND ITS INFLUENCE ON DEVELOPMENT.*

BY WM. EDGAR DARNALL, A.M., M.D., ATLANTIC CITY, N. J.

The period of puberty is the most critical time in the whole life of the female, because this time of most rapid development of both mind and body may be the starting point for the physical perfection of womanhood or the first beginning of a physical wreck. "Many a young life is battered or forever crippled in the breakers of puberty. If it cross these unharmed and is not dashed to pieces on the rocks of childbirth, it may still ground on the ever recurring shallows of menstruation, and lastly upon the final bar of the menopause, ere protection is found in the unruffled waters of the harbors beyond the reach of sexual storms."

The girl while passing through this period is peculiarly susceptible to mental, moral and physical influences, and during this period may receive the first blow. Ere the girl is fully aware of the change that has taken place, or is warned by her mother of its significance, she has heedlessly exposed herself to injury, and the results may sap her energies through life. It is most important, therefore, that her environment and tendencies should be studied with discreet carefulness.

The average pubescent girl is at school, and under the modern high pressure system of education is straining every nerve to keep up with her duties. Her physical development is slighted, and what vitality she has is all used up in mental effort. It is forgotten that cultivation of the mind and the cramming of the intellect do not comprise the whole of education; and that unless the body is developed along with the mind that more harm than good may be done. The demand for rapid education is the curse of the age. The crowding of children through long years of work often sacrifices health, permanently, for promotion. The work of maturity is demanded by educators, where maturity does not exist.

From the ninth to the sixteenth year is the period of most rapid growth in height and weight, and sexual development begins. From now until the pubertal change is fully established there may be manifestations of physical, emotional and intellectual turmoil characterized by the various neuroses as: hysteria, chorea, epilepsy, somnambulism, neurasthenia, romancing,

* This paper will appear later in the Bulletin of the American Academy of Medicine.

cardiopathies, gastric, hepatic, renal, vesical, genital, metabolic, pulmonary trouble, convulsions, nervous laughs, nervous coughs, anemias, deformities, etc. The neuroses may be of a purely psychic type as: hallucinations, ecstasy, delusions, night terrors, idiocy, imbecility, the various types of insanity, stupor, love, jealousy, anger, hate, theft, rape, arson, homicide, suicide, alcoholism, and the various forms of mental disturbance other than insanity. There may be periodic headache, capricious appetite and muscular twitchings.

During this period the body is developing so fast that brain weight is actually lost by the lessening of the usual blood supply to the brain, which is diverted to nourish rapidly growing organs. The child brain under these circumstances is easily fatigued. What is acquired by a brain that is tired is soon lost, memory becomes impaired, vital force is required faster than it is generated; the work of to-day is done on to-morrow's credit, and the system of the child becomes wholly at a loss to protect itself against disease and accident. "I am convinced," says Pearce, "that from the neurologist's standpoint such children in the cities would do better to have only one session in school, than be compelled to rush to a midday meal, then back again within an hour to recitation, which necessarily requires the freest circulation in the brain to the detriment of digestion, which, of course, is ill carried on under such abnormal circumstances. Over half the general aches and pains, including headaches, are due to disturbance of metabolism from various causes."

The physiologic processes of puberty make greater demands of the girl than they do of the boy, and yet in addition to performing the same work in school as her more rugged brother, her parents are not only anxious that she shall excel in the regular studies, but that she shall also acquire accomplishments, such as music and painting, at an early age. Is it any wonder then that under this system of high pressure and overstimulation the overworked girl, robbed of rest, sleep and exercise, fails to develop physically into perfect womanhood? These years of endless antagonism between brain growth and body growth, years perhaps the most important in her whole life, are very needful for the perfect development of the reproductive organs and the establishment of their functions. On them may hang the whole future health and happiness of the woman and her usefulness as a member of society.

Let me illustrate for a moment what I mean: To-day girls are absolutely started to school before they can dress themselves. They sit in miserably ventilated rooms from six to eight hours with perhaps a few minutes' recess, when they hurriedly eat a cold lunch. At twelve years of age they are studying English, mathematics, and a host of other things. The girl reaches home in the afternoon tired and worn out from efforts that have been too much for her. She must go at once to her music and practice for two hours, or until she becomes so nervous that the notes fail to strike harmony. Supper is announced. Afterward she must begin her preparation for the next day's work, often being forced to study as late as ten or eleven o'clock. Then, of course, her tired brain and body are too exhausted for sleep. This is not an over-drawn picture, and every physician knows that it is not right to subject a girl verging on menstruation, or one in whom nature is making a desperate effort to maintain this function, to such an exhausting strain as this.

Visit the female colleges and you will be impressed with the large numbers of pale-faced girls whose roseate blushes of youth have been chased away by nervous exhaustion born of the shadows of midnight toil; bright eyes have been dulled by brain fag, and sweet temper transformed into irritability, crossness and hysteria, while the womanhood of the land is deteriorating physically and filling our hospitals with invalids, neurasthenics and sexual incompetents. After this weary, worn-out, rest-needing girl is released from school, she launches into the dissipations of society. She may be highly cultured and shine in society, but her future husband will discover too late that he has married a large outfit of headaches, backaches, and spineaches instead of a woman fitted to take up the duties of life.

Accompanying this prolonged strain of school life there is usually a combination of other causes also involved in the school breakdown. Home life is often badly regulated, and the parents or guardians must in many cases share a part of the blame on account of carelessness and unwise indulgences at home. Scant attention is given to the functions of the bowels and bladder. Gross carelessness is the rule. There is an utter disregard in many cases for the menstrual week, when by their own feeling and sensations women ought to know that they are unfit for exhausting brain work or fatiguing body work. The religious systems of Moses and Zoroaster made provision for this period, and even savage Indian women show more wisdom at this period than the product of modern civilization. The tepee of the menstruating Indian is built so low that she is compelled to lie down. Again, the stomachs of girls are often spoiled by an unwholesome diet of sweetmeats, pickles and highly seasoned food, and the bad habit of nibbling between meals. Too long confinement in impure air, inadequate supplies of light, little exercise and poor sanitation complete the evils that other factors have contributed to.

Schmidt-Mounard found in the schools of Leipzig that headaches, sleeplessness and nervous ailments were frequent, especially among girls. Those schools, however, in which attention was given to gymnastics and other forms of exercise had a much smaller proportion of children suffering from these complaints than those in which it was not.

The adolescent period has been termed "the golden period of life when the faculties of both soul and body reach their acme." It is, writes

Alice Smith, "the transitional period when youth begins to look out upon society with the dawning insight of maturity. It is the time when childish illusions are dispelled, and the time when broad, educational influences are most needed." The work should not be such as will overtax either the mental or the physical powers. Girls especially should be exempt from gymnastic work and other heavy physical effort during the menstrual period lest they bring about pelvic disease; and severe mental strains lest they fail to properly develop and functionate. "The gymnastic ideal should be to develop a splendid physique, a sound condition of the body, which means the uniform development of the organism in all its organs and parts." There should be a perfect adjustment of structure to function, a conserving of energy against the strain of future emergencies, and a creation of perfect metabolism, *i. e.*, the balancing of nutrition and waste.

While the inflexibility of school requirements acts as one of the factors in maintaining and perhaps in creating this unhealthful physical state among girls in many instances, yet we are well aware that there are also other and potent causes for it, such as the unsuitable dress of the average female, social excesses, indiscretions in diet, neglect of sleep and the bodily needs which contribute to the result in a large degree. Could the teacher understand the nature and the signs of the extra physical strain to which so large a per cent of the female pupils are periodically subjected, and were she free to temper the demands of the curriculum to meet the condition, much and serious injury might be avoided. Certainly one of the strongest factors in bringing about a reduction of nerve energy and laying the foundation of a future psycho-neurosis is menstrual disorder and an unhealthy condition of the generative organs. The bane of the existence of the schoolgirl worn out from her overwrought and overstimulated life is dysmenorrhea. Chapman thinks that fully 75% who have reached the age of puberty would give a history of scant and painful menstruation. Engelman in a tabulated list of 5,000 cases among schoolgirls found 66% suffering from menstrual troubles. As a result of observations made on 2,000 girls in the schools of New England Jane Kelley Sabine found 75% with menstrual troubles, and 90% with leucorrhea and ovarian neuralgias; 60% had to give up work for one or two days in each month. The fact of the pain being increased with hours of intensity of study, with worry and emotion, and being diminished or ceasing entirely without treatment of any kind during vacation time is a fitting commentary on the underlying causes. These are nervous menstrual pains oftentimes due to a spasmodic action of the uterine muscular tissue. They are augmented by physical exertion and mental strain. The mental or nervous element is a more prominent factor than we usually take it to be, and shows the importance of general management of the girl and the elimination of all injurious conditions of worry and debility, mental or physical, for psychical conditions and nerve influences undoubtedly have much to do with this function.

"Statistics have clearly shown the tremendous susceptibility and the almost feverish activity of the system in the pre-pubertal period, the period of developing womanhood; susceptibility indicated by heightened morbidity and nerve excitement; by increase of stuttering and hysteria; heightened physiological activity by increased growth; and resistance to disease by lowered mortality, — all gradually wane as the vital energies are claimed more and more by the reproductive function, and reach their lowest ebb with the advent of puberty, again rising after menstruation is established, and it is at this period of still unstable equilibrium that we find the schoolgirl."

Similar conditions less intense recur before each menstrual period. Investigation has proven the increased pulse rate, blood tension and temperature, increased nerve excitation and muscular power, with a depression consequent upon the appearance of the flow; the system slowly regaining its normal tension with slight rise shortly after cessation, and these scientific facts are verified and emphasized by the status of young womanhood of to-day, which reflects the present conditions of life and indicates the susceptibility of the physiological function in early years of puberty and during menstruation.

This mental depression is evident in the listlessness, indifference and inability to master tasks easy at other times noted by every observant educator as indicating the presence of the flow and the period of its first advent. It is at this period that overstrain most readily occurs. The powers of attention and concentration are most quickly exhausted and the brightest mind, the most sensitive, high-strung, nervous organization is, as a rule, most responsive and most liable to impairment during the first menstrual periods. The nervous system in the healthy and vigorous frequently shows an excitability which may not pass beyond psychical limits; but in the less strong, often, symptoms which are pathological are developed and the connection between the menstrual epoch and the mental status becomes pronounced. The younger the girl, the nearer the period of puberty, the more impressionable is her nervous system and her susceptibilities for influences good or evil, so that the greatest amount of harm is wrought in the first year of her functional life.

Dr. W. Gill Wylie pointedly expresses the truth when he says that "the American horse receives on the average better treatment than the young woman of America from the time of early girlhood until the age of development has passed. The stock breeder never forces the young animal during the period of development, realizing that it is the time the greatest care should be taken, while American parents, especially of the middle classes, with great ambition for their children and the desire that they develop intellectually beyond their own standard,

allow their heads to be crammed with knowledge so rapidly that the brain cannot assimilate it, and the result is that all the strength of development is devoted to the brain, and the physique finds expansion as best it can. New England furnishes the extreme type of this woman, supposedly more perfect than in any other section, intellectually above the average, but with a physique below par, with greatly reduced reproductive powers, all due to the forcing of study at the age of development."

This forced education, therefore, at or subsequent to the time of puberty leads to flabby muscular development, poorly developed lungs, weak heart and arteries, feeble digestion, anemia, malnutrition of the nervous system, nervous irritation and an increase in neurasthenia, chorea, hysteria and final collapse.

Careful observation will show that a large proportion of the women who make up a neurotic class have arrested development of the sexual organs in varying degrees. The human brain is approximately one forty-fifth of the body weight. It demands about one seventh of the blood to supply its needs. If the education be forced at the developmental period of puberty it needs more to meet the strain. The growing uterus and adnexa must suffer, therefore, in consequence of the withdrawal of blood and the nutrition it should receive. The result is a defect that is very common,—the failure of the uterine cervix to develop. It retains its infantile characteristics. Under these circumstances the uterus is usually abnormally anteflexed, and the canal of the uterus less patulous than normal, with a very small os. The cervix is long and conical in shape and the uterine functions imperfectly discharged. These women nearly always suffer with scant and painful menstruation, while amenorrhoea, menorrhagia and metrorrhagia, endometritis and leucorrhea are common. The entire uterus as well as the tubes and ovaries may be involved in this imperfect development, and may remain more or less rudimentary. Under the strenuous responsibilities of life it is this class of patients who are most likely to break down and suffer from neurasthenia and hysteria, and if of an unstable stock even develop insanity. Much of such lack of development and final breakdown, undoubtedly, has its beginning back in the forcing process of school days, the insufficient attention to physical development, which is allowed to struggle for recognition as best it may, the abuse of the corset and other vicious habits of dress and person.

As preventive measures much can be done by a watchful study of the girl for overwork, by restricting the studies during the establishment of puberty, and if this cannot be done, by taking her from school altogether until menstruation is established. Ambition to excel must be curbed when it is pressing too hard with school duties. Better sacrifice the first place in the class, or fail on an examination than get through at the expense of a poorly developed body, a nervous breakdown, and a dwarfed womanhood.

Especial attention should be paid to a proper regulation of habits at home. All stimulants and excitement, such as late hours, children's parties, and the many artificialities of our so-called modern civilization which tend to bring about a premature maturity should be avoided. Childhood is the time of active development and growth, and as sleep is nature's great upbuilder and restorer, children should have an abundance of it, especially while their vital capacities are being drained by exacting school duties. Especial care must be given to the general health, daily evacuation of the bowels and frequent emptying of the bladder. Proper diet should be looked after, hurried eating and eating between meals absolutely forbidden, knick-knacks and sweetmeats restricted, while plenty of outdoor exercise and healthy recreation should be engaged in.

Even more care is to be employed as the period of puberty advances; that period when the woman's womanhood is struggling with all its energy for recognition, and when the rapid growth of pelvic organs is making exacting demands upon her strength, vitality, and nervous system that must be met. If her supply of vital force is expended in mental pursuits her physique must suffer. Undue excitement, mental worry, or anything that may divert the vital forces from the great work they are performing in the development and perfecting of her womanhood must be jealously guarded from the pubescent girl, for in all her entire life this short period is the most important to her, mentally, morally and physically, and her whole future happiness may hang upon it.

Not until teachers and parents remember that health is more important than knowledge; not until schools realize the futility of the forcing process of education, and guard the health of their girls by diminishing rather than increasing the work of the pubescent period; not until they appreciate more fully that a sound mind depends upon a sound body, can we hope to diminish the pitiable army of suffering neurotics and sexual incompetents, who so largely constitute the womanhood of the land, and who are to be the mothers of the men of our country.

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# Clinical Department.

## BOSTON CITY HOSPITAL CLINICAL MEETING.

April, 1904.

Dr. F. B. Mallory in the chair. Dr. L. R. G. Crandon, secretary.

(Concluded from No. 10, p. 270.)

### I. A CASE OF ADDISON'S DISEASE. II. A CASE OF CANCER CONFINED TO THE PAPILLA OF THE COMMON BILE DUCT.

BY GEORGE G. SEARS, M.D.

Case I. This patient is an engineer, sixty-one years old, who has been in the hospital since Mar. 28. He is an Englishman who claims to follow his family back to the tenth century, so that he has no apparent hereditary right to his very dark complexion. His health has always been good except for an attack of rheumatic fever twelve years ago. He noticed no impairment of his general condition until about three months before entrance when he began to complain of loss of strength. About a month later he bruised his shin, suppuration followed and he was compelled to give up work the following week. He has since felt very weak and drowsy and has been confined to the house. A week before entrance he developed an acute bronchitis.

When first seen there was general pigmentation of the entire skin which extended to the lips. Elsewhere the mucous membranes were normal. The discolorations were more marked in the flexures of the joints, and scattered over the body were numerous areas of deeper color which varied in size from a pea to a ten-cent piece. The pigment is particularly dark in the neighborhood of scars, a number of which are scattered over his body. This is especially well marked about the recent scar on his left shin. Since he came under observation the pigmentation has increased in intensity and has extended to the inner surface of his lips. He is able to be about but complains of great weakness. He has vomited once or twice without apparent cause, but otherwise has had no gastric symptoms. His temperature was at first slightly elevated as a result of his bronchitis, but is now running a normal course. The liver and spleen are slightly enlarged, otherwise physical examination is negative. No tubercle bacilli have been found in the sputum and he has not reacted to 5 mgm. of tuberculin, but there is reason to suspect the activity of our present supply. The urine contains no sugar, but the slightest possible trace of albumen and a few hyaline and fine granular casts have been found. He has been getting one grain of suprarenal extract, at first three times, later four times, a day, without any apparent result one way or the other.

Case II. The case has considerable interest since the only noteworthy lesion found at autopsy was a cancer, not larger than a pea, which had developed in the papilla of the common bile duct, completely occluding it. It is the only one of the sort which has ever come to autopsy at the hospital. Dr. Mallory tells me that he has seen two similar cases in Dr. A. T. Cabot's practice, in one of which the diagnosis was correctly made by Dr. Cabot before death.

The patient was a German, forty-nine years old, who was admitted to my service on Feb. 27, 1904. His previous history recorded tuberculosis of the knee at the age of sixteen, catarrhal jaundice eighteen years ago, gonorrhea and syphilis. His family history was negative. Five weeks before entrance he had an attack of acute bronchitis. He was given iodide of potash which he says upset his stomach and caused vomiting. Ten days before entrance he noticed that his skin was growing yellow, and about the same time an urticarial eruption appeared, at first on his wrists and ankles, but later over most of his body. The itching became intense. Constipation was troublesome and the stools were clay-colored. Except for jaundice and an eruption of erythema and urticaria, physical examination was negative. The icterus, however, steadily deepened until it assumed a distinct green hue. He slept but little owing to the constant itching, and lost in weight and strength. There arose a suspicion of a fluctuating tumor of indefinite limit below the margin of the liver. Dr. Post, who was kind enough to see him with me, advised against operation on the ground that the trouble was probably malignant. The previous excellent health of the patient, the mode of onset, the coincidence of urticaria and the failure to detect any important evidence in corroboration in physical examination made me hesitate to accept such a diagnosis unreservedly. I was more inclined to attribute the obstruction to a gallstone or to some obstruction outside the duct, *e. g.*, a constricting band. At all events, I thought he ought to have the benefit of the doubt, and on my insistence he was transferred to Dr. Post's service and the abdomen opened by Dr. Paul Thorndike. The operation disclosed nothing abnormal except a distended gall bladder full of viscid bile. The patient died two days later. Dr. Post was vindicated.

### I. LEUCOPLAKIA OF TONGUE. II. CICATRICIAL STRICTURE OF PHARYNGEAL ORIFICE, RELIEVED BY PLASTIC OPERATION.

BY G. A. LELAND, M.D.

Case I. Mr. D., about sixty-eight years old, has been an inveterate smoker and also a copious drinker all his life. About ten years ago noticed some white spots on the tongue, without any pain or discomfort. Four years ago there appeared on the right side of the lower lip near the center a superficial ulceration called a "smoker's cancer" by his physician. He was given a paste or salve for it which healed it, and left no scar. The white patches continued and about a year ago on the under surface of the front of the tongue there appeared a very white thick layer. This has continued since and now has the appearance as if 95% carbolic acid had been painted over the under side of the tongue, considerably elevated, rather hard (horny) to the touch, as far back as the flexure of the floor of the mouth and slightly extending upon it.

On the upper surface are several more or less rectangular patches of a dull white; also on the inside of the lips. About four weeks ago this appearance, especially on the lips, was much more marked, with here and there a slight solution of continuity, with more or less slightly painful irritability. The patient was given 2% solution of resorcin with which frequently to paint the lips, and now they are quite smooth, although here and there having a small white spot. He has no pain nor discomfort, and no curtailment of movement, though pepper, hot drinks, alcohol and tobacco smoke cause the tongue, which is rather large and flabby, to smart. He is now a total abstainer.

This is evidently a case of leucoplakia with extreme proliferation of the epithelium on the under surface of the tongue where it is least

rubbed. It is very much like a case in Mikulicz and Michelson's atlas. This they have named epithelioma, to which end this patient is doubtless going.

CASE II. The next patient, P. H., age about thirty-five, before four years ago had a very extensive ulceration of the skin of the face, the scars of which you see. That of the fauces and buccal pharynx was perhaps even more extensive. As a result of the process of healing both the velum palati and the tongue became firmly adhered to the posterior wall of the pharynx. The glosso-pharyngeal adhesion approached the middle from the sides. This was in the spring four years ago. During March and part of April he came to the throat Out-Patient Department for relief. Dilatation was practised, but the cicatrix contracted more and more till in April he was admitted to the surgical house service. Here certain treatment was instituted which gave him some relief, and he went out, to be again admitted in May. By this time it was impossible for him to get enough air for respiration and tracheotomy was done.

For some time before this it was with the greatest difficulty that sufficient nourishment could be swallowed, and nutrient enemata were resorted to,—about April, 1900, as my memory serves me. After a few weeks he was dismissed from the hospital with the tracheotomy tube in *situ*. In October, he visited the Aural Out-Patient Department and the condition then was, that the only entrance to the esophagus from above the tongue was about sufficient to admit a small surgical probe. The glosso-pharyngeal adhesion seemed to be about ½ inch in thickness. The velum palati was adhered completely, the only opening being about 1 cm. wide by 1½ cm. long near the hard palate.

For the relief of this the method devised by the late Dr. J. E. H. Nichols of New York, a member of the American Larynx Association, was used to produce a cicatricial perforation at the outside limit of the desired division of the cicatricial adhesion, and hence under cocaine a suture was passed down through the remaining orifice and as much of the cicatricial mass was grasped as possible, bringing it out near the right lateral wall of the pharynx. The tissue being exceedingly hard several needles were broken in the attempt, but finally about 3 cm. were enclosed in a very heavy double silk suture. The right side was only attempted at this time. Up to the middle of November or first of December the suture had to be renewed once or twice; but at that time it had cut through so as to leave space large enough to admit an index finger. He was now able to swallow a pretty good bolus of meat well chewed, and liquids and semi-solids without trouble. There was sufficient room for respiration and the tracheotomy tube was removed, the wound healing very satisfactorily; and by the first of the year 1901 he was dismissed. Having had experiences enough of a surgical nature he decided to wait, and did not appear again till a month ago when he thought he would like to have a little more space, that formerly obtained not having contracted perceptibly, but desiring to eat more and faster. With a double curved aneurism needle again under cocaine, a grasp was taken on the left side out as far as possible toward the side of the throat, and the case is now shown so that this suture can be seen in place. It is, as before, a very heavy silk suture doubled, and has already made a pretty good cicatricial opening. It will now be best probably to hasten the cutting through of the enclosed mass by an elastic ligature.

The salient point about this case is that dilatation of such cicatrices around orifices is of no permanent benefit, besides being too slow and tedious; and an interesting point and of some therapeutic value is that he was able to nourish himself for about seven months per rectum.

## Medical Progress.

### PROGRESS IN THORACIC DISEASE.

BY JOHN W. BARTOL, M.D., BOSTON.

#### "TAPOTAGE" IN DIAGNOSIS OF CAVITIES.

ERNI [1] claims that such cavities as occur superficially at the apex, *i. e.*, in infra-clavicular or supra-scapular regions, give conclusive evidence of their existence in response to a new maneuver in examination. Taking between thumb and forefinger the tip of a flexible bladed paper knife, weighing perhaps 100 gms., he taps gently on the chest in the suspected area; as he approaches the zone of reaction the patient complains of feeling a movement within, and when over the cavity, at each blow there results a short attack of coughing and immediate expectoration of sputum, evidently representing the contents of the cavity. A possible therapeutic value is also given to the procedure in that, after repeated percussion, the sputum at first purulent becomes mucous and finally disappears, giving the cavity a possible chance of cleansing itself and eventually cicatrizing.

#### DIAGNOSIS OF ASTHMA BY TRACHEAL TRACTION TEST.

Abrams [2] adds another novelty to his already imposing list of diagnostic maneuvers. In health and in all other conditions so far studied, the tracheal traction test is positive, *i. e.*, when percussion is performed over the manubrium sterni, first with the chin approximating the sternum, and then with the neck forcibly extended, a change in the note is observed from resonant or hyper-resonant to dull or even flat. This change does not take place in spasmodic bronchial asthma, either during an attack or in the interparoxysmal period, but is observed in cardiac or uremic asthma. The explanation, which, if correct, is in support of the muscular theory as against the angioparetic theory of spasmodic asthma, is that in asthma the tone of the bronchial muscle is so reduced that it no longer reacts in the ordinary way by contracting in response to the stimulation of the vagi, brought about when the neck is forcibly extended on the sternum.

#### LATENT FOCI OF TUBERCULOSIS. TUBERCULIN DIAGNOSIS.

Cornet [3] emphasizes the misleading nature of statistics based on autopsy findings, where the smallest healed lesions put the individual in the tubercular list, without discrimination as to the obvious virulence or non-virulence of the infection, and founded almost entirely on tabulation

[1] Sem. Med., Mar. 9, 1904.
[2] N. Y. Med. News, June 25, 1904.
[3] Berl. Klin. Wchn., xli, 14, 15.

of cases studied in large hospitals, the inmates of which obviously do not furnish a reasonable criterion of the total population. The relative virulence of different races of tubercle bacilli, and the possibility of lesions histologically indistinguishable being caused by different members of the acid-fast group, of low order of virulence, are both questions which need much further study before we can ascribe as much importance as is commonly given to "power of resistance" or "hereditary predisposition" in explaining lesions that in one individual show evidence of prompt healing and in another rapid advance. Against the positive tuberculin reaction as diagnostic proof or conclusive indication for antitubercular treatment, it is to be logically urged that it gives us no indication of the extent, histological progress or virulence of the assumed infection, and must remain simply a valuable confirmatory evidence when other signs point to tuberculosis.

Hope of clearing up in the immediate future some of these obscure points, however, is suggested by the results reported by Kapralik and v. Schrötter.[4] They have followed up preliminary studies instituted by Cornet himself in 1900 on the action of tuberculin taken by inhalation mixed with water in a finely divided spray. In the first place, it seems proven that, making allowance for the difference in dosage, the signs of positive reaction will be the same whether tuberculin is given subcutaneously or by inhalation. Upon the difference in dosage, and on the varying relation which the injection dose bears to the inhalation dose at different periods in progress of the disease, depend the conclusions in applying the test as a differential diagnostic. Thus in Group I, which includes cases in which the physical signs are obvious, the inhalation dose required to produce a positive reaction averages twenty times as large as the injection dose; while in Group II, comprising those cases in which signs of pulmonary involvement are lacking or absent, the inhalation dose averages 250 times as large as the injection dose. Incidentally, it is assumed that the marked variation in the relation of one dose to the other which may be exhibited by cases in series of Group I, is due to particular characteristics of the individual case, *i. e.*, size of foci, age, activity and varying virulence, while the much more constant relation exhibited by cases in Group II is due to the fact that here the tuberculin of the inhalation does not meet directly with lung tissue that is involved, but simply reacts through the circulation on more remote foci. In conclusion, and as result of study of twenty-eight cases, they strongly advise a combination of the two tests, claiming that while a positive reaction from injection alone shows simply that there is somewhere a focus which only by inference can be fixed in the lung, a positive reaction from the inhalation also will give important testimony based on the relation which the doses bear to one another, as to the actual involvement of the lung and its extent; and further, that a changing relation of the doses as time goes on may lead to important prognostic conclusions, as in cases of suspected infection only, or in conditions tending to change a case from Group I to Group II, or *vice versa*.

[4] Wien. Klin. Wchn., 21, 22.

### JUGULAR THROMBOSIS IN PULMONARY TUBERCULOSIS.

Aldrich[5] reports ten cases (nine from the literature and one of his own), in which, in the later stages of phthisis, there was a quite extensive thrombosis of the internal or external jugular, often extending into the subclavian and farther. He is of the opinion that such a condition obtains much more frequently than is generally supposed, and that even in the early stages of the disease, it is not so rare as might be assumed. As factors likely to contribute to the process of thrombosis, there exist in the advanced cases: (1) Change in the blood; the presence of some bacteria and the toxins of many more, and in terminal conditions a general invasion with the more or less virulent micro-organisms of a mixed infection; (2) changes in the venous wall due to nutritional alterations, as a result of which it becomes a ready lodging place for multiplying organisms; (3) foreign matter in the blood stream tends to formation of fibrin ferments favoring coagulation; (4) with diminishing vital force the influence of stasis is added. Reasons for the frequent location of the thrombi in the jugulars are anatomical, *i. e.*, the existence of the valves and the ease with which an eddying motion of the blood may be set up there.

### MUSCLE DEGENERATION AS A SEQUENCE TO INFECTIOUS PROCESS IN LUNGS OR PLEURA.

Coplin[6] presents a preliminary study of changes taking place in the intercostal muscles and the diaphragm as a result of inflammation in lung or pleura. The first step he considers to be a granular degeneration, identical with the cloudy swelling seen in other muscles as a result of infectious process, and probably due to toxins circulating in the blood. Following this, however, he describes changes incident to the involvement of and extension from the adjacent serosa, proceeding in some cases to leucocytic invasion and necrosis, with the ready identification of organisms that in the pneumonias and epipneumonic pleurisies are doubtless pneumococci. The clinical application of these findings is suggested in the likelihood that there well might be modifications in the physical signs as a result of the increased density of the thoracic walls, while the structural changes in the muscles may also play their part in the altered shape of thorax and diminished respiratory function. They also have a bearing on the frequent association of intercostal rheumatism or neuralgia with pneumonia, and the occurrence of pleuritic pains, although the immediate cause of the painful manifestations is probably an implication of the nerve fibres in the degeneration.

[5] N. Y. Med. Jour., Mar. 5, 1904.
[6] Am. Jour. Med. Sci., May, 1904.

PERICARDIAL EFFUSION.

It is apparent that, although effusions of noteworthy size are not difficult of demonstration, their presence is still often overlooked, and that even after diagnosis is made, paracentesis is not unlikely to prove unsuccessful. Thayer [7] reports two cases, both tuberculous, and both with classical signs of large effusion; in one 1,250 cc. of almost clear straw-colored fluid were readily withdrawn by aspiration in the fifth left space, about two fingers' breadth inside the mammillary line; in the other, aspiration in the sixth left space at the sternal border and in the left costo-xyphoid angle was unsuccessful, while at autopsy the enlarged and dilated heart was contiguous with but not adherent to the anterior wall of the pericardial sac, and there was over 1,200 cc. of fluid lying posteriorly and at the lateral angles. So far as these cases go, they lead to the conclusion that the procedure of Delorme and Mignon, which was practiced in the second case, is not a reliable one, but that on the whole the recommendations of Shapojshnikof lead to the surest results. He advises in all cases exploratory puncture with a hypodermic needle, which serves to determine the character of the fluid and often gives important aid in fixing the position of the heart, which as a rule will be found close to the anterior wall of the pericardium, and does not fall downward and backward. In the fourth or fifth left space one is particularly apt to injure the heart, and in cases where the effusion is not large, the third or fourth right space close to the sternum is advocated, providing always that there be dullness at that point. In larger effusions, with diaphragm depressed and the semilunar space occupied by flatness, the sixth left space just beyond the supposed position of the apex is indicated.

Further articles bearing on the diagnosis and relative frequency of tubercular pericarditis are those by Stockton [8] and Scagliosi.[9]

A TEST OF THE HEART'S FUNCTION.

Katzenstein [10] describes at length a new and seemingly very practical method of informing oneself about the power of endurance of any individual's heart, supplying a need that every clinical observer, whether physician or surgeon, feels when the time comes to express an opinion as to the probable effect on the cardiac muscle of an increased amount of work. He was originally led to further investigations by the result of experiments on animals, which showed that ligature of larger arteries called forth in the heart an increase in force, manifested by an elevation in the blood pressure with unchanged or lowered pulse rate; these modifications continuing throughout the period of formation of the collateral circulation, and gradually returning to normal again as the resistance becomes less.

Applying this same principle to the study of the human heart, he found that a marked resistance, even if transiently exerted, would be met by the normal heart with a prompt increase in force without a rise in pulse rate, whereas a heart, insufficient for one reason or another, would change in pressure or rate, or both. The technic consists simply in compressing to obliteration of wave both iliac arteries at the inguinal ligament, and noting what change takes place in the general blood pressure and the pulse rate. Duration of compression is at most five minutes, and does not require great amount of force. As a result of numerous investigations, he tabulates the following standards:

1. In the normal heart an increase of pressure of from 5–15 mm. Hg., while the rate remains the same or possibly becomes slower.

2. In a heart that is hypertrophied and of undiminished force, the pressure rises AT LEAST 15 mm. and may reach 40 mm., while the pulse again is unchanged or slower.

3. In a heart whose muscle is somewhat insufficient, the pressure fails to rise and the pulse is unchanged or faster.

4. In a seriously impaired heart the pressure is lowered and the pulse rate increased. For ordinary purposes it is safe to conclude that if the pulse goes up the heart is unsufficient; if it remains unchanged or lowered the heart has normal force.

In nervous and easily excited patients the precaution should be taken of accustoming them to the manuever for several days before the observations are recorded.

[7] Bull. Johns Hopkins Hosp., May, 1904.
[8] Am. Med., June 11, 1904.
[9] Deut. Med. Wchn., No. 24.
[10] Deut. Med. Wchn., 22, 23.

## Reports of Societies.

### AMERICAN LARYNGOLOGICAL ASSOCIATION.

ANNUAL MEETING AT ATLANTIC CITY, NEW JERSEY, JUNE 2, 3 AND 4, 1904.

(Concluded from No. 10, p. 274.)

FIRST DAY — (Continued).

FOUR CASES OF FOREIGN BODIES IN A BRONCHUS.

DR. A. COOLIDGE, JR., of Boston, Mass., presented reports of four cases, three treated by means of a preliminary tracheotomy, and one by Killian's bronchoscope, through the natural passages. In the first three cases, after tracheotomy, a short tube was inserted through the tracheal wound, and the foreign body easily removed through the tube. In three cases a general anesthetic was used; in one, only cocaine spray in the trachea.

The author referred to the change in the attitude of many surgeons toward operating for foreign bodies in a bronchus, since the introduction of direct bronchoscopy by Killian, in that formerly many advised delay or non-interference, whereas now he felt that there was, and should be, little or no hesitation in operating on these cases.

The discussion of these two papers brought out reports of many cases of foreign bodies in both esophagus and bronchi, and many successful removals, but no other cases in which the Killian method and instruments had been used.

PRESENT METHODS FOR THE TREATMENT OF MALIGNANT DISEASE OF THE LARYNX.

Dr. D. Bryson Delevan of New York read this paper. Stating that there was nothing new to present in regard to etiology and pathology, he proceeded to discuss the treatment under the following heads: (a) Internal medication; (b) antitoxins; (c) liquid air; (d) ligation of the carotids; (e) the x-ray; (f) the ultra violet ray; (g) radium; (h) surgical methods. The author dismissed internal medication, antitoxins, liquid air and ligation of the carotids as useless.

The various "radiants" up to date had not proved curative, although enough good has seemed to follow their use in some cases to warrant further and patient work with them.

In general he felt that, from a review of all the various methods of treatment, the radiants, particularly the x-rays, are the best means at our command for the temporary relief of the chief symptoms of advanced cases of laryngeal cancer, and that direct surgery presents the only *certainty* of success in the curative treatment.

The author reviewed the literature of the surgery of the larynx, especially commending the work of Butlin. He recommended thyrotomy and partial extirpation for the cases seen early, with small and sharply limited lesion, and total extirpation for the more advanced cases; and thought that, notwithstanding some disadvantages, a preliminary tracheotomy, some time previous to the main operation, was advisable.

He urged particularly the early recognition of the cases, and also the necessity of having especially skilled and experienced operators and nurses in charge of all thyrotomy and tracheotomy cases, and also laid great stress upon the danger of excising portions of malignant growths for microscopical examination, on account of the irritation and immediate stimulation of the growth to a rapid and extensive development.

THE EFFECT OF TOBACCO UPON THE THROAT.

Dr. Samuel W. Langmaid of Boston presented this paper, giving as his thesis the statement that "smoking is responsible for certain forms of throat disease, or is an added factor in the injurious effects of climate." The author believed that comparatively little nicotine was absorbed, but that most of the poisonous symptoms were produced by the absorption of carbon monoxide gas, possibly by some of the other by-products of the imperfect combustion of tobacco. The author's summing up statement was that "tobacco smoking is not only harmful to the throat as a direct local irritant, but that it produces vasomotor disturbances of the pharyngeal mucous membrane by its poisonous effects upon the nervous system," and that in most cases of acute pharyngitis and nasopharyngitis and cough, due to irritation of pharynx, larynx, or trachea, occurring in smokers, little or no result could be obtained from treatment until or unless the smoking was stopped or much lessened.

FINAL HISTORY OF A SUPPOSED CASE OF VOCAL NODULE; EPITHELIOMA OF THE LARYNX; THYROTOMY; DEATH.

Dr. Charles H. Knight of New York presented this report of a case reported in detail at the meeting in 1901.

With not much change in the nodule, the case was examined during 1902 by several laryngologists, one of whom removed a fragment with a cold wire snare, the microscopical report upon which was "Papilloma of Larynx — Malignant Tendencies." Then followed great reaction, which did not subside, and finally, in December, 1902, a thyrotomy was done, and extensive infiltration found. A few hours after the operation the patient suddenly sat up in bed, gasped for breath, became cyanotic and died shortly afterwards.

The author called attention particularly to the marked stimulation to activity after the irritation caused by removing the small specimen for examination; to the question of the relation between microscopic reports and clinical history; to the question of the possibility of the transformation of a benign growth to one of malignant character, or the development of latent malignancy, and to the fact that we "are still in the dark as to positive signs by which to identify malignancy in its inception."

TWO CASES OF PEMPHIGUS OF THE MOUTH.

Dr. John W. Farlow of Boston read the above paper, calling attention to the rarity of the disease, quoting freely from its literature. Accepting the definitions commonly given of the disease, the author described in detail two cases in which the typical lesions were well marked in the mouth. The blisters occurring on the mucous membranes were so short lived that it was difficult to demonstrate them before they collapsed, and then showed only the slightly raised swellings, with raw surfaces, sometimes reddish in color, sometimes white from the macerated and loose mucous membrane of the collapsed blister. He discussed in full the two main classes of cases, viz.: those in which the eruption occurs on skin and mucous membrane at the same time; and second, those in which the eruption is confined to the mucous membranes alone, either of the mouth, nose, pharynx, larynx and conjunctiva, or any two or more of them. He noted its essentially chronic character, with poor prognosis as to cure, but comparative rarity of death.

As to treatment, he recommended principally care of the general health, and great care of the mouth and nose in the way of cleansing washes, with arsenic for internal medication.

PRIMARY ULCERATION OF THE TONSIL, TOGETHER WITH SOME REMARKS ON TONSILLAR ULCERATION IN GENERAL.

Dr. Thomas J. Harris of New York presented this paper, basing his discussion on the following classes of primary ulceration:

(1) Membranes — ulcerative tonsillitis — the so-called angina of Vincent.
(2) Acute lacunar ulcerative tonsillitis.
(3) Pseudo-diphtheritic ulceration.
(4) Gangrene of the tonsil.
(5) Syphilis.
(6) Tuberculosis.

He described the various clinical forms found under these heads, with the bacteriological findings; and the symptoms. He called attention also to the *secondary* ulceration so frequently found on the tonsil, due to diphtheria, typhoid, tuberculosis, lupus, syphilis (both primary, secondary and tertiary), and malignant disease, and the differential diagnosis between those and the primary ulcerations. In conclusion the author summed up by noting:

(1) The value of bacteriological examination.
(2) The occurrence of the primary ulcerations, which may be mistaken for the graver secondary forms due, *e. g.*, to diphtheria or syphilis.
(3) The almost irreparable harm which may result to the patient from a false diagnosis of syphilis.

BONE AND CARTILAGE IN THE TONSIL.

Dr. James E. Newcomb of New York presented a paper with this title. His attention had been called to the condition by the reports of a few cases pre-

viously published, and two years ago he had seen one case in his own practice.

In removing a tonsil in a woman about thirty years of age, a hard body was cut through, and examination of the tonsil showed that the body was the tip of the styloid process of that side. The other side of the same patient showed nothing abnormal.

Such cases were, perhaps, of greater interest than importance, yet irritation might result if sufficient soft tissue did not pad the stump left in the tonsil. His own patient had suffered no inconvenience, though the stump was easily perceptible on palpation. He spoke of the two theories as to origin of these bony and cartilaginous deposits in the tonsil; one, that they were vestigial rests of the second bronchial arch; the other, that they were due to a metamorphosis of connective tissue. He presented a summary of the comments on these two views by various writers, with brief reports of published cases.

LUPUS OF THE PHARYNX AND NASO-PHARYNX TREATED BY X-RAYS.

DR. HERBERT S. BIRKETT of Montreal read a paper with this title, reporting in full this history of one case, as cured by use of the x-rays. The patient was a boy of fifteen years of age; he had occupied a room in which a brother had died of tuberculosis; he had enlarged lymph nodes in the neck. He complained only of difficult nasal respiration. Was robust and healthy in general appearance.

The lesions were two distinct masses on lateral and posterior walls of the pharynx, extending to vault of naso-pharynx, with considerable surrounding infiltration, but not involving the pillars of the fauces nor the tonsils, and not extending into the posterior nares.

The bulk of the growths was removed by forceps, the surface curetted and rubbed with lactic acid, and as after some time the lesion did not heal, it was then treated with the Röntgen rays. The author then detailed the technique of the x-ray treatment, extending from April, 1903, to July, 1903, "when the local condition in the throat had entirely disappeared." A small area of the same disease appeared in February, 1904, on the anterior part of the cartilaginous septum, which the author claimed to be a *new* area, and not an extension of the lesion from the old infected part. This is now under treatment and yielding rapidly to the same measures used in treating the former site of invasion.

The following papers were read by title:

SUB-MUCOUS OPERATIONS ON THE NASAL SEPTUM; NO PERFORATION — THE END IN VIEW; REPORT OF CASES.

By DR. ROBERT C. MILES, New York.

BRONCHOLITHS, WITH REPORT OF CASES.

DR. D. BRADEN KYLE of Philadelphia presented this paper, speaking of the comparative rarity of the cases, and the fact that diagnosis was seldom made until the concretion was expectorated, and that many stones were found post-mortem, having caused no symptoms during the life of the patient. The majority of cases, however, show symptoms often attributed to tuberculosis, asthma, chronic bronchitis, infection, etc., those symptoms being usually cough, generally paroxysmal, expectoration, pain and general uneasiness, dyspnea, and occasionally hemoptysis. The only pathognomonic symptom is, of course, the expulsion of one or more stones. The author detailed various theories as to the origin and formation of the stones, observed that while they have probably been observed most frequently in tuberculous subjects, they do occur in the non-tuberculous, who after expulsion of the stone become entirely well and remain free from any pulmonary or bronchial irritation, and gave a history of a case demonstrating the last statement.

SUB-GLOTTIC TUBERCULAR LESIONS OF THE LARYNX.

DR. T. A. DEBLOIS of Boston presented this paper, giving the histories of two similar cases in which a tubercular lesion, when first seen apparently an abscess, and later a distinct ulcer, was present on the anterior wall, about one inch below the cords.

These cases both occurred in patients already well advanced in pulmonary tuberculosis, and the laryngeal involvement was undoubtedly secondary to the pulmonary lesion. Both cases resulted in death.

At the executive session of the meeting, the following gentlemen were elected as members: To corresponding fellowship, Prof. B. Fraenkel, Berlin; to active fellowship, Dr. T. Passmore Berens, New York City, Dr. John M. Ingersoll, Cleveland, O., Dr. Harris P. Mosher, Boston, Mass.

The following officers were elected for the ensuing year: President, Dr. Clarence C. Rice, New York; first vice-president, Dr. Thomas Hubbard, Toledo, O.; second vice-president, Dr. Walter J. Freeman, Philadelphia; secretary and treasurer, Dr. James E. Newcomb, New York; librarian, Dr. J. H. Bryan, Washington, D. C.; members of council, Dr. D. Bryson Delevan, New York, to serve for three years, Dr. J. H. Hartman, Baltimore, Md., to serve for four years.

The date and place for the next meeting was left to the decision of the council.

An amendment to the constitution was adopted, increasing the active fellowship from 75 to 100.

## Recent Literature.

*The Practice of Medicine.* A Text Book for Practitioners and Students with Special Reference to Diagnosis and Treatment. By JAMES TYSON, M.D., Professor of Medicine in the University of Pennsylvania and Physician to the Hospital of the University; Physician to the Pennsylvania Hospital, etc. Third edition thoroughly revised and in parts rewritten. With 134 illustrations, including colored plates. Philadelphia: P. Blakiston's Son & Co. 1903.

The first edition of Dr. Tyson's "Practice of Medicine" appeared in 1896. This edition, the third, retains the original good features and has been brought up to date, incorporating the changes in theory and practice of the last few years. The chapters on infectious diseases are those in which the most numerous changes occur, but there has been a careful revision by Dr. W. G. Spiller of the section on nervous diseases and by Dr. Simon Flexner of dysentery. The entire book has been reset.

*Consumption a Curable and Preventable Disease.* By Lawrence F. Flick, M.D. David McKay, Publisher. Philadelphia.

The name of the author who has done such great work in the crusade against tuberculosis would ensure the earnest attention of readers to anything appearing from his pen.

The present work is written for the general public, and is written in a popular manner and contains much that will be of interest and practical value to the public at large. If the style is to the critic somewhat redundant and rather more figurative than seems necessary or wise, that fact may be lost sight of in the recognition of the undoubted merits of the book.

A few of his statements, however, will doubtless be challenged and we believe with justice, especially when, at the end of Chapter XXXVI, he makes the very sweeping assertion that "climate in itself is of little value in the treatment of consumption," that " it is the outside air which counts " and that "it *makes very little difference where this outside air* is gotten from, so it is gotten every day and all the day and night."

That his teachings stand for as fresh air as possible, wherever the patient may be every hour of the twenty-four, is highly to be commended, but that it should be claimed that the vitiated air of cities can be compared with the pure air of the country as an efficient remedy for tuberculosis strikes us as most extravagant and unwarranted and liable to mislead. His Chapter XXIV entitled, "Should Consumptives Marry?" impresses us also as claiming altogether too much in his statement that "immunity gradually comes to those in whose ancestry the disease has existed." While there are doubtless thousands of people apparently free from tubercular taint whose ancestors have been tuberculous, it seems to us that we are hardly justified in drawing the conclusions he makes upon such grounds. Such sentences, too, as " Many a young consumptive mother gets her shroud shortly after she has purchased the christening frock for her babe," and again, " Many a young man has sacrificed his chances of recovery on the altar of Hymen," while containing wholesome truths, strike us as lacking the simplicity of statement which is the most convincing form of argument.

Apart from these blemishes, as they seem to the critic, the book will do good and deserves a wide reading.

*La Separation de l'Urine des Deux Reins.* Par Georges Luys, Assistant du Service des Voies Urinaires à l'Hôpital Lariboisiere. Préface par Henri Hartmann, Professeur Agrégé à la Faculté, Chirurgien de l'Hôpital Lariboisiere. Avec 55 figures dans le texte. Paris: Masson et Cie., Editeurs, Libraires de l'Academie de Médecine, 120 Boulevard Saint-Germain. 1904.

This small book of about three hundred pages is most attractive to one at all interested in the urinary organs, and it is especially instructive to one wishing to know the evolution of the mechanical appliances for obtaining the urines from each kidney separately. Luys has perfected a very simple device for the separation of the urines. He finds that the apparatus is of very great practical value. Prof. Henri Hartmann, as well as Luys himself, has operated many times, assisted by the evidence which the use of this instrument affords, and he has demonstrated that the instrument is of great service.

In the first chapter Luys considers the necessity for the separation of the urines of the two kidneys. In the second chapter he describes the several methods hitherto employed for obtaining the urine from each kidney. In Chapter III the method of compression of one ureteral orifice is related. A description of the technique of ureteral catheterization and a criticism of the procedure is set forth. Chapter V describes different methods of separating the urines. Among these methods are those of Lambotte, Newman, Harris, Donnes, Cathelin, Jaboulay, and finally, the technique of the Luys apparatus is dwelt upon and a description of various experiments upon the cadaver is given. In Chapter VI Luys recounts why he thinks that the intravesical separation of the urine is advantageous as compared with the catheterization of the ureters. He bases the advantages upon physical, physiological and mechanical grounds. Chapter VII, the concluding chapter, is largely occupied by illustrative cases, recorded in considerable detail.

The book will well repay careful reading. The apparatus is simple, easily handled and apparently, with very few exceptions, efficient. The apparatus is made in this country by the Kny-Scheerer Company of New York.

The Luys separator consists of a staff, curved somewhat like a urethral sound, made up of three portions. The middle portion is a thin, solid metallic shaft, flattened from side to side. On each side of this, and completing the rounded staff, is a metal catheter almost semicircular in section. The two catheters upon their concave border of the curved portion have small openings into which the urine trickles — the two catheters applied to the central staff making a single instrument corresponding in size to a No. 21 French bougie. A little chain stretches across the concavity of the instrument, manipulated by a screw in the handle. This chain when not taut rests between the two catheters. The staff is covered with a rubber cot. After being introduced, the chain having been made taut, raises the rubber as a septum, filling the whole of the concavity of the curve of the instrument. The urine collecting on either side of the instrument trickles into the little holes in the silver catheters, and is collected at the distal end in separate tubes. The tricks of using the instrument are few, and after an occasional use of it are apparent. The convexity of the curved portion of the instrument is shaped to fit the floor of the bladder between the two ureters and the internal meatus of the urethra when the patient is in the semi-sitting position. The instrument is ordinarily used without an anesthetic. C. L. S.

*The Internal Secretions and the Principles of Medicine.* By CHARLES E. DE M. SAJOUS, M.D., Fellow of the College of Physicians of Philadelphia. Formerly Lecturer on Laryngology in Jefferson Medical College and Professor of Laryngology and Dean of the Faculty in the Medico-Chirurgical College. Volume I. With forty-two illustrations. Philadelphia: F. A. Davis Company. 1903.

Undeterred by the quoted words of Virchow, that "medical men are tired of the many new hypothetical systems that are thrown aside as rubbish only to be replaced by similar ones," the author in an octavo volume of seven hundred and eighty-eight pages presents an elaborate hypothetical conception of physiological and pathological processes.

In the construction of this work, fact and fancy are inextricably interwoven. In the preface the author states that "what we have said of the physiological chemistry of glycogen, myosinogen, urea and many other bodies, may not stand the scrutiny of an Ehrlich, a Gautier, an Abel, a Chittenden, a Vaughan; but the fact that such men are available to correct promptly what errors we might have made gave us confidence to proceed with our work without undue anxiety."

The author presents a great mass of data which he has collected from the writings of the leading investigators in anatomy, physiology and chemistry. From these collected observations surprising deductions are made by the author in support of his hypothesis. An idea of the nature and value of the work can best be given by a few excerpts.

The adrenals are considered as the key to tissue-respiration and also to the function of all organs now classed as ductless glands. "The secretion of the adrenals was traced as far as the pulmonary alveoli, but not beyond. Here it was found to hold in combination the various constituents of hemoglobin, and to endow both the latter and the plasma with their affinity for oxygen. Prevailing views as to the chemistry of respiration were thus radically transformed and our knowledge of the manner in which the blood-pigments were held together likewise." According to Sajous, contraction of the heart-walls is in great part due to oxygen-laden adrenal secretion. The adrenals are stated to be directly connected with the anterior pituitary body. "Indeed, this diminutive organ, hardly as large as a pea, and now thought to be practically functionless, proved to be the most important organ of the body, as governing center of the adrenals, and, therefore, of all oxidation processes. In general diseases what has been termed the patient's 'vitality' or 'vital resistance' thus becomes ascribable to fluctuations in the anterior pituitary body's functional efficiency. Symptoms of infection or poisoning are all manifestations, more or less severe, of overactivity or insufficiency of the adrenal system." The posterior pituitary body "proved to be the chief functional center of the nervous system." The pancreas and spleen are considered together, as "the secretions of these two organs unite in the formation of trypsin. A portion of the ferment passes into the splenic vein as an internal secretion and plays a leading part in all immunizing processes."

The Ehrlich's theories are greatly simplified by Sajous. The amboceptor is oxygen laden adrenal secretion and the complement is nothing more than trypsin. "The dominant active principle of antitoxin proved to be trypsin."

"The white corpuscles of the blood were found endowed with functions greatly exceeding in importance any as yet ascribed to them, even hypothetically. . . . Ehrlich's eosinophiles, non-phagocytic leucocytes asserted their identity as daughter cells, the separation from their parent cells, the neutrophiles, occurring in the liver by mitosis. They were traced to the pulmonary alveoli, where they participated in the formation of the nucleated epithelium. Their product proved to be hemoglobin."

This book has been reviewed in terms of praise by some of our leading medical periodicals. The publication of such works and their favorable review in representative journals will tend to discredit American medicine in the eyes of the scientific world.

AMERICAN EDITION OF NOTHNAGEL'S PRACTICE.

*Diseases of the Intestines and Peritoneum.* By DR. HERMANN NOTHNAGEL, of Vienna. Edited, with additions, by HUMPHREY D. ROLLESTON, M.D., F.R.C.P., Physician to St. George's Hospital, London, England. Authorized translation from the German, under the editorial supervision of ALFRED STENGEL, M.D., Professor of Clinical Medicine, University of Pennsylvania. Octavo volume of 1032 pages, fully illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

This new volume in Saunders' American edition of Nothnagel's Practice is the eighth to be issued, and appearing within two months after the publication of the volume on Tuberculosis, gives evidence that the publishers intend completing the series at an early date. This, one of the most valuable volumes in the series, is by the famous clinician Dr. Hermann Nothnagel himself, and is as exhaustive as it is practical. The distinguished editor, Dr. Humphrey D. Rolleston, of London, England, has used his pen most profusely, almost every page giving generous evidence of his careful editing. The editorial additions include sections on Intestinal Sand, Sprue, Ulcerative Colitis, and Idiopathic Dilatation of the Colon. Appendicitis and Peritonitis have been given unusual space, treatment and diagnosis receiving exhaustive consideration. The section on Intussusception has been greatly enlarged by the invaluable additions of D'Arcy Power of England, who has made this subject his own. There are 20 inserts of great merit.

The present volume is an important one, and after passing from the hands of its distinguished author has received due care and attention from the English and American editors.

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## A HOSPITAL OBSERVATION LAW IN MASSACHUSETTS.

With the increasing complexity of social relations, it is inevitable that the questions relating to crime and insanity are likely to be more and more difficult of just settlement. To the end that the way may be as easy as possible both for the physicians and the courts, and that completest justice may be done the person charged with an offence, it is desirable that means of the most accurate observation during the pendency of a trial be provided.

In a recent paper, read originally in Boston and published in the last number of the *American Journal of Insanity*, Dr. Henry R. Stedman, on the basis of an important and confusing case of well-poisoning, expresses his views on the subject of a proper hospital observation law. The case itself does not particularly concern us at this time beyond the general fact that only after the last of many examinations was it possible to determine with assurance the actual insanity of the person charged with the crime. Taking this case as a text, and undoubtedly there are many like it, Dr. Stedman calls attention to the desirability of laws which will require that persons of this general character be under constant supervision in properly constituted hospitals for a sufficiently long time to determine their sanity or insanity. He holds that could such persons be under the eye and supervision of skilled alienists and of trained nurses, more prompt and accurate decisions could be reached and with less expense to the state than has hitherto prevailed. Three classes of persons he thinks would be affected by such a law, which he characterizes as follows:

(1) Patients who conceal their delusions. These cases are notoriously suspicious and persistently refrain from unburdening themselves to the examiners, so that many long interviews are often needed to gain their confidence sufficiently to elicit their false beliefs.

(2) Persistent feigning can also be far more easily and quickly detected under asylum conditions and surroundings than in jail, owing chiefly to the difficulty a prisoner experiences in keeping up the pretense of insanity uninterruptedly and consistently (as he must to be successful) where he is watched day and night by careful observers. Most malingering is, as we all know, bungling and readily exposed, but it is only with the utmost difficulty that really adroit feigning can be detected by the expert in occasional visits to the jail.

(3) Notorious capital cases. Here hospital observation as an adjunct to expert examinations must be of advantage in silencing popular clamor and alarm lest the prisoner escape just punishment through what is termed the "insanity dodge." The delay involved also tempers public opinion, as does the evident intent of thorough investigation shown in a term of hospital supervision.

The state of Maine has enacted a law of this sort which has been in successful operation for some years which has also been adopted by Vermont and New Hampshire. These laws provide that persons indicted for offences whose plea is insanity shall be ordered to the state hospital for the insane for observation. Such a law, in Dr. Stedman's opinion, is rather too sweeping in its provisions for the conditions as they exist in Massachusetts. The communities in this state are larger, and therefore a certain criminal element might be added to the atmosphere of insane hospitals which would be undesirable and a just cause for criticism. Removal to the asylum for the criminal insane is also manifestly unjust. Furthermore, the experts in Maine and New Hampshire are almost without exception members of the staffs of the state hospitals, whereas in this state many experts have no such connection with such hospitals. In view of these facts Dr. Stedman is of the opinion that provision should be made for "the occasional important and doubtful case only by enacting a law to the effect that at the request of the examining physicians the judge of the court before which a person is to be tried, for whom the plea of insanity is made, may order said person into the care of the superintendent of one of the state insane hospitals to be there detained and observed until further order of the court."

At the meeting of the Boston Society of Psychiatry and Neurology, held last November, where Dr. Stedman's paper was originally read, a committee, consisting of Drs. Folsom, Cowles, Channing, Jelly, Copp, Ayer and Stedman, was

appointed for the purpose of securing legislation. It is gratifying to note the fact that the efforts of this committee have resulted in the enactment of the following statute:

CHAP. 219, SECTION 11. "If a person under indictment for any crime is, at the time appointed for trial, or at any time prior thereto, found by the court to be insane, or is found by two experts in insanity designated by the court to be in such mental condition that his committal to an insane hospital is necessary for the proper care or for the proper observation of such person, pending the determination of his insanity, the court may cause him to be committed to a state insane hospital for such time and under such limitations as the court may order."

We have no question that this is a decided step in progress which should do much to obviate the undignified situations into which both physicians and the courts are often forced.

## BOSTON CITY HOSPITAL REPORT.

THE report of our chief city medical institution is always a document of interest. This year the fortieth report brings the history of the hospital up to Jan. 31, 1904, and fills a pamphlet of 186 pages, embellished with two admirable charts of the hospital buildings and a number of illustrations in the text. The changes in the personnel of the staff during the past year have been numerous through promotions and resignations, as is natural in so large an institution, among the resignations being that of Dr. John C. Munro to take charge of the surgical department of the Carney Hospital. The office of physician for infectious diseases has been created, and Dr. J. H. McCollom, long identified with the South Department of the hospital, has been appointed consultant in such cases. The trustees in their report call attention to the fact that during the year the new out-patient building and a pavilion for the hospital have been completed, but, owing to lack of funds, the occupancy of these buildings has been temporarily deferred. When the new surgical out-patient building shall be occupied, it is proposed to renovate the building devoted to medical out-patients, and when this is done, the hope is expressed that there will be no demand for additional room for the out-patient service for several years. Speaking of the South Department, the trustees state that during the nine years it has been in commission it has treated 21,387 persons ill with some infectious disease. As the work of this beneficent department of the hospital has grown, the need of further accommodation for patients has become increasingly apparent. Difficulty, has, for example, been experienced through the mixed infections resulting from the classification of patients as at present necessitated. Many cases of measles have also been admitted, although there is no special building for this relatively innocuous disease. The trustees are perfectly aware of the need and are of the opinion that an additional building, at a probable expense of approximately $125,000, should be erected as soon as possible. The work of the pathological department, the trustees particularly commend, and make the following liberal statement regarding the necessity of a pathological laboratory and its appurtenances as an integral part of the modern hospital: "The trustees are very glad to co-operate in scientific research, believing it to be the duty of all first-class hospitals to aid to the utmost everything that furthers the advancement of medical science. Patients in a large, general hospital, having a well-equipped pathological laboratory, receive more scientific treatment, more careful investigation and professional study, and better nursing than in those without one. In fact, no hospital is complete to-day, without a laboratory conducted by skilful physicians and pathologists." This attitude of the trustees, as expressed in the foregoing statement, has done much to make the hospital what it is. Dr. Rowe's report as superintendent of the hospital covers adequately, as heretofore, points in administration and in general hospital development. A large part of the volume, as is usual, is taken up with medical and surgical statistics, which, as we have previously had occasion to remark, have been of very much increased value since the adoption of a systematic plan of classification. The report in general is an exemplification of a modern municipal hospital of the highest character.

## A MEDICAL RECREATION SOCIETY.

IN a recent address as president before a New England medical society, Dr. E. R. Campbell of Bellows Falls made certain suggestions to which we wish to call attention. After discussing various matters of significance to practitioners everywhere, he drew his hearers' attention to the benefits of what he termed "the medical society habit." The medical society he regarded as a kind of post-graduate school, wherein the expression of diverse opinions might be made of practical value to physicians. He urged upon his hearers to make the medical society habit contagious, and hoped that the infection might spread to the seventy-seven thousand physicians

in the United States who are said to belong to no medical society whatever. We are heartily in accord with this opinion of Dr. Campbell, which, if not original, is certainly of the very first importance for the uniform development of our practitioners. The point, however, in his remarks to which we desire particularly to revert is what he terms a New England medical society, which shall act as a summer school of medicine in connection with a short vacation. He suggests that physicians leave their practices absolutely for a certain period to congregate at some point in the New England states where pleasure may be combined with a certain amount of literary work, urging that such an organization would prove to be not only of professional benefit, but conducive to much social pleasure and recreation.

Dr. Campbell's idea, as elaborated much more fully in his address, is one worthy of consideration. We have for a considerable time noted the tendency of combining with the somewhat heavy side of our medical meetings a degree of recreation which not many years ago would have been thought impossible. We note that the place of medical meetings is chosen with care to this end, and that the programs suggest not only attendance upon the meetings, but also possibilities of various quite extraneous amusements. This tendency we have always commended, and certainly, if Dr. Campbell's plan of instituting a society, which shall have as its professed aim recreation as well as profit, can be organized, it would fill a well-defined need. It is, however, a question whether it is not wiser to stimulate existent societies to a further recognition of the desirability of recreation rather than to constitute an entirely new one for that purpose. Our existent summer schools, as we have observed them, offer admirable opportunities for other pursuits than medical work in cities and towns well adapted for the frivolities, and this over a period of several weeks. In general, however, the development of the plan suggested is one to which we are glad to give our support.

## MEETING OF SOCIETY OF CHEMICAL INDUSTRY.

In closing an address at the banquet given in honor of the Society of Chemical Industry at the Waldorf-Astoria on Sept. 8, Sir William Ramsay, President of the Society, made a statement which was regarded as of great significance by his auditors. It was as follows: "It seems to me that we may be on the eve of the discovery of the origin of the ordinary elements which may be the products of the breaking down of radio-active elements of high atomic weight." Among the distinguished foreign chemists present were Professors Oscar Leprecht of the University of Berlin, and Hugo Münsterberg, and Ostwald of the University of Leipsic. During the session of the society, Prof. Ira Remsen of Johns Hopkins University was presented with a gold medal for the most important discovery of the year in chemistry. At a business meeting Mr. Nichols of New York was elected president of the society for the ensuing year. This is the second time that the honor has been conferred upon an American, Prof. Charles Chandler of Columbia University having been the first of our countrymen to receive it.

## MEDICAL NOTES.

Dr. E. L. Munson.— The following statement is made in the last report, which has come into our hands, of the Board of Health for the Philippine Islands: "The Board of Health has been unfortunate in losing the services of Dr. E. L. Munson, captain and assistant surgeon, United States Army, who, as Assistant to the Commissioner of Public Health, rendered very faithful and efficient service to the cause of sanitation in the Philippine Islands. Captain Munson's health became impaired by overwork, and he found it necessary to return to the United States for treatment. He had to leave undone many things which he had planned, but the work that he accomplished and the influence which he exerted upon the cause of sanitation in the Philippine Islands will remain as permanent testimonials to his zeal and knowledge." Dr. Munson has been a valued contributor to this Journal. We regret exceedingly to hear of his illness, which it is hoped may be benefited by a return to this country.

Wellcome Chemical Research Laboratory at St. Louis. — Among the exhibits in St. Louis of importance for medical men are two, numbered 14 and 15 respectively, in the British section, illustrative of the work being done by the Wellcome Chemical Research Laboratories and the Wellcome Physiological Research Laboratories in London. The work undertaken in these laboratories — founded by Mr. Henry S. Wellcome in the year 1896, and since then under the direction of Dr. Frederick B. Power — has been of a most varied character and wide range, representing almost every department of chemical and phar-

maceutical science. The investigations have comprised, for example, the devising of new methods of analysis, the examination of drugs of reputed medicinal value from distant lands, Africa, India, and the Fiji Islands, as well as those indigenous to Europe and North America, in order to determine both the nature of their active chemical constituents and their pharmacognostical characters; the study of the constituents of various essential oils; the constitution of some of the more important alkaloids and other chemical substances of special therapeutic value; and the preparation of new chemical compounds by synthetic methods, both chemical and electrolytic.

MEDICAL PROGRESS IN THE PHILIPPINES. — The following statistics taken from a recent monthly report of the Board of Health for the Philippine Islands gives one an idea of the vigorous sanitary and medical work going on there.

In the work of sanitary inspections there were 5,302 inspections and reinspections of houses during one month, 329 houses were cleaned as a result of sanitary orders, 35 whitewashed or painted, and 95 disinfected. A total of 669 yards were cleaned and placed in good sanitary condition. There were 32,409 rats destroyed in the prophylactic measures against plague. Two hundred and sixteen thousand seven hundred and sixty-five units of vaccine virus were issued, and 13,251 vaccinations were performed in the city of Manila. During the month Dr. Edward L. Munson, captain and assistant surgeon, U. S. A., who was detailed to this office as assistant to the Commissioner of Public Health, prepared and put in operation a comprehensive and carefully prepared plan which has for its purpose the vaccination of all the inhabitants of the Philippine Islands. If the work as outlined is carried out it is hoped that smallpox will play little part in the reports of infectious diseases of the future. A veterinary division was established which will have direct charge of all matters pertaining to veterinary medicine and surgery throughout the Philippine Islands. Dr. Munson has since returned to the United States.

CANDIDATES FOR STATE REGISTRATION. — It is announced that eighty-eight candidates have taken the September examination for registration in medicine in Massachusetts. This is regarded as a large number for this time of the year, but a considerable proportion are candidates for re-examination. Announcement of successful candidates will be made the latter part of this month.

## BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon Sept. 14, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 47, scarlatina 2, typhoid fever 50, measles 1, smallpox 0.

## NEW YORK.

PREVENTION OF SUICIDE. — At a meeting of the Board of Health held Sept. 7, an amendment made by the Board was announced which will, no doubt, have a salutary effect in the prevention of suicide. This ordinance forbids the sale of carbolic acid, when in a stronger solution than 5%, except when ordered in a physician's prescription.

ARRIVAL OF PROFESSOR ORTH. — Prof. Johannes Orth, the successor of Virchow at the University of Berlin and consultant in the operations performed some time ago on Emperor William's throat, arrived by the steamship "Zeeland" on Sept. 5. He was met at the dock by Prof. Thomas Cullen of Johns Hopkins University and Dr. Paul M. Pilcher of Brooklyn, two of his former pupils.

UNIQUE ESCAPE FROM DEATH. — By the prompt action of Joseph McSweeney, a tenement house inspector, the lives of two men were recently saved in the Brownsville district of Brooklyn. They were Italians engaged in making an excavation upon whom a great mass of loose earth had fallen, and McSweeney, with the help of some workmen, succeeded in getting down to them a piece of rubber hose which had been used as a water pipe in mixing mortar near by. By this means they were supplied with air until their rescue could be effected.

NEW PAVILION, ST. MARY'S HOSPITAL. — The new pavilion of St. Mary's Hospital at Jamaica, Borough of Queens, was opened on Sept. 5, with appropriate ceremonies. It is built of brick and stone, 116 by 34 feet, and has three stories and a basement. Its cost was $75,000, and it is stated to be the finest hospital structure on Long Island, outside of Brooklyn. It affords accommodation for seventy-five patients, and the site allows for two other pavilions to be erected in the future. The total capacity will then be three hundred.

ATHLETIC EXHIBITION. — On Aug. 31, eight hundred young athletes, some of the boys and girls who for two months had made up the classes in the Board of Education's great summer playground school, gave an admirable exhibition in the grounds located under the Manhattan

end of the new Williamsburg bridge over the East River. Mr. Evert Jansen Wendell, who is still remembered as a distinguished sprinter at Harvard, acted as the judge of the various events. On Aug. 30 a playground, exclusively for girls, the first in the history of the city, was opened in Tompkins Square. This playground, which occupies an acre and a half, has been equipped at an expense of $700 and is to be open throughout the year.

A Public Athletic Field. — A large athletic field, provided by the city, was opened to the public on Sept. 10, by Mayor McClellan in the presence of 30,000 spectators. It is located in Pelham Bay Park, in the Bronx, and consists of 120 acres, twenty acres of which are devoted to a parade ground. It also includes ample bathing and boating accommodations on Long Island Sound. A feature of the undertaking is an emergency hospital tent, where prompt surgical aid will be afforded to persons injured in the park. The credit for the whole scheme is largely due to Mr. William P. Semidt, Park Commissioner of the Borough of the Bronx, who raised $8,000 by personal subscription among his friends to defray the expense of the opening ceremonies, which included medals for a large number of athletic events.

Quarterly Death Statistics. — The condensed quarterly report of the Bureau of Records of the Health Department, just issued, shows that the number of deaths for the second quarter of 1904 was 21,100. This mortality, on an estimated population of 3,838,024, gives a death-rate of 22.08 per thousand, as compared with an average number for the same quarter of the five preceding years of 16,919 deaths; which, on an estimated population of 3,540,664, gives a death-rate of 19.15, an increase of 2.93 points. The principal causes of this increased death-rate are regarded to have been: (1) The effect of the protracted measles epidemic, which, beginning in December, 1903, did not diminish in severity until the early part of June, thus increasing the number of deaths from acute respiratory diseases; (2) the prevailing influenza, furnishing considerably above its average quota of deaths, as reflected in the unusually large mortality from pneumonia, Bright's disease, and pulmonary tuberculosis; (3) a severe epidemic of cerebrospinal meningitis, showing itself in the month of March and continuing throughout the quarter; and (4) the "Slocum" disaster, in which over 900 lives were lost. The increased number of deaths occurred at all ages, among children under five years, adolescents, adults and old people.

## Miscellany.

### THE NEW SURGICAL BUILDING OF JOHNS HOPKINS HOSPITAL.

According to the New York *Medical Journal*, elaborate preparations are being made for the dedication of the new surgical building of the Johns Hopkins Hospital on the morning of Oct. 5. The structure is now practically ready for occupancy.

The building cost about $150,000, is of brick, has four stories, and is believed to be admirably adapted for teaching. Sanitation and ventilation have been important considerations in every feature of the structure. All the floors are of tiles, every room and hallway used by patients being also wainscoted with glazed white tiles as high as a man can reach. The stairways are of marble and iron, and there are fine toilet rooms and baths on every floor. A surgical amphitheatre forty feet high also has extensive tiling, marble work, and a hall, with wide lights, composed entirely of wired glass. There are a number of rooms for consultation. The principal feature of the building is the surgical amphitheatre, which is situated on the third and fourth floors. There the operations which are watched by the medical students will be performed. The conical incline with the seats is composed entirely of tiles and marble. The parapets in front of the seats are white enameled sheets of steel supported by narrow iron stanchions, and the seats are supported by iron bars from these plates. In order to cleanse the room all that is necessary is to turn on the hose and the incline carries the water to the bottom of the amphitheatre, where it is run into a drain. The amphitheatre is entered by the students at the fourth floor. The operating rooms, which open into the bottom of the amphitheatre, are at either side on the third floor. There are two operating rooms, in both of which a superior system of heating and ventilation is installed. The air enters the shaft from the outside and is conducted to a box in the room containing the radiators. From the radiators the air escapes gradually to the room through a metal mesh, or filter, and thus a draft of air upon the patients is prevented. On the third floor there are also waiting rooms for the patients in beds, washing rooms, dressing rooms for the surgeons, and preparing rooms. There is a room for surgical pathology and a private office for Professor Halsted, head of the surgical department. On the second floor there are a number of smaller apartments which will be used as consulting rooms on the surgical cases, each room or suite of rooms being furnished with handsome toilet sooms and baths. Here, too, is a surgical lecture room, a large, fine auditorium which will be used by Dr. Halsted and his assistants in addressing the surgical classes. On the first floor, which is entered from Monument Street, will be emergency rooms for accident cases, minor operation rooms, the orthopedic department, and the fine clinical lecture rooms, over which Dr. William Osler presides. This latter room is said to be one of the finest lecture rooms connected with any medical institution. Like the surgical amphitheatre, it is from thirty-five to forty feet high, and will be lighted on the north side by long windows. It can be entered from the first and second floors. The patients brought to the operating rooms from the hospital must be carried to the third floor of the surgical building, and for this purpose a hydraulic elevator of special construction has been installed. The surgical records are to be placed for storage in two fire proof vaults.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPTEMBER 3, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid Fever. | Diarrheal Diseases. |
| New York . . | 3,908,644 | 1,274 | 518 | 36.89 | 8.31 | 2.20 | 1.02 | 18.91 |
| Chicago . . . | 2,021,086 | 491 | 164 | 34.40 | 12.42 | 1.22 | 1.83 | 17.51 |
| Philadelphia | 1,407,968 | 371 | 131 | 32.67 | 5.67 | .81 | 2.70 | 15.39 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 184 | 65 | 39.67 | 2.71 | 1.08 | 3.26 | 17.93 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 92 | — | 35.87 | 3.26 | 5.43 | 5.43 | 15.22 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 57 | 23 | 36.83 | 4.35 | 5.26 | 1.75 | 21.04 |
| Boston . . . | 617,950 | 199 | 77 | 31.15 | 3.52 | 1.51 | 2.01 | 18.59 |
| Worcester . . | 136,925 | 37 | 15 | 24.32 | 5.40 | 8.10 | — | 18.91 |
| Fall River . . | 119,349 | 28 | 14 | 50.00 | 10.71 | — | — | 32.13 |
| Lowell . . . | 104,402 | 27 | 11 | 29.62 | — | — | 3.70 | 18.51 |
| Cambridge . | 100,998 | 22 | 12 | 36.36 | 4.54 | — | 4.54 | 22.72 |
| Lynn . . . . | 73,875 | 26 | 6 | 23.07 | 3.85 | — | — | 11.53 |
| Lawrence . . | 72,348 | 17 | 9 | 41.17 | 11.76 | 5.88 | — | 29.41 |
| Springfield . | 72,020 | 22 | 7 | 22.72 | — | — | — | 13.63 |
| Somerville . | 70,413 | 13 | 2 | 15.40 | 7.70 | — | — | 7.70 |
| New Bedford | 68,868 | 29 | 17 | 51.72 | 6.90 | 3 44 | — | 41.37 |
| Holyoke . . . | 50,538 | 18 | 10 | 50.00 | 5.55 | — | — | 27.77 |
| Brockton . . | 46,601 | 17 | 4 | 11.76 | — | — | — | — |
| Newton . . . | 39,310 | 13 | 3 | — | — | — | — | — |
| Haverhill . . | 39,061 | 3 | — | 33.33 | — | — | — | — |
| Malden . . . | 37,205 | 5 | 3 | 80.00 | — | — | 20.00 | 60.00 |
| Salem . . . . | 37,188 | 11 | 7 | 27.27 | — | — | — | 27.27 |
| Chelsea . . . | 36,499 | 13 | 10 | — | — | — | — | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 12 | 6 | 58.31 | 8.33 | — | — | 50.00 |
| Everett . . . | 30,209 | 2 | — | — | — | — | — | — |
| North Adams | 29,201 | 12 | 6 | 33.33 | — | — | — | 25.00 |
| Quincy . . . | 26,798 | 7 | 5 | 71.50 | — | — | — | 57.20 |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 10 | 4 | 40.00 | — | — | — | 20.00 |
| Brookline . . | 23,576 | 1 | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | 12 | 3 | 25.00 | 8.33 | — | — | 16.67 |
| Medford . . | 21,956 | 6 | 2 | 33.33 | — | — | — | 33.33 |
| Chicopee . . | 21,692 | 6 | 5 | 33.33 | 16.67 | — | — | 33.33 |
| Northampton | 20,314 | — | — | — | — | — | — | — |
| Beverly . . . | 15,807 | 4 | — | 25.00 | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 3 | 0 | 33.33 | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | 4 | — | 50.00 | — | — | — | 25.00 |
| Hyde Park . | 14,500 | 3 | 1 | 33.33 | — | — | — | — |
| Newburyport | 14,478 | 10 | 4 | 30.00 | — | — | — | 30.00 |
| Woburn . . . | 14,315 | 7 | 3 | 14.30 | — | — | — | 14.30 |
| Melrose . . . | 13,819 | 2 | 1 | — | — | — | — | — |
| Westfield . . | 13,809 | 2 | — | 50.00 | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 1 | 0 | 100.00 | — | — | — | — |
| Revere . . . | 13,609 | 4 | 1 | 25.00 | — | — | — | — |
| Framingham | 12,974 | 3 | 0 | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 3 | 1 | 33.33 | — | — | — | — |
| Southbridge . | 11,716 | 1 | — | 50.00 | — | — | — | — |
| Watertown . | 11,575 | 5 | 1 | — | 20.00 | — | — | — |
| Weymouth . | 11,350 | 3 | 1 | — | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,092; under five years of age, 1,152; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,083; acute lung diseases 184, consumption 360, scarlet fever 14, whooping cough 15, cerebrospinal meningitis 12, smallpox 1, erysipelas 2, puerperal fever 4, measles 4, typhoid fever 51, diarrheal diseases 567, diphtheria and croup 53.

From whooping cough, New York 5, Chicago 3, Philadelphia 2, Baltimore 1, Pittsburg 2, Boston 1, Lynn 1. From measles, New York 3, Pittsburg 1. From scarlet fever, New York 5, Chicago 3, Philadelphia 1, Baltimore 4, Pittsburg 1. From cerebrospinal meningitis, New York 10, Chicago 1, Worcester 1. From erysipelas, Philadelphia 2. From smallpox, North Adams 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending Aug. 20, the death-rate was 22.7. Deaths reported 6,639; acute diseases of the respiratory organs (London) 40, whooping cough 79, diphtheria 39, measles 130, smallpox —, scarlet fever 26.

The death-rate ranged from 7.8 in Kings Norton to 39.1 in Liverpool; London 21.6, West Ham 28.0, Brighton 17.3, Plymouth 17.8, Bristol 16.0, Birmingham 24.4, Leicester 21.2, Nottingham 23.9, Bolton 16.9, Manchester 26.9, Salford 32.1, Bradford 17.0, Leeds 23.5, Hull 29.0, Sheffield 22.4, Cardiff 17.2, Rhondda 30.7, Merthyr Tydfil 20.1, Swansea 27.7, Wigan 34.0, South Shields 17.0.

## METEOROLOGICAL RECORD.

For the week ending September 3, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in Inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. . 28 | 30.06 | 68 | 81 | 56 | 69 | 61 | 66 | W | S W | 8 | 11 | C. | C. | 0 |
| M. 29 | 29.98 | 72 | 82 | 61 | 69 | 47 | 58 | S W | N | 11 | 12 | O. | C. | 0 |
| T. . 30 | 30.20 | 60 | 64 | 55 | 58 | 78 | 68 | N E | S E | 7 | 8 | C. | C. | 0 |
| W . 31 | 30.23 | 64 | 73 | 56 | 67 | 68 | 68 | S W | S E | 7 | 4 | O. | C. | 0 |
| T. . 1 | 30.26 | 64 | 72 | 56 | 75 | 75 | 75 | N E | S | 4 | 11 | O. | O. | 0 |
| F. . 2 | 30.12 | 70 | 79 | 62 | 78 | 82 | 80 | S W | S | 14 | 12 | O. | C. | 0 |
| S. . 3 | 30.04 | 76 | 85 | 68 | 78 | 84 | 81 | S W | S | 9 | 10 | C. | C. | 0 |
| ☞ | 30.13 | | 77 | 59 | | | 71 | | | | | | | 0 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for week.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING SEPTEMBER 10, 1904.

J. F. URIE, surgeon. Detached from the "Missouri" and granted sick leave for three months.

N. H. DRAKE, surgeon. Detached from the "Lancaster" and ordered to the "Hancock."

M. S. GUEST, passed assistant surgeon. Ordered to the "Lancaster."

C. M. DEVALIN, passed assistant surgeon. Unexpired portion of leave revoked; ordered to duty at the Naval Hospital, Philadelphia, Pa.

## THE BOSTON CITY HOSPITAL.

The following operations will be done and cases shown in the amphitheatre of the Boston City Hospital on September 16th, from 10 A.M. until 12.30 P.M.; Carcinoma Breast; Tumor Breast: Tuberculous Peritonitis; Breast Abscess; Inguinal Adenitis; Inguinal Hernia; Interval Appendix.

## RECENT DEATHS.

EDWARD P. BUFFET, M.D., of Jersey City, died on Sept. 9, of cardiac disease. He was born in Smithtown, Long Island, of Puritan ancestry, Nov. 7, 1833, and was graduated from the College of Physicians and Surgeons, New York, in 1858.

JOHN T. BROSNAN, M.D., of Brooklyn, N. Y., died on Sept. 9, after a long illness, at the age of thirty-five. He completed his collegiate education at St. Francis Xavier College, New York, and was graduated from Bellevue Hospital Medical College in 1893.

## BOOKS AND PAMPHLETS RECEIVED.

Clamp and Cautery in Appendectomy. By Joseph Rilus Eastman, M.D. Reprint.

Tuberculosis of the Urinary Tract. By Edgar Garceau, M.D. Reprint.

A Handbook of Pathological Anatomy and Histology, with an introductory section on Post-mortem Examinations and the Methods of Preserving and Examining Diseased Tissues. By Francis Delafield, M.D., LL.D., and T. Mitchell Prudden, M.D., LL.D. Seventh Edition. Illustrated. New York: William Wood & Co. 1904.

Clinical Lectures on Mental Diseases. By T. S. Clouston, M.D. Edin., F.R.C.P.E. Sixth Edition. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1904.

The Prevention of Typhoid Fever. A Paper Presented at the One Hundred and Twelfth Annual Meeting of the Connecticut Medical Society, May 26, 1904. By William G. Daggett, M.D. Reprint.

A Medico-Legal Case of Well-Poisoning, with a Plea for a Hospital-Observation Law. By Henry R. Stedman, M.D. Reprint.

The Student's Handbook of Surgical Operations. By Sir Frederick Treves, Bart., K.C.V.O., C.B., LL.D., F.R.C.S. New Edition. Revised by the Author and Jonathan Hutchinson, Jun., F.R.C.S. Illustrated. (Abridged from the Author's "Manual of Operative Surgery.") Chicago: W. T. Keener & Co. 1904.

## Address.

# THE TENDENCIES OF THE PRACTICE OF MEDICINE AS A PROFESSION AND AN ART.*

BY LEWIS M. PALMER, M.D., SOUTH FRAMINGHAM, MASS.

Mr. President and Members of the Society:

Knowing too well that I have no special knowledge on any medical or surgical subject that would justify me in asking your attention for an hour to-day, I have chosen for a theme, "The Tendencies of the Practice of Medicine as a Profession and an Art." I do not expect to instruct you, for I have no instruction to give. I shall emulate Mark Twain, where he says in one of his prefaces that he should try and impart no knowledge, but if he failed it would be because, under great pressure, he leaked some, in spite of his efforts to the contrary. I shall measure my success by the times I see you look at your watches, or the clock, to see how much longer it is before the time of the real object of this meeting, "the dinner."

After a quarter of a century of study and practice of our noble profession, I am ready to say, with a partial knowledge of failures, weaknesses, and limitations, that it is the noblest profession of all. I would not for a moment belittle the profession of the minister of God. No higher ideal can be conceived than to be a beloved pastor of a people, leading them by example and precept to a higher plane of thinking and living. We all of us, perhaps, have had occasion, in some inexplicable tragedy of life, to turn to him for some words of comfort, or hope or cheer, and we remember with gratitude what he has been to us and done for us. But when I remember what travail of soul, worriment of mind, and physical strain it has caused me to write one sermon, on which I had a whole year's time, I have tried to imagine what the strain and work must be to grind out two sermons a week on the same great theme, and always have them new and fresh and interesting, and not too pointed about personal shortcomings.

A prominent lawyer friend of mine says he thinks he could write about four good sermons, and after that he should be entirely pumped dry. No, friends, high and noble as is the calling of a minister, I think I prefer to it the carping and unreasonable criticism of ignorant patients, or be amused by the untellable things that occur in every busy doctor's life.

While much in the legal profession is high and noble, it seems to me that far too much of its work consists of making and fostering needless strife between man and man, to make it desirable. It is supposed to deal with right and justice and equity, but its noble ideals are besmirched by the quack of the legal profession, the pettifogging lawyer, who scents accident and trouble as the buzzard does the carrion, and like him, ever hovers about. More than once, in time of accident, have we had difficulty in our little Framingham Hospital, in keeping out these legal buzzards, and I have often wondered what would be said of us as doctors if, in like manner, in time of accident, we were to rush to these poor unfortunates and say, "Employ me, employ me, and I will save you."

My attention has been recently called by an eminent judge to another remarkable difference between the legal and medical professions. He says: "You, as doctors, are always looking ahead for the new thing, scientific fact, or discovery, while we lawyers and judges are always looking backward, hunting after a precedent." I think I prefer the profession that looks ahead for better things, instead of looking backward, banking on the wisdom of ancestors.

An ancient scholar has this exalted praise for the physician: "Man in nothing comes nearer to the gods than in giving health to his fellow-mortals." In the advance of civilization, and the wonderful progress of scientific knowledge along all lines of human thought, in none has there been a more wonderful result seen than in medical, and especially surgical, knowledge. As we like to revisit places that we have seen many, many times because of their associations, or read and reread a beautiful poem because it expresses a tender sentiment in language which appeals to our experience, or as we love to hear again and yet again the same old melodies, and be carried for the time being beyond our narrow, sordid lines by the harmonies of some of the symphonies or oratorios of the old masters, so do we enjoy hearing the story of the progress of medical thought from the mysticism and superstitions of former times to the present so-called scientific age. But with all this wonderful advance, and with all our boasted knowledge, it seems to me that in some respects we as practical physicians, seeking all possible sources of aid, are woefully deficient.

We live in an age of materialism. We are attempting to account for all conditions and manifestations on a material basis. We glory in the fact that everywhere are springing up, like the flowers of spring, laboratories and educational institutions, endowed with some of the wealth of both honestly and ill-gotten gain, searching with the enthusiasm of the true scholar after the gem of gems — truth. Thousands of the keenest intellects, stimulated by ambition, by love of knowledge, and influence of mind upon mind, are spending their lives in biological, physiological and pathological scientific research. Myriads of eager eyes are peering ceaselessly through the microscope, looking for the festive germ, which is to account for all that is amiss or awry in this otherwise would-be perfect world of ours. Still other thousands are patiently and impatiently experimenting in the laboratory, at the bedside and in the clinic with disorganized humanity, looking for the elixir of life, or the panacea for all diseases.

The versatile Beecher once foolishly said that there grew within the sight of every man's grave

* Annual Address read before the South Middlesex District Medical Society, April 20, 1904.

some herb which, if rightly understood and applied, would have saved his life. Before and since that time there has been given for the cure of the sick, at some time or season, everything conceivable and inconceivable, in the heavens and on the earth, mineral, vegetable and animal, in the sea and beneath the sea, as well as the organic extracts of man and beast.

The pathologist has contended that all was diseased, and the Christian Scientist positively asserts that there is no such thing as disease. The specialist has searched for and found the trouble in his limited field, the surgeon has gradually dismembered the sufferer, till the marvel is how little of the original plan is necessary for existence; formerly the ovary was the *bete noire* of female happiness, but now the appendix and the gall bladder hold the centre of the stage. The physical culturist has exercised the patient; the neurologist has put him to bed; the dietarian has starved him; the Weir Mitchells have stuffed him; the hydropaths have deluged him inside and outside with water; and the orthopedist has baked him; the osteopaths have boned him and the quacks have fooled him; the homeopaths have given their thirty dilutions or infinitesimal doses, and the regular physician has given him a dose a million times as large; and all these treatments in the majority of the cases give practically the same results, for as Oliver Wendell Holmes once wittily said to a company of surgeons: "There's a Divinity that shapes our ends, rough hew them as we will." If this be true, as perhaps some of you will question, why is it true? I answer because a large part of our cases will get well, if let entirely alone and given a fair chance. You remember Mr. Dooley said: "If the Christian Scientist had some science, and the doctors more Christianity, it wudden't make any diff'rence which ye called in, if ye had a good nurse."

People are governed chiefly through their fears and prejudices, and not by their hopes. It is a very strange fact to me that from the medical schools and the masters and teachers, down through to the humblest practitioners, it is practically forgotten and ignored that man is a complex being; more than physical and material, or a complicated machine; that he has not only a body, but also at least a mind, if not a soul, whatever that may mean. There is an old Latin saying, which I think is not true, that where there are three doctors, there are two atheists. Personally, I am happy to say that I believe that man has not only a body and mind, but also a spiritual or moral nature, or soul. The how, the what, the where, and the whither of this third part of our nature I will not attempt to sermonize upon, or to teach to you. Maturity develops a belief in it. Of the mentality part of our nature, however, there can be no question, but its relation to and connection with the physical body is still a mystery. How vividly I remember my keen disappointment when a medical student, when the professor in physiology lectured upon the brain. He had told us of the functions and relations of the other organs of the body, and now was explaining those of the brain. In my interest and eagerness to have some things made clear that had always been dark, I forgot to take notes, and was all anticipation when the professor stopped and said: "But, gentlemen, here we have to stop; for how the mind exists and works and thinks in these brain cells we do not know." Even now I never make an autopsy or see the wonderful brain that I do not wonder and ponder over the same old subject.

But that the mind does exist and act and connect, and is dependent upon and interdependent with the body, is beyond question. The most of us can recall the days when we have done the most good have been the days we haven't opened our medicine case, if we carry one, or written a prescription, if we are more *toney* than economical. We have done it by removing groundless fear in A, in advising B, in restraining C, in encouraging D, and poking fun at E.

Can mental impressions and conditions cause disease? To answer that question, let us consider some of the familiar experiences of daily life. Pleasurable emotions, excitement, or shame will flush the face by dilating the superficial blood vessels, while fear or nervous shock will contract them and make one turn pale; and sudden and terrible bad news will so inhibit the heart's action as to stop it and cause death. Your critical attention gives me, just now, a bad attack of tachycardia. Grief and worry will stop entirely digestion, while later, to-day, the sociability of the banquet table will allow you to make pigs of yourselves with impunity. The whipped dog or the public singer or speaker has polyuria. The woman in labor will lose her pains on the coming of a new doctor, or any unusual excitement. The doctor will go with safety and impunity into all kinds of contagious and infectious diseases, while the fear-stricken laity will succumb while they are yet afar off.

It is a well-recognized fact among military men that an army is much more liable to sickness and disease after a defeat than after a victory. A woman in anger may poison her milk to the danger of her child. I knew a woman, young and healthy, midway between her monthly periods, when unexpectedly confronted by a tough-looking tramp, to have a tremendous gush of blood from her uterus.

But why need I cite further cases? They are familiar to you, and you can add to them out of your own knowledge and experience. If a momentary mental condition will give a temporary disturbance of function, then a prolonged bad mental influence will give a prolonged disturbance of function or disease. If disease is a lack of harmony in the functionating processes of life, then it looks to me logical that the proper cure for diseases caused by mental conditions is to remove the cause as far as possible, and use those agents that will best cure or correct the bad results.

When I write my prayer-book, I shall have as one of the leaders, "From hysterical women and hypochondriacal men, Good Lord, deliver

us." But if we belong to that class whose prayers don't avail much, and we still have such for patients, what shall we do with them? The love-sick maiden comes to us with a long story of nervous troubles, and we attempt to cure her by giving her phosphorus, when it isn't phosphorus she lacks or wants. Later in life she marries a beast, fondly dreaming she was wedding a man, and her later condition is worse than the first. Then, instead of killing the man, we give the poor wife valerian or assafetida. The hypochondriacal man imagines all sorts of things, and makes mountains out of mole-hills, and we give him — well, what would *you* give such a man?

The tendency of the medical profession of today is to look to the laboratory as the supreme court in medical science. In many things I admit that it is, but on the other hand, in many more things I contend that it is far from it. I desire not to be misunderstood. The laboratory has done, is now doing, and will in the future do more wonderful things, but it is only a part of our fighting force. There can be no question about the truthfulness of the germ theory, and its being a causative agent in the production of many diseases, especially the so-called infectious or contagious diseases, and others yet to be demonstrated, but the care of these is relatively a small part of our life's work. The trend is toward absolute materialism.

Sir James Paget said: "A physician's exclusive duty should be to study men as men, to master the marvelous intricacies and dependencies of spirit, soul and body, and to be sufficiently skilled to know when and how to call on the one to help the other, and with such men the profession would be complete." Sir Benjamin Brodie said: "It is the business of every practitioner of medicine to study not only the influence of the mind upon the body, but also that of the body upon the mind."

Neurotic affections of both children and adults are increasing and multiplying to an alarming extent, because more nervous energy is now expended in a decade, with modern high pressure living, than in a century of the good old times. The results are inevitable and lamentable. Psycho-therapeutics is a very important but a very poorly understood branch of our profession. It is yet in its infancy and a feeble child at that. Personally, I think there should be in every medical school a chair of psycho-therapeutics, which should include in it psycho-physiology and psycho-pathology. We have now bright lights in this field, among whom I would mention Gowers, Weir Mitchell, Charcot and others.

In this field the common people are dissatisfied and wiser than the profession. The neglect of this mental factor in medicine has been probably the direct cause of the multitude of fads, past and present, such as mental science, spiritualism, clairvoyance, mind cure, hypnotism, mesmerism, Dowieism, and the last two and most popular cults, namely, osteopathy and Christian science. I have done much reading and thinking on these fads the last year, and am ready to exclaim as did Hamlet to Horatio: "There are more things in heaven and earth than are dreamt of in your philosophy."

I have looked up with more or less care osteopathy. I have relied chiefly upon an article by J. Martin Littlejohn, an Englishman with many titles, and whose article was approved by a local osteopath as representing their ideas. Osteopathy was first formulated by Andrew Taylor Still, M.D., in 1874. Dr. Still claimed "that a natural flow of blood is health; that disease is the effect of local or general disturbance of the blood; that to excite the nerves causes muscles to contract and compress the venous flow of blood to the heart, and that the bones could be used as levers to relieve pressure on nerves, veins, and arteries."

Osteopathy aims to correct rib and vertebral displacements, to correct tissue contracture or displacement, so that when the tissues and bones are restored to their normal position and function, nature may resume its normal activity. In the removal of these obstructions, irritations and hindrances to free activity, they claim, lies the secret of osteopathic success. To sum up briefly what I gather of the system, if it can be called such, it is that they believe, or pretend to believe, that sickness is all or nearly all due to irregularities and displacements of bones, muscles, nerves and tissues, and by remedying these defects, sickness can be removed. To any one who knows anatomy, or has had experience as a surgeon or in the autopsy room in moving or removing a vertebra or any large bone from the place where the Lord put it, it seems a huge joke to think of trying to move any such bone through skin, fascia, muscle, tendon and cartilage. Only a mythical Cyclops could do that stunt. If they would honestly do away with the quack claim of cause, and practice and honestly claim results from legitimate massage, then they could accomplish wonders, and claim, deserve and have the respect of those who are searching after truth, wherever it lay.

Along this line of thought, I have also, in the preparation of this paper, read much concerning Christian Science. Now please don't do as perhaps you are in the habit of doing, say it's all nonsense, only a fad, that will soon pass. Not so fast. Have you ever looked it up and given it the same considerate investigation that you have other subjects? If not, I want to advise you to do so, not only to see for yourself what there may be in it, but also as an exercise in mental gymnastics to see what stunts your mind is equal to. I am ready to confess that though I am a college-educated man, been a teacher many years, done some public speaking, and under ordinary circumstances think I have a fair, average knowledge and use of the English language, yet when it comes to grasping and assimilating what the most of the Christian Science writers say, I am a monumental failure. I don't know whether I lack mentality or spirituality, or some other "ality," yet this I do know,— I can't see what they are driving at.

With some of the writers I found the sense was the same whether I began in the middle or at the end, or the beginning. It has reminded me of the old lady who read the dictionary through as a story book, who, when asked how she liked it, said, "Wall, it was all very interesting, but I couldn't see the connection." Mrs. Eddy, or as her quasi-worshipers call her, "Mother Eddy," the author, says Christian Science is the essential religion that Christ came to establish, but has been lost for centuries, but was rediscovered by her in 1866.

It is supposed to be founded on the Bible, but is a revised or up-to-date exposition of the same, as set forth in a book called "Science and Health, with Key to the Scriptures." Some of her followers claim that the simple reading of this book has cured them.

Let me give some of the striking and absurd thoughts or quotations from this book: "Christian Science is the Holy Ghost, the Comforter." "Jesus was the offspring of Mary's self-conscious communion with God." "The union of the two sexes is not required to create the rest of the human family" (page 524). "That our body is material, and as body should suffer, is but a delusion." "The body can never be weary, any more than a wheel" (114). "Food does not affect the real existence of man" (387). "Food neither strengthens or weakens the body" (118). "Lungs never sustained existence" (423). "Man is incapable of sin, sickness, or death" (471). "Disease is but fear made manifest in the body" (372). "Sickness is a dream from which the patient needs to be awakened" (415). "Ossification or any unusual condition of the body is as directly the action of mortal error as insanity. Bones have only the substantiality of thought which formed them. They are only an appearance, a subjective state of mortal mind" (421). "Inflammation, tubercles, hemorrhage, and decomposition are beliefs, images of mortal thought. They should be treated as error" (422). She says further: "The lightning is fierce and the electric current swift, yet in Christian Science the flight of the one and the blow of the other are harmless" (262). "Electricity is some of the nonsense of error" (259). "The unreal offspring of finite mind" (610). Again, she says: "She had already in her possession well authenticated records of the cure by herself and her students, through mental surgery alone, of dislocated joints and spinal vertebræ." Again she says: "A farmer chopped off his forefinger at the first joint and came to her for treatment, and that she made his finger whole, giving him a new bone, new flesh and a new nail." One of the most interesting and sane claims that Mrs. Eddy makes is the following: "Christian Science demonstrates that the patient who pays whatever he is able for being healed is more apt to recover than he who withholds a slight equivalent for health" (300, 301). That's common sense.

I could give you plenty more of interesting quotations, but perhaps what I have already given will suffice. Christian Science claims to cure all manner of diseases, and yet they say that sickness is only a dream and disease a fear.

A Mr. E. A. Kimball of Chicago, a teacher of Christian Science in the Boston Metaphysical College, said in a lecture in Boston last fall: "The practice of Christian Science is in its infancy. No pretence is made that such proficiency and efficiency have been attained by practitioners as to preclude any failure, but already this practice has resulted in the cure of practically every disease that is in the long list of incurables. In other words, Christian Science can heal all diseases that drugs have ever healed, and all that drugs have never healed, hence the Christian Scientist contemplates sickness as something he has a right to cure and ought to be able to cure."

Yet, personally, I have never known them to make a single cure, or even known of a well-authenticated cure of any serious disease.

Dr. John B. Huber of New York recently attempted to investigate twenty of their remarkable cures, but in no instance was he able to get the necessary facts by which their genuineness could be tested. He then wrote politely a series of questions to Mrs. Eddy. She did not reply, but, several weeks later, her counsel, Judge Hanna, wrote him, saying: "Study earnestly the Bible and 'Science and Health, with Key to the Scriptures.'"

I have given you some of the glaring nonsensical statements or quotations from the Christian Science textbook to show their inconsistency, yet I have no hesitation in saying that underneath what to the ordinary scientific mind seems and is nonsense, such as denying the existence of matter, the reality of sickness, pain and death, and evidence given us by our senses, there is in it an element of truth, which the doctor of medicine ought to know and make daily use of. Their leaders claim they have a following of two million people, and they are not the ignorant people either, but as a rule, they are educated. They are increasing in number and influence. They have their expensive churches, which are well filled. They doubtless cure many cases that are real or imaginary, that are due to mental or psychological causes that the regular profession foolishly ignore. So also have others, as quacks, mental healers, relic dealers and holy waters, cured by the same agency of mental suggestion.

Let us now turn our attention for a few moments to the art side of our profession. We used to hear much of the art and science of medicine, or the practice of medicine as a profession and an art, etc. Apparently the art of healing has been overshadowed and swallowed up by the science of medicine. The old-time doctor had one advantage that the latter day educated doctor does not have, namely, the preceptor. The advantages and knowledge of the little arts of life to be gained by a young man just starting in practice from an intimate association with a refined, gentlemanly, and successful general practitioner cannot be overestimated. The following concrete illustrations of the point in question could

never have occurred had the doctors in question had such an example:

A well-meaning and well-read young doctor just starting in a village in New England lost an influential family, and so the whole village, and had to move on because he asked the countrified question, "Do your victuals hurt you?" Another doctor I know of lost business and standing because in the presence of a lady of refinement he took his thermometer from her mouth, wiped it on his doubtful pocket handkerchief and put it back in its case; still another bad break. A splendid country physician was called to attend a high-toned city woman. He put his hand upon her flesh and innocently remarked, "Why, you are as hot as a *skunk*, a'n't ye?" He did not mean anything by it, any more than the clergyman did in the following story: A miscellaneous company were playing cards in a camp in Maine, when a rough but worthy old fellow called a minister a d—— fool, because of a play he made. His companions later called him down and said he must apologize for it, which he promptly did after this fashion: "Say, elder, I hope you didn't mind what I said to ye last night. I didn't mean anything by it. I didn't mean nothing more by it than you do when you pray in the pulpit Sunday morning."

These doctors quoted, I hear you say, lacked the instincts of a gentleman. True, but many a brainy man has been handicapped by lacking them, because of heredity and early influence, and should have had them cultivated. It is attention to the little details of life that make success, yet I do not recall a lecture or a sentence in my medical course that touched upon the art of medicine. In my opinion, one of the most helpful books that has been written for doctors is Cathell's "The Physician Himself," and every young and old doctor ought to read it.

There is another side to this subject to which I ask your attention. It is that feature of it which links us with the great hustling world. I refer to the dollar side, or the practice of medicine from its business or bread-getting view. A physician is a genuine altruist. From a dollars and cents standpoint our profession is a monumental failure, for I need not attempt to prove to any company of doctors that very few men who rely on their practice alone ever become rich. I venture the assertion that there is no class of men, who have invested so much in preparation and equipment, that get so small a return on their investment. This is in a small part his own fault, for a doctor is by common consent a poor business man.

Our profession occupies the unique position of having every man in it doing his best to destroy his own business, and in this respect we are succeeding to a remarkable degree. The work of our profession has decreased the death-rate in some places like London one half in the last two hundred years, has added many years to the average of human life, to say nothing of the saving of an inestimable amount of human suffering.

Every advance in medical science, every new discovery of the cause of disease, every new law in sanitary science, every advance in hygienic knowledge and right living, lessens the sum total of work for our profession to do. But in all these things the true physician rejoices, as he does to have his patient recover. But there are other influences at work that are not so noble and desirable. The Great Physician has said: "The laborer is worthy of his hire," but we are not getting it, and it is rapidly growing less.

I am no pessimist or alarmist, but from my point of view, if the present tendencies are not checked or changed, I shall be glad that the most active part of my professional work was done in the nineteenth instead of the twentieth century. This is an age of organization. Unionism and combinations are in the air, and gigantic trusts are being rapidly formed. The minister is respected for the sacredness of his calling, the lawyer and the judge are hedged about and protected by the sanctity of the law. There are all kinds and degrees of combinations, from that of the Northern Securities and Ship Combine to the union of the servants in the kitchen and the bootblack in the street. Capital is arrayed against labor, and labor is pitted against capital, and between these upper and lower millstones the unorganized are suffering severe and unnecessary hardships. Among the unorganized are the doctors. We have our medical societies, it is true, meet together quarterly, listen to a paper, pass a perfunctory vote of thanks for the very able, interesting and scholarly address (I think that is the ritual), then eat a good dinner, and rush back to our labor of love, wondering if those that stayed at home had swiped any of our few patients in our absence. There are 80,000 regular physicians in the United States to-day, and we are adding to that army 5,000 new recruits every year. The National Brotherhood of Boiler Makers requires that an apprentice shall work four years before he can be called a journeyman, while we have many medical schools which in one year of actual time will authorize by diploma any callow youth to rivet together the human boiler.

It has been computed that it takes at least 1,000 people to give a doctor a living, but we have at the present time one doctor to every 600 people. If each physician had the 600 people he would be lucky, but he hasn't. The abuse of the out-patient department of our hospitals is too well-known to need any words from me, and the abuse is with our help. It is an alarming and rapidly increasing evil, especially in our cities. It is estimated that now fully one-half of the population of New York City and Chicago are medical paupers in the hospital clinics. Another dangerous tendency is the formation for profit, often by laymen, of the so-called emergency hospitals, where any laboring man can be cared for, if injured, for one year for one dollar. Not only do the steamship lines and railroad lines have their surgeons, but there is a rapid increase in the number of and membership in social insurance organizations, such as the Hibernians, the For-

esters, United Hebrew Society, St. John Baptiste, Odd Fellows of the Manchester Unity, etc., where each member is cared for for one dollar per year.

Large contractors, manufacturers, mining companies are doing the same evil thing, and by the aid and consent of its agents and victims, the doctors. These are the days when the masses desire to get rich quick. Graft is also in the air, and it not only invades the government of cities and politicians, but even the professions are becoming tainted. Private hospitals and sanitariums, specialists, surgeons, and even nurses in some places offer a liberal commission on business brought them, and, I fear, could the actual amount of this nefarious business be made open and public, it would be a great shock to the moral sense of the profession as a whole.

Not only are the evils of counter-prescribing increasing, but the patent medicine evil is increasing, not only in quantity, but also in quality of business done. The elegance and combinations of modern large drug manufacturers now make it easy to any intelligent man or woman to remember the name of some favorite combination that their physician prescribed for them, and the next time it is wanted get it without asking the doctor's " If you please."

Our medical experts have come into such disrepute, as witnesses, because testifying for money instead of truth and justice, that an eminent English jurist has recently said, " There are three classes of liars, — liars, damned liars, and medical experts."

These are growing tendencies and evils on the business side of our work, not mentioning poor collections, dead beats, and bloodsuckers that yearly make it harder and harder for a conscientious doctor to live and support and educate a family; and they will continue to increase till the profession awakens and begins to assert some of its self-evident rights, and demand a fair treatment from the public. We are not only not paid by our patients, but more and more often, we are turned upon and abused most by those we have served best, aided and abetted by the shyster lawyer, who offers to take a case for malpractice for nothing if he fails, and divide the award if the doctor settles the case, and we have no redress. As illustrating this principle and tendency, I beg your indulgence in allowing me to quote a case and a chapter out of my own recent personal experience. In 1900 a carpenter was severely injured by a fall in my town and taken to the Framingham Hospital for treatment and repairs. He was found to have suffered a simple fracture of his left humerus, and a " T " fracture of his left tibia, into the ankle joint, with the left fibula dislocated and driven into the sole of the foot, with some other lesser injuries. At this time and for the next eleven days he was under the care of another physician. Both the arm and leg were put up in plaster-of-paris casts, well padded. An effort was made to hold the foot with other kinds of splints, but they would not hold it. By chance I happened in the accident room while the arm was being put up. I did not even know that the leg was broken. The toes were all left out as usual, and at no time showed evidence of undue pressure. There was but little pain in the foot, and but little morphia given. Eleven days after the accident, he asked to come under my care, because I was on duty at the hospital, and he could have my services free. This request was granted. On the fifth day of my service I removed the plaster and found a small dry slough, the size of a silver quarter, on the instep. I cared for him three weeks, when he went to his own home and physician. This slough gradually deepened until it destroyed the tendon of the tibialis-anticus muscle, and he was cared for in the Massachusetts General Hospital for many weeks. He lost in all some six months' time.

For the above case, the doctor who only gave the man ether, the doctor who took care of him the first eleven days, and myself, who cared for him the last twenty days he was in our hospital, were each of us sued for $10,000 apiece for malpractice; but the doctor who put on the cast was not sued, by mistake of identity.

For many years, because of this blackmail business, I have not kept my property in my own name, but what interest I might have had in my wife's property was tied up by this suit.

It was more than three years after this accident before the trial came off. In that interval, as is usual in such cases, hints were thrown out by the prosecution that a few hundred dollars to help the poor man would probably settle the suit. To add to my discomfiture, my two able and trusty lawyers advised me to settle the case if I could, saying it would cost me more to fight it than to settle it, and run the ever-present risk of being beaten before a jury. I am so constituted that I can throw good allopathic dollars into the stock market and see them depreciate into the thirtieth dilutions of homeopathic pennies, and whistle and grow fat, but to have my leg pulled for even a trade dollar makes my whole Anglo-Saxon spirit boil with righteous indignation, and therefore, perhaps with more stubbornness than sense, I refused the advice, and made a vow that I would sacrifice all my wife's relations before I would pay one cent in settlement, reaffirming in another form Otis's famous adage, " Millions for defence, but not one penny for tribute to a shyster lawyer."

The trial came, and with it the usual number of cheerful liars. Some of the testimony was rich. The plaintiff testified that he had such pain that the nurses gave him a Hypo. of Morph. every half hour for two days, whereupon one of Boston's famous surgeons reached over to me and said, " You do a land office business out in the Framingham Hospital, don't you? " Another amusing bit of testimony was when all the witnesses for the prosecution, especially the women, passed by the plaster cast on the arm, easily seen, and in serious procession all lifted the bed clothes to look at the leg, and all saw only one toe, the big toe, and that was always black.

But I must abbreviate my story. I am told that many large law firms think it necessary to have one solid man for influence and dignity, and another man to get business, like the Quaker's advice to his son, "Get business, honestly if possible, but get business." Such were apparently the prosecuting lawyers. It gives me pleasure to say publicly that the senior member of the plaintiff's lawyers, who had not said a word in the trial for the two days, and when not more than one half the witnesses for the defense had testified, came into court on the morning of the third day and moved that a verdict for the defense be given.

Two things helped to mitigate the annoyance of this case. First, the interest and loyalty of the doctors, some of whom gave generously of their time without thought of money, while yet others generously offered services that were not needed. Dr. M. H. Richardson, the man with a big heart, as well as a big mind and body, gave two days, as he said, for love and not for money. Dr. Mixter heroically sat out a whole day when he ought to have been in bed because he was sick. Dr. Bottomley of Boston, Dr. Hoitt of Marlboro, and Dr. Wood of Waltham all gave two days for the love of right.

Second, because this was a hospital case, both my lawyers, Ex. Dist. Attorney P. H. Cooney of Natick and Ex-Representative John M. Merriam of Framingham, both able and busy men, gave probably a week each, and both refused all money consideration. My money expense, therefore, consisted only of railroad fares and banqueting the lawyers, doctors and witnesses at the hotels and restaurants of Cambridge, and those of you who know of them don't need to have that joke labeled.

My story of this case would not be complete were I not to tell what to me is a delicate and sad part of it. When I told my case to my senior counsel, he at once replied, "There is some doctor at the bottom of this. There always is." I replied, "There can't be, for there is no reason for there being one." I can understand how the family physician of this injured man would sympathize with him, — he ought to. He may have tried to discourage a suit, though I have evidence to the contrary. I can easily forgive him for taking the witness stand against me, because he would be obliged to when summoned, but I couldn't understand then, and I can't now, after six months of sober thought, how any physician, with any true professional spirit, and especially an honored member of this society, would give over to the prosecution a personal and confidential letter I wrote him as a favor, to be used against me, after three years' time, and while upon the witness stand, when lawyers say he was under no obligation to do so. This courteous letter of mine was never even acknowledged, and I have never received any note of interest or sympathy in any way since from him.

Another very marked and popular tendency of the present day practice of medicine is toward specialism. Unfortunately for a clear discussion of this subject, the term is used loosely and differently. It has a catchy and high sounding tone to it that covers a multitude of shortcomings. It is a fetish which the popular fancy just now worships. Nothing that I know of will so quickly satisfy an uneasy patient, and the meddlesome interest of perhaps well-intentioned neighbors, as to say to a family, "Well, this is so rare and unusual a case that we will refer it to the final and supreme court of medical knowledge, and have a specialist from the city come out."

This has a twofold attraction. He is not only a specialist, but he is from the city. Did you ever hear of a specialist from the country being called? It would be a paradox. It is a very common idea among the city as well as the country minds that a residence and practice within the city's corporate limits carries with it a superior knowledge and *vice versa*, and that because a man chooses to live where he can enjoy driving through the woods and the green fields, and see and hear some other bird sing beside the chattering, quarrelsome and contemptible English sparrow, he is in consequence inferior to his city brother.

But to return to my specialist. He comes out with the air of a conqueror, and the paraphernalia of his peculiar specialty. He looks wise, and at once gives the impression that at last we have found a man that knows. He asks questions, both relevant and irrelevant. He uses big words that have been coined to express conditions that we do not understand, but sound expressive. He gives a big name to the disease or condition, but when he comes to suggesting a big medicine to fit and cure the big name, he at once comes into the same class with the countryman. He, however, gives some directions which the home doctor is glad to carry out, for he is at his wit's end, and ready and glad to try any new thing. The patient's mind has taken on new hope, for he had seen a specialist from the city, but physically he remains the same, and, after a few days, finds himself in the same old condition. I am reminded of the apt and quaint way in which that prince of men and teachers, and under whose instruction it was my happy fortune to have been, Dr. Oliver Wendell Holmes, put it, when he said of a man who consulted many specialists, and finally died just the same, that he raised the question whether it would not have been just as well and a good deal cheaper if the patient had *not* got well under his family physisian at home, as under the city specialists. It is a law of economics that the supply will equal the demand. Create a demand of any kind, and there will be a consequent and necessary supply. Specialism is in the air. It is everywhere and creating a universal demand. We see it in the one hundred and forty different religious sects with their varied beliefs and teachings. We see it rapidly developing in the legal profession. We see it running wild in our system of education, and especially in our higher institutions of learning, where electives have gone so far as to already alarm its advocates. We see it in all lines of

business. We see it in manufactures, where the work has become so divided and subdivided that the part of each person has become so small a part of the finished product, that the workman becomes practically a machine or automaton himself and by that much cramped in his development. Well do I remember the little boot and shoe shop that was so common all over New England twenty-five to fifty years ago, where each man made the whole boot or shoe and was a master workman, knowing the business from A to Z. If necessary, I could name other lines of specialism.

In the profession of medicine there has been the same tendency and the process is still going on. In a delightful book recently published, and written by Dr. Mumford, one of our bright young Boston surgeons, entitled "A Narrative of Medicine in America," he devotes his closing chapter to tendencies in medicine, and among them he speaks of specialists. To learn how many were becoming general practitioners and how many were specialists, so-called, he sent a series of questions to the graduates of Harvard Medical School, in the ten years from 1892 to 1901, which were in number 820 men. Of this 820 graduates questioned, 487 responded, or nearly two thirds. From the replies, several very interesting facts were learned. First, only 191 out of 487 had settled in large cities of 100,000 people or more; 229 men, or nearly one half, had settled in small cities of from 10,000 to 100,000 people, while only 38 were in places of less than 10,000 inhabitants, or country practice. Of these 487 doctors who responded, 96 are pure specialists, or about one in every five men, and four out of five classified themselves as general practitioners. Of the general practitioner, 99 combine some specialty with their general practice, and 77 of them intend and expect some day to abandon general practice for a specialty. If this intention is carried out, and none of the specialists get discouraged or change for other reasons to general practice, this would make more than one third of these graduates of ten years, specialists. Of the 487 reporting, only 202 are and expect to be "Simon pure" general practitioners, or less than one half.

Another surprise to me was the fact that only two out of this whole number stated that they had been general practitioners and had now become specialists. Still another surprise was the number of different specialties returned, there being thirty-three in all. With the present tendency, it is only fair to expect that this number will be still further enlarged and subdivided. Within my day I have seen them rapidly increase.

An interesting discussion has been going on of late, as to whether or not this increased specialism did not eventually result in the final extinction of that once upon a time highly appreciated species, called "the beloved family physician." There are those who would make of him only a person like that of a doorkeeper of the large clinic, a man who sorts out the kind of trouble and then tells them what room to go to for special treatment.

As an illustration of this tendency, but I imagine an unusual case, I quote from an address given by one of Boston's eminent lawyers, Mr. Moorfield Storey, before the Harvard Medical Alumni Association recently, in which he said that within one year he had employed in his family twenty-three different doctors. In this connection I raise the query, Did either one of these twenty-three different doctors know thoroughly any one member of that family, so as to treat him intelligently as a unit, or a harmonious or inharmonious whole, or did each one, like the modern shoemaker, attempt to repair some small individual part of this intricate machine, whose function may have been thrown out of harmony or health by some reflex influence, arising in some other part of the body, to that individual specialist a hidden book?

Is there such a thing as knowing one's constitution, and has every individual a personal equation, which an intimate, experimental, personal knowledge, by a family physician extending through many years, would enable him to treat and care for more thoroughly and successfully, than the new man or any number of special knowledge men? My experience teaches me that this is so. Lest my position be misunderstood, and I get the credit of being opposed to specialism and specialists, I shall risk a little more personal history, and confess that I, too, pose as a quasi-specialist. After fifteen years of general practice in a large country town and village, I found myself interested in special lines of my work, and I spent more than a year in Boston, New York and the medical centers of Europe in preparing myself for those special lines of work. This study was a perfect delight and I am glad I made it, for it not only gave me new light, but the breathing spell gave me a new lease of life. Because of real estate anchors and a too strong love of old friends, I returned to the place of my general practice, hoping in time to devote myself entirely to the special work I enjoyed most, and drop the hard parts of a general practice.

In the past eight years I have demonstrated the following points to my own satisfaction: First, that it is very difficult and practically an impossible thing for a general practitioner to drop his general practice, while he remains in a place where he has become thoroughly known and established as such. Second, that so long as a person does any general practice, he need not expect to be acknowledged a specialist or given work as such by his brother practitioners to any extent, for fear of losing patients. On this point I find no fault or make any harsh criticism. It is perfectly natural. Third, that when one makes any claim to specialism, a certain proportion of the people think that from lack of interest or ability he becomes less valuable as a general practitioner. Fourth, that specialism and general practice are not incompatible or undesirable, either from a professional or monetary or enjoyment point of view, but rather to the contrary. Fifth, that having learned the limitations of the specialists, I have a peace of

mind that the world cannot give or take away. Sixth, that with the higher requirement now insisted upon by our best schools in the four years' course, and the critical work now done in small sections along special lines, every man allowed a degree of M.D. should be a specialist along general lines in nine out of every ten cases he sees, and be able to tell when, because of his own limitations, to send the tenth case to some one with superior knowledge and skill, who can do better for him than he can. Seventh, I am firmly convinced that the family physician has a work and a place that no amount of specialism ever can or should destroy. That at the present he is under a cloud and not justly appreciated, but with the development of humanitarian tendencies so noticeable at the present time, he will again be recognized and appreciated as a potent factor in the world's betterment and advancement.

Having given you what have seemed to me some of the unfortunate tendencies of our noble profession, you will probably ask me for my remedy. I offer the following suggestions as a tonic:

First, a better *esprit de corp*, and less foolish jealousies in our ranks. Second, a cultivation of a more businesslike profession, putting a proper value on our own services, sending bills and collecting them. Third, a better organization, in simple self-protection. Fourth, the discouragement of the free clinic for those able to pay, and the employment of society doctors. Fifth, the joining of a physician's defence alliance, and fighting every case of malpractice instead of compromising it. Sixth, the improvement in the quality, and lessening the number in our profession when possible. Seventh, taking greater interest and active part in legislation that affects us as a profession. Eighth, by enlarging our medical vision beyond material agencies. Ninth, by an increased interest in national organizations, and co-operation in regard to moral betterments such as divorce laws, food and drug adulterations, sanitation, national quarantine regulations, etc. Tenth, uniformity of requirements for a degree in different medical schools, and in examinations for permission to practice in different states, with reciprocity between such states in these certificates, and other similar laws.

I cannot better close my paper than by the following quotation from an editorial in the *Christian Register:*

THE FAMILY PHYSICIAN.

"This is such a day of specialties that comparatively few can ever enter into the dear old relation that existed formerly between physician and family. Heart secrets and sufferings that the minister could not extract from burdened souls were poured into the trustworthy ear of the good doctor who ministered to soul quite as much as to body. His breast was the safe repository of every man, woman and child in the parish who needed his confidence, and to no other human being did he ever betray these confidences. When such a man enters the sick room the burden of anxiety falls from the mother's heart; her child is safe so long as he is there. It seems as though he had power to banish the death angel; or if, indeed, that sad messenger must come, the physician becomes the sympathetic friend who gives strength to bear the sorrow.

"There is no man in the community who has more love and respect than the good physician. As a rule, physicians are more permanent residents than ministers, since short pastorates are now the fashion, so that the pastor must give up to the doctor the place of honor which he once held when he was the curé of two or three successive generations in the same parish. One asks with sadness as the poets pass away, Who is going to sing the songs of the future? When the great men die we ask, Where are they who are to be the great men of the days to come? And so, when we see the family doctor going his rounds, faithful, generous, devoted, and daily growing more wise, threading his way through crowded streets that were pasture-land when he began his practice forty years ago, we ask with a pang at our hearts, Who can ever take the place of the beloved physician? Long may he be spared! And may many of the young men who are now seeking that profession for 'what there is in it' find that the noblest thing in it is the opportunity that it gives for devotion and self-sacrifice, for winning love and honor, and for saving men, heart and soul, as well as body. No profession requires more of a man — fidelity, purity, wisdom, patience, hard work, sleepless nights, weary days; but no profession brings richer rewards or sweeter benedictions."

## Original Article.

### EXAMINATION OF PLEURAL FLUIDS WITH REFERENCE TO THEIR ETIOLOGY AND DIAGNOSTIC VALUE.*

BY PERCY MUSGRAVE, M.D., BOSTON.

THE examination of pleural fluids for many years has furnished us with little valuable data upon which to base a positive or even probable diagnosis of the underlying cause of the effusion. To be sure the specific gravity and the amount of albumin have, in most instances, enabled us to differentiate between the exudates and transudates, and in few cases masses of the so-called cancer cells have been of positive diagnostic value.

In the last three years many investigators in Europe have done a large amount of work with reference to determining the cause of these effusions, and two new and valuable methods of investigation have been published.

In 1900 Widal and Ravaut[1] published the results of their researches based upon the differential enumeration of the white blood corpuscles and endothelial cells found in the sediments of

* Read before The Massachusetts Medical Society, June 7, 1904.

[1] Widal and Ravaut. Compt. Rend. de la Soc. de Biol. de Paris, 1900, p. 648.

serous fluids, and as a result have formulated the following laws, or so-called cytological formulae:

1. A predominance of lymphocytes means a tubercular effusion.

2. A predominance of polynuclear leucocytes means an effusion of an acute infectious origin.

3. A large number of endothelial cells, occurring especially in sheets or plaques, means a mechanical effusion or transudate.

They also divide tuberculous pleurisy into two classes. The primary form, in which there are no discoverable lesions of the lungs, and the secondary form resulting from an underlying tuberculous lung focus.

In the secondary variety the lymphocytic formula, as seen in the primary form, is usually not found, but instead the sediment is almost entirely composed of necrotic cells and detritus. Of the distinguishable cells a large proportion may be polynuclear. This difference is probably due to a mixed infection

Of the acute infectious varieties they note those due to the pneumococcus, streptococcus and staphylococcus. In the pneumococcus variety they described the occurrence of considerable numbers of large cells having phagocytic properties. In the streptococcus variety these cells are comparatively few in number and the percentage of polynuclear leucocytes is greater.

These formulæ have been extensively investigated by numerous observers, especially in France, and, to a lesser extent, in Germany, and have in the main been found correct. Certain modifications, however, must be taken into consideration. The chief of these modifications which has been pointed out especially by Naunyn [2] is, that lymphocytes may also predominate in transudates of long standing or near the end of an acute infectious case where the process is subsiding or where the infection is a very mild one. The specific gravity and the amount of albumin aid us in eliminating the first mentioned of these conditions, and the clinical evidence usually gives a clew to the nature of the process in the second condition. Both of these conditions are rarely met with.

In the first week or ten days of a tuberculous effusion polynuclear elements may predominate, but these rapidly disappear and give place to a purely lymphocytic formula.

The phagocytic cells mentioned above as occurring especially in the cases of pneumococcus origin are of very large diameter as compared with the other elements occurring in the sediment, and I have frequently found that they measure as much as twenty microns. These cells frequently contain partly digested polynuclear and other cellular elements, which can easily be seen included in their protoplasm. Their occurrence in large or increasing numbers is usually a good prognostic sign, and their absence, together with the presence of bacteria, is usually a warning of approaching empyema.

From the observations which I have been able to make, the presence of polynuclears in a proportion of over 90% and the presence of bacteria in most cases precedes an empyema by only a few days.

Little need be said of the formula for the transudates except that the diagnosis is occasionally complicated by the presence of a considerable amount of blood which raises the specific gravity and the amount of albumin. This blood is usually accidental.

In addition to these above three classes of fluids we have the cancerous cases. These are difficult to diagnose, since the majority of pathologists agree, I think, in saying that it is difficult to differentiate the so-called cancer cells from endothelium, unless actual pieces of the cancerous tissue can be isolated. The iodine reaction (showing glycogenic degeneration) was thought at one time to be suggestive of the cancer cells, but this reaction is very commonly seen in the endothelial cells of simple transudates and in other conditions where endothelium is found.

The few cases of cancer that I have been able to study have shown a high specific gravity, 1,018 or over, and an albumin content of over 1.5%. The sediment has shown many more endothelial cells than are found in the tuberculous cases and these cells are often found in plaques. This is very rare in tuberculosis. There is usually a much larger number of lymphocytes proportionally than in the simple transudates.

In addition to the above method of investigating pleural fluids, to which the writers have given the name cyto-diagnosis, Jousset [3] has published a new procedure for the detection of tubercle bacilli in these fluids, to which he has given the name of inoscopy and which is of value in some cases.

The technic of cyto-diagnosis is as follows:

The fluid should be drawn with the usual aseptic precautions into sterilized flasks or tubes. If it is already clotted when received for examination, it should be shaken and stirred with a glass rod until the clot is thoroughly contracted and the clot, or all clots of large size, should be removed. This is necessary because some of the cellular elements are entangled in the fibrinous meshes and by contraction of the clot are set free.

Widal and Ravaut accomplished the process of defibrination by placing sterilized glass pearls in the flask and shaking the fluid thoroughly. This I do not believe is essential for an accurate differential estimate of the cellular elements.

The fluid is then placed in centrifuge tubes and centrifugalized for five minutes at least.

Decant the supernatant fluid gently at first, and when only a small amount remains invert the tube for a few seconds. A few drops will adhere to the side.

[2] Naunyn. Uber Cyto-diagnostik der Pleuraexsudate. Deutsche Med. Wchnschr. Leipz. u. Berlin, 1903, Apr. 30, 1903, xxix, Ver. Biel., p. 140.

[3] Jousset. Soc. Med. des Hop. 9 Jan., 1903. Sem. Med. No. 3, 1903, p. 22.

With a small platinum loop stir the sediment thoroughly, rubbing the sides of the glass to remove adherent portions. When the sediment is thoroughly mixed with the few drops of fluid remaining after decantation, remove a drop of the mixture with the platinum loop and make a cover-slip smear. Allow this to dry spontaneously or by gently heating the preparation. (Heating at the boiling-point will spoil the preparation.)

Many methods of fixing and staining these preparations have been used by the various investigators. Alcohol, and ether, chloroform vapor, and osmic acid have been used as fixative agents. Ehrlich's triple stain, hemotoxylin and eosin, methylene blue and eosin, Loeffler's blue, and a great variety of other stains have been employed.

Some writers have maintained that careful differential staining was not essential, but from my observations I cannot agree with those holding these views, for the reason that careful differential staining of the protoplasm and granules of the polynuclear elements is essential, since the nuclei of these elements are often globular when the cell is degenerated, and they may be mistaken for lymphocytes.

The method of staining which has given the best results in my hands is practiced as follows:

Cover the preparation with a staining fluid composed [4] of

| | |
|---|---|
| Wright's blood-stain, | 3 parts. |
| Pure methyl-alcohol, | 1 part. |

Allow this mixture to remain on the preparation twenty to forty-five seconds, then dilute it with eight or ten drops of water, and allow it to stand one or two minutes.

Wash very gently, preferably by flooding the slide with a dropper. Do this four or five times, allowing the water to remain on the slide a few seconds each time. Vigorous or forcible washing will destroy the film and spoil the preparation.

Dry the preparation by holding it between the thumb and forefinger and waving it through the Bunsen or alcohol flame. Do not attempt to blot the preparation or heat it above the temperature which the fingers will bear.

Mount in xylol-balsam and examine with an oil-immersion lens.

Inoscopy is practiced as follows:

1. The fluid should be drawn with aseptic precautions into sterilized flasks (Ehrlenmeyer flasks preferably) and at least 100 cc. should be taken, although results may sometimes be obtained with much smaller amounts. Allow the fluid thus taken to clot.

2. Shake the fluid gently to contract the clot as much as possible, and then wash it on a piece of sterile linen or fine gauze wrapped over the end of a funnel, until all the serum is washed away.

3. Remove the clot or clots with a sterile spatula, and place it in a small flask with sufficient of the following fluid to digest it:

| | |
|---|---|
| Pepsin, | 2 gm. |
| Pure glycerin, } | each, 10 cc. |
| Strong HCl, } | |
| Sodium fluoride, | 3 gm. |
| Distilled water, | 1000 cc. |

The amount of this fluid necessary will vary, of course, with the size of the clot to be digested, but 20 or 30 cc. is sufficient in most cases. A freshly prepared pepsin — HCl solution — apparently serves as well as the above fluid, but will not keep on standing as the above fluid does.

4. Place the above preparation in the incubator or oven until the clot is digested. A temperature of 37 C. for two or three hours will suffice but the time is shortened if kept at a temperature of 50 C.

5. When the clot has disappeared, pour the mixture into centrifuge tubes and centrifugalize for five or ten minutes. Decant the supernatant fluid as described under cyto-diagnosis.

6. Make a cover-slip preparation and stain it for tubercle bacilli. Care, however, should be taken not to decolorize too long — one half to three quarters of a minute with Gabbet's solution is sufficient. Dry and mount.

The majority of the bacilli found by this method are shorter and broader, as a rule, than the tubercle bacilli usually seen in sputum, and some are paler red, but all forms occur. These bacilli may occur singly or in groups. The largest part of the sediment consists of undigested nuclei and a small amount of detritus.

Chiefly through the courtesy of the Visiting and Out-Patient Staff of the Massachusetts General Hospital I have been enabled to make systematic examinations upon seventy-two cases of serous fluids withdrawn from the chest, and the remarks and conclusions which follow are derived from the study of these cases with reference to their clinical history, chemical and microscopical examination of the fluids, and from animal inoculations and cultures in a large number of the cases.

For the sake of convenience, I shall divide these cases into four classes according to the diagnoses justified by the examination of the fluids:

Class 1. The Tuberculous cases.
Class 2. Acute Infectious cases.
Class 3. Mechanical Effusions or Transudates.
Class 4. Cancerous cases.

### TUBERCULOUS CASES.

The largest number of cases examined must be classified under the first heading. Of these there are fifty-one. To follow out the scheme of Widal and Ravaut,[5] this class must be further sub-divided into the primary and secondary tuberculous cases, namely, those cases in which the sputum is negative, and there are no demonstrable lung lesions, will be classified as primary; those cases in which the examination of the spu-

[4] Wright, J. H. The Journal of Medical Research, 1902, Vol. II., pp. 138–144.

[5] Widal and Ravaut. *Loc. cit.*

tum shows tubercle bacilli will be classified as the secondary cases. This is by no means a strictly anatomical classification, but an arbitrary one used for the sake of convenience. Before dividing them into these two sub-classifications, I shall speak of the tuberculous cases as a whole. Out of fifty-one cases, twenty-eight were positively proved to be of tuberculous origin, 54.5%. They were proved by one or more of the following methods:

Animal inoculation.
Presence of tubercle bacilli in the sputum.
Operation.
Inoscopy.

Seventeen cases, 33%, in this series gave positive results when inoculated into guinea pigs, producing unmistakable anatomical lesions in these animals from one or more of which in every case bacilli were demonstrated by cover-slip preparations. In thirty-three cases the animal inoculated showed no evidence of tuberculosis.

Inoscopy was positive in ten, 45.4%, out of twenty-two cases in which examinations by this means was possible. This method was not applied to cases examined before Sept. 4, 1903, but since then it has been brought into use on all cases in which there was sufficient coagulum. In a considerable number of the cases this was so small as to exclude the possibility of doing inoscopy, and I have not yet been able to find any practical and simple method of causing these fluids to clot.

The bacilli found were, in the majority of cases, short forms resembling the tubercle bacillus grown on culture media, and in some instances resembling the familiar form of tubercle bacillus seen in sputum.

In two cases bacilli were found both by inoscopy and in the lesions in guinea pigs.

In five cases the tubercle bacillus was found in sputum; in two of these animals inoculation was positive, and in two negative, and in one case no other tests were applied.

One case was proved by the tuberculin test and subsequent operation for tubercular peritonitis.

As I have just shown, forty-six of these cases come under the heading of primary tuberculous pleurisy and five under the heading of the secondary form. Twenty-three, 50% of these cases, as I have shown, were certainly tuberculous. Of these, the differential counts of the white cells in the sediment showed a marked predominence of lymphocytes in twenty-two of the twenty-three cases. In one case necrotic changes in the sediment rendered the differential estimation of the cells impossible. In other words, the lymphocytic formula as described by Widal was found in twenty-two out of the twenty-three cases; in one case the diagnosis which was indicated by the sediment would have been secondary tuberculous pleurisy but no bacilli were found in the sputum. Out of the twenty-three unproved cases of this series twenty-two showed an unmistakable predominence of lymphocytes.

The question now naturally arises, What evidence have we that 50% of this series is tuberculous, seeing that we have been unable to prove it? The clinical history in both the proved and the unproved cases is identical, namely, that the majority show an insidious onset with pain in the chest, slight cough, with or without sputum, and gradually increasing dyspnea and anorexia. An appreciable elevation of the temperature may or may not be present in any of these cases. The appearance of the patient does not give us any differentiating clew. In other words, the clinical picture is the same in both series.

Of the twenty-three unproved cases two can be excluded as in all probability not tubercular by means of the clinical history. One was an unmistakable pneumonia followed by a pleuritic effusion; the other was a case of myocarditis, and from the specific gravity was, without much doubt, a case of transudate; in other words, the examination of the sediment led us to faulty conclusions. (Cases 51 and 50.) In one case there was a history of trauma and, although the specific gravity and albumin were both high and the sediment showed a marked predominence of lymphocytes, the question arises if this does not fall into the class of mild acute infections which I have previously mentioned as a source of error. (Case 48.)

Another case, coming on eight days after labor with sudden onset, suggests the possibility that this case also may be one of the same nature. (Case 41.)

It is also fair to exclude a fifth case where pleural effusion arose in the course of a lymphatic leukemia, since the number of lymphocytes in the blood in this case would strongly suggest that their presence in the pleural fluid was of blood origin. The white count was 711,900, the differential count showing five hundred lymphocytes in a count of five hundred cells. (Case 39.)

Of the remaining eighteen cases the history in four suggests a tuberculous origin. The reasons for the failure to obtain proofs in these cases, although theoretical, are certainly plausible by analogy.

Out of fifty animal inoculations made with the fluid from cases showing the so-called tuberculous formulæ, even including the cases which we have shown were probably not tuberculous, only 33% appeared positive, but we have seen that by inoscopy we have been able to find bacilli in ten cases, only two of which gave positive results in the pig; in other words, where the bacilli were found by inoscopy the animal gave negative results. This suggests that in many of these cases the bacilli have lost their virulence for animals. This is also rendered more probable from the fact that I have several times seen organism within the cells of cover-slip preparations made from the sediment which would not grow on culture media.

As further illustrating the difficulty of proving these cases in one of the series of proved cases (Case No. 2) inoculations of three animals from

three successive tappings in November failed to give any positive results, but, although there was no change in the character of the fluid or in the condition of the patient, except for reaccumulation of fluid, an animal inoculated in May gave positive results, and another case (Case No. 14) in which three successive inoculations occurring within three weeks of each other were made from the fluid drawn from the same patient, the first animal inoculated was positive and the other two negative. Another case (Case No. 27), reacting to tuberculin and showing at operation tubercular peritonitis, gave negative results when inoculated into a guinea pig.

In Barjone and Cade's [6] series of cases it was not an unusual experience to have only one out of three or four animals inoculated respond.

This class of cases, namely, the so-called primary tuberculous cases, is the one which has given rise to so much discussion for the last twenty years. It was formerly attributed to taking cold, so-called "Pleurisy *a Frigore*," but the investigations of the French school, also those of Naunyn,[7] Litton and Wolff [8] have shown us that at least the great majority of cases are probably tuberculous. To Landouzy,[9] Le Damany,[10] and Widal and Ravaut we are indebted more than to any others for the interest aroused in the investigation of this problem, and for pointing out valuable methods of investigation.

With regard to the cases of secondary tuberculosis, little need be said, as, with one exception, they all show the formula described by Widal.

One case, however, did not show the necrotic, broken-down sediment, but an evident lymphocytosis; this, however, is not particularly significant since it would have led to the diagnosis of tuberculosis in any case. It is in this class of cases that the examination of the fluid is of the least diagnostic value since the diagnosis can be made in any event from the sputum.

It has been possible, however, in two of this series of cases to predict the finding of tubercle bacilli in the sputum, which subsequently occurred.

In one of these cases, reported in a former article, although the examination of fluid was that of a hydro-pneumothorax, or secondary tuberculosis, no proof of its being tuberculous could be found at that time, but subsequently, the patient re-entering the hospital, bacilli were found in the sputum.

ACUTE INFECTIOUS CASES.

There are twelve of these cases, six resulting in the course of an acute croupous pneumonia, one from infarction of the lung, with subsequent infection with the pneumococcus, three started from unknown sources, one from trauma and one from abscess of the liver infecting the pleura without rupturing into it.

In six there was no growth on culture media, two showed pneumococcus, two streptococcus, one staphylococcus, and in one no culture was taken.

In seven of the cases organisms were found on the cover-slip, usually few in number.

Five of these cases are of especial interest. In one (Case No. 63) where the diagnosis of an acute infection was established against a clinical probability of its being tuberculous, the examination was of great aid in determining whether or not an operation should be done for an abscess of the liver.

In one case (Case No. 53) it was possible to predict an empyema, which subsequently followed.

In two cases (Cases No. 60 and No. 61), although the fluids were serous, streptococci occurring on the cover-slip determined the advisability of immediate operations.

In one case (Case No. 52) in which the clinical diagnosis was endocarditis, and from that diagnosis it seemed most probable that the fluid was a transudate, examination showed an acute infectious process, and subsequently at the autopsy it was shown that the effusion was due to infarction of the lung which had been invaded by pneumococci with resulting consolidation. The sediments in these cases showed a predominence of polynuclear leucocytes.

TRANSUDATES.

Of five cases of simple transudate four appeared in the course of cardiac disease and one in the course of nephritis.

One of these cases (Case No. 67) illustrates the probable accidental occurrence of blood which at the second tapping was not present, but instead the fluid had the characteristics of the typical transudate.

*(To be continued.)*

[6] Soc. Med. des Hôp. de Lyon, 7 Mars, 1902.
[7] Naunyn. *Loc. cit.*
[8] Litton & Wolff. Deut. Aerzte Zeit. 1901. No. 18.
[9] Landouzy. De la pleurisie dite a frigore. Manifestation de tuberculose. Rev. de Med. 1886, iv.
[10] Le Damany. Recherches sur les pleurisies fibrineuses. These de Paris, 1897.

## Clinical Department.

### SUB-GLOTTIC TUBERCULAR LESIONS OF THE LARYNX.*

BY THOMAS AMORY DE BLOIS, M.D., BOSTON.

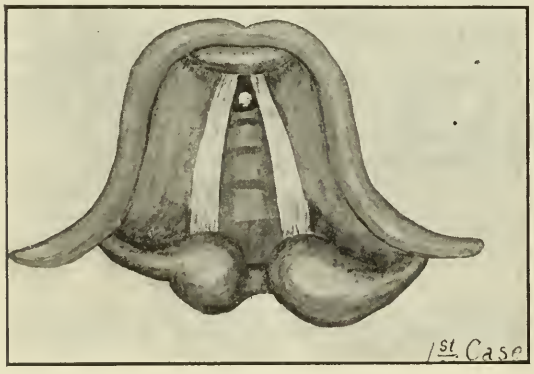
It has always been a question for argument as to whether tuberculosis is ever primary in the larynx, and any instances which throw even a feeble light on this subject seem to be worthy of being reported.

There have been, of course, numerous cases of apparent primary tubercular lesions of the parenchyma of the larynx, where the absence of physical signs in the lungs and the constitutional disturbance would seem to indicate that the larynx was the point of first infection, but these two cases which I report were already well advanced in lung disease before the subglottic

* Read at the annual meeting of the American Laryngological Association, June, 1904.

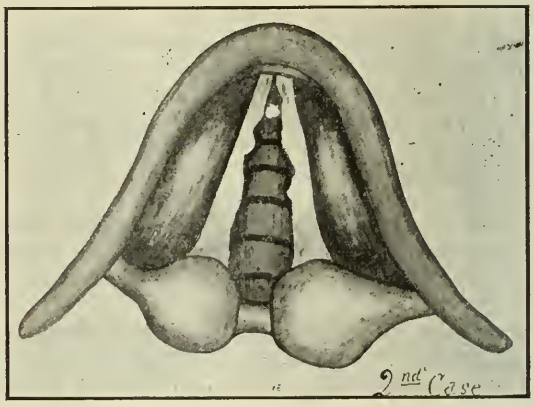
space became involved. Besides this, tubercle bacilli were found in the sputa on the first examination. I have never known tubercle bacilli to be found where there were no physical signs. In sections of a tubercular larynx, even where there is deep ulceration, demonstration of the presence of bacilli is far from easy. My cases were both from the Boston City Hospital.

My first case was a young Irish lad, Hugh W., and his history and appearance are best stated in the words of the Medical Department, to which he was referred. His age was twenty-three, and he was a butler by occupation. As to his family history, his father and mother are alive and in good health; four brothers and three sisters are in the same condition. One brother died of diphtheria, and two others of some unknown cause in infancy. The patient had measles when a child, pneumonia at eleven years, also an abscess in the throat. He never had venereal nor rheumatic disease and does not use alcohol nor tobacco. He has had a cough since July, 1903. The sputum is yellow; there is persistent cough. He had sore throat for three weeks. The dyspnea was so severe as to cause him to give up work. His appetite was fair. He has lost nineteen pounds of weight. He weighs one hundred and sixteen and a half pounds. His physical examination shows him to be poorly developed and poorly nourished. Heart is systolic at apex. Apex beat visible and palpable in fourth interspace inside nipple line. Right border in line with right border of sternum. The lungs show dullness in left apex, to second rib, to right apex. There were rales in both apices, and front and back, and in base of left lung (fine musical), occasional squeaky rales heard above spine of scapula on the right. Tubercle bacilli were present (Feb. 26). On laryngeal examination the larynx was observed to be somewhat hyperemic, the voice was not hoarse, the arytenoid cartilages were not much enlarged, the vocal cords were somewhat reddened, but the edges were sharp and smooth. Between the cords and in the region of the anterior commissure could be seen a round, red swelling situated about an inch subglottic. This first examination was before the physical examination was made, and was about the middle of February. I believed this to be a subglottic abscess, and so entered it on the records.




Two days after this the supposed abscess had either ruptured or broken down and presented the appearance of a slightly raised circular swelling with a white ulcerated centre. The rest of the larynx did not show the evidences of tuberculosis in a marked degree. Suspecting the tubercular origin of the lesion the patient was sent to the medical department, and the before-mentioned report was received. A specimen of sputa was furnished the pathological department and a report of the presence of "T. B." was returned. Under constant local applications of lactic acid, together with the use, internally, of "Creosotal" the subglottic ulcer slowly healed, the patient gained weight, and as the laryngeal condition did not interfere with deglutition, there seemed no reason why this patient should not secure an arrest of the tuberculous process in the larynx. From the advancing disease in the lungs, however, this patient went down rapidly, although the throat complications did not return.

My second case came to the City Hospital clinic within a few days after my first, and so much did the conditions of the second larynx resemble the first, that I might have mistaken the two patients (except that the second was a Swede and the first an Irishman). Karl H. was aged twenty-four years and was born in Sweden; was an upholsterer by trade. A little over three months ago was hoarse and came to see what the matter was. The vocal cords and arytenoids were somewhat swollen and slightly reddened. Below the anterior commissure, exactly in the same position as the first case, was a similar open ulcer. The patient was sent to the medical department for physical examination, and the following report returned:




Karl H., aged twenty-four, Swede, upholsterer. Father and mother are living and well. Two sisters and four brothers are living and well. There is no lung trouble in the family. He has always been well; the first time he ever went to a doctor was to the Throat Department for his hoarseness. About three years ago he had gonorrhea which was cured in three weeks. He uses no tobacco nor alcohol; once in a while uses a little snuff. Bowels are regular, he sleeps well, his appetite is good. Two months ago he began to feel lazy, and not so strong. He commenced to be slightly hoarse nine weeks ago, and this brought him to the hospital a short time ago. He expectorates about a tablespoonful morning and night; the color is green and white, and thick. He coughs mornings and evenings, and sometimes during the day. He sweats very little, if any, and sleeps well at night. No pain in throat at any time; no pain anywhere. He does not feel so strong now. He thinks he has lost seven and a half pounds in past one and a half years. Now weighs one hundred and thirty-five pounds. Does not know what his best weight was. His color is good, tongue coated, slightly cyanotic. Heart negative, save for soft systolic at pulmonary area. *Lungs:* Dullness with moist rales at right apex. Abdomen and legs

negative. This case retrograded very rapidly; by the time I made my sketch, the ulceration had crept upwards and involved the edges of the cords. Aphonia came on, deglutition became difficult, and death came a little quicker than in the first case where the larynx did not become ulcerated. It is rarely that ulceration below the vocal cords is seen primarily.

## TECHNIQUE OF GASTRO-ENTEROSTOMY.[1]

### SPECIAL PREPARATION OF PATIENT FOR OPERATIONS ON THE STOMACH.

BY C. A. PORTER, M.D., BOSTON.

In emergencies such as perforation, or acute gastric hemorrhage, no previous preparation of the patient can be made. It must be borne in mind, however, that, if possible, the rectum should be thoroughly emptied, previous to or during anesthesia, in order that subsequent enemata may be given.

In operations of election, attempts may be made, first, to improve the nutrition and anemia; second, to empty the stomach, and to render it and the upper intestine as free from bacteria as possible; third, to minimize shock.

(1) Improvement of nutrition and anemia. On carefully reviewing the various and varying opinions of authorities on the value of rectal feeding, I have concluded that it is overestimated. I am not speaking of those cases in which, from the necessity of resting an ulcerated stomach, the rectum is used because the stomach cannot be, but of protracted attempts to improve the nutrition, previous to operation, by nutritive enemata. It is doubtful if a patient at rest can absorb from the rectum more than two thirds to three fourths of the amount of nourishment to maintain tissue equilibrium. Fluids are, of course, readily absorbed. It is more than likely that many reported cases of weight sustained for long periods give an erroneous idea that the tissues in contradistinction to the fluid portion of the body have not suffered. In cases which have received no proper medical treatment, and in those who have pyloric obstruction and starvation, it is a nice question of judgment how much preliminary treatment should be given. In the cachectic, especially in cases of stasis, attempts should be made for a week or ten days, by daily or twice daily stomach lavage, to thoroughly cleanse that organ. Easily digested foods, giving small residue, may be given at short intervals, such as egg white, beef juice, thin soups, peptonoids, alcohol, sugar solution, etc. The character of the fluid which is used in washing is of secondary importance, as the effect is almost entirely mechanical. Warm saline, bicarbonate of soda, or boracic acid solution, are to be chiefly recommended. The value of antiseptics, such as resorcin, carbolic acid, beta-naphthol, etc., is doubtful and certainly much inferior to mechanical cleansing. In general, not more than a week should be given up to such preliminary treatment, and often a period of three or four days will accomplish all that can be done. Rectal feeding in these cases may be given with two objects, — to supplement absorption by the stomach, or to accustom the rectum to enemata, which will be used subsequent to operation. The amount, as a rule, should not exceed eight to ten ounces, three times in twenty-four hours. In addition to stomach and rectal feeding, the subcutaneous use of sterilized olive oil and 10% glucose solution has been recommended. It would seem best to reserve the use of oil and sugar for exceptional cases of very marked cachexia or malnutrition. It must be remembered that the sugar is slowly, and the oil very slowly, absorbed, so that effects from such feeding must not be expected for several days. In cases of marked gastric stasis, which have not been treated, improvement may be fairly rapid, both in anemia and nutrition. The weight gained, however, may be rapidly lost, and operation should be done at the first step backwards. In general, as I have said, too much reliance should not be placed on attempts to build up patients by nutritives.

In cases of gastric stasis, the amount of urine is apt to be small. For two or three days previous to operation, the patient should always have sufficient liquids, either by subcutaneous infusion, or large saline enemata.

(2) As a result of Harvey Cushing's work on the "Bacteriology of the Upper Intestinal Tract," published in Welch's *Festschrift*, attempts have been made to render the part to be operated upon as free as possible from bacteria. In a considerable number of cases, the contents of the stomach and upper intestine have been proved to be sterile, as the result of the following treatment:

Thorough gastric lavage, once or twice daily, until the fluid returns clean, careful attention to carious teeth and suppurating gums, with the frequent use of antiseptic mouth washes. Free catharsis by salines, in those cases in which the condition of the patient does not contra-indicate it, and the administration of nothing but sterilized food and boiled water by mouth. The value of gastric lavage, and cleanliness of the mouth, will be granted by all, and few will object to saline cathartics. But the value of sterilizing food is open to some question, as it must pass through a cavity necessarily unclean. Egg white, soups, tea, alcohol, are probably relatively free from germs, and the value of careful sterilization is somewhat doubtful. Whatever the judgment of the surgeon may dictate about the amount of such preliminary treatment, it is always of advantage to give nothing but easily digested, soluble food, for thirty-six to twenty-four hours previous to operation. The stomach should at least be thoroughly emptied and washed out on the evening before operation after which no food should be given. The operation should be done in the morning.

Depending upon the condition of the patient, and the difficulty of using the stomach tube, a washing previous to operation may be used in those cases in which there is evidence of distention of the stomach. A previous cocainization of the pharynx, with 4% cocaine, part of which may be swallowed, allows easier passage of the tube. Five minutes should be given, however, for the cocaine to act to best advantage. Two hours before operation a nutritive enema, with salt solution, up to a pint, should be given.

It is difficult to estimate the value and possible dangers of washing out the stomach after anesthesia has been induced. In some cases this procedure acts well, in others it has seemed to me that the gastric contents passed up the esophagus, and that the danger of inhalation was increased by the anesthesia and the obvious derangement of deglutition from the presence of the tube. If used, the tube should have a large caliber.

(3) Avoidance of shock. There is probably no poorer subject for operation than a case of advanced cancer of the stomach, with co-existing obstruction, starvation and anemia. Careful attention to prophylaxis against shock will here be well rewarded. The room should be warm, 72 to 75°, the patient should be completely enveloped in a flannel suit and well-covered with blankets, about which hot water bottles should be placed. Anesthesia should always be as light as is

[1] The following papers on the general subject of gastro-enterostomy were read at the Surgical Section, Suffolk District Medical Society, Feb. 3, 1904.

compatible with the avoidance of vomiting and the relaxation of muscles. The abdomen should be prepared before the anesthesia is started, and covered with sterile towels. The operation should be begun immediately after the patient is anesthetized, and continued uninterruptedly until completion. No delay which can be avoided is admissible. Rapid though careful operation has much to do with ultimate success. Morphia and atropine given one-half hour before operation often cause a quieter anesthesia.

## REMARKS ON EXPLORATORY LAPAROTOMY IN CACHECTIC SUBJECTS.

BY DANIEL FISKE JONES, M.D., BOSTON,
*Surgeon to Out-Patients, Massachusetts General Hospital.*

THERE is little to say about "the technique of exploratory operations in cachectic subjects," except to emphasize a few well-known facts. Some here would undoubtedly say that there was nothing to say, as such patients should not be operated upon, but that some of these patients deserve an exploratory laparotomy many will admit. Those who oppose exploratory measures usually overestimate the suffering, and especially the mental suffering. Many of these patients are perfectly indifferent to what is done to them while some ask for an operation. That they do suffer for twelve hours cannot be denied, but after that the pain is often less than before operation. In a recent case the patient said he would be all right if he could only be relieved of his pain. After an exploratory laparotomy his pain almost entirely disappeared and when seen a month after leaving the hospital, his only complaint was that he was very weak. In another recent case of cancer of the cardiac end of the stomach the pain was much lessened after an exploratory laparotomy, and the patient gained five pounds in six weeks. This was undoubtedly due in great measure to the careful supervision of diet after operation by Dr. Joslin.

Looking at these cases from a purely humanitarian point of view, one might say that it would be a blessing if the patient did not recover from the ether, but should we be willing to take the part of the executioner? We must start with the idea that it is just as important that these patients should live as any other class of patients.

Because of their weakened condition and lack of resistance, it is important to save time and to cause the least possible amount of shock. To begin with the anesthetic, the most satisfactory one in all cases is ether, carefully given, and in quantities sufficient only to keep the patient quiet. Given in this way and for a short time it never becomes a depressant; the surgeon, therefore, must not be deceived by the excellent condition of the patient into prolonging the operation beyond the time absolutely necessary for it.

Nitrous oxide would not keep the patient sufficiently relaxed for a long enough period in most cases. Local anesthesia leaves the patient in full possession of his senses which is inadvisable in these cases where hopeless malignant disease is usually found, because of the mental impression such discovery would make upon the patient. Although it is justifiable to use cocaine in cases where there is some hope of saving the patient's life and the condition of the patient is such that it does not warrant giving ether, it seems to me to be unjustifiable to put a patient through so much suffering in an exploratory laparotomy. For although the incision may be made down to the parietal peritoneum with little pain, it is impossible to open the abdomen and explore it with the finger without excruciating pain. If the patient is not sufficiently strong to stand ether narcosis the operation should not be done.

The incision should be in the median line, unless there are very definite reasons for going to one side or the other, because there is less bleeding, an important factor in saving time. Abdominal surgery has gone beyond the use of the director in such incisions, and the time required now to open the abdomen should be seconds rather than minutes. An incision of from two to two and a half inches is usually sufficient; the size is important because of the length of time required to close the larger incisions.

Before exploring the abdomen, the surgeon must have it definitely in mind as to what is operable and what is not.

Mayo-Robson gives the following conditions as inoperable:

(*a*) Cases in which extensive and extremely dense adhesions to the liver, pancreas, gall bladder, etc., are present.

(*c*) Cases in which a widespread enlargement of lymphatic glands is found.

(*c*) Cases in which secondary deposits in the liver or elsewhere are seen.

Although Mayo-Robson does not consider mural carcinoma of considerable extent inoperable, it must be to the great majority of surgeons in cachectic subjects. Von Mikulicz hopes that cancer of the cardiac orifice may come within the safe reach of capable surgeons, a hope which has not yet been realized.

The surgeon should know his own ability and limitations, and should estimate the power of the patient to withstand an operation before he opens the abdomen, that there may be no delay then. To shorten the operation and avoid shock as much as possible the surgeon should be the only one to examine the abdomen and the sole judge as to the advisability of proceeding.

If one expects to make a positive diagnosis in every case after opening the abdomen he will be disappointed, for it is impossible in many cases. I have recently seen an autopsy where a hard mass was found at the pylorus. The pathologist was unable to make a diagnosis even when the mass was removed and put before him. If this is true how can a surgeon expect always to make a correct diagnosis on the living.

Enlarged lymphatic glands are not safe specimens to remove for examination, as they may be simply inflamed and not infiltrated with new growth.

Enthusiasm for pathological specimens should be restrained in all cases where the diagnosis can be made with any degree of certainty, or where the condition is evidently inoperable, for removal of sections complicates an exploratory laparotomy tremendously in weak subjects. It prolongs the operation very materially and in some cases the hemorrhage following is a dangerous complication. The use of gauze for the purpose of walling off should be avoided if possible, for its use increases shock and makes convalescence more painful.

The method of suturing the wound is important in these cases for the patient should be gotten up early. The most rapid method is the simple through and through suture with silkworm gut. A safer method is to place the silkworm gut sutures and then put in a row of interrupted silk sutures including the sheath of the rectus, the rectus, and peritoneum, after which the silkworm gut sutures are tied. This makes a strong wound with all layers held firmly together, a very important point in cases where the patient gets up early.

If one would improve his statistics, five or ten minutes must not be wasted in preparation after the

patient is fully etherized; he must operate rapidly, make a quick decision as to whether the case is operable or not, and must be the only one to examine and decide upon the condition. I believe that one can open the abdomen, make a diagnosis and close the abdomen in ten minutes or less, as well as in half an hour.

### THEORIES AS TO THE CAUSE OF THE VICIOUS CIRCLE.

BY DR. F. G. BALCH, M.D., BOSTON.

THERE are numerous different theories as to the persistent vomiting which at times follows gastro-enterostomy, but no theory which has yet been advanced explains all cases. This much seems certain. The so-called vicious circle is extremely rare except in cases of malignant disease. This at least suggests the possibility that it is not so much the particular operation that is chosen to relieve the condition but the condition itself which is responsible for this dangerous phenomenon. Most of the operations which have been devised to avoid circular vomiting are based on the idea that there is a circle established by which the contents of the duodenum are returned again to the stomach and that the presence of the bile and pancreatic juice in the stomach gives rise to the vomiting. Others again believe that the contents of the jejunum are forced back into the stomach by the muscular effort in vomiting after ether, and that this causes the disturbance. If it were bile alone or the combination of bile and pancreatic juice it is hard to see why the trouble should occur only in the malignant cases. Moreover, Moynihan has cut the jejunum and sutured the proximal end, the distal end being inserted into the stomach. No harm came of it, though all the secretions which were poured into the duodenum had to go back into the stomach. Again, in animal experiments, the bile duct has been ligated and the gall bladder anastomosed with the stomach. The animals thrived. Again, bile has been regularly introduced through a gastrostomy without ill effect. Kocher, who at the time of writing his book had had one hundred successful cases where the operation was done in non-malignant cases but who had lost nearly one third of his malignant cases, advises the Y method of operation where there is cancer. He says that in these cases the stomach contents ferment very rapidly and that the irritating products cause the vomiting. This theory of irritating products of decomposition seems the most tenable. Outside of what we might call the chemical theories are the mechanical causes. The advocates of the posterior operation say that the distended colon gives pressure on the loop of jejunum and that the front opening does not drain the stomach when the patient is recumbent. Those who are enthusiastic for the anterior route say that there are many adhesions found about the loop of jejunum where the mesocolon is split to get at the posterior wall of the stomach.

Adherents of both the anterior and posterior route can show most excellent statistics, and it seems probable that either operation properly done will avoid the "vicious circle" except in malignant cases, and there it is probable that neither will be invariably successful.

### ANTERIOR VS. POSTERIOR GASTRO-ENTEROSTOMY.

BY HUGH CABOT, M.D., BOSTON.

AT the outset of any discussion of this subject I wish to suggest certain difficulties of arriving at a positive conclusion.

In the first place, much confusion is likely to occur from a discussion of results in which it does not appear whether the term is intended to mean immediate results or permanent results. It may well occur that any given operation may give good immediate results and poor ultimate results as compared with another somewhat similar operation, and thus much confusion is introduced into the discussion.

In the second place, the results of any individual operator can with difficulty be compared with those of any other as there is a large variation in the pathological condition of the various cases, and in the age, nationality and social standing of the patients.

In the third place, statistics even of a large number of cases are not only unreliable but frequently positively misleading, on account of the sources of error above noted. In speaking of the statistics of mortality after operation for gastric cancer Mr. Mayo-Robson says, "To show how absurd this fettering of our practice to statistics may be, we may quote the figures of Carle and Fantino, who have an operative mortality of about 40% in gastro-enterostomy and of 20% in pylorectomy."

I wish, further, to disclaim any desire to be dogmatic, and if the appended statements appear so the shortness of the time at my disposal should bear the blame.

#### ANTERIOR OPERATION.

*Advantages.*

1. Simplicity and rapidity of operation. There are a considerable number of cases in which a short, quick operation is highly desirable, and may be necessary to the exclusion of greater niceties of technique. In this class of cases, the anterior operation has distinct and obvious advantages which may make it the operation of election. These are largely cases of cancer in cachectic subjects in which gastro-enterostomy is done for drainage pure and simple, and no permanent or curative effect is expected. It may at times be the operation of election in patients much reduced by hemorrhage from gastric ulcer, for somewhat similar reasons.

2. Slightly greater safety of the operation. It appears to be held by the majority of surgeons that the anterior operation is slightly safer than posterior. This is in great measure due to the fact that the operation can be done, so to speak, upon the surface, and greater accuracy of suture can be obtained by those not familiar with other methods. The warm advocates of the posterior operation will probably not be willing to admit this advantage, and it may fairly be said that experience with the posterior operation will tend to minimize or obliterate any advantage which the anterior operation may have in this respect.

*Disadvantages.*

1. It is anatomically less perfect. By this I mean that with the patient in the recumbent position, an anterior opening will drain less rapidly and completely than a posterior opening, provided always that the openings are made at the same level as regards the lower border of the stomach. It may also be noted that it is necessary to bring a coil of small intestine into a position which it does not ordinarily occupy, and we are not, therefore, in a position to foretell in how far it will adjust itself to the new conditions. It would seem theoretically to be a less perfect procedure.

2. So-called "Vicious Circle" seems to be more common after the anterior operation. As no satisfactory explanation has been given of the occurrence of this phenomenon, it is impossible to say to what it is due. It seems probable, however, that in many cases it is due to an anatomically faulty arrangement by which the stomach contents go into the proximal and not into the distal segment of the intestine. If experience bears out the view that it is a more common compli-

cation after anterior gastro-enterostomy, it may perhaps be due to the greater length of the proximal segment and the greater possibility of angulation at the point of suture.

POSTERIOR GASTRO-ENTEROSTOMY.

*Advantages.*

1. More perfect drainage of the stomach. This advantage has already been touched upon, and is due to the fact that a posterior opening will drain better with a patient in the recumbent position, and probably drain fully as well with the patient in the erect position.

2. It is anatomically more perfect. This advantage, if such it be, lies in the fact that the anastomosis is made between portions of the digestive tract which normally lie close together, and that therefore little disturbance is necessary in order to make the attachment. The first portion of the jejunum normally lies behind the stomach, separated from it only by the mesentery of the transverse colon. It can, therefore, be attached to the stomach by simply making an opening through this mesentery.

*Disadvantages.*

1. More difficult, less rapid. While it is not to be denied that speed is often of great importance in operations upon the stomach, it has been shown that the amount of time required to make a posterior anastomosis is not, in the hands of those familiar with the technique, sufficiently long to be a large factor in the mortality. It is probably safe to say that ten minutes' additional time will cover the amount necessary, and there must be few cases in which this will seriously affect the ultimate result. It is, nevertheless, a distinctly more complicated operation, and for those unfamiliar with the technique, certainly a more difficult one.

2. Greater danger if leakage occurs. The operation of anterior gastro-enterostomy is done, so to speak, upon the surface of the body, and when the parts are returned to the abdomen, they lie just beneath the abdominal wall and in immediate proximity to the omentum. These two facts conspire to make the results of leakage less serious after the anterior operation. With the posterior operation on the other hand, if leakage occurs, the contents will be distributed freely throughout the peritoneal cavity, following the root of the mesentery. Little or nothing is to be expected from the omentum, and, unless the danger of leakage is forestalled by drainage, serious results are almost certain to occur. Too great stress must not, however, be laid upon this condition for it will be found that the vast majority of operators, whether by the anterior or posterior method, close the abdomen completely, and thus make no effort to provide against leakage. This tends to show that they do not regard the danger of leakage as serious, and are prepared to accept it, when it occurs, as one of the rare complications. It has been my own view that with a little experience it should be possible in the vast majority of cases to make the suture so secure that the danger from leakage will be but a small factor in the mortality after this operation.

In summing up the present position of these operations we may say:

*First:* That the anterior is the easier operation and likely to show a slightly lower operative mortality.

*Second:* That the posterior operation is a theoretically more perfect, practically more difficult operation, likely to give better permanent results at a slightly greater risk.

*Third:* That in any individual case the surgeon must be guided:

1. By the nature of the case, as, for instance, extensive adhesions or cancer of the posterior stomach wall, making a posterior operation very difficult.

2. By his own experience and his knowledge of his own surgical capacity.

## GASTROENTEROSTOMY — AFTER-TREATMENT.

BY E. A. PEASE, M.D., BOSTON.

THE ideas on after-treatment of gastroenterostomy have changed much since 1892, when, for the first time, I took charge of a case at the Massachusetts General Hospital in the service of the late Dr. John Homans, to whom most of the unusual surgery of the abdomen came at that time. Dr. Homans, and other surgeons with much experience in abdominal cases, felt that the nourishment of such cases for the first ten days should be chiefly by the rectum, and so, in this case, I gave nothing by the mouth for the first week, except teaspoonfuls of hot water, and milk with lime water. At the present time we begin much earlier to feed by mouth, and use such liquids as milk and lime water, beef juice, Valentine's meat juice, veal tea, black coffee, brandy and water, and occasionally very dry champagne may be given in teaspoonfuls, every half hour at first, and soon increased up to half ounces every hour. It is well to begin immediately after the ceasing of the nausea or vomiting the patient may have had from ether; and then gradually increase things to eat as rapidly as you would after an ordinary case of laparotomy. In fact, even more quickly, in order to support the strength of the patient, because when this operation is done it is usually for malignant disease and here nourishing food is important. For instance, my last case had had nothing except milk and lime water for five weeks, and had lost about forty pounds in three months. I began to feed him beef tea, and milk and lime water the evening of the operation and broths the next day, soft solids after that, and after the fifth day minced meats, as chicken. There must be care that the food is thoroughly chewed and all meats minced before being taken into the mouth, for if a Murphy button is used a large piece of meat might clog the opening. This man left the hospital in three weeks, eating three good meals a day, and had gained markedly in flesh and strength. The pyloric opening having been practically closed before operation, there was no chance for the food to get through. He vomited only once after operation, and two weeks after leaving hospital was doing his regular business down town. Of course this case gained exceptionally rapidly, and I felt it was due to the nourishment. Before operation he vomited every day or two regularly, and could only retain milk and lime water.

Although early feeding is so important in keeping up the vitality of the patient, it is also important to take great care that no unusual strain comes at the seat of the operation, as would be given by vomitus or flatus. To avoid the after vomiting I have the stomach washed out just before taking ether, and also the patient is given a small dose of morphine $\frac{1}{3}$, and atropine $\frac{1}{100}$, subcutaneously. The atropine, drying up the secreting glands, temporarily stops the flood of mucus, which not only is apt to be swallowed and to irritate the stomach, but also bothers the anesthetist. The morphine tends to produce sleep as patient comes out of ether, calms restlessness and allows the use of less ether. Much morphine is apt to constipate and disturb the digestion, and I rarely use any more except on the evening of the operation, when sleeplessness, restlessness or pain may demand it.

The flatus is important to get rid of, and for getting rid of this a rectal tube should be placed in rectum soon after recovery from ether, and if no gas comes,

and there is distention, I have an enema given of suds and glycerine; and this repeated every four hours if necessary for distention. I usually try to have the bowels moved by these enemata; but whether successful or not, I give calomel gr. $\frac{1}{10}$ every hour, till one grain is given, beginning the evening of the operation. I do not, however, use anything effervescing, like Seidlitz powder, until after forty-eight hours from the operation, because any distention of the stomach might tear away some of our work, but after forty-eight hours the adhesions have become extensive enough to withstand the possible inflation of the stomach. Of course one may order the Seidlitz given after the effervescence has ceased, but orders have been misread and the nurse has given Seidlitz effervescing, which luckily only gave the patients a few gripes but no serious harm. I don't think the adhesions are always firm enough in the first twenty-four hours after such an operation as gastroenterostomy to risk giving effervescing draughts.

Flatulence tends to produce nausea and vomiting. If nausea and vomiting exist, tablets of cocaine, gr. $\frac{1}{10}$ hourly often stop it. If due to bile, drainage of the gall bladder I have used successfully.

The position of the patient in bed is important after gastroenterostomy, the head and shoulders being raised on a pillow or two to allow the contents of the stomach to drain into the intestine; and I believe also this position better allows the bile to flow naturally along the intestinal course instead of flowing back into the stomach as it sometimes does.

The above points are the chief ones in which gastroenterostomies differ in their after-treatment from laparotomies in general, and as you all know the treatment of laparotomies, I will not discuss the question further.

## Reports of Societies.

### AMERICAN CLIMATOLOGICAL ASSOCIATION.

Twenty-first annual meeting held at Philadelphia, June 2–4, 1904.

The meeting was called to order by Dr. J. C. Wilson of Philadelphia, the president, who made an opening address. He called attention to the fact, Dr. Benjamin Rush was the first American physician to recognize the importance of climatology as a special branch of medicine. His papers on "The Climate of Pennsylvania" and on consumption, yellow fever, etc., were referred to. The later work for consumptives in Philadelphia and the foundation of a national association for the study and prevention of tuberculosis were mentioned. The work of the American Climatological Association has been one of the initial forces in the world movement which started about the time of its organization and aroused the Western world from its more than Oriental apathy in regard to pulmonary consumption. Its transactions constitute an accurate historical record of that movement from its inception.

Dr. W. H. Flint of Santa Barbara, Cal., read a paper embodying his observations at Santa Barbara during a residence of nine years, with statistics covering twenty-five years. The coast line runs east and west for twenty-five miles, and the Santa Inez range of mountains protects this coast region from the north winds. The proximity of the Mojave desert exerts a powerful influence, causing a cool ocean breeze by day and a dry air from the desert at night, producing a sudden fall of temperature as evening comes on. This land breeze may last far into the night, gradually subsiding until a perfect equilibrium is established. The town has 8,000 inhabitants. Its climatic features are its abundant sunshine, its low average rainfall, about seventeen inches, its notable uniformity of temperature and its comparatively low relative humidity. This, during winter, averages 67%; during spring, 71%; in summer, 75%, and in autumn, 71%.

At Pine Crest on the mountain side the relative humidity is from 5 to 12 points less. The wind velocity averages 3.5 to 4.5 miles an hour. Patients with chronic rheumatism, asthma and advanced tuberculosis do badly at Santa Barbara. The climate is favorable for patients with neurasthenia, cardiac disease, renal affections, arrested pulmonary tuberculosis and chronic bronchitis. It is suitable especially for young people and feeble and old persons, convalescents and pleasure seekers.[1]

Dr. J. H. Elliott of the Muskoka Sanitarium read a paper on the

CLIMATE OF MUSKOKA, CANADA.

The district considered lies on the eastern shores of Georgian Bay; its southern portion is about one hundred miles from Toronto. It is frequently called the "Highlands of Ontario" and is near the Algonquin National Park, a reservation of over one million acres. The mean daily maximum temperature during June, July and August is 77.4° F., and mean daily minimum, 53.3° F. There is immunity from hay fever. The climate is excellent for neurasthenics. The district has been growing in favor as a station for the treatment of pulmonary tuberculosis. The two sanatoria are meeting with the greatest success, quite comparable with that of the institutions in the Adirondacks. The climate is similar, being free from rain, fog and dampness in winter; the spring and autumn, rainy but beautiful; the summer, ideal in having warm days but cool nights. No dust, no malaria and well suited for all pulmonary invalids.

Dr. Lawrason Brown of Saranac Lake, N. Y., read a paper embodying

SOME WEATHER OBSERVATIONS IN THE ADIRONDACKS.

Saranac village has an elevation of 1,550 feet, and the Adirondack Cottage Sanitarium, a half mile distant, has an elevation of 1,625 feet and has a northeastern exposure. The soil is a light sand, very porous, and glacial drift and moraines are common. Deciduous and evergreen trees are in about equal proportion. The monthly mean temperatures vary from 14.98° F. in January to 66.24° F. in July. A temperature of 90° F. has been recorded nineteen times in ten years. The highest recorded was 95° on July 5, 1897, and the lowest, —38° on Feb. 16, 1896. The average annual precipitation is 34.5 inches. The yearly snow-fall averages 90 inches. With the exception of June, July and August snow falls every month. One fourth of the precipitation is in the form of snow. About one third of the days are clear; one third cloudy, and on one hundred and forty-five days there is precipitation. The climate is cool and moist during seven months of the year; cold and dry during five months. The entire region enjoys freedom from dust and disagreeable winds. The forests break the winds and the snow and rain prevent dust and purify the air.

Dr. Carroll E. Edson of Denver presented a

METEOROLOGICAL STUDY OF THE WINTER OF 1903–04.

The winter was an unusually severe one in the eastern portion of the United States, but Denver had a warmer winter than usual by a daily average of from

[1] For the discussion on this paper and the three succeeding papers, *vide infra*.

1.8° to 8.3° F. Of the 152 days studied, Boston had 51 below freezing all day; New York had 50; Buffalo, 74; Chicago, 85 and Denver but 8. Buffalo had one day with a maximum of zero and Chicago one day with a maximum below zero. Tables showing maximum and minimum temperatures, humidity, sunshine, wind and precipitation were shown. Denver had less wind than other cities in the following proportion: Boston, 84; New York, 115; Philadelphia, 79; Buffalo, 128; Chicago, 127; Denver, 66. The obvious lesson drawn from this study was the importance and advantage of selecting the climate in the care of patients having pulmonary tuberculosis. The particular advantages of the climate of Denver were presented in the light of this meteorological study.

The foregoing papers were then discussed:

DR. W. JARVIS BARLOW of Los Angeles said that the fogs on the Pacific coast occur especially in May and June. It seems that the chronic cases of tuberculosis and rheumatism do better from the first of July until the first of January; then from the dampness and fog occurring more or less from January to the first of July, they do better away from the coast, up in the foothills, or up in the higher altitudes where the fog does not occur.

The equilibrium occurring at night is marked along the coast, and it allows the people to sleep outdoors with comfort. The interval from 5 to 8 P.M. is the time when the difficulty from dampness occurs.

DR. E. O. OTIS of Boston called attention to a very admirable paper by Miss Lillian Brandt on the

SOCIAL ASPECTS OF TUBERCULOSIS,

in which a large number of statistics were given and among them those of many large cities of the United States with the mortality from tuberculosis; the cities were arranged in a list with the mortality increasing downward; and at the head of the list stands Buffalo with the least mortality of any, although it has the smallest per cent of sunshine and the largest per cent of rainfall.

DISCUSSING PAPERS OF DRS. ELLIOTT, BROWN AND EDSON.

DR. DELANCEY ROCHESTER (Buffalo): If we can get a climate that gives us the most favorable results, the sooner we send our patients to that climate the better. But we cannot send our patients there; the vast majority of them cannot go to Denver and we have to treat some of them at home; and I was going to quote this very same paper that Dr. Otis has just quoted to show that we can do pretty well, even in dirty, wet and cloudy Buffalo, with patients suffering from tuberculosis.

I have had four cases of moderately advanced tuberculosis recover in Buffalo; three of them had cavities and one of them had a cavity in both lungs and they recovered in Buffalo on simply living out of doors and paying attention to food and hygiene generally.

I would like to know how some of the California cities compare with Denver and the eastern cities. You know many of our friends living in California tell us that California has a great deal better climate than Denver and other places for the cure of tuberculosis; and I should like to have had the same comparison made with reference to the California cities as in the case of these other cities.

DR. BEVERLEY ROBINSON of New York called attention to the fact that in tuberculosis there is a certain limitation as in almost all diseases with which we are familiar, and that limitation is to be always kept in view in our appreciation of most of those conditions which we are called upon to investigate, especially when we record any particular resort as being especially favorable to special diseases.

DR. W. JARVIS BARLOW (Los Angeles, Cal.): I made some inquiry throughout the western slope, and the southwestern part, especially, of Arizona and California; and I find in general all through these sections that the past winter was milder than usual; and two years ago the winter being milder here in the East it was more severe with us in California.

DR. E. FLETCHER INGALS (Chicago): I regret that but one winter was taken in the comparison of the various cities. Denver had a beautiful winter last year as I know; but no one can tell what next winter will be; last winter we had it cold in the East; we may have it warm this year; the paper well illustrates the necessity of considering many years; but the paper brought out strongly the fact that we must not consider simply the number of rainy or cloudy days, or the open-air treatment, or the food alone, but we must carefully weigh all of the factors that, taken together, constitute the patient's environment. We forget in studying the effects of climate, as well as of other forms of treatment, that we only have to go to the dead-house to find that 25% of all persons dying of other diseases have had tuberculosis at some time; 12% die of this disease. Dr. Austin Flint said most of those who got well had never been treated for the disease; I do not think he laid this to the physicians, but that he thought they had not been ill enough to seek medical advice. I want to say one thing in reference to Chicago's climate, — that I can see nothing better to be desired; we can get any climate we want in the course of two or three days.

DR. R. H. BABCOCK (Chicago): Apropos of Dr. Ingals' remark, some wag has said that the climate of Chicago would be all right if it wasn't for the weather.

There are three points with which I am especially impressed in listening to the papers and the discussion this morning. The first is, that tuberculosis patients get well in any climate under any weather conditions, provided they are properly managed. The second is that unquestionably there are some climates in which the proper management of these tuberculous patients is very much easier. Now I think this last is a very important consideration. The members of the American Climatological Association are presumably all physio-therapists of more or less experience; and it explains why Dr. Rochester gets results in Buffalo which other men in Buffalo would not get. We who meet with tuberculous patients in consultation with the rank and file of the profession are only too sadly impressed with the ignorance, or indifference, or carelessness, or all combined, of the average doctor in the management of his tuberculous clientele. The average physician is not sufficiently informed concerning the best methods of utilizing climate at home, or he will not take the trouble to so impress his patients or so instruct them, as to render it possible for them to secure good results in the home climate; and therefore such papers as we have had this morning are very valuable in showing to the rank and file of the profession that if they will not properly manage their tuberculous patients at home there are climates to which they can be sent and where they will get results with very much greater ease.

The third point I should like to dwell on for a moment is that we are not to think merely of our tuberculous patients. The charts which have been shown illustrating the character of the climate in our eastern cities indicate that we, as physicians, should urge all persons who have any respiratory, circulatory, or renal disorders to get out of the winter climate at home when it is possible. I think we are apt to think of

climate with reference almost exclusively to tuberculous patients, and that is not right; we must think of these climates with reference to patients exposed to the dangers of bronchitis and pneumonia; and certainly the climates of California and Colorado cannot for a moment be compared in their disastrous effects on these patients with the climates where most of us are compelled to reside.

Dr. Henry Sewall (Denver): One word in protest against the notion that a person who is shown to be afflicted with consumption of the lungs has a very good chance of getting well. I don't believe anything of the kind. When one can discover tubercular lesion in the lungs of a man, I think it means that he has been progressively diseased for months, and very often for years; and provided that man does not change his habits of life — more important than that of habitat — I think that in the great majority of cases he dies. When I discover the signs of tuberculosis in a patient I feel as if he is on the brink of the precipice, and I advise him that the only reasonable hope for safety lies in definite hygienic habits and possibly a change of habitat as well.

Dr. Frederick I. Knight (Boston): It seems to me we were so impressed with the fact that a man could recover in any climate, that we forgot, really, that it was possible to give him the benefit of this very important climatic factor; and I think that we have been misled, also, by the post-mortem appearance of cured tuberculosis. We must remember that those cases where we find slight scars are generally in patients who have never had clinical tuberculosis; and we cannot judge by them of the proportion of possible cures in patients who have advanced to show clinical tuberculosis.

Another thing that has influenced our prejudices in regard to the treatment is the fact that we have got hold of cases so much earlier, and diagnoses are made so much earlier; and for that reason I was a little inclined to differ from the opinion just expressed, — that in regard to the possibility of cure. It seems to me in getting hold of the very earlier cases that we may, especially with the aid of the climatic change, get absolute cure and feel pretty confident of it in a large proportion of cases. Personally, in regard to advising change of climate, of course, I do not feel it is necessary in every case, but the fact that so many men formerly went out to the Rocky Mountains, for instance, with marked phthisical tuberculosis and got well without any particular care, from simple change, — went there and lived their ordinary life and got well when they surely would have died in the East, — still remains a very important argument in favor of change in some cases; and it seems to me that it is necessary above all to consider the conditions carefully in regard to each individual case when it comes up, including the climatic factor, in order that we may do our duty to the patient. If it is impossible, for any reason, to consider the factor of climatic change, then we must do the best we can at home.

Dr. W. F. R. Phillips (Weather Bureau, Washington, D. C.): Dr. Edson has shown us graphically the climatology or the climatic conditions of certain cities — Chicago, Buffalo, and others — that is, in the center of those cities. We should always bear in mind that there are certain atmospheric differences between the city and the country; that each city, especially a large manufacturing city, has peculiarly a climatology of its own, and its statistics taken, as is most often the case, in the central part of the city cannot accurately be applied to the suburbs of that city.

Dr. W. H. Flint (Santa Barbara): I think the discussion gives us a very hopeful outlook for the cure of tubercular troubles, no matter in what climate the attempt be undertaken, provided, as Dr. Sewall said, the patient is willing to change his mode of life. A great many people come to us and think they may stay in the hotel lobbies amid a cloud of tobacco smoke and go to all the evening entertainments and still get the benefit the climate is supposed to confer, which is a very great error.

Dr. Lawrason Brown (Saranac Lake, N. Y.): I was struck with the close similarity of the climate of Muskoka and the Adirondacks. I would like to add one thing, — that if our patient in the Adirondacks sat out only when the weather was warm and clear I don't think he would sit out very much. Dr. Sewall says the first three weeks he was there it rained. In regard to change of climate there is one point that has always struck me; the man who has not been accustomed to good hygienic surroundings, who has had poor food and bad environment, needs a change of climate very much less than a man who has had all those things.

Dr. Philip Marvel of Atlantic City, read a paper on

OCEAN BATHING.

The paper was partly historical. The sea bath was considered to be a mineral water bath with a strong temperature influence, which is shown by the slowing and enfeeblement of the pulse. This amounts to one or two degrees Fahrenheit and 15 or 20 beats. According to Dr. Gibbony, an English physician, there is an occasional lowering of 25° and 30 beats. In considering the special benefits other agencies must be taken into account, as, for instance, the force and movement of the water, the physical conditions of the strand, the distance of the dressing rooms, the time of the bath, length of exposure, etc. Dr. Marvel believes that the ocean bath, as practiced at the usual resorts, does more harm than good. Few people seem to attach much importance to the danger of either the prolonged exposure in the water or in the cool atmosphere, on the sand, in their wet garments. The majority of the bathers bathe for pleasure with a blind disregard of either its advantages or disadvantages. Bathers return very often cyanosed, with arterial capillaries contracted and internal organs and deeper vascular system greatly engorged, shivering and chattering. Dr. Marvel advocates a short bath, — ten, fifteen or twenty minutes, — and the necessity of prompt reaction. He denounced the practice of parading about the beach in bathing suits and lying on the sand and frequently returning to the water, believing that it insures progressive debility. Sea bathing is contra-indicated in cases in which there is arterio-sclerosis, organic heart disease, recent rheumatism, cholelithiasis or any acute gastro-intestinal or febrile disease.

Dr. R. G. Curtin read a paper on "Delirium Accompanying Heart Disease," and cited four cases.

Dr. Abraham Jacobi (New York): There are many heart diseases, but very few such cases; so it is not in the heart disease alone that the cause must be looked after. There must be an abnormal or a predisposing condition of the brain itself — either an abnormal circulation or an abnormal brain. We have heard that it is principally aortic anomalies in which Dr. Curtin's cases are met with. The disease of the aortic valves would give rise to anemia. We have been told that such attacks of delirium will come on after sleeping. Now during sleep there is either an increased anemia (which is normal), or in consequence of the recumbent position there may be, in predisposed brains and on account of circulatory disturbances, a hyperemia. Thus it is not exclusively the heart disease, as such, that gives rise to these conditions of delirium, of insanity; but it is the condition of the brain resulting

therefrom, or complicating the heart disease. I have seen a case of insanity (one of the first I have seen of that kind) that was complicated with, as far as I know, absolutely nothing else, as the final result showed. It was in a man of thirty odd years, who had to be sent to the lunatic asylum. I did not find anything in him except a hypertrophied and dilated heart and an old mitral incompetency. He was in the lunatic asylum perhaps six months; very probably he had more rest there than he had outside, and he came home "cured" of his insanity. Our lunatics are getting cured ever so many times, and readmitted and statistically cured again. He was not a drinking man and he was not syphilitic; but he got worse in the course of five or six years, and every time he got worse he was sent to the lunatic asylum, was kept quiet in bed, and during that time got well. Finally the compensation advanced to such an extent that he at last advanced to a responsible position in the interior of the state of New York. There he is yet. He has his heart disease, certainly, but with good compensation, and he has not been in the lunatic asylum these ten or twelve years, I think.

Heart disease has surely a powerful influence on the nutrition of the brain, but I have always looked for concomitant or predisposing conditions. In one case I found a history of syphilis in a young boy of fifteen or sixteen, with a moderate mitral incompetency. When he had been submitted to an anti-syphilitic treatment for a period, he got comparatively better, as far as I know during the treatment, because his syphilis got well. The majority of the few cases that I have seen were adolescents, not persons in advanced age, — ranging from fifteen to seventeen and eighteen years of age. We know that the disposition to mental disturbances is very great about and after puberty; in fact, the heart disease in every case, I believe, was a mitral incompetency sufficient to be the proximate cause of the delirium. I do not think that I have seen many cases, but the majority that I have seen were about that age.

DR. CHARLES E. QUIMBY of New York read a paper, "The Mechanical Treatment of Organic Heart Disease." The author made a previous communication to the Association in 1892, in which he demonstrated the relations of pneumatic differentiation to the several forms of pulmonary disease. Dr. Quimby believes that in the pneumatic cabinet we have the nearest approach to an ideal treatment of organic heart disease. The cabinet supplies circulatory force and reduces vascular tension, and thus favors nutritive repair; the heart is allowed to rest a little and recuperate. Clinical results corroborate this. Cases of aortic insufficiency are especially suitable for treatment. When the vascular tension is in excess of possible force expenditure on the part of the ventricle, a reduction of diastolic tension by the cabinet with an increase of propulsory force means restoration of circulatory equilibrium. In angina the cabinet affords rapid relief.

DR. SEWALL: It seems to me that in this, as in so many medical subjects, we have got to depend upon empiricism for our conceptions. I would like to know if Dr. Quimby has carried out experimental work to justify his claim of the increased hyperemia of the lungs with the inspiration under greater relative intra-pulmonary pressure. I think that it is very important that not one thing be taken for granted in establishing the physical basis for our conceptions in climatology; and I do not see that the physical explanation of the happy clinical results follows *a priori*. I am asking for information simply, and would desire to know if experimental work has been done in this direction; I do not know of any such myself. Ordinarily we decrease, of course, the tension within the lungs at inspiration, and we know that the blood flows there in a greater stream. In Dr. Quimby's cabinet there is increase of intra-pulmonary tension, I take it, with inspiration, as in blowing up the lung by a bellows, so that the conditions are somewhat reversed. This is so vastly important a subject that I trust not one assumption will be made to explain the results unless it is on an experimental foundation.

DR. QUIMBY said he had never undertaken experiments to prove it for they are not required. There is a point in altitude or atmospheric rarefaction which produces very definite pulmonary hyperemia, and the same changes will be started by one or two inches of rarefaction that are manifested grossly at high altitudes. What Dr. Sewall states in reference to the circulatory changes under differentiation, that blood is driven out of the lungs during inspiration and drawn in during expiration, is entirely correct.

DR. J. O. COBB, of the U. S. Public Health and Marine Hospital Service, read a paper entitled "Is Milk a Factor in the Spread of Tuberculosis?" The author holds that Koch was substantially correct in his claim, though he made rather too positive a statement, that cattle could not be infected with tubercle bacilli of human origin, and Ravenel has disproved this; Koch may be technically wrong, but not wholly wrong. Dr. Cobb holds that for clinical purposes and for means of prevention these accidental and possible diversions of the bovine bacillus to man or the human bacillus to bovines cannot receive serious consideration; that they are not the common method by which man is infected. Dr. Cobb holds that the wide extent of tuberculosis throughout the world is totally beyond the comparatively limited use of milk as a food. The statement was also made that the cattle of the islands of Jersey and Guernsey are free of tuberculosis, but that the inhabitants have about as much of the disease as elsewhere under similar environment.

Tuberculosis is a great scourge in China, according to reports from all portions of the empire. Authoritative statements from Japan were made that cows' milk is a factor of no account in the etiology of tuberculosis in that country, for the reason that it is little used and usually not to be had except as prescribed by physicians in cases of illness. The mortality from consumption for Japan in 1901 was 81,669 in a population of 45,000,000.

DR. A. JACOBI (New York): We have been told that cases of tuberculosis are very numerous and very fatal in countries where no milk is being used. Nobody doubts that. We also know and always have known that the principal mortality in our own country, where much milk is used, is not attributed to the use of milk at all, but to other causes. The question is simply whether tuberculosis can be the result of improper milk, that is, milk that contains tubercle bacilli,— whether there are cases which, in all probability or with certainty, are attributable to the use of raw milk. That is the question,— not that millions die of tuberculosis who have never used milk. What we have to do is, if we can, to answer the question as to whether milk is a factor in the spread of tuberculosis. One hundred negative cases or assertions do not prove anything against a single positive one, and there are such positive ones. The literature is too rich to be overlooked, and I would simply refer to that. There are, though there may be ever so many official denials of the fact, authenticated cases of general tuberculosis attributable to milk, or where tubercle bacilli have been found in the milk and where children were affected by it. In adults we seldom have an opportunity to attribute tuberculosis to milk. They eat a great many other things. Infants or children are more or less restricted to milk, and amongst these are the cases. If, for in-

stance, we have a case such as that of Ollivier's, where in a boarding school a number of girls were fed on milk that was found to be tubercular, and a large number of these girls died in consequence; when you have other cases in which a single cow was singled out for the special purpose of feeding the farmer's baby, and where that child was the only one that died of tuberculosis, and the cow died after the child of tuberculosis — such cases, by no means exceptional, although they are only isolated cases, prove more for the possibility of tuberculosis being spread by tubercular milk than any number of negative cases. I do not say that cases are very numerous, but they are numerous enough to induce us not to let up on watching milk for the presence or absence of tubercle bacilli, and, in case of doubt, boiling or sterilizing. That is a reason, also, why for a long time we have come to the practice of rather mixing the milk that comes from a farm — mixing the milk of a herd of thirty or forty; because it has been found by feeding that when the milk of one tubercular cow was mixed with the milk of so many cows not tubercular, the milk was so diluted, as far as the percentage of bacilli was concerned, that practically it proved uninjurious.

All these are facts that should not be lost sight of. It is quite true that there are a thousand more cases of tuberculosis that have nothing to do with milk; but there are quite a number of them that have.

*(To be continued.)*

## SUFFOLK DISTRICT MEDICAL SOCIETY. SECTION FOR SURGERY.

A meeting of this section was held on Feb. 3, Dr. F. B. Harrington in the chair.

The evening was devoted to a discussion of the

### Technique of Gastro-Enterostomy.[1]

#### discussion.

Dr. F. T. Murphy spoke briefly of the McGraw elastic ligature, and showed specimens of gastro-enterostomies done on animals which demonstrated the various stages in the process of the cut-out by pressure necrosis. The speaker stated that he had obtained the most satisfactory results in animal experiments by using a pure rubber cord of 3 mm. in diameter at the middle of which a square knot had been tied. With this knot it was necessary to have a needle at either end of the ligature. This procedure brought a knot at either end of the anastomosis, and apparently decreased very considerably the time necessary for the cut-out, bringing it, in the resistant stomach of the cat, to about five days. Regarding the technique of the operation, he recommended the simple, single loop as described by McGraw rather than the elaborate modifications which have been suggested.

Dr. J. G. Mumford: In July, 1902, Finney of Baltimore published a description of what has come to be known as Finney's pyloroplasty. It is so ingenious and effective a method of opening the pylorus and establishing efficient drainage that I wish to call attention to its advantages.

It was developed out of Jaboulay's operation of gastroduodenostomy which Finney found unsatisfactory. It might be described as a combination of gastroduodenostomy and the pyloroplasty of Heineke and Mikulicz. It consists practically in establishing a large opening between the duodenum and stomach and then joining the duodenal and gastric openings by a cut carried through the pylorus. Finney's description of the operation is elaborate and somewhat difficult to follow, especially as regards his method of placing the stitches. In practice I have found that the procedure may be made variously at the convenience of the individual operator.

The advantages and limitations of this operation are as follows: Its value lies in that it establishes a large and efficient drainage through normal channels, and in the case of a dilated stomach the anastomosis may be carried down nearly to the fundus of that viscus; it is not applicable in cases of malignant stricture, but in the case of non-malignant stricture and especially when the pyloric stenosis is not complete. In many cases of incomplete pyloric closure when a gastro-enterostomy is made we know that in the course of time the pyloric obstruction lessens; the gastric anastomosis closes more or less completely and the original symptoms may return. After Finney's operation, however, there is no record of failure of drainage.' I quote the following brief paragraph from a recent address of W. J. Mayo:

"The gastroduodenostomy of Finney is a far better operation [than the Heineke-Mikulicz]. It gives a very large opening, and as the enlargement is downward in the line of gravity drainage, the results are much better than in the unmodified pyloroplasty. We have made this operation 34 times with but one death, and our results have been most excellent. In open ulcer it is probable that the operation will often fail to cure, as obstruction has no part in its causation as is shown by the existence of ulcers in the duodenum beyond the pylorus. It can be readily seen, therefore, that no matter how large the opening is made, the food and irritating gastric secretion must pass over the ulcer area to reach the intestine. The conditions calling for the Finney operation are late cicatricial stenosis and contractures."

A word in regard to one such case on which I recently operated. The patient had symptoms of obstruction for some two and a half months, with almost complete inability to retain food. She had been fed by nutrient enemata. The stomach was not greatly dilated. On opening the abdomen it was found that the pylorus was only slightly contracted by an old cicatrix; but the duodenum was tied down so closely against the stomach that a sharp kink resulted at the pyloric opening, causing almost total obstruction. A freeing of the adhesions and a pyloroplasty by Finney's method established perfect drainage. The patient promptly recovered; is eating solid food, and now, six weeks after the operation, is entirely well and free from gastric symptoms. This case is an admirable example of the type suitable for Finney's operation.

From the foregoing it would appear reasonable to make a comparison between Finney's operation and what is called Peterson's operation of gastro-enterostomy. Finney's operation is practically a gastro-duodenostomy carried low down in the stomach. Peterson's operation is a high gastro-jejunostomy. In Finney's operation the circulus-vitiosus is impossible because there is no circle; in Peterson's operation the circle is a very short one, as the distance from the pylorus to the anastomosis is made about 3 inches from the plica duodenalis, and by his method the vicious circle is almost unknown. Trendel of Tübingen reported last year 269 cases of this operation which is done by the posterior method, the cases being in the service of Czerny, Steinthal and himself. Of these 269 cases, 49, or about 18%, died within four weeks. In no case was there any vicious circle; so that it seems fair to assume that between this method and Finney's we have a choice covering nearly all possible con-

[1] See p. 323 of the Journal.

tingencies and offering the advantage of avoiding the fatal vomiting which is seen occasionally in gastro-duodenostomy with the long loop, with or without entero-anastomosis.

DR. F. B. LUND: The subject which we have under discussion this evening is of such extreme interest that it is very hard to confine one's remarks within due limits. Each of the papers which has been read to-night has brought out certain points of value.

In regard to Dr. Porter's paper on the "Preparation of Patients for Stomach Operations," I would say that I should condemn, as he does, the washing out of the stomach on the table, with the patient under ether, as dangerous, on account of the possibility of causing inhalation pneumonia. Patients with obstructed pylorus, who have been starved for long periods, it is less important to wash at all, as there is practically nothing in the stomach to wash out. Feeding with sterilized foods before operation on the stomach strikes me as an unnecessary precaution, if we operate, as we do, with the stomach empty. We certainly cannot sterilize the stomach contents, and by modern methods we are able so completely to prevent soiling, that this matter seems of little importance.

In regard to Dr. Jones's paper on the exploratory operation, I have only one suggestion to make, and that is, that the epigastric incision be made a little to the left of the median line, thereby avoiding the broad ligament of the liver, that the fat contained between these layers, into which, if we operate exactly in the median line, we may cut vertically for some distance, thus being somewhat delayed about entering the peritoneal cavity, and having at the end of the operation, a more complicated wound to sew up. By cutting slightly to the left, we enter the peritoneal cavity more directly, and can sew up more quickly. As has been stated, every second of time is to be saved in doing this operation.

In regard to the so-called circular vomiting, I would say that, in my belief, its occurrence does not depend upon the presence of malignant or non-malignant disease. It is due, usually, to some obstruction of the descending loop, either by obstruction from a band, as the edge of the transverse mesocolon in a posterior operation, or adhesions from an omental tag, or to local paralysis of the loop from infiltration of its walls, due to the traumatism of too much handling. It may be avoided by paying such attention to technique as to avoid these contingencies.

In the posterior gastro-enterostomy, an ample opening may be made in the transverse mesocolon, and it should be stitched to the stomach in such a way that it cannot close on the anastomosis. Where there are numerous adhesions about the posterior surface of the stomach, and the transverse mesocolon is greatly thickened, the posterior operation should not be performed, but one of the anterior methods, or a Finney's operation, should be substituted. The writer lost one benign case by doing a posterior operation in the presence of extensive adhesions about the posterior surface of the stomach and thickening of the transverse mesocolon. Whatever operation is performed should be performed as quickly as possible and with as little handling as possible of the stomach and intestinal loops.

Moynihan's use of the clamps in a posterior gastro-enterostomy enables that operation to be done very quickly and neatly, with the minimum handling, and, it seems, is a distinct advance.

An important point in the technique of Moynihan's operation is the removal of clamps after the completion of the inner layer of sutures. This allows inspection of the line of anastomosis, and the securing of any bleeding vessel which may have been skipped by the inner layer of sutures, which, however, are placed so close together that the latter accident is a rare one. Another advantage of removing the clamps at this time is that the anterior peritoneal layer of sutures infolds the peritoneum with less tension and strain, and enables the surgeon to infold exactly what is necessary for the safety of his inner line of sutures, and nothing more.

Circular vomiting is much less frequent than it was a few years ago, and it has been shown in the anterior operation it was due not infrequently to the high position of the opening in the stomach, preventing drainage. This danger was thoroughly emphasized by Mayo, who showed that it could be avoided by making the opening of the anterior operation in the dependent portion of the stomach, and this procedure since it has been adopted has gradually reduced the frequency of this complication. The writer believes that now that we more thoroughly understand the reasons for its causation, this complication may be avoided in almost every instance.

Gastroduodenostomy, after the method of Finney, absolutely does away with the possibility of this complication, as there is no circle or loop to cause it, but there are many cases in which the operation of Finney cannot safely be performed, as in cases of great thickening of the pylorus, or adhesions of the pylorus to the liver or abdominal wall, which cannot be separated without danger of perforation or hemorrhage. Under these circumstances we are compelled to perform gastro-enterostomy, and the writer believes that, with proper attention to technique, gastro-enterostomy can be performed in almost every instance in such a way as to avoid the vicious circle.

In regard to choice between the anterior and posterior operations, it seems to the writer that the posterior operation is distinctly preferable, as enabling the stomach to drain downward by gravity from its lower posterior portion, and as avoiding the bringing up of a loop in front of the transverse colon, which is a *sine qua non* of the anterior operation.

The operation as described by Moynihan, in the author's hands, has proved so satisfactory that he has preferred it to the use of the McGraw ligature. The latter method is very attractive, and minimizes the time employed and the danger of soiling, but it has the disadvantage that the patient cannot be fed until the ligature has begun to cut through, a disadvantage in the case of patients weakened by starvation and hemorrhage, which seems to the writer to more than counterbalance the slightly less time in which the operation can be performed. The ligature simply takes the place of the inner row of sutures of Moynihan's method, and in the latter method the use of the clamps renders the danger of soiling very slight indeed. In skilled hands, the operation by the latter method does not require more than thirty to forty minutes.

In regard to the convalescence from these cases, it has seemed to the writer, in reviewing his own cases and those of his colleagues at the City Hospital, that in cases where gastro-enterostomy has been done for a complete obstruction of the pylorus, the convalescence has been smoother, and the good results more lasting than in certain of the cases where operation has been performed for the cure of chronic ulcer with obstruction of the pylorus by spasm. During the first few weeks after an operation in a case of the latter type, the pylorus relaxes on account of drainage provided by the new opening, but, having relaxed, the pylorus allows the food to escape through it and the gastro-enterostomy opening gradually closes. Then the old conditions recur. Pyloric spasm again takes place, and the patient begins to vomit. We have then two openings, both of which are insufficient to properly

drain the stomach, and further operation has to be performed.

Mayo and Rodman have suggested that the operation of the future in these cases may be resection of the pylorus, thus excising what he calls the ulcer-bearing area of the stomach, and by absolute closure of the pylorus, the permanency and patency of the new opening made by the surgeon. Closure of the pylorus by a purse string or silver wire passed about it has also been suggested in this class of cases.

The operation of Finney seems to be especially suited to this class of cases in which we find ulcer is at a distance from the pylorus, and the wide opening made by Finney's gastroduodenostomy will remain sufficiently large to prevent recontraction and recurrence of the symptoms.

We must wait for further experience to aid us in determining absolutely what is the best operation in cases of this type.

In regard to the after-treatment, as stated by Dr. Pease, we can with advantage begin to feed the patients earlier than we have done in former years. In favorable cases we can begin to give them diluted milk within twenty-four hours after the operation and semi-solids on the second or third day, and on the fourth or fifth day can give them finely divided, minced meat. Convalescence is aided and the danger of vomiting lessened, and the strength of the patient much more rapidly built up by beginning to feed these cases early. If a large enough opening has been provided, the food passes out of the stomach without bringing undue strain upon the anastomosis, and, in fact, the giving way of sutures and separation of the anastomosis is to-day one of the rarest of accidents. The convalescence of these patients when early feeding is begun is one of the most satisfactory phenomena which the surgeon is privileged to see. These patients may be out of bed often in ten days from the day of the operation and be able to leave the hospital in two weeks, and even patients who have been considerably exhausted by starvation are able to begin to do light work within a month after a gastro-enterostomy. The semi-recumbent position aids greatly in the drainage of the stomach, and these patients, many of them, should be propped up on pillows when they are first put to bed after the operation and given a bed rest in the first three or four days.

## Recent Literature.

*The Elements of Water Bacteriology with Special Reference to Sanitary Water Analysis.* By Samuel Cate Prescott, Assistant Professor of Industrial Biology, and Charles Edward Amory Winslow, Instructor in Sanitary Bacteriology in the Massachusetts Institute of Technology. New York: John Wiley & Sons. 1904.

This work, emanating as it does from the biological laboratories of the Massachusetts Institute of Technology, carries with it the stamp of authority. American sanitarians have contributed so much to water bacteriology that it was most desirable to gather together, as the writers of this volume have done, the results of investigations made in this country, and to describe the methods used here. Although intended to serve as a textbook and laboratory guide, a working knowledge of general bacteriology is presupposed. The book is well written, up-to-date, and contains a good bibliography.

THE BOSTON
# Medical and Surgical Journal.

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## FOURTH OF JULY TETANUS.

For two years the *Journal of the American Medical Association* has rendered a service in compiling statistics of Fourth of July accidents with special reference to the occurrence of tetanus. Last year the outcome of this investigation showed that at least four hundred and fifteen deaths had resulted from such injuries. In the first place it is of interest to note that the number this year is relatively so small, being but one hundred and five, that it is a matter of difficulty to determine whether last year showed an unusually large number of cases or this year an unusually small number. The figures have been obtained in precisely the same way as last year, making comparison fair.

After a careful consideration of all the facts, the editor is inclined to the opinion that the high mortality last year was not greatly in excess of the average, and that this year there has been a distinct reduction. For example, cities in which in previous years several cases of tetanus have occurred have this year had none. Chicago this year had but five deaths originating in wounds from blank cartridges, which, with one exception, is the lowest record which that city has ever had. Similar reports have come in from all parts of the country. The cause of this somewhat unexpected improvement is naturally of great interest. It has been suggested that in certain years the tetanus bacilli are less numerous, but this is not the case this year, inasmuch as tetanus from wounds other than those occurring on the Fourth of July has been rather more frequent than usual. Furthermore, the decrease in the disease has been general throughout the country and not local. The conclusion is, therefore, reached that the improvement is presumably due to the two factors of an actual decrease in the number of wounds

and to better care of the wounds when received. No doubt, public sentiment has been aroused within the last few years as never before, and the press has done much to warn parents of dangers to their children. No doubt, also, the actual publication of the mortality last year has done much to influence legislation toward the prevention of the sale of dangerous implements. In this state, for example, an attempt was made in the spring to pass a bill looking toward a less noisy celebration of the Fourth of July. The bill was defeated, but the impulse which excited its presentation and the general public feeling on the matter combined here, as elsewhere throughout the country, to modify the sale of explosives. Last year in Massachusetts sixteen deaths resulted from tetanus, and this year but five.

So far as one may judge from the somewhat scanty facts at our disposal, it seems altogether probable, as our contemporary suggests, that the education of the public, and through the public the passage of certain restrictive measures, has been the first factor in the diminution of the death-rate from this avoidable cause. In the second place the reports received indicate that wounds made by blank cartridges were more thoroughly cared for surgically, and that more doses of antitoxin were given this year than during all the previous years put together. On this point the writer affirms that not a single patient so treated developed the disease. In St. Louis, thirty-six cases of gunshot wounds were treated in the dispensary with no death from tetanus, a far better showing than last year. These cases had been injected with antitetanic serum.

This unexpectedly good showing should be most encouraging to those who see the possibility of influencing the public in medical matters. If tetanus may be reduced to such an extraordinary degree by the recognition on the part of the public of the correctness of the medical profession's views, it becomes evident that diseases of other sorts may likewise be gradually exterminated through similar campaigns of education. That this is becoming more and more the case is evident, and we have long been convinced that the wise education of the public is one of the main prophylactic measures upon which we must depend in the future for the gradual extermination of various forms of bacterial disease. The service which the *Journal of the American Medical Association* renders through its laborious statistical inquiry regarding tetanus is an example of missionary work which may well be followed by others. The facts which such an analysis contains are far more eloquent and persuasive than any amount of theoretical considerations regarding the danger of the disease.

## THE OPENING OF THE MEDICAL SCHOOLS.

WITHIN a week the medical schools will have entered upon another session, and a large body of young men, with small realization of what they are undertaking, will have begun their professional work. To the student, the entrance upon a medical course offers many and perplexing problems, quite unknown to our forefathers and even to ourselves. He must, in the very nature of the case, be called upon early in his professional career to make decisions which are of vital importance to him and to the community which he is to serve. However much his instructors may do toward rendering this task easy, the ultimate responsibility cannot be shirked.

A corresponding responsibility, and perhaps even a greater one, certainly rests with the medical faculties. The ever-growing puzzle between what shall be prescribed and what shall be elective is offering difficulties in medical education which experience, however tempered with good judgment, must alone finally decide. It is easy to see the pitfalls into which our educational institutions are likely to fall in their combined endeavor to do the best for the student and to add laurels to their own reputations. Teaching on the one hand and personal investigation on the other render difficult a just balance. Our schools must now as always have teachers whose aptitude and interest in their subjects is such that they can lead the student with interest and enthusiasm in his work. On the other hand, we must also have men whose instincts lead toward original investigation, and whose dealings with students are therefore rather a matter of necessity than of choice. This problem of the investigator and the teacher is one which is becoming increasingly difficult of solution.

In the second place, the friendly rivalry between the laboratory and the clinic is becoming somewhat increasingly difficult of adjustment in view of the very great interest and importance attaching to the ramifying branches of laboratory study and the unpopularity of the lecture as a means of teaching. No doubt, time will adjust what differences of opinion may now exist. In the meanwhile, however, the medical student becomes the subject of experimentation.

A further problem, which, as we have recently

indicated editorially, we are inclined to think of significance, is the relatively small number of students entering our best medical schools. Statistics show that the number in general this year is decidedly less than last in spite of increasing preparations for their reception. It is apparent that many lines of strictly medical work, as, for example, illustrated by the Rockefeller Institute for Medical Research, may be and will be undertaken by men who have received no medical degree and have not had a medical education in the ordinary sense of that term. That such positions are increasing in number and that more and more opportunities will be offered for young men to enter upon what may prove their life work immediately is a fact of which our medical educators should take cognizance.

These are some of the matters which suggest themselves at this opening of an academic year, a year which will, no doubt, mark a further progress in medical teaching and will do its share toward adjusting the somewhat chaotic conditions which now exist. From the student's point of view the uncertainty of the future should add zest to his work and should likewise be a source of renewed effort to his much-tried teachers.

## TREATMENT OF THE WOUNDED IN THE RUSSO-JAPANESE WAR.

From many standpoints the war now going on in the East is destined to afford information of great value, both in its military and medical aspects. Meager as authentic reports have been, certain facts regarding the treatment of the wounded and the character of the wounds received have been published in various periodicals. In the first place it appears that the Japanese Red Cross Society, in its discipline, equipment and efficiency, stands as a model for such organizations everywhere. Mr. George Kennan, writing on this subject recently in the *Outlook*, points to the fact that a Red Cross organization existed in Japan some six years before it was recognized in other countries, and that through its later affiliation with the army and navy departments it has attained a degree of practical efficiency which is far superior to the conditions in America where the relation existing between the society and the army is far less intimate. This organization no doubt had done much toward mitigating the inevitable horrors of the war in that the treatment of the wounded has been skilful and promptly performed.

Furthermore, as was demonstrated in the recent Boer War, the character of the rifle bullet now used is such that wounds are far more likely to heal than under conditions fifteen or twenty years ago. This fact, with the advent of modern surgical treatment, has led to a vast diminution in the number of deaths from wounds which not many years ago would certainly have been regarded as fatal. The rifle used by the Japanese throws the smallest bullet of any existing military rifles, but was favorably reported upon some years since by Dr. Kikuchi, staff surgeon of the Japanese army, on the ground that it would have great stopping power and that its wounds would heal quickly. This opinion he regards as confirmed by the experience thus far in the war. Patients shot through lungs, stomach, and even through the head, are said to have recovered. The stopping power is attributed to the cutting of blood vessels, leading to a loss of blood with accompanying weakness. The *British Medical Journal*, commenting on a letter of Mr. J. Gordon Smith, a war correspondent, states certain interesting facts regarding immediate treatment of the wounded. The plan has been not to operate on the field, but rather to dress wounds antiseptically and return the soldiers to hospitals as soon as possible. It is stated that up to the beginning of July over a thousand sick and wounded had been received at two hospitals in Tokio of whom not one died. Beyond the immediate treatment of aneurisms, the experience of the war seems to have taught that the knife is rarely necessary at the front. It is possible that the ration issued to the Japanese soldier has something to do with his immunity from suppuration. Naturally, physical condition must account for much in a prompt recovery from wounds. The foregoing may be true of small calibre bullet wounds, but it is difficult to see how the service of immediate surgery can be dispensed with in the case of wounds made by shrapnel and shells of various sorts so extensively used in this war. On this we have no information.

Some of the lessons thus far taught seem to be that the hospital organization should be in the closest possible relationship to the military service, that bullet wounds may best be left to nature, and that surgical operations of a radical sort are best performed, except in cases of extreme emergency, at base hospitals.

## MEDICAL NOTES.

Delegates of International Dermatological Congress. — It is announced that Dr. Stelwagon of Philadelphia, Dr. Fordyce of New

York and Dr. Gilchrist of Baltimore are to be American delegates to the forthcoming International Dermatological Congress in Berlin.

A CENTENARIAN. — The death of James McWilliams, at the reputed age of one hundred and seven years, a veteran of several wars, occurred at Grenville, Ala., recently.

### BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon Sept. 21, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 44, scarlatina 7, typhoid fever 34, measles 6, smallpox 0.

TYPHOID FEVER. — Typhoid fever has for some time past been reported as prevalent in Newton, Mass. The source of its outbreak in this generally salubrious place has not as yet been announced. Typhoid has also appeared at the Navy Yard at Portsmouth, N. H., with between twenty and thirty cases up to the present time.

POSSIBLE BEQUESTS. — By the will of the late Dr. Henry Tuck, who was possessed of large wealth, one fourth of his entire estate is left to the Massachusetts General Hospital, one fourth to Harvard University and most of the rest in one-twelfth part shares to various institutions and societies in Boston and New York. As these bequests, however, are made with the proviso that his widow survives his children and all of their descendants, it would seem extremely doubtful whether they will ever be carried out.

A UNIQUE HONOR TO A PHYSICIAN. — If reports are to be trusted, Dr. W. L. Smith of Worcester, also intimately associated with medicine in Boston, has been appointed Physician in Ordinary to the Shah of Persia. The report goes that Dr. Smith, during his recent travels, was detained at Ispahan during an outbreak of plague. During this detention he prescribed for the natives with success. The Shah, ill with malaria, hearing of Dr. Smith's success, sent for him. As a result of his successful ministrations he has received the honorary title above referred to.

### NEW YORK.

A RECORD FOR WEIGHT. — The record for weight among the patients of Bellevue Hospital is borne by Michael Glynn, who was recently an inmate of Bellevue, and later transferred to the City Hospital on Blackwell's Island. Although only twenty-four years old and considerably under six feet in height, he weighs 410 lbs. As may be imagined, the handling of so large a patient was attended with no little difficulty, and the heaviest bed that was available having collapsed under him, he was afterwards accommodated with one strongly reinforced with iron bars.

HEBREW CONVALESCENT HOME ASSOCIATION. — Initial steps have been taken for the organization of the Hebrew Convalescent Home Association, which proposes to buy a tract of land in Westchester County and build a home for convalescents just leaving the city hospitals.

DIPHTHERIA AT NEWARK, N. J. — During the last month, diphtheria has become increasingly prevalent in Newark, N. J., and now that the public schools have re-opened it is feared that there may be a further spread of the disease. The Board of Health is acting energetically in the matter and has adopted the practice of ordering preventive antitoxin inoculations in the members of families of persons attacked.

INSPECTOR OF CONTAGIOUS DISEASES. — A new office has been created by the New York Board of Health, namely, Chief Inspector of Contagious Diseases in the Borough of the Bronx, and Dr. Charles F. Spencer of that borough has been appointed to the position. Commissioner Darlington states that on account of the rapid increase of population above the Harlem the work there has become so enlarged that the present sanitary inspector is unable to keep up with it. The office of the new chief inspector will be at the Bronx headquarters of the Health Department, Franklin Avenue and East 168th Street.

MEASLES, CAUSE OF A RIOT. — A riot of curious origin recently occurred among a large band of gypsies who arrived on the steamship "Carpathia" and were being detained by the Government at Ellis Island for deportation. When they arrived, it was found that some forty of the children among them were suffering from measles. These were removed to the Kingston Avenue Hospital for contagious diseases, Brooklyn, and in some way the absurd report was spread among their parents that the children were being drowned by the city authorities. The trouble came to a head on Sept. 4, when a physician attempted to examine a child who had developed measles after the others had been sent away. Physical violence resulted, and the gypsies were only pacified after the mother of the child, who was allowed to accompany it to the Kingston Avenue Hospital, came back and reported that the patients were being well taken care of.

## Miscellany.

### THE POTASSIUM-PERMANGANATE-OXALIC ACID FETISH.

Dr. Charles Harrington in a paper, "Some Studies in Asepsis," read before the American Surgical Association, at St. Louis, June 14, 1904, made the following statement:

The preparation of the hands for surgical work is a subject that has interested me greatly. The potassium-permanganate-oxalic acid portion of the process has always excited my wonder. Three explanations have been given me of the necessity or advisability of this treatment, namely: (1) That the permanganate destroys bacteria; (2) That it oxidizes the organic matters adherent to the skin; (3) That when one stains the hands in every part with permanganate and then removes the stain with oxalic acid, the hands are clean. As to the assertion that it destroys bacteria: I have experimented with saturated permanganate solution against *Staphylococcus aureus* and *albus*, *B. coli* and *B. pyocyaneus*, and have found that ten minutes' exposure is ineffective against all but the last mentioned. These results, which were obtained not once, but several times, are shown in the following table in which the plus sign indicates growth, and the minus sign sterility:

| TIME (MINUTES) | AUREUS | ALBUS | COLON | PYOCYANEUS |
|---|---|---|---|---|
| 1 | + | + | + | + |
| 1–½ | + | + | + | + |
| 2 | + | + | + | + |
| 2–½ | + | + | + | + |
| 3 | + | + | + | + |
| 4 | + | + | + | + |
| 5 | + | + | + | + |
| 10 | + | + | + | — |
| 15 | — | — | — | — |

As to the oxidation of organic matter: Potassium permanganate is pre-eminently an oxidizer of organic matter. On dipping the hands into a saturated solution, they are stained a deep brown, owing to the precipitation of a lower oxide, oxygen having been given up to the epidermal scales and other organic matter. This deposit of the lower oxide is soluble in oxalic acid, which thus restores the normal color of the hands. It is assumed that the organic matter (just what harm it will do, unless it is in the form of bacteria, I do not know) is completely oxidized and disposed of. Dip the hands, however, a second time, and see what happens. The same thing. Repeat it. Again it happens; and again, and again, and again. This is due to the fact that, immediately on contact with organic matter, the permanganate is reduced and the hands become, as it were, *plated* with the precipitated lower oxide, which acts as a bar to further action of the permanganate upon the parts immediately beneath the plating, just as the albuminate of mercury prevents the further action of corrosive sublimate. A short time ago I tried the experiment of treating my hands first with permanganate and then with oxalic acid and repeating the process until further treatment failed to give the characteristic brown stain. On the twenty-first trial, the stain was observed to be less intense, and so on to the twenty-fifth, when the experiment was discontinued. From this it would appear that to oxidize all the organic matter possible by this means is an endless task. After twenty-five treatments I washed my hands with soap and water, and after repeated rinsing in running water, I dipped them again into the permanganate solution. At once the original dark brown stain appeared as intensely as ever; I was then oxidizing the traces of soap, which, in spite of continued rinsing, adhered tenaciously to the skin, as is proved by the great difficulty one observes in removing, by rinsing, the odor of a scented soap after washing therewith.

As to the statement that a hand once stained and decolorized is necessarily clean, there is but little to say. A dirty hand may be stained and decolorized as well as a clean one, but the dirt remains. Permanganate removes no dirt and destroys only weakly resistant bacteria.

### THE COMPARATIVE INTELLECTUAL POWERS OF THE TWO SEXES.

A comparison between the mental attributes of the two sexes has practical as well as scientific interests, for from the economic standpoint it is obvious that the world's intellectual work must eventually fall into the hands of those persons, be their sex what it may, who by reason of their mental capacities are best fitted for this purpose. The comparisons drawn by Dr. J. de Körösy, the director of municipal statistics at Budapest, and embodied in a paper read before the meeting of the British Association at Cambridge, are certainly deserving of attention if only for the extensiveness of the observations on which they are founded. As director of municipal statistics, he has had opportunities of comparing the examination records of nearly 1,000,000 children, girls and boys, who have received their education both in elementary and in higher grade schools. As gauged by successes and failures the comparison is greatly in favor of the girls, and even as regards proficiency in arithmetic, a subject usually regarded as the special prerogative of boys, the balance of proficiency inclines obviously to the side of the girls. The intellectual superiority of girls, as revealed by the test method applied by Dr. Körösy, is so unexpected and so entirely opposed to the teaching of the world's history that we naturally turn to other possible sources of explanation apart from inherent intellectual superiority to reconcile the pre-existing conception with the statistical figures drawn from the Hungarian archives. — *Lancet.*

## Correspondence.

### A DISCLAIMER.

Boston, Sept. 19, 1904.

Mr. Editor: My attention has been recently called to a circular advertising a Sanitarium in Athol, Mass., for the treatment of diseases by electrical and magnetic methods, and bearing as one of its signatures the name, "C. J. Alexander, M.D., Physician and Surgeon."

The similarity of names having suggested the question of my own connection therewith, I desire, through the columns of your Journal, to emphatically disclaim any knowledge of, or connection, past or present, with the above-mentioned institution.

Truly yours,

Clara J. Alexander, M.D.

The Bristol, Copley Square.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPTEMBER 3, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid Fever. | Diarrheal Diseases. |
|---|---|---|---|---|---|---|---|---|
| New York . . | 3,908,644 | 1,274 | 518 | 36.89 | 8.31 | 2.20 | 1.02 | 18.91 |
| Chicago . . . | 2,021,086 | 491 | 164 | 34.40 | 12.42 | 1.22 | 1.83 | 17.51 |
| Philadelphia | 1,407,968 | 371 | 131 | 32.67 | 5.67 | .81 | 2.70 | 15.39 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 184 | 65 | 39.67 | 2.71 | 1.08 | 3.26 | 17.93 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 92 | — | 35.87 | 3.26 | 5.43 | 5.43 | 15.22 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 57 | 23 | 36.83 | 4.35 | 5.26 | 1.75 | 21.04 |
| Boston . . . | 617,950 | 199 | 77 | 31.15 | 3.52 | 1.51 | 2.01 | 18.59 |
| Worcester . . | 136,925 | 37 | 15 | 24.32 | 5.40 | 8.10 | — | 18 91 |
| Fall River . . | 119,349 | 28 | 14 | 50.00 | 10.71 | — | — | 32.13 |
| Lowell . . . | 104,402 | 27 | 11 | 29.62 | — | — | 3.70 | 18 51 |
| Cambridge . | 100,998 | 22 | 12 | 36.36 | 4.54 | — | 4.54 | 22.72 |
| Lynn . . . . | 73,875 | 26 | 6 | 23 07 | 3.85 | — | — | 11.53 |
| Lawrence . . | 72,348 | 17 | 9 | 41.17 | 11.76 | 5.88 | — | 29.41 |
| Springfield . | 72,020 | 22 | 7 | 22.72 | — | — | — | 13.63 |
| Somerville . | 70,413 | 13 | 2 | 15.40 | 7.70 | — | — | 7.70 |
| New Bedford | 68,863 | 29 | 17 | 51.72 | 6.90 | 3 44 | — | 41.37 |
| Holyoke . . . | 50,538 | 18 | 10 | 50.00 | 5.55 | — | — | 27.77 |
| Brockton . . | 46,601 | 17 | 4 | 11.76 | — | — | — | — |
| Newton . . . | 39,310 | 13 | 3 | — | — | — | — | — |
| Haverhill . . | 39,061 | 3 | — | 33.33 | — | — | — | — |
| Malden . . . | 37,205 | 5 | 3 | 80.00 | — | — | 20.00 | 60.00 |
| Salem . . . . | 37,188 | 11 | 7 | 27.27 | — | — | — | 27.27 |
| Chelsea . . . | 36,499 | 13 | 10 | — | — | — | — | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 12 | 6 | 58.31 | 8.33 | — | — | 50.00 |
| Everett . . . | 30,209 | 2 | — | — | — | — | — | — |
| North Adams | 29,201 | 12 | 6 | 33 33 | — | — | — | 25.00 |
| Quincy . . . | 26,798 | 7 | 5 | 71.50 | — | — | — | 57.20 |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 10 | 4 | 40.00 | — | — | — | 20.00 |
| Brookline . . | 23,576 | 1 | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | 12 | 3 | 25.00 | 8.33 | — | — | 16.67 |
| Medford . . | 21,956 | 6 | 2 | 33.33 | — | — | — | 33.33 |
| Chicopee . . | 21,692 | 6 | 5 | 33.33 | 16.67 | — | — | 33.33 |
| Northampton | 20,314 | — | — | — | — | — | — | — |
| Beverly . . | 15,807 | 4 | — | 25.00 | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 3 | 0 | 33.33 | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | 4 | — | 50.00 | — | — | — | 25.00 |
| Hyde Park . | 14,500 | 3 | 1 | 33.33 | — | — | — | — |
| Newburyport | 14,478 | 10 | 4 | 30.00 | — | — | — | 30.00 |
| Woburn . . . | 14,315 | 7 | 3 | 14.30 | — | — | — | 14.30 |
| Melrose . . . | 13,819 | 2 | 1 | — | — | — | — | — |
| Westfield . . | 13,809 | 2 | — | 50.00 | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 1 | 0 | 100.00 | — | — | — | — |
| Revere . . . | 13,609 | 4 | 1 | 25.00 | — | — | — | — |
| Framingham | 12,974 | 3 | 0 | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 3 | 1 | 33.33 | — | — | — | — |
| Southbridge . | 11,716 | 1 | — | 50.00 | — | — | — | — |
| Watertown . | 11,575 | 5 | 1 | — | 20.00 | — | — | — |
| Weymouth . | 11,350 | 3 | 1 | — | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,092; under five years of age, 1,152; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 1,083; acute lung diseases 184, consumption 360, scarlet fever 14, whooping cough 15, cerebrospinal meningitis 12, smallpox 1, erysipelas 2, puerperal fever 4, measles 4, typhoid fever 51, diarrheal diseases 567, diphtheria and croup 53.

From whooping cough, New York 5, Chicago 3, Philadelphia 2, Baltimore 1, Pittsburg 2, Boston 1, Lynn 1. From measles, New York 3, Pittsburg 1. From scarlet fever, New York 5, Chicago 3, Philadelphia 1, Baltimore 4, Pittsburg 1. From cerebrospinal meningitis, New York 10, Chicago 1, Worcester 1. From erysipelas, Philadelphia 2. From smallpox, North Adams 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending Aug. 20, the death-rate was 22.7. Deaths reported 6,639; acute diseases of the respiratory organs (London) 40, whooping cough 79, diphtheria 39, measles 130, smallpox —, scarlet fever 26.

The death-rate ranged from 7.8 in Kings Norton to 39.1 in Liverpool; London 21.6, West Ham 28.0, Brighton 17.3, Plymouth 17.8, Bristol 16.0, Birmingham 24.4, Leicester 21.2, Nottingham 23.9, Bolton 16.9, Manchester 26.9, Salford 32.1, Bradford 17.0, Leeds 23.5, Hull 29.0, Sheffield 22.4, Cardiff 17.2, Rhondda 30.7, Merthyr Tydfil 21.0, Swansea 27.7, Wigan 34.0, South Shields 17.0.

## METEOROLOGICAL RECORD.

For the week ending September 3, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. Daily mean. | Thermometer. Daily mean. | Thermometer. Maximum. | Thermometer. Minimum. | Relative humidity. 8.00 A.M. | Relative humidity. 8.00 P.M. | Relative humidity. Daily mean. | Direction of wind. 8.00 A.M. | Direction of wind. 8.00 P.M. | Velocity of wind. 8.00 A.M. | Velocity of wind. 8.00 P.M. | We'th'r * 8.00 A.M. | We'th'r * 8.00 P.M. | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S.. 28 | 30.06 | 68 | 81 | 56 | 69 | 64 | 66 | W | S W | 8 | 11 | C. | C. | 0 |
| M. 29 | 29.98 | 72 | 82 | 61 | 69 | 47 | 58 | S W | N | 11 | 12 | O. | C. | 0 |
| T.. 30 | 30.20 | 60 | 64 | 55 | 58 | 78 | 68 | N E | S E | 7 | 8 | C. | C. | 0 |
| W .31 | 30.23 | 64 | 73 | 56 | 67 | 68 | 68 | S W | S E | 7 | 4 | O. | C. | 0 |
| T.. 1 | 30.26 | 64 | 72 | 56 | 75 | 75 | 75 | N E | S | 4 | 11 | O. | O. | 0 |
| F.. 2 | 30.12 | 70 | 79 | 62 | 78 | 82 | 80 | S W | S | 14 | 12 | O. | C. | 0 |
| S.. 3 | 30.04 | 76 | 85 | 68 | 78 | 84 | 81 | S W | S | 9 | 10 | C. | C. | 0 |
| ☞ | 30.13 | | 77 | 59 | | | 71 | | | | | | | 0 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for week.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING SEPTEMBER 17, 1904.

E. H. GREEN, medical inspector. Ordered to the Navy Yard, New York, N. Y. Oct. 1.

D. N. BERTOLETTE, medical inspector. Detached from duty as a member of the naval retiring board and of the naval and medical examining boards, Washington, D. C., and ordered to resume other duties.

A. F. PRICE, medical director. Detached from the navy yard, New York, N. Y., Oct. 1, and ordered to duty as a member of the naval retiring board, Washington, D. C.

F. W. BRECK, pharmacist. Ordered to the Naval Hospital, New York, N. Y.

## OPERATIONS: BOSTON CITY HOSPITAL.

The following operations will be done and cases shown in the amphitheatre of the Boston City Hospital on Sept. 23, from 10 A.M. until 12.30 P.M.; Renal Calculus; Nephrorrhaphy; Fecal Fistula; Inguinal Hernia; Abdominal; Tuberculous Glands of Neck; Abdominal Tumor.

## RECENT DEATH.

JACOB CHAMBERS, M.D., a prominent physican of Kingston, N. Y., died on September 15, in the fifty-third year of his age. He was the family physician of Judge Parker, the Democratic candidate for President, who was one of the pall-bearers at his funeral services at St. John's Church, Kingston, on September 17.

## BOOKS AND PAMPHLETS RECEIVED.

The Suppression of Tuberculosis together with Observations concerning Phthisiogenesis in Man and Animals and Suggestions concerning the Hygiene of Cow Stables and the Production of Milk for Infant Feeding, with special Reference to Tuberculosis. By Prof. E. von Behring. Authorized translation by Charles Bolduan, M.D. First Edition. New York: John Wiley & Sons. London: Chapman & Hall, Ltd. 1904.

Transactions of the American Association of Obstetricians and Gynecologists. Vol. xvi. For the Year 1903. New York: Rooney & Otten Ptg. Co. 1904.

Transactions of the Medical Society of the State of New York for the Year 1904.

A Theory of the Symptom-Reflex. By T. Horace Evans, M.D. Reprint.

Origin of the Vermiform Appendix. A Preliminary Report. By Alfred Moore, M.D. Reprint.

Studies from The Rockefeller Institute for Medical Research. Reprints. Vol. II. 1904.

Handbook of Surgical Anatomy. By G. A. Wright, B.A., M.B. (Oxon.), F.R.C.S., and C. H. Preston, M.D., B.S. (Lond.), F.R.C.S., L.D.S. (Eng.) Philadelphia: P. Blakiston's Son & Co. 1904.

The Physiological Feeding of Infants. A Practical Handbook of Infant Feeding, and Key to the "Physiological Nursery Chart." By Eric Pritchard, M.A., M.D. (Oxon.), M.R.C.P., (Lond.). Second Edition. Greatly Enlarged and Entirely Rewritten. Chicago: W. T. Keener & Co. 1904.

# Original Articles.

## DISEASE OF THE MYOCARDIUM.*

BY HENRY JACKSON, M.D., OF BOSTON.

Many large volumes have been written on the subject of valvular disease of the heart, and much discussion has taken place as to the possibility of an accurate differential diagnosis and as to the exact pathologic condition which is the cause of a certain murmur. All textbooks contain many chapters on this branch of heart disease. On the other hand, diseases of the myocardium are dismissed with a short account of the rare forms of new growth which may be found in the muscular substance of the heart, and often by a rather confused account of dilatation and hypertrophy of the heart.

Practically, we cannot with our present knowledge successfully apply treatment to chronic valvular diseases, or rather we cannot, at any rate, cure the deformities of the valves produced by chronic valvular endocarditis. In heart disease, individuals suffer only when and in proportion as the myocardium becomes involved as the result of a failure of the valves to carry on their work. This is certainly true of the cases of disease dependent upon valvular trouble, but such cases represent only a small proportion of the individuals who suffer from disturbance of the heart.

A very large number of individuals who are affected with "heart disease" have no valvular lesion. The nomenclature of non-valvular diseases of the heart is at present chaotic, and an exact diagnosis is most difficult to make, in many cases, impossible. We are confronted by two possibilities in choosing the proper name for a given case; we may choose a name according to the most prominent clinical symptom as dilatation, or mitral regurgitation, or we may choose a name based on the probable pathologic condition. The former method is certainly faulty; as to the second suggestion we are rarely in a position to decide with accuracy as to the exact pathologic lesion present in a given case. In many cases we may be reasonably sure as to the ultimate cause of the trouble, as in cases of arterio-sclerosis, yet quite in the dark as to the exact pathologic condition of the heart. A glaring proof of the futility of attempting to define the disease on the basis of the pathologic condition is found, in the continued use of the term, "fatty heart," though we know that fatty degeneration of the heart is rarely found to be the cause of serious chronic myocardial disease. Until further light is thrown upon the subject the name, "myocardial disease," or disease of the myocardium seems open to as little objection as any other term. Myocarditis is objectionable as it signifies a condition seldom present; degeneration of the myocardium is far more common than any inflammatory process.

It seems wise to choose a generic name rather than a definite name based on pathologic findings as the changes found are manifold. Diseases of the myocardium may be classed as acute and chronic. In most septic diseases, using the word in the wide sense of including all diseases of acute course dependent upon bacteria, we find at autopsy more or less fatty or granular degeneration of the muscle of the heart. During life this process is suggested by rapid action or by irregularity and intermittent action. I have seen in diphtheria and scarlet fever weakness of the heart so marked that only a portion of the beats were transmitted to the pulse at the wrist, a condition that I have elsewhere described as the "acme of cardiac weakness." It is probable that in a large number of cases such a condition is absolutely curable, though the recent investigations of Thayer suggest that the more marked affections of the heart in typhoid may lead to subsequent disease appreciable by physical examination.

Aside from the irregularity of the heart and the increased rate, other phenomena may be noted. As a rule, dilatation of the heart cannot be or certainly is not diagnosed by percussion; but it is not unusual in the hospital, where careful measurements of the heart area are frequently made, to find in acute disease that the left border may extend some distance to the left of the nipple line. In children and young adults I have frequently seen such a dilatation come on rapidly, and as quickly subside with the improvement in the course of the disease. As the state of the patients in which I have found this condition has not always been serious, I am inclined to the opinion that dilatation might be found more often if its existence were sought for with care. In certain infectious diseases, especially in diphtheria, the affection of the heart is more common than in many others. Doubt has been raised whether the chief disturbing factor in producing incompetency of the heart in acute disease was to be sought for in the nerves or in the muscle of the heart. Until proof to the contrary is forthcoming, the fact that pathologic changes in the myocardium are common seems to weigh in favor of the assumption that the chief trouble is to be sought for in the degeneration of the muscular substance of the heart.

In the course of an acute disease the condition of the heart described above is not usually so marked as in itself to demand attention, aside from that given as routine practice in the care of the case, but in convalescence I have frequently seen irregularity of the heart persist after the main symptoms of the primary disease had entirely subsided. A slow action of the heart is frequently described as a symptom of heart weakness, especially in so-called "fatty heart"; this condition I consider rare, in fact very seldom seen; whereas in disease of the myocardium, as evidenced by weakness subsequent to acute infectious disease, a slow, irregular pulse, often intermittent, is a common occurrence. If the patient survive the acute disease, the immediate prognosis of the cardiac condition is certainly good, as sudden death is rare except in diphtheria.

* Read before The Massachusetts Medical Society, June 7, 1904.

From analogy it is more probable that sudden death in diphtheria is due to a disturbance of the nerves than to the pathologic condition of the myocardium.

Aside from acute degeneration of the myocardium already spoken of, other processes may be found. Abscesses in the course of general septicemia may be found. In gonorrhea I have seen acute purulent myocarditis ending in sudden death. Acute malignant myocarditis of the same nature as acute malignant endocarditis is not very rare; in an analysis that I made of 59 cases of malignant endocarditis, in three the process was myocardial, and I have recently seen other cases. In none of the cases was the diagnosis made definitely, and probably such a diagnosis could not be absolutely established during life, unless by exclusion. In all the cases the heart was rapid, weak, and the symptoms suggested some serious heart disturbance.

The acute forms of myocardial disease described do not, except in the case of acute abscess, present a picture suggestive of heart disease, but are simply physical conditions that may account for the varying grades of the severity of an illness dependent upon the primary disease which gives rise to the cardiac condition.

In chronic disease of the myocardium we find an entirely different process. A patient consults us for symptoms suggestive of heart disease, — shortness of breath, palpitation, precordial distress, cough, — and having determined that the essential lesions causative of the disturbance are situated in the heart, we have to decide whether the case under consideration is suffering from valvular disease or from disease of the myocardium.

In approaching the consideration of such a case, determine as accurately as possible the size of the heart by palpation and percussion; the latter method is to my mind more accurate than palpation, and in most cases gives accurate data as to the size of the heart. Frequent comparison of the post-mortem findings with the data determined by percussion gives me a good deal of confidence in drawing conclusions from percussion. This opinion is based largely on examination made by house pupils in the hospital, therefore I feel at liberty to make this statement as to the accuracy of percussion. The character of the pulse, the regularity of the beats, and the presence or absence of signs suggestive of chronic passive congestion, determine whether the enlargement be due mainly to dilatation or hypertrophy of the muscular substance. But we may with much certainty assert that where there is enlargement readily appreciable by percussion, a certain amount of dilatation is present. Frentzel makes the statement that in all cases where enlargement of the cardiac area is appreciable by percussion dilatation is present.

In the vast majority of cases the presence of an aortic murmur determines that the trouble is dependent upon degeneration of the aortic valves, and certainly the opposite conclusion can only be decided by post-mortem evidence. This is not the case with a murmur in the mitral area. In a large number of cases of myocardial disease there is a regurgitation through the mitral valve, not to be distinguished by its situation, quality or transmission from a murmur produced by endocarditis of the mitral valve. This murmur is certainly not even distantly related to the so-called "hemic murmur," but is caused by a leak in the mitral valve as shown by the characteristics of the murmur, by the results dependent upon the leak evidenced in chronic passive congestion of remote organs, and associated with great enlargement of the mitral orifice, often demonstrated post-mortem.

The diagnosis of myocardial disease rather than mitral cannot be made definitely in such a case, but is dependent upon the absence of diseases which usually lead to the production of a mitral endocarditis; further by the presence of signs usually causative of myocardial disease. As a rule, great enlargement of the heart area with marked evidence of dilatation is less common in mitral than in myocardial disease.

Post-mortem the heart is found to be enlarged; the weight may not infrequently reach 600 gm., the normal being perhaps 300 gm., and cases are often seen in which the heart weighs 800 or 900 gm. In the larger hearts the cavities are much dilated. Except in early stages the increase in the substance is dependent not upon increase in the muscle but upon fibrous growth into and surrounding the muscular substance. Microscopically the muscular cells are degenerated and are often widely separated by fibrous growth. Large areas are frequently seen in which the muscular substance has practically disappeared, and these are the cases in which local dilatation gives rise to the so-called aneurism of the heart.

Myocardial disease may arise from various pathologic processes:

First, from disturbances within the heart itself: sclerosis of the coronary arteries, in many cases the direct cause of myocardial disease in that as a result of narrowing of the vessels the nutrition of the heart muscles suffers, and a gradual fibrous degeneration takes place, causing indirectly weakness of the heart. Absolute closure of the coronary vessels in rare instances gives rise to softening of the muscular substance which may end in rupture, as in a case under my observation. In cases with sclerosis of the arteries of the heart precordial pain and distress seem to be more common than in other forms of myocardial disease.

Second, and by far the most common cause, is general arterio-sclerosis. The younger the individual attacked by sclerosis the greater the probability that the heart will be involved. Arterio-sclerosis is a very common disease, and the size of the heart varies so much in cases which present apparently a similar grade of degeneration in the vessels, that it certainly seems possible that some other element than simple mechanical obstruction enters into the etiology of enlargement of the heart — perhaps a toxemia which affects directly the heart and the superficial ves-

sels, making both conditions, therefore, the result of a common etiologic factor. In many cases of intense hardening of the vessels in old age, we find no evidence of any involvement of the heart.

Third, renal disease; especially in the type of chronic kidney disease in which the process consists essentially of a chronic interstitial nephritis. In these cases hypertrophy is the rule, and the heart itself does not usually become sufficiently dilated to become incompetent.

Fourth, many cases are seen in which no pathologic factor can be found, cases in which we have the history of excessively hard physical labor, but no sclerosis of the arteries is found and no renal disease.

Fifth, excessive abuse of alcohol in which no gross pathologic lesions are found. Many such cases come under our observation in a hospital clinic. They represent a type of "heart disease," and the heart may be of enormous size. Such cases certainly suggest the possibility that the large hearts found in certain cases of arteriosclerosis may be dependent upon a toxemia rather than upon a simple mechanical obstruction due to the narrowing of the superficial vessels.

Sixth, a few cases come under our observation in which we find an enormous heart without any known etiology, cases in which there is no history of hard work, no history of alcohol, and in which no pathologic factor can be found that represents in any way a probable explanation for the enlargement on the theory of mechanical obstruction.

In a few rare cases tumor of the myocardium gives rise to symptoms suggestive of "heart disease." So far as I can say, I have not seen this condition except occasionally in syphilitic myocarditis, a condition that I have diagnosed.

Enough has been said to show that "heart disease" does not always mean valvular disease of the heart. In fact, from statistics that I have gathered and published from clinical observations and from post-mortem records, valvular disease of the heart is found in only about half of the cases of "heart disease."

### DISCUSSION.

Dr. J. H. Pratt of Boston: I have recently been studying the relation of diseases of the heart muscle to cardiac insufficiency, with special reference to the significance of fatty degeneration, and I am pleased to learn that my observations, so far as they go, accord with the conclusions of Dr. Jackson. I agree with him and with recent German investigators, notably Krehl, Romberg and Albrecht, that fatty degeneration of the myocardium has little if any clinical significance. As Dr. Jackson says, the textbooks pay too little attention to myocardial disease. Even in cases of chronic endocarditis the condition of the heart muscle is more important than the valvular lesion. The most frequent cause of broken compensation, according to Krehl, Kelle and Albrecht, is acute interstitial myocarditis. They found that when the entire heart was cut into small blocks, and sections studied from each block, that pathological alterations in the heart muscle were always present.

Interesting experimental work from Curschmann's clinic by Romberg, Pässler and Rolly indicates that in diphtheria the circulatory disturbances which occur early in the disease are due to injury of the vaso-motor apparatus by the diphtheria toxin, while the circulatory disturbances which occur during convalescence are, as Romberg pointed out some ten years ago, the result of an acute interstitial myocarditis.

Dr. H. H. Smith of Boston: The statement is frequently made that sudden death from heart failure is common in diphtheria. During my two years' connection with the South Department of the Boston City Hospital, I did not see an instance of sudden death from this cause, although there were several from respiratory obstruction. Several patients taken from the hospital by parents or friends before they were ready for discharge have subsequently died suddenly, death in each instance taking place during the third week of the illness.

## ABSCESS OF THE LIVER FOLLOWING ABDOMINAL INFECTIONS, WITH A REPORT OF FOUR CASES.

BY DANIEL FISKE JONES, M.D., BOSTON,
*Surgeon to Out-Patients, Massachusetts General Hospital.*

Abscess of the liver, though a comparatively rare complication of abdominal infections, is, we believe, of more frequent occurrence than is generally supposed. Statistics show it to be a complication of appendicitis in from 1% (Caley) to 2% (Langheldt) of all such cases as come to autopsy. Fitz in 257 autopsies on cases of perforative appendicitis, found 11 cases of pylephlebitis. Langheldt in 112 autopsies found 4 cases of pylephlebitis, 2 of abscess of the liver, and 2 of suppurative hepatitis. Caley in 200 autopsies found 2 cases of abscess of the liver. Libman in 48 cases of appendicitis found suppurative lesions in the mesenteric and portal veins in 6 cases, in 4 of which there were multiple abscesses of the liver. The percentage of abscesses to the number of cases reported by Libman must be considered purely accidental. These statistics must be modified somewhat when applied to appendicitis at the present time, for patients are now operated upon much earlier than they formerly were and the appendix is practically always removed.

I have been able to find in literature 114 cases of abscess of the liver following abdominal infections. Of these the appendix was the focus of infection in 100 cases, salpingitis or pelvic cellulitis in 11 cases, and perforated gastric ulcer in 3 cases. I have taken only those cases in which it was definitely stated that there was abscess of the liver, and not pylephlebitis alone; and I have not included cases of abscess from simple ulcer of the stomach or intestines.

The most frequent situation for these abscesses is the right lobe, close to the posterior-superior surface. Of the 114 cases collected, the abscess or abscesses were in the right lobe in 50%; in both lobes in 44%; in the left lobe in 6%. The reason for this seems to be a purely anatomical one; the right lobe is larger, and the branch of the portal vein to this lobe continues in a straight line from the main trunk, while the left leaves it almost at a right angle.

The varieties of abscesses found are: (1) Multiple abscesses, usually situated in the periphery, and varying in size from that of a pin head to that of a walnut. (They are by far the most frequently met with and were given the name of "Abscès areolaire" by Chauffard); (2) The single abscess (Loison, Koerte, Morton) which is usually situated close to the periphery but may be found in any part of the organ; (3) The large single abscess surrounded by a colony of small ones (Legg and Rolleston); (4) Two or more large abscesses, which may be situated in parts remote from each other (Monnier and Starr); (5) Several large abscesses, which may connect (Ashby, Roger, Payne); or (6) One large abscess with the remainder of the liver filled with small ones (De Gennes, Munro, Becker).

Though there may be many ways for the infection to reach the liver from the abdomen, the portal vein is undoubtedly the path followed in practically all cases. Of the 114 cases collected, the portal vein was found to be infected in 55. It was not stated whether the portal vein was infected or not in 38, while in only 21 was it stated that it was not infected; and there is nothing to prove that the branches of the portal were not infected in these cases.

I have been unable to find that the lymphatics of the abdominal cavity or retroperitoneal tissue have any close connection with the lymphatics of the liver. Infection of the retroperitoneal tissue takes place in a large proportion of appendiceal infections, and yet liver abscess rarely occurs. On the other hand a large proportion of cases of liver abscess occur in simple ulcerative or mild perforative appendicitis when the retroperitoneal tissue is not involved. If the retroperitoneal lymphatics do connect freely we should have the liver infected in perinephritic abscesses and spinal caries more often than is the case. That the peritoneal lymphatics, too, have no intimate connection seems probable when we consider the great number of abdominal infections, — the number of appendix abscesses in contact with the under surface of the liver, and the subphrenic abscesses.

Anatomically it would seem difficult to infect the liver from the abdomen through the lymphatics. Poirrier and Cuneo in their anatomy divide the lymphatics of the liver into two systems: (1) The superficial lymphatics, which begin in the interlobular tissue between the superficial lobules; (2) The deep lymphatics, which originate about the deeper lobules. The superficial come to the surface beneath the peritoneum and empty into the glands, (1) about the celiac axis, (2) about the thoracic portion of the inferior vena cava, (3) about the œsophagus in the thoracic cavity, (4) in the hilus of the liver, and (5) the subxiphoid group.

The deep lymphatics follow the portal and subhepatic veins and terminate in the glands of the hilus and in the intra-thoracic glands about the vena cava. It will be seen that only one group of lymphatics terminates below the liver, — the one from the posterior surface which terminates in the celiac glands. Another point to be noted is that the lymphatic flow is from the interior of the liver outward and not from the abdominal cavity toward the interior of the liver.

The power of the liver to destroy infective material is well known, and if the bacteria do reach it through the lymphatics, they must come so slowly that the liver is able, in most cases, to destroy them.

That abscess of the liver does result from the contact of pus, cannot be denied; yet it is only after a considerable period, when the peritoneum and capsule have sloughed through, that infection takes place. Fashen's and Owen's cases were, undoubtedly, owing to contact of pus.

Although it is possible for infection to be carried from the abdomen to the liver by the systemic circulation, the occurrence is undoubtedly rare. The following concomitant infections have been found at autopsy: Ashby, endocarditis; McClelland, meningitis; Netter, infection of the lung; and Wallis, infection of the kidney. These infections may have been secondary to infection of the liver, and they do not necessarily show that they came or that the liver was infected through the systemic circulation.

Dieulafoy lays great stress upon the fact that the appendix is a closed cavity in which the virulence of the bacteria is increased to such an extent that the liver is unable to destroy them when they are brought to it.

A striking fact in looking over the reported cases of appendicitis is that a very large percentage of cases were either of the simple ulcerative or of the mild perforative form. It is undoubtedly owing to this fact that the primary abdominal symptoms were so many times entirely overlooked. Of the 100 cases of appendicitis, in but 4 was the appendix removed before the onset of liver symptoms; in many, appendicitis was not suspected until found at autopsy. In 14 of the 100 cases of appendicitis, a pin in the appendix was found to be the exciting cause.

Abscess of the liver is, as I have said, a much rarer complication of appendicitis to-day than formerly because the average length of time before operation is much shorter, and because the appendix is practically always removed. In case No. 1 the appendix was not removed, and not until fifteen days after drainage of the appendiceal abscess were there any symptoms of abscess of the liver. Dieulafoy thinks that abscess of the liver is one of the most serious complications of appendicitis and one of the strongest arguments for early recognition of the lesion and operation for the removal of the appendix. He believes that such a complication can be avoided by operating before the fifth or sixth day, as liver symptoms seldom if ever develop before that time. Unfortunately, it is the mild cases of appendicitis which often cause abscess of the liver; and they are, of course, the cases which are most often treated medically.

The diagnosis of abscess of the liver is comparatively easy if the patient is seen early, when there are tenderness and pain in the region of the

liver; or if seen late after the liver is enlarged. In the intermediate stage it is difficult and often impossible to make a diagnosis.

If the case is seen from the beginning there will be some symptoms of appendicitis, of salpingitis, or whatever the primary cause may be. Sometime during the course of these symptoms, or perhaps after their subsidence, there will be a sudden severe pain in the epigastrium or lower chest, with tenderness in this region, which in the great majority of cases is accompanied by a chill, usually severe. With this pain in the hypochondrium there is often increased rapidity of respiration with pain on deep inspiration. This may be true even though the abscess is deep and there is no peritonitis between the liver and diaphragm (as in Case 1). Marked tenderness on pressure over the liver is usually present. Chills may occur at intervals of several days, or they may recur once or twice daily. They are rarely, however, absent entirely. With the chills there are great variations in temperature. Vomiting is a somewhat constant symptom. This Berthelin calls the first stage.

In the second stage the pain and tenderness are much diminished or wanting entirely. Diarrhea is usually present at this stage; constipation is rare. Jaundice may be present, but is often absent. It may vary from the slightly yellow tinge of the sclerotics to a deep jaundice. The urine may contain bile.

The chills are followed by profuse sweating. Their frequency in this stage depends largely, it seems to me, upon the condition of the portal vein; that is, if there is a pylephlebitis with frequent fresh infections of the liver, the chills are frequent, while if there is infecton of the smaller mesenteric veins only, with a single or perhaps two or three abscesses, the chills are infrequent, and sometimes absent after the first one or two.

The temperature is very irregular, with great excursions, varying from normal or even subnormal to 104° or even 106°. There may be a day, or even several days, during which the temperature is little above normal. The pulse is rapid and weak. In this stage enlargement of the liver can usually be made out very easily. The patient is now in a typhoidal state, is extremely weak and thirsty, and has no appetite. The tongue is dry, and the patient rapidly grows weaker and more emaciated.

In the third or last stage all the foregoing symptoms are exaggerated; the patient sinks into a semi-conscious condition and dies. Delirium may or may not be present.

A physical sign of value, which at times is present when the abscess is caused by infection from the intestinal tract, is tympany over the abscess cavity, owing to the presence of gas producing bacteria. This was a localizing symptom in Case 1.

A procedure of doubtful value is aspiration. It is unsatisfactory because the abscesses are often so small that the tap is a dry one, or if the abscess is single it may be transfixed by the needle or missed altogether. I have seen a surgeon puncture the liver ten or twelve times, when the abdomen was open, without finding the abscess which autopsy later showed to be present. Aspiration is not only unsatisfactory, but it is dangerous; for even though no pus is obtained through the needle, an abscess cavity may have been opened which will discharge pus through the needle hole. This occurred in Case III. After I had opened the abdomen and had made several punctures without obtaining pus, I saw that pus was oozing out of the first two punctures. Wood says that 80% of punctures are fatal, — a statement very hard to prove.

Loison has found the x-ray of considerable diagnostic value in his cases.

After the diagnosis of abscess of the liver is made, shall operation be advised? Munro says we must have earlier diagnosis and earlier operation in these cases. Operation would undoubtedly give the best results in a certain small percentage of cases which may be considered operable. But this percentage is so very small that it would hardly seem wise to operate early on all cases. Is there not a class of cases which we can select to operate upon early? Berthelin says that only the single abscesses are operable, but that the diagnosis between single and multiple abscesses is impossible. Of the 114 cases collected, in but 35 was there a single abscess or a grouping of abscesses which might be considered operable.

The condition of the portal vein seems to me to be of much greater importance than the number of abscesses in the liver; for if there is a phlebitis of the main trunk of the portal, drainage of a single liver abscess can be of little value. I believe such cases are inoperable, in spite of the cases of Treves and Libman. Treves reported a case of pylephlebitis and multiple abscesses of the liver in which the patient recovered after a simple exploratory laparotomy; and Libman reports an autopsy which showed a healed abscess of the liver and pylephlebitis, the patient having died of an abscess in the mesentery. Of the 114 cases, in 21 the portal vein was reported clear; in 38 no mention of the portal was made; and in 55 a pylephlebitis of the main trunk was reported. If we take as having no portal phlebitis one third of the cases in which no mention was made of the condition of the portal, we shall have 13 cases, and if we add these to the 21 in which we know that the portal was clear, we have 34 cases which are operable so far as the condition of the portal vein is concerned.

We have then out of 114 cases 35 which are operable so far as the condition of the liver is concerned, and 34 in which the condition of the portal vein would permit of operation; but, unfortunately, these groups of cases are not the same, and of the two groups which are operable so far as both conditions are concerned, there are at most 18 cases or 16%. It must be remembered, however, that the condition of practically all these cases is that found at autopsy, and it seems but fair to suppose that a certain propor-

tion of the inoperable cases might have been found operable early in the course of the disease. The cases of Owen and Fashen, and those cases of a large abscess surrounded by a colony of small ones, tend to prove that multiple infections of the liver may take place from the primary focus in the liver. In Owen's case the infection of the liver resulted from contact of pus at the hilus, causing a small abscess in the liver at this point and another in the right lobe; while in Fashen's case a perforated gastric ulcer connected with a large abscess in the right lobe, and many smaller ones filled both lobes.

Clinically those cases are inoperable in which the temperature is very irregular, with frequent chills, and in which there are very acute symptoms, — that is, those cases in which there are symptoms of pylephlebitis and multiple abscesses. Those cases should be operated upon in which after two to seven days the acute symptoms are subsiding, the temperature becoming somewhat more regular, and the chills, if present at all, infrequent; or in which the onset of the symptoms is insidious with infrequent chills and moderately irregular temperature.

Of the 114 reported cases of abscess of the liver 16, or 14%, were operated upon for drainage of the abscess. Of the 16 cases, 7, or 44%, recovered; while of those not operated upon none recovered. We have shown above that at least 16% should be operated upon early, but what operation should be done? Obviously, the location of the abscess, if it could be determined, would aid very materially in deciding upon the best route to be employed. Of the reported cases the abscesses were situated in the right lobe in 50%; they were in both lobes in 44%; in the left lobe in 6%. Of those in the right lobe a very large proportion were in the posterior superior portion. Therefore, we must in these cases reach the posterior superior surface of the right lobe. This can be done best by the transpleural route, to which, however, there are some serious objections, the most important of which is the danger of infecting the pleural cavity. The infection will undoubtedly take place in some cases, as it did in three reported by Patel; but it is not necessarily a fatal complication, for all three of his cases recovered. Another objection to the transpleural route is that it gives a view of only a limited area of the surface of the liver. This difficulty, however, may be largely overcome by resecting a sufficient number of ribs.

That this route is not always to be employed, is quite evident, and I believe that in many cases a preliminary exploratory laparotomy should be performed. Abscesses of the under surface of the liver could in this way be found, and by careful exploration of the liver with the hand, and aspirating needle, abscesses in other portions might be located. If, however, nothing is seen on the under surface and the abscess cannot be located, the transpleural route with resection of one or more ribs should be employed. The opening should be large enough to permit intelligent exploration of the upper surface of the right lobe. This can be done with comparative safety if, after resecting the ribs and before opening the pleural cavity, the surgeon sutures the diaphragm to the intercostal muscles about the whole wound; or if, after resecting the ribs, he takes care that the parietal pleura is held against the diaphragm to prevent pneumothorax when the pleural cavity is opened. The edge of this wound may then be sutured to the diaphragm, before the opening is made into the abscess cavity. After opening through the diaphragm, a second row of sutures may be placed about the edge, to make the shutting off of the pleural cavity doubly certain, before the abscess is opened. If the liver is not adherent to the diaphragm, the abdominal cavity should be walled off by thin strips of gauze, or the wound may be packed with gauze for twenty-four hours before the abscess is opened. Suturing of the edge of the wound to the liver may be attempted, but if the liver is not already adherent, this will in most cases be found impossible.

In 1887 Lannelongue recommended "the resection of a triangular or trapezoidal segment of the thoracic wall of which the costal border is the base or greatest side," for the drainage of subphrenic abscesses and exploration of the upper surface of the liver. The length of the base of the triangular flap may be made of any size deemed necessary.

This operation, when tried on a cadaver, did not give the amount of room necessary for exploration of the posterior-superior surface; nor did it increase the amount of liver surface exposed sufficiently to warrant such a formidable procedure.

Rhoads recommends an exploratory incision along the costal border first. If the abscess is found on the posterior-superior surface, he recommends the resection of one or more ribs; but instead of a transpleural route he uses a transthoracic route. The parietal and diaphragmatic pleura, he says, will separate very easily. The pleura, both parietal and diaphragmatic, is separated and raised up, the diaphragm is then incised below the pleura, and abdominal cavity opened without entering the pleural cavity. If a hole is made in the pleura in separating it, the diaphragm is at once sutured to the intercostal muscles by a continuous catgut suture. If the diaphragm is adherent to the pleura, the incision is carried directly through the pleura and diaphragm.

I have no doubt that the transpleural route is the most satisfactory in the great majority of cases, but no particular operation can be indicated in all cases.

It is interesting to note that of the 7 recoveries, in 3 (Koerte, Loison, Jones) one or more ribs were resected; in 2 (Morton, Jones) the abscess was in the left lobe and drained through the abdomen; in one (Sheen) it was in the right lobe and drained through the abdomen; while in another (Burrell and Bottomley), after an abdominal incision had been made and closed, the abscess ruptured through the incision.

Of the four cases of abscess of the liver herewith reported, two were undoubtedly the result of appendicitis; one was possibly the result of appendicitis, though there was no definite proof of this; and one was the result of an abscess in the region of the pylorus (probably a perforated gastric ulcer). Two of these cases were fatal, in two the patients recovered.

Case I. M. M., female, aged thirteen, entered the Brockton Hospital on Jan. 10, 1901, during the service of Dr. E. C. Frost. The symptoms were those of appendicitis with abscess. Dr. Frost drained the abscess, but did not remove the appendix, as it made up part of the abscess wall. Two days after operation the temperature rose from 99° to 102°, and remained between 100° and 103° until Jan. 25, when the patient complained of severe pain in the lower part of the right chest over the liver. On the 29th and on the 30th had a chill. Respirations were shallow, 35 to 40 per minute, and there was extreme tenderness and pain over the lower part of the right chest. The temperature then began to go down and reached normal on Feb. 2. From this time until March 6 when I saw the patient, the temperature ran an irregular course between normal and 102°, remaining normal at times for one, two, or three days. I found her emaciated and exceedingly weak, but not jaundiced. The liver was enlarged and slightly tender. In the posterior axillary line over the 8th and 9th rib was a small area of tympany. An aspirating needle was put into the liver here and a small amount of foul pus was obtained.

*Operation.* — The patient was etherized and the 9th rib in the posterior axillary line was resected. The pleural cavity was opened and the diaphragm found pushed up against the chest wall, but not adherent to it. The drawing of a small amount of air into the pleural cavity during respiration was noticed, but it was stopped by holding the chest wall down upon the liver. A continuous cat-gut suture was put in about the whole wound, suturing the diaphragm to the costal muscles. The diaphragm was then incised, showing the liver to be nowhere adherent to it. The area exposed was, however, very dark. This region was walled off with strips of gauze, to prevent infection of the abdomen. A small incision was then made in the liver, where the aspirating needle had entered; and the finger was carried upward and backward, through the substance of the liver for about two inches, where a cavity the size of an orange, filled with thick foul pus, was found. A rubber tube and gauze packing were put in for drainage and for the control of the hemorrhage.

The patient made an uninterrupted recovery except for one or two days, when the opening narrowed down too much to allow free drainage. In eight weeks she left the hospital with the wound entirely healed.

Case II. F. G., male, aged thirty-two, entered the Brockton Hospital on May 7, 1901, during the service of Dr. F. J. Ripley. There was a history of severe pain in the right upper abdomen, of sudden onset, two days before entrance. The history suggested appendicitis; but on physical examination nothing could be found except an indefinite tenderness on deep palpation high up under the right costal border. The patient continued to have constant moderate pain in the epigastrium, with temperature between 99.5° and 101°, until May 26, when there was a sudden rise to 102.5°. On May 30 there was a severe chill. Between May 30 and June 18, inclusive, there were six chills, followed by profuse sweating, nausea, and vomiting. The temperature was not very irregular and not above 102°, except immediately after the chills. During this time pneumonia was first considered, as there was rusty sputum part of the time, with some dulness, pain and tenderness over the right side of the chest. Tuberculosis also was thought of, but no tubercle bacilli were found. The patient, though not very sick, was steadily losing ground; and although nothing could be found except a very indefinite tenderness in the epigastrium and a leucocytosis of 15,000, an exploratory laparotomy was decided upon after a consultation with Dr. W. H. Smith.

*Operation.* — Incision showed a small abscess about the pylorus, surrounded by a thick wall of adhesions. The abscess cavity was packed, and the liver examined. The left lobe was enlarged downward somewhat, was very much thickened and darkly mottled. An aspirating needle was used, but no pus could be obtained. On holding up the left lobe in order to examine the under surface, I tore into an abscess in the left lobe close to the great fissure. This abscess cavity was examined with the finger, and was found to run forward on the under surface of the liver and across the fissure into the right lobe. Three gauze wicks were left in: one running down to the foramen of Winslow, one into the abscess cavity about the pylorus, and another into the abscess in the liver. One week after the operation there was a profuse discharge of bile through the wound, and the stools became clay colored. The patient was in a wretched condition for another week, when the discharge of bile began gradually to lessen, and in three weeks had entirely ceased. Five weeks after the operation he left the hospital perfectly well.

Case III. J. McD., female, aged twenty-two, entered the Carney Hospital during the service of Dr. Temple on Sept. 19, 1902. This patient had been on a visit to her home in Nova Scotia, and the night before leaving there she went to a party where she ate very heartily. The next day, Sept. 16, on her way to Boston, she had a cold lunch with a good deal of fruit. In the afternoon she was attacked with severe abdominal pain, with nausea, vomiting, and diarrhea. The pain and diarrhea continued until the day after entrance to the hospital when it ceased. The patient's general condition, however, did not improve. Her previous history was negative, except that she had had a somewhat similar attack several months before. On Sept. 22, she became much worse, with pain in the right side in the region of the gall bladder, a chill, with a temperature of 103°, and a pulse of 110. On Sept. 23, she was slightly jaundiced. She had a chill, and the pain and tenderness had moved farther to the left. Sept. 24, she had a severe chill with a temperature reaching 104°, and a pulse of 120. She was rapidly losing ground.

*Operation.* — On Sept. 24, the patient was transferred to the surgical side, and laparotomy was performed. When the abdomen was opened the gall bladder was found to be normal; but the liver was dark and congested, and the under surface of the left lobe was mottled with light colored spots from ½ cm. to 2 cm. in diameter. The lobe was thickened but did not project much below normal limits. The left lobe was aspirated but no pus was obtained. A small drop was seen to ooze from a needle hole however. The finger was introduced at this point and numerous small cavities were opened up. The large cavity was then packed with gauze. The liver was hurriedly palpated, but no definite focus could be felt. The condition of the patient was such that nothing further could be done.

Sept. 25. Patient seemed somewhat better, more comfortable, no chill.

Sept. 26. Patient grew worse gradually and died.

The liver was examined through the abdominal

wound, as no autopsy was allowed. It was found to be filled with minute abscesses. The whole posterior-superior surface was covered with multiple abscesses.

Considering the attack of abdominal pain some months before entrance, and the symptoms in the beginning of this attack, it seems possible that the infection of the liver was owing to a mild appendicitis.

CASE IV. H. R., male, aged twenty-two, wire weaver, entered the Massachusetts General Hospital on July 28, 1903. He had walked into the Out-Patient Department in the morning. The history was as follows: The patient had always been well except that for the last year or more he had had indigestion, with occasional "attacks of stomach ache." Two weeks before entrance he was taken with a violent pain in the abdomen, but did not vomit. Bowels had not moved for nine days except a very slight movement two days before entrance. The patient had had considerable morphia every day. He seemed dull and unwilling to answer questions, so that it was impossible to get any further details of the symptoms for the two weeks preceding entrance to the hospital. Physical examination showed a man fairly well developed and fairly nourished. He did not seem to have any pain, but he looked pale and sick. The abdomen was rather full and slightly rigid. There was no shifting dullness in the flanks. No enlargement of the liver could be detected by percussion. In the epigastrium and extending down the right side there was marked tenderness; but the patient referred to the epigastrium the pain caused by pressure on the right side. There was no mass to be felt in the abdomen. Rectal examination was negative. The temperature was 1030; the pulse 105. A diagnosis of appendicitis had been made, but this was considered hardly possible, and diagnosis of a perforated gastric ulcer which had localized, was considered probable.

*Operation.* — Operation July 28, 1903. Under ether no mass could be made out. In the abdomen there was a slightly increased amount of clear fluid. Between the gall bladder and pylorus were a number of old adhesions, but otherwise the gall bladder was normal. The liver was somewhat darker than normal, but was not increased in size. It was examined with the hand, but no irregularity was felt. The falciform ligament was edematous. In the neighborhood of the pylorus, both in the gastrohepatic and great omenta, there were enlarged glands. The lesser peritoneal cavity was almost obliterated by adhesions. No thickening or congested area could be found anywhere on the stomach.

As no adhesions were found in the region of the appendix when it was first examined appendicitis was ruled out; but a more careful examination just before closure of the abdomen showed the appendix to be about 2½ inches long and thickened. Just beneath it in its mesentery was an abscess the size of a filbert. The appendix and mesentery were tied off and removed. It was felt at this time that the appendicitis was not sufficient to account for the condition of the patient, and abscess of the liver was suspected.

July 30. Abdomen still rigid, temperature 101°, leucocytosis of 38,000.

Aug. 1. Leucocytosis 21,000. Widal's reaction negative. Patient says he feels better but condition had not improved.

Aug. 7. Leucocytosis 27,000. Widal's reaction negative. Patient's general condition less satisfactory; he is still tender in the epigastrium.

Aug. 13. A tender mass in the left epigastrium, first noted two days ago, has been increasing in size. Operation advised, but refused by the patient. No bile in urine.

Aug. 15. Severe chill last night and this morning.

*Operation.* — The mass in the epigastrium, which proved to be the adherent liver, was opened into with cocaine. The finger was introduced and several small abscess cavities containing a very thick mucoid looking pus were found. The finger broke up abscesses as far as it could reach, — apparently in the left lobe. Tube and gauze drainage were put in.

A culture from the pus showed a large unknown bacillus.

Aug. 16. Chill. Patient emaciating very rapidly.

Aug. 17. More abscesses opened with the finger.

Aug. 21. Two slight chills.

Aug. 22. More abscesses broken up with the finger.

Aug. 24. Patient died.

An interesting point about this case was that the breaking up of the liver with the finger caused no great pain, the patient complaining only of a pain in the back.

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## CONCLUSIONS FROM A SERIES OF MEASUREMENTS OF BLOOD PRESSURE IN FEVERS, BEFORE, DURING AND AFTER THE ADMINISTRATION OF STRYCHNIA.*

BY RICHARD C. CABOT, M.D., BOSTON.

1. THE cases included in this study were all febrile. Among them were 31 cases of typhoid fever, 4 of pneumonia and 15 others with a variety of diagnoses.

2. In 32 cases the strychnia was given by mouth and in 18 subcutaneously. The total daily dose was usually $\frac{1}{8}$ gr., sometimes $\frac{1}{6}$ gr. Except in a few instances, the diet and position of the patient remained the same throughout the experiment.

3 The records were continued for days, and occasionally for weeks before and after the drug was given, in order that the regular range of variation in the blood pressure might be ascertained.

4. The measures were taken with Stanton's modification of the Riva-Rocci instrument. The maximum pressure was recorded as the height of the mercury column at the moment of the disappearance of the radial pulse, and the

* Read before The Massachusetts Medical Society, June 7, 1904.

minimum as the trough of the wave of greatest oscillation of the column.

5. Measurements were taken at various intervals of time succeeding the administration of strychnia, from a few minutes to several hours. The observations extended over about eight months and included over 5000 measurements.

6. The total result is negative. I have been unable to convince myself that strychnia exerts any influence upon the blood pressure of febrile cases when given in manner and dose above mentioned.

7. In the twenty-four hours following the administration of the drug there was a rise 5 mm. or more of pressure in 16 cases, a fall in 17 cases, and no change in 24. The average pressure in the 50 cases that received a daily dose of strychnia was no greater than in 18 cases without any drug.

8. To me one of the most striking features of the investigation was the fact that while strychnia and whiskey seemed to be entirely without influence upon the blood pressure, the sight of the dinner-tray or the prospect of getting up produced a most obvious, though transient, rise in the pressure. The only permanent gains in pressure occurred when the patient reached the crisis in pneumonia, or when convalescence enabled him to get up and walk.

9. As in the alcohol research of last year, I do not wish to be construed as saying that the drug under investigation is of no value. To prove so general a negative my work is altogether insufficient. My conclusion is, that in the dosage employed strychnia does not raise or in any way affect the maximum or minimum blood pressure so far as can be determined by the instrument employed.

### DISCUSSION.

Dr. Henry Jackson of Boston: It seems that the experiments certainly prove that, as far as we can tell, the blood pressure is not increased by the administration of strychnia. We do not know that an increase in the blood pressure is necessarily an indication of increased strength of heart.

Personally, I should be much against giving up the use of strychnia. However, I admit that my own experiments made at the hospital have been in accord with the observations made by Dr. Cabot, but it does not make me feel that I do not care to use strychnia.

Dr. E. A. Locke of Boston: I have been associated only in a very remote way with this investigation, and consequently cannot speak authoritatively for Dr. Cabot. There certainly can be no doubt as to the action of strychnia on the circulation. Numerous animal experimentations have shown its action on the circulation to be two-fold; first, it acts on the vasomotor nerves, causing a constriction of the peripheral blood vessels, with a consequent rise of blood pressure; and second, the rate of the heart's action is slowed. There is every evidence that a similar action takes place in man. Personally, I believe that strychnia has a very definite action, and I doubt very much if Dr. Cabot, were he present, would deny this on the strength of his negative results with the Stanton apparatus.

## EXAMINATION OF PLEURAL FLUIDS WITH REFERENCE TO THEIR ETIOLOGY AND DIAGNOSTIC VALUE.

BY PERCY MUSGRAVE, M.D., BOSTON.

(Continued from No. 12, p. 321.)

### CANCEROUS CASES.

Three cases which I have been able to examine have all showed a relatively large amount of endothelium occurring with a predominence of lymphocytes. The endothelial plaques appeared in all of these cases, which we have previously mentioned were extremely uncommon in tuberculosis, and the albumin and specific gravity indicated an inflammatory process rather than a transudate.

Further research upon the formula for cancer is necessary.

One case cannot be classified from the examination of the fluid or from the clinical history.

### CLASS I. —TUBERCULOUS CASES.

Case 1. — A. C., twenty-one, s., Italy, railroad brakeman. Aug. 3, 1903. F. H. and P. H. negative. Habits good. Pres. ill. — No symptoms up to five days before entrance. Chill (?), fever and malaise followed by severe pain in the lower left chest, increased by deep breathing and coughing. Phys. exam. — W. D. and fairly W. N.; left pleural effusion; examination otherwise negative. Temperature at entrance 103.5, gradually reaching normal within a week. Pulse averaged 80, respiration, 25 to 30. Blood: whites — 26,400; no Widal. *Aug. 4, chest tapped, fluid:* amount 12½ oz., hemorrhagic, sp. gr. 1,022, alb. 2%; sed.: lymphocytes 85%, polynuclears 12%, large mononuclears 2%; large number of red corpuscles. Cultures: no growth. Pig inoculated; autopsy Sept. 9; pig tuberculous; bacilli demonstrated. Diagnosis from fluid: primary tuberculous pleurisy. Patient made marked improvement, no symptoms of cough, and was discharged relieved Aug. 19. Clinical diagnosis: pleurisy with effusion.

Case 2. — J. S., twenty-four, s., Italian, laborer. Nov. 13, 1903. F. H. negative, P. H. negative. Habits good. Pres. ill. — Dyspnea for one month; no edema; no palpitation; slight pain in left axilla; worked up to day of entrance. Loss of weight, night sweats, slight cough for two days, no expectoration. Phys. exam. — W. D. and N., slightly pale, cardiac displacement to right, left pleural effusion; examination otherwise negative. Temperature irregular with moderate morning remissions; pulse averaged about 100 and respirations 20. Blood: whites — 9,300. *Nov. 14 chest tapped, fluid:* amount 3¾ pints, color yellow, turbid, alkaline, alb. 2%, sp. gr. 1,020; sed.: lymphocytes 76%, polynuclears 18%, endothelial cells 5%, eosinophiles 1%; considerable number of red corpuscles. Dec. 1, fluid had reaccumulated; tapped, amount 5 pints, hemorrhagic, considerable coagulum, alkaline, alb. 2%, sp. gr. 1,020; sed.: lymphocytes[11] 96%, polynuclears 1%, endothelium 1%, large mononuclears 2%. Inoscopy: negative. Three pigs inoculated: autopsies on Jan. 10 (2) and 15 negative. Patient improved, and was discharged much relieved, Dec. 17. Clinical diagnosis: pleurisy with effusion. April 20, 1904, patient entered Out-Patient Department with pleural effusion. *Chest tapped, fluid:* straw colored, no coagulum, alb. 2%, sp. gr. 1,019; sed.: slight, lymphocytes 90%, polynuclears 8%, endothelium 2%;

[11] Two hundred and fifty cells were counted where no number is given.

moderate number of red corpuscles; no bacteria seen. Pig inoculated; autopsy May 17, 1904; pig tuberculous; bacilli demonstrated. Diagnosis from fluid: primary tuberculous pleurisy.

CASE 3. — F. D., thirty-eight, s., Canadian, building mover. Dec. 6, 1903. F. H. and P. H. negative. Habits: moderate alcoholic excess. Pres. ill. — For five weeks felt feverish and chilly, slight cough without expectoration, no pain; for four weeks has noticed increasing dyspnea. Phys. exam. — W. D. and muscular. Lips slightly cyanotic. Heart not displaced. Lungs: right pleural effusion; examination otherwise negative. Temperature averaged between 101 and 102½ for eight weeks, gradually reaching normal in the ninth and tenth weeks; pulse averaged about 90 and respirations about 25. Blood: whites — 6,900; Widal negative. *Dec. 8, chest tapped, fluid:* amount 28 oz., color orange, considerable coagulum, alkaline, alb. 2½%, sp. gr. 1,020; sed.: lymphocytes 91%, polynuclears 8%, eosinophiles ½%; large mononuclears ½%; cultures: no growth. Inoscopy: negative. Pig inoculated; autopsied Jan. 15, 1904; pig tuberculous. T. B. demonstrated. Diagnosis from fluid: primary tuberculous pleurisy. Patient improved slowly, and Jan. 27 was discharged well. Clinical diagnosis: pleurisy with effusion. Thickened pleura.

CASE 4. — J. C., twenty-five, s., Italian, laborer. March 20, 1903. F. H. negative; P. H. unimportant. Habits good. Pres. ill. — For five weeks slight dry cough; for five days pain in left lower chest increased by deep inspiration. No sputum. Phys. exam. — W. D. and N. Heart not displaced. Lungs: signs of left pleural effusion; examination otherwise negative. Temperature averaged from 100 to 102, gradually coming down; pulse averaged 100; respirations 25 to 30. Blood: whites — 10,600. Tuberculin test negative. *March 25, chest tapped, fluid:* amount 22 oz., straw colored, slight coagulum, alkaline, alb. 5.6%, sp. gr. 1,020; sed.: lymphocytes 99%, polynuclears ½%, endothelium ½%. Cultures: no growth. Pig inoculated; autopsied May 7; pig tuberculous; bacilli demonstrated. Chest tapped again March 31; fluid similar to that of the 25th; also April 4 chest tapped, fluid same. Diagnosis from fluid: primary tuberculous pleurisy. Slow improvement; April 24 discharged much relieved. Clinical diagnosis: pleurisy with effusion.

CASE 5. — T. P. M., thirty-two, m., American, teamster. April 24, 1903. F. H. one brother tuberculous (?). P. H. negative. Habits: slight excess of alcohol and tobacco. Pres. ill. — For three weeks moderate cough, no sputum; for six days increased cough with chill, headache, malaise, pain in left chest on deep inspiration; increasing dyspnea. Phys. exam. W. D. and N. Color good; heart displaced to right. Lungs: signs of left pleural effusion; examination otherwise negative. Temperature averaged between 99 and 101, gradually coming down; pulse averaged 95; respirations 25. Blood: whites — 7,300. *April 26, chest tapped, fluid:* amount 1,920 cc.; straw colored, very slight coagulum, alkaline, alb. 3%, sp. gr. 1,023; sed.: scanty, lymphocytes 98.8%, polynuclears 1.2%; few red corpuscles. Culture: no growth. Pig inoculated; autopsied June 1; pig tuberculous. T. B. demonstrated. Chest tapped again April 30 and May 4, amounts 36 and 24 oz. Fluids of the same character as that of the 26th. Diagnosis from fluid: primary tuberculous pleurisy. Discharged much relieved, May 4. Clinical diagnosis: pleurisy with exudation.

CASE 6. — D. H., forty-one, m., American, lather. Sept. 21, 1903. (O. P. D.) F. H. and P. H. negative. Habits: alcohol to excess. Pres. ill. — Two weeks malaise, pain in chest, increased by deep inspiration; dry cough, anorexia. Phys. exam. — Heart negative. Lungs: left pleural effusion. Blood: no leukocytosis. Temperature not taken. *Sept. 21, chest tapped, fluid:* amount 3 to 4 oz., orange yellow, very slight coagulum, alb. 1½%; sed.: lymphocytes 80%, polynuclears 13%, endothelium 3%, large mononuclears 4%. Culture: no growth. Inoscopy: not sufficient coagulum. Pig inoculated; autopsied Oct. 18, 1903; pig tuberculous. T. B. demonstrated. Diagnosis from fluid: primary tuberculous pleurisy. Clinical diagnosis: tuberculous pleuritic effusion and alcoholism.

CASE 7. — W. D., thirty-six, s., Canadian, engineer. Oct. 9, 1903. (O. P. D.) F. H. and P. H. negative. Habits good. Pres. ill. — Came to the hospital for relief of dyspnea and cough. Phys. exam. — Temperature 98.8; heart displaced to right. Lungs: left pleuritic effusion. *May 21 chest tapped, fluid:* amount 21 oz.; sed.: lymphocytes 72%, polynuclears 23%, endothelium 2%, large mononuclears 3%; considerable number of red corpuscles. Inoscopy. T. B. found. Pig inoculated; autopsied Dec. 4; pig tuberculous. T. B. demonstrated. Diagnosis from fluid: primary tuberculous pleurisy. Clinical diagnosis: pleurisy with effusion.

CASE 8. — S. R. (colored), eleven, s., school girl. July 10, 1903. (O. P. D.) F. H. good. P. H. unimportant. Pres. ill. — Cough accompanied by fever and night sweats, thick yellowish sputum. Phys. exam. — Signs of bronchitis with question of apical phthisis. Sputum: no tubercle bacilli found. Aug. 28. Sputum: no tubercle bacilli found. Phys. exam. — Signs of bronchitis persist. Oct. 10. Sputum; no tubercle bacilli; symptoms and signs as before. Same condition continued with repeated examination of sputum up to Dec. 26, 1903. Phys. exam. — Temperature 100, pulse 120, respirations 44, heart displaced to right. Lungs: left pleural effusion. Blood: whites — 13,600. *Chest tapped, fluid:* straw colored, moderate coagulum, alb. 1½%, sp. gr. 1,020; sed.: lymphocytes 80%, polynuclears 15%, eosinophiles 2-5%, mast 2-5%, endothelium 1 1-5%, large mononuclears 3%; few red corpuscles. Inoscopy: negative. Pig inoculated; autopsied Jan. 20; pig tuberculous. T. B. demonstrated. Diagnosis from fluid: primary tuberculous pleurisy. Entered the hospital Dec. 26, 1903. Temperature fluctuated between 99 and 101, gradually coming down; pulse averaged 100 to 110; respirations 30. Blood: whites — 12,100. Sputum: no tubercle bacilli found. Case improved. Jan. 3, 1904, discharged much relieved. Clinical diagnosis: pleurisy.

CASE 9. — M. C., nineteen, s., Greek. Aug. 1, 1903. (O. P. D.) F. H. good. P. H. unimportant. Pres. ill. — Pain in left chest, cough, slight expectoration. Phys. exam. — Lungs: left pleural effusion. *Chest tapped, fluid:* amount 8 oz., straw colored; sed.: necrotic cells predominate to such extent as to render differential of little value, but majority of cells appear to be lymphocytes. Pig inoculated; autopsied Sept. 9, 1903; pig tuberculous. T. B. demonstrated. Diagnosis from fluid: secondary tuberculous pleurisy. Clinical diagnosis: pleurisy with effusion.

CASE 10. — W. C., fifty-two, m., Irish, laborer. Aug. 6, 1903. (O. P. D.) F. H. negative. P. H. unimportant. Pres. ill. — Came to the hospital on account of shortness of breath and anorexia. Difficulty in swallowing. Phys. exam. — Left pleural effusion. *Chest tapped, fluid:* amount 1½ pints, straw colored, serous, considerable coagulum; sed.: lymphocytes 72%, polynuclears 24%, eosinophiles 1%, large mononuclears 3%; small number of red corpuscles.

Pig inoculated; autopsied Sept. 9, 1903; pig tuberculous. T. B. demonstrated. Diagnosis from fluid: primary tuberculous pleurisy. Blood: whites — 7,200. Last seen Aug. 10, 1903, when he was improved. Clinical diagnosis: tubercular pleuritic effusion. Dysphagia.

Case 11. — H. P., twenty-two, m., American, telephone operator. July 27, 1903. (O. P. D.) P. H. negative. Pres. ill. — Four weeks before entrance had pain in right lower chest for three weeks, slight cough, some sputum, loss of weight 30 lbs. Phys. exam. — Pleurisy with effusion. *July 28, chest tapped, fluid:* amount 39 oz., straw colored, sp. gr. 1,020; sed.: lymphocytes 96.7%, polynuclears 1%, cosinophiles .3%, endothelium 1.3%, large mononuclears .6%; few red corpuscles. Culture: no growth. Pig inoculated; autopsied Aug. 27, 1903; pig tuberculous. T. B. demonstrated. Diagnosis from fluid: primary tuberculous pleurisy. Aug. 4, 1903, patient seen for the last time; better. Temperature 99 to 100. Clinical diagnosis: tuberculous pleural effusion.

Case 12. — M. S., fifteen, s., Irish, rubber factory. Aug. 14, 1903. (O. P. D.) F. H. good. Pres. ill. — For two months intermittent pain in right side, slight cough; for one week cough has increased. Phys. exam. — W. D. and fairly nourished. Temperature 102½. Heart displaced to left. Lungs: right pleuritic effusion. *Chest tapped, fluid:* amount 30 oz., straw colored, slightly turbid, alb. 1½%, sp. gr. 1,016; sed.: lymphocytes 86%, polynuclears 8%, endothelium 4%, large mononuclears 2%; moderate number of red corpuscles. Culture: no growth. Pig inoculated; autopsied Sept. 14, 1903; pig tuberculous. T. B. demonstrated. Diagnosis from fluid: primary tuberculous pleurisy. Clinical diagnosis: pleural effusion; insidious onset.

Case 13. — H. McL., fifty, s., Irish, mason. Sept. 4, 1903. F. H. good. P. H. negative. Habits: slight alcoholic excess. Pres. ill. — For three weeks chilly sensations, slight cough, and pain in left chest; dyspnea, occasional night sweats; lost 15 lbs. in a year. Phys. exam. — W. D. and fairly W. N.; good color. Heart negative. Lungs: signs of left pleural effusion; examination otherwise negative. Temperature at entrance 103, falling to normal on the second day. Blood: whites — 7,100. Sputum not obtained. *Sept. 4, chest tapped, fluid:* amount 80 oz., straw colored, moderate sized coagulum, alb. 1.8%, sp. gr.; 1,018 sed.: lymphocytes 94%, polynuclears 3%, endothelium 1%, large mononuclears 2%; few red corpuscles. Culture: no growth. Inoscopy. T. B. found. Pig inoculated; autopsied Sept. 28, 1903; tuberculous. T. B. demonstrated. Diagnosis from fluid: primary tuberculous pleurisy. Rapid improvement. Sept. 12, 1903, discharged, much relieved. Clinical diagnosis: tubercular pleurisy.

Case 14. — J. L. McN., thirty-two, m., Canadian, teamster. March 16, 1904. F. H. good. P. H. Chest injured by elevator four months before entrance. Habits: slight alcoholic excess. Pres. ill. — For seventeen days malaise, pain in right side increased by deep inspiration; gradually decreasing pain; dyspnea for one week; slight dry cough for three weeks. Phys. exam. — W. D. and N.; good color. Heart displaced to right. Lungs: left pleural effusion. Examination otherwise negative. Temperature gradually coming down to normal in ten days; pulse averaged 90; respirations 25 to 30. Blood: whites — 9,200. Sputum; no tubercle bacilli. *March 16, chest tapped, fluid:* amount 44 oz., greenish yellow, slightly opalescent, moderate coagulum, alb. 3%, sp. gr. 1,025; sed.: slight, count of 275 cells, lymphocytes 96%, polynuclears 4%; few red corpuscles. Culture: no growth. Inoscopy: not sufficient clot. Pig inoculated; autopsied April 21, 1904; tuberculous. T. B. demonstrated. *March 20, chest tapped again:* amount 21 oz.; sed.: lymphocytes 94%, polynuclears 3%, endothelium 3%. Pig inoculated; autopsied April 28; negative. *March 24, chest tapped again:* amount 4 oz.; sed.: lymphocytes 98%, polynuclears 1%, endothelium 1%. Pig inoculated; autopsied May 13; negative. Diagnosis from fluid: primary tuberculous pleurisy. Patient gradually improved, and was discharged much relieved March 29. Clinical diagnosis: pleurisy with effusion. On May 24, patient returned to O. P. D. with reaccumulation of fluid in chest. Chest tapped: dirty, yellowish thin pus withdrawn, no odor, no growth on blood serum, but had digestive action. On coverslip few organisms morphologically resembling pneumococci and streptococci; no tubercle bacilli found. Pig inoculated with pus died in two days; negative.

Case 15. — P. D., nineteen, s., Italian, laborer. July 31, 1903. F. H. good. P. H. negative. Habits: moderate alcoholic, excess at times. Pres. ill.— For two weeks malaise, soreness and pressure in left chest; slight cough; no sputum. Phys. exam.— W. D. and N. Face flushed; heart displaced to right. Lungs: left pleural effusion; examination otherwise negative. Temperature normal or subnormal most of the time, first three days 99 to 101. Pulse irregular, 80 to 100; respirations averaged 25. Blood: whites — 6,000. *Chest tapped, fluid:* amount 300 cc., straw colored, slightly turbid, considerable coagulum, alb. 1% —, sp. gr. 1,020; sed.: count of 300 cells, lymphocytes 96.6%, polynuclears 1%, endothelium 1%, large mononuclears 1.4%; very few red corpuscles. Culture: no growth. Pig inoculated; autopsied Sept. 9, 1903; pig tuberculous. Bacilli demonstrated. Clinical diagnosis: pleurisy with effusion.

Case 16. — W. C., eleven, American. (Inf. Hosp.) Sept., 1903. F. H. One brother died at seventeen with phthisis. P. H. Always well. Pres. ill.— For ten days epigastric pain, loss of appetite, cough without expectoration, lassitude, loss of flesh, for two days feverish and chilly. Phys. exam.— left pleural effusion. Heart displaced to right. Poorly developed and very poorly nourished. *Sept. 21, 1903, chest tapped, fluid:* amount 27 oz., dark straw colored, much coagulum; sed.: lymphocytes 96%, polynuclears 2%, large mononuclears 2%; considerable number of red corpuscles. Inoscopy: tubercle bacilli found. Pig inoculated; autopsied Oct. 18, negative. Diagnosis from fluid: primary tuberculous pleurisy. Clinical diagnosis: pleurisy with effusion.

Case 17. — M. L. (female) thirty-nine, m., Irish, housewife. Nov. 25, 1903. F. H. and P. H. negative. Habits good. Pres. ill. — For three weeks sharp pain in left side; chilly sensations, dyspnea, cough, white expectoration, feverish with night sweats, increasing dyspnea. Phys. exam.— Well developed and slightly obese. Heart displaced to right. Lungs: left pleural effusion; examination otherwise negative. Temperature at night averaged 102½, mornings 100, coming down to normal in the third week. Pulse averaged between 100 and 120; respirations 20 to 30, considerable variation. Blood: whites — 14,700. *Nov. 26, chest tapped, fluid:* amount 2 qts., straw colored, opalescent, sp. gr. 1,020; sed.: lymphocytes 96%, polynuclears 2%, endothelium 2%; marked number of red corpuscles. Culture: no growth. Inoscopy: tubercle bacilli found. Pig inoculated; autopsied Jan. 5, 1904, negative. Dec. 1, 1903, fluid had reaccumulated; left chest tapped again: amount 1 qt., character of fluid same. Diagnosis from fluid: primary tuberculous pleurisy. Dec. 16 discharged much relieved. Clinical diagnosis: pleurisy with effusion.

CASE 18.—A. O. (female), twenty-one, s., Italian, candy-maker. Sept. 14, 1903. F. H. and P. H. negative. Habits good. Pres. ill. — For two weeks sharp pain in right side, dry cough, dyspnea, diminishing pain, feverish, no chills, no anorexia. Phys. exam. — W. D. and fairly W. N. Heart displaced slightly to the left. Lungs: right pleural effusion. Physical examination otherwise negative. Temperature averaged normal; highest 100; pulse averaged 90; respirations averaged between 20 and 25; 30 at entrance. Blood: whites — 9,400. *Sept. 15, chest tapped, fluid:* amount 30 oz., dark orange, considerable coagulum; sed.: lymphocytes 97%, polynuclears 2%, large mononuclears 1%; red corpuscles fairly numerous. Culture: no growth. Inoscopy: tubercle bacilli found. Pig inoculated; autopsied Oct. 13, 1903, negative. Diagnosis: primary tuberculous pleurisy. Discharged, relieved, Sept. 27. Clinical diagnosis: pleurisy with effusion.

CASE 19.— P. H., sixty-two, Irish laborer, March 16, 1904. F. H. good. P. H. unimportant. Habits good. Pres. ill. — For two weeks sharp pain in right side increased by deep inspiration; cough gradually increasing; little sputum; feverish, no chills; for one week dyspnea; orthopnea. Phys. exam. — W. D. and N. Face and finger nails slightly cyanotic. Heart negative. Lungs: left bronchitis; right pleural effusion; examination otherwise negative. Temperature between 99.5 and 101, gradually coming down to normal in ten days. Pulse averaged 90, respirations 25 to 30. Blood: whites — 6,600. Sputum: no tubercle bacilli found. *March 17, chest tapped, fluid:* amount about 3 qts., straw colored, slight coagulum, alb. 3%, sp. gr. 1,022; sed.: marked amount, lymphocytes 94%, polynuclears 3.2%, mast 8%, large mononuclears 2%; marked number of red corpuscles. Culture: no growth. Inoscopy: tubercle bacilli found. Pig inoculated; autopsied May 5, 1904, negative. Diagnosis from fluid: primary tuberculous pleurisy. Patient improved remarkably after tapping and was discharged much relieved on the 30th of March. Clinical diagnosis: pleurisy with effusion.

CASE 20. — M. J. S., sixteen, s., Irish, errand boy. Dec. 28, 1903. F. H. good. P. H. unimportant. Habits good. Pres. ill. — For two months pain in right chest, cough and expectoration lasting two weeks. Return of pain two weeks ago aggravated by deep inspiration. Dyspnea on exertion. Phys. exam. — W. D. and N. Face flushed. Heart negative. Lungs: right pleural effusion; physical examination otherwise negative. Temperature fluctuated between normal and 103; evening temperature rarely below 100 during ten weeks' stay in hospital, except for last week. Considerable wavy variation in pulse rate, average about 100; respirations averaged between 20 and 25. Blood: whites — 14,600. No sputum obtained. Feb. 4, 1904, signs of left pleural effusion. Cardiac displacement to right. Feb. 5 fluid had accumulated rapidly. *Chest tapped, fluid:* amount 34 oz., light straw color, considerable coagulum, alb. 2.1%, sp. gr. 1,021; sed.: lymphocytes 93.5%, polynuclears 4%, endothelium 2.5%; moderate number of red corpuscles. Culture: no growth. Inoscopy: tubercle bacilli found. Pig inoculated; autopsied March 25, 1904, negative. Diagnosis from fluid: primary tuberculous pleurisy. Patient slowly improved. March 9 discharged much relieved. Clinical diagnosis: pleurisy with effusion; double.

CASE 21. — E. W., thirty-one, s. (colored), coal heaver. Dec. 22, 1903. F. H. and P. H. negative. Habits: slight alcoholic excess. Pres. ill. — For two weeks headache at first followed in two or three days by sharp pain in right chest increased by cough and deep inspiration. At entrance little pain, complained of gradually increasing dyspnea. Phys. exam.— W. D. and muscular. Heart: slight displacement to left. Lungs: right pleural effusion. Examination otherwise negative. Temperature ranging between normal and 100; pulse averaged 80; respirations 20. *Jan. 1, chest tapped, fluid:* amount 62 oz., color, greenish yellow, opalescent, moderate coagulum, alkaline, alb. 4%, sp. gr. 1,018; sed.: lymphocytes 95%, polynuclears 4%. endothelium 1%; marked number of red corpuscles, Cultures: no growth. Inoscopy: tubercle bacilli found. Pig inoculated; autopsied Feb. 15, 1904, negative. Diagnosis from fluid: primary tuberculous pleurisy. Continual improvement; discharged well on Feb. 15. Clinical diagnosis: pleurisy with effusion.

CASE 22. — O. R., twenty-three, s., American, farmer. Nov. 23, 1903. F. H. and P. H. negative. Habits good. Pres. ill. — Pain in right side, eight days, aggravated by cough and deep inspiration. No expectoration; dyspnea on exertion; chilly sensations, feverish at first. Phys. exam. — W. D. and N. Heart pushed slightly to left. Lungs: sign of right pleural effusion; examination otherwise negative. Temperature did not go above 100 at any time. Pulse averaged 90, respirations 20 to 25. Blood: whites — 9,900. *Nov. 28, chest tapped, fluid:* amount 1 pint, color deep orange, considerable coagulum, alb. 2%, sp. gr. 1,021; sed.: lymphocytes 91%, polynuclears 2%, endothelium 2%, large mononuclears 5%; numerous red corpuscles. Inoscopy: tubercle bacilli found. Pig inoculated; autopsied Jan. 1; negative. Diagnosis from fluid: primary tuberculous pleurisy. Improvement. Discharged much relieved Dec. 10. Clinical diagnosis: pleurisy with effusion.

CASE 23. — C. J. W., twenty-two, s., American, street car conductor Feb. 13, 1903. F. H. and P. H. negative. Pres. ill. — Seven months ago cough, obliged to give up work since that time; two and a half months ago bloody sputum for one week. Dyspnea and pain in left side; dyspnea has continued since; gained three or four pounds in seven months; night sweats for two weeks at time of hemorrhage. Temperature while in hospital did not go above 99.8 Phys. exam. —W. D. and N. Somewhat pale; physical examination negative except for signs of left pleural effusion. Pulse averaged between 90 and 100, and respirations 25. Blood: whites — 9,000. *Feb. 14, chest tapped, fluid:* amount 48 oz., straw colored, alkaline, alb. 5%, sp. gr. 1,023, sed.: differential count impossible; cells almost all necrotic; clumps of necrotic cells and a considerable number of necrotic lymphocytes and polynuclear leucocytes. Diagnosis from fluid: secondary tuberculous pleurisy. On the 17th signs of a hydropneumothorax were present. On the 19th tubercle bacilli found in sputum. Clinical diagnosis: pulmonary tuberculosis; hydropneumothorax.

CASE 24. — C. C., twenty-three, s., Armenian, barber. April 4, 1903. F. H. negative. Habits good. P. H. "Pneumonia" five weeks ago lasting two weeks. Pres. ill. — Has gained strength since the "pneumonia," no pain but heavy feeling in right chest which has steadily increased, with increasing dyspnea and sense of epigastric fullness; occasionally dry cough. Phys. exam. — W. D. and N. Cardiac displacement to the left; physical examination otherwise unimportant except for a marked right pleuritic effusion. Temperature normal throughout stay in hospital. Blood: whites — 12,400. *April 4, chest tapped, fluid:* amount 67 oz., straw colored, alkaline, alb. 5.6%, sp. gr. 1,023; sed.: entirely broken down leucocytes, most of them containing fat drops; cells are so necrotic that varieties cannot be distinguished; occasional red blood corpuscle. Pig inoculated; autopsied May 14, 1903; pig tuberculous. Tubercle bacilli demon-

strated. Cultures: no growth. Diagnosis from fluid: secondary tuberculous pleurisy. April 6, tubercle bacilli found in sputum. Discharged relieved April 10. Clinical diagnosis: phthisis pulmonalis; pleurisy with effusion.

Case 25. — M. K., forty-eight, m., English, painter. July 24, 1903. F. H. tuberculous. Habits good. P. H. cough and night sweats for short time six months before entrance. Pres. ill. — For three months pains principally in left chest on deep inspiration; slight cough, with whitish expectoration; loss of flesh and anorexia. Phys. exam. — W. D. and fairly W. N. Heart: moderate displacement to the right. Lungs: left pleural effusion; signs of left apical phthisis. Physical examination otherwise negative. Temperature averaged between 100 and 102, pulse between 90 and 100, respirations 25. Blood: whites — 20,700. *July 25, chest tappcd, fluid:* amount 34 oz., orange yellow, considerable coagulum, alb. 4%,sp. gr. 1,020; sed.: count of 250 cells, lymphocytes 95.6%, polynuclears 3.2%, endothelium 1.2%; numerous red corpuscles. Cultures: no growth. Pig inoculated; autopsied Aug. 24: no tubercular lesions found. Diagnosis from fluid: primary tuberculous pleurisy. July 29. Sputum: tubercle bacilli found. Condition remained the same; discharged relieved Aug. 4. Clinical diagnosis: pulmonary tuberculosis; pleurisy with exudation.

Case 26. — B., thirty, m., teamster. Jan. 21, 1903. F. H. negative. Habits: alcohol in excess. P. H. doubtful specific disease. Pres. ill. — Slight cough with expectoration; no other symptoms since latter part of last winter. Last July strained himself lifting heavy object, and immediately had fit of coughing, during which he raised about a pint of blood. He kept at work, however, but the cough has increased since that time. Slight white expectoration, but no hemoptysis. Has had night sweats. Since November cough has increased, and has had extreme dyspnea while lying on left side. Has not worked since Thanksgiving. Cough and dyspnea prominent symptoms at entrance. Phys. exam. — Maximum temperature 100 F., below that most of the time. Signs of hydropneumothorax right chest, namely, swashing, shifting dullness and tympany. Left lung negative, except for fine rales at base. Heart displaced to left. Blood: 7,600 whites. Sputum, no tubercle bacilli found. Jan. 25 was discharged, with symptoms relieved and with signs of hydropneumothorax persisting. *Was tapped on Jan. 22. Fluid:* 46 oz., straw colored, sp. gr. 1,022, alb. 2%. Most of cells necrotic. Neutrophiles seemed to predominate, but there was a large percentage of lymphocytes. On account of the ragged and broken up condition of cells differential count very difficult. Examination for tubercle bacilli negative. June 18, 1903, re-entry. Feeling well up to two weeks ago, since when there has been increased splashing in chest. For three weeks has had slight hoarseness and cough, no night sweats or dyspnea. Patient states he has gained 12 pounds since last visit to hospital. Phys. exam. — W. D. and N. Good color. Heart negative. Lungs: signs of right hydropneumothorax; left lung negative; examination otherwise negative. Temperature normal. Pulse 60 to 65; respirations 20 to 25. Blood: whites — 12,900. *June 19, chest tapped, fluid:* amount 55 oz., very turbid, yellow, white sediment, sp. gr. 1,023; sediment consists almost entirely of necrotic cells, lymphocytes and polynuclears. Differential not possible. Cultures: no growth. Pig inoculated; autopsied July 27, 1903; tuberculous. Tubercle bacilli demonstrated. Diagnosis from fluid: secondary tuberculous pleurisy. May 21 discharged relieved. Sputum: tubercle bacilli present. Clinical diagnosis: hydropneumothorax; pulmonary tuberculosis.

Case 27. — G. S., nineteen, s., German, barber. March 14, 1904. F. H. and P. H. negative. Habits good. Pres. ill. — For one month cough with white sputum, pain in left chest, gradual decrease of pain with onset of dyspnea which has gradually increased. Orthopnea and anorexia. Phys. exam. — W. D. and fairly W. N.; pale. Heart: slight displacement to right. Lungs: left pleuritic effusion; examination otherwise negative. Temperature below 99.5 except after tuberculin test when it rose to 103.4; pulse averaged 90 except after tuberculin test when it rose to 125; respirations between 20 and 25 except after tuberculin test when it rose to 34. Blood: whites — 5,200. *March 15, chest tapped, fluid:* amount 37 oz., straw colored, very slight coagulum, sp. gr. 1,023; sed., considerable amount, lymphocytes 76.8%, polynuclears 7.2%, endothelium 14.8%, large mononuclears 1.2%; marked number of red corpuscles, many endothelial plaques. Cultures: no growth. Pig inoculated; autopsied, May 5, 1904, negative. Inoscopy: not sufficient clot. Diagnosis from fluid: primary tuberculous pleurisy. March 31, there were signs of abdominal effusion and the patient was transferred for operation for tubercular peritonitis. Operation showed the peritoneum studded with tubercles. Clinical diagnosis: tubercular pleurisy and peritonitis.

Case 28. — W. L. H., twenty-six, s., American, student. Sept. 30, 1903. F. H. and P. H. negative. P. H. negative except hemoptysis two years ago. Sputum; tubercle bacilli found. Remained in Colorado for a year; hemoptysis again one year ago. Six months later pleurisy with sudden onset, chilly, temperature 102 to 103, rapid pulse, dyspnea; on about the seventh day effusion developed and *was tapped, fluid:* amount 1,500 cc., straw colored, slightly turbid, considerable coagulum, alb. 2%, sp. gr. 1,019; sed.: cells necrotic but lymphocytes predominate of the cells that are recognizable. Inoscopy: tubercle bacilli found. Pig inoculated, autopsied Oct. 29, 1903, negative. Diagnosis from fluid; secondary tuberculous pleurisy. Clinical diagnosis: pulmonary tuberculosis; acute tuberculous pleurisy.

Case 29.—T. McG., twenty-five, s., Irish, tube-works. April 22, 1903. F. H. and P. H. negative. Habits good. Pres. ill. — Pain in lower left chest for two weeks, decreasing in severity; dyspnea for one week increasing. Malaise and anorexia. Phys. exam. — W. D. and muscular; face flushed. Heart displaced to right. Physical examination, except for marked pleural effusion, negative. Temperature averaged normal; pulse averaged 70 to 90; respirations 20. *April 23, chest tapped, fluid:* amount 50 oz., bloody, alkaline, alb. 4½%, sp. gr. 1,021: sed.: lymphocytes 93%, polynuclears 5%, endothelium 1%; large mononuclears 1%. Cultures: no growth. Pig inoculated; died May 8; autopsy negative. Diagnosis from fluid: primary tuberculous pleurisy. Discharged much relieved May 1. Clinical diagnosis: pleurisy with exudation.

Case 30.—D. P., eighteen, s., Italian, mill-hand. Jan. 29, 1904. F. H. and P. H. negative. Habits good. Pres. ill.— For two weeks pain in right chest, gradually increasing dyspnea, slight cough. Phys. exam. — W. D. and N. Heart displaced to left. Lungs: large right-sided effusion. Downward displacement of liver; examination otherwise negative. Temperature: considerable oscillation between 99 and 102 on the average. Pulse averaged 100; respirations between 25 and 30. Blood: whites — 9,000. *Jan. 31, chest tapped, fluid:* amount two pints, orange yellow, considerable coagulum, alb. 2½%, sp. gr. 1,020; sed.: count of 550 cells, lymphocytes 98%, polynuclears 1%,

endothelium 1%; red corpuscles fairly numerous. Cultures: no growth. Inoscopy: negative. Pig inoculated; autopsied March 7, negative. Diagnosis from fluid: primary tuberculous pleurisy. Sputum: no tubercle or influenza bacilli found, several examinations. Gradual improvement; March 16 felt perfectly well, discharged much relieved. Clinical diagnosis: pleurisy with effusion.

CASE 31. — A. C., twenty-two, Italian, laborer. April 15, 1903. F. H. negative. P. H. pneumonia five years ago. Habits good. Pres. ill. — For four weeks pain in left hypochondrium increased by deep inspiration, occasional cough. For two weeks slight chills. Phys. exam. — W. D. and N. Heart displaced to right. Lungs: signs of left pleural effusion; examination otherwise negative. Temperature: considerable daily oscillation between 102 and 104, gradually coming down in the course of two weeks. Pulse averaged 90; respirations 25. Blood: whites — 10,500; Widal negative. Sputum: no tubercle bacilli found. *April* 17, *chest tapped, fluid:* amount 1,200 cc., straw colored, considerable coagulum, alkaline, alb. 3%, sp. gr. 1,021; sed.: lymphocytes 99%, endothelium 1%. Cultures: no growth. Pig inoculated; autopsied May 20, negative. Diagnosis from fluid: primary tuberculous pleurisy. May 2 discharged much relieved. Clinical diagnosis: pleurisy with effusion.

CASE 32.— M. S., thirty-nine, s., American, electrical supply factory. April 22, 1903. F. H. and P. H. negative. Habits good. Pres. ill.— For two weeks pain in epigastrium, gradually increasing in severity. No stomach symptoms. Dyspnea on exertion. For two or three days slight cough without sputum; chilly sensations for two weeks. Phys. exam.— W. D. and N. Heart displaced to right. Lungs: left pleural effusion. Examination otherwise negative. Temperature only once over 101, averaged between normal and 100; pulse averaged 100; respirations averaged 30. Blood: whites — 6,900. *April* 22, *chest tapped, fluid:* amount 1,920 cc., straw colored, very slight coagulum, alkaline, alb. 4.2%, sp. gr. 1,021; sed.: almost entirely lymphocytes of small variety; occasional red corpuscle. (House officer.) *April* 27, *chest tapped, fluid:* amount 1,560 cc., straw colored, very slight coagulum, alb. 3%, sp. gr. 1,023; sed.: count of 300 cells, lymphocytes 98%, polynuclears 1%, endothelium 1%; moderate number of red corpuscles. Cultures: no growth. Pig inoculated; autopsy negative. Diagnosis from fluid: primary tuberculous pleurisy. Improved rapidly; April 29 discharged well. Clinical diagnosis: pleurisy with effusion.

CASE 33.—R. D. P., thirty-one, s., Italian, baker. May 10, 1903. F. H. and P. H. negative. Habits good. Pres. ill. — For two weeks pain in right chest, dyspnea, feverishness and moderate cough; these symptoms persisted to time of entrance. Phys. exam.— W. D. and N. Good color. Heart slightly displaced to left. Lungs: right pleural effusion; examination otherwise negative. Temperature fluctuated between 100 and 102; pulse averaged 100, respirations 25 to 30. Blood: whites — 14,200. *May* 10, *chest tapped, fluid:* amount four quarts, straw colored, very slight coagulum, alkaline, alb. 4%, sp. gr. 1,022; sed.: count of 300 cells, lymphocytes 99%, polynuclears 1%. Cultures: no growth. Pig inoculated; autopsy negative. Diagnosis from fluid: primary tuberculous pleurisy. May 14, discharged much relieved. Clinical diagnosis: pleurisy with exudation. Thickened pleura.

CASE 34. — A. F., twenty, s., Italian, bookbinder, March 7,1904. (O. P. D.) F. H. negative. P. H. attacks of "grip" last four or five winters. Pres. ill. — "Grip" two weeks ago which left him with cough; no sputum; dyspnea on exertion. Phys. exam. — Temperature 99.8. Left pleural effusion. *March* 8, *chest tapped, fluid:* amount ½ pint, straw colored, slight coagulum, alb. 3%, sp. gr. 1,022; sed.: moderate amount, lymphocytes 80½%, polynuclears 17%, endothelium 1%, large mononuclears 1½%; moderate number of red corpuscles. No bacteria seen. Inoscopy: not sufficient coagulation. Pig inoculated; autopsied May 5, 1904; negative. March 12, 1904, entered hospital. Phys. exam.— W. D. and N. Slight cardiac displacement to right. Lungs: left pleural effusion; examination otherwise negative. Temperature did not go above 99.8; pulse averaged 85, respirations 20. Blood: whites — 9,400. *March* 13, *chest tapped, fluid:* amount not stated, straw colored, alkaline, alb. 6½%, sp. gr. 1,022; sed.: moderate amount, lymphocytes 91%, polynuclears 6%, endothelium 2%, large mononuclears 1%. Culture: no growth. Inoscopy: negative. Pig inoculated; autopsied May 18; negative. Diagnosis from fluid: primary tuberculous pleurisy. Patient improved. May 25, no symptoms; discharged well. Clinical diagnosis: pleurisy with effusion.

(*To be continued.*)

## Clinical Department.

### EARACHE, OR CASES OF EARLY INVOLVEMENT OF THE MIDDLE EAR, USUALLY NEGLECTED.

BY FRANCIS P. EMERSON, M.D., BOSTON,
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How familiar the remark,— "Doctor, Margaret had a little earache last night, but I dropped in some sweet oil and it all went away." Usually the anxiety of both mother and doctor ends here, although earache usually means a catarrhal inflammatory process, which may be limited to the eustachian tube or which may involve the middle ear or mastoid — not a neuralgia but an inflammatory process, as evidenced by an injected area along the manubrium and sometimes over Schrapnel's membrane. Inspection will show these changes in the drum, although the pain may not have been of long duration or at all severe. The middle ear then has been invaded, and such a catarrhal process must leave results, either in the immediate effects of an acute attack, or in laying the foundation for a chronic middle ear. Such conditions must in time be attended by more or less deafness. If these children have not passed the age of the infectious diseases, the danger of a suppurative process will be very great. Many of these cases furnish the backward children in school, who are not dull but who do not hear.

At the hospital clinics every year we examine many such cases, sent by teachers who have been instructed along these lines, and almost invariably find local causes which have impaired the hearing. With the improvement of hearing, the pupil is as bright as others.

So much has been written about adenoids that physicians even are apt to expect to find typical cases with mouth breathing, deficient nutrition, active naso-pharyngitis and frog face. These

conditions being absent, the conclusion is reached that there is no local process requiring attention.

These catarrhal ears, however, may occur frequently in children living under the best surroundings. Such children may be well nourished, have no evidence of catarrh, nor even be mouth breathers. In fact, if such middle ears be due to adenoid tissue, this may only be around the eustachian tubes and hence not offer any mechanical obstruction to breathing, Such glandular tissue often persists into adult life, especially if once infected, and usually exerts a baneful influence upon the hearing. When such active organisms as the bacilli of influenza cause the infection, the patient is liable to a rapid involvement of the middle ear and the mastoid.

In children, certain reflex symptoms resulting from dentition, dental caries or pressure from cerumen may cause an otalgia, but inspection does not show inflammatory changes in the drum. One is an inflammatory process; the other a neuralgia. The following cases are cited because they are almost uniformly neglected. These cases lay the foundation for an innumerable train of symptoms in later life. The earache, usually coming on at night, is repeated one or many times at variable intervals until finally the child awakens with a more active attack, which is followed by a serous or suppurative middle ear.

These four cases are typical of what the general practitioner, as well as the specialist, is constantly seeing. They occurred in well-to-do American families living under good hygienic surroundings. These children would have been handicapped, however, unless promptly treated, not alone in impaired or destroyed hearing, but because at the growing period of their lives, they would have been subject to bronchitis, head colds, and poor digestion during each successive winter. Such acute attacks, however short, seriously interrupt school life, but what is of more importance, they impair the physical condition, especially in chest development. We have learned that these attacks are usually due to pathological conditions of the naso-pharynx, and that a child whose upper respiratory tract is normal rarely suffers from bronchitis or head colds. Abnormal conditions in the naso-pharynx as a cause of earache are, however, usually neglected until serious damage has resulted to the middle ear.

Case I. S. V., twenty months. Only child of American parents. He is well nourished, breathes easily with his mouth closed, always well except for several mild head colds. These colds were always accompanied by slight pain in his left ear. The parents were warned that there was trouble in his throat needing attention. After two attacks, the third occurred while on a visit in Chicago, and resulted in perforation of the left drum. On his return, a large central adenoid was removed with glandular tissue especially marked about the left tube. Subsequent colds were unaccompanied by earache.

Case II. R. H., four years. Only child of American parents. Well nourished, accustomed to a daily, cool bath, slept in a cool room, was much out of doors, and breathed with the mouth closed. She was subject to frequent head colds which were always accompanied by a slight earache. She was seen in four or five attacks and perforation of the drum was avoided with difficulty. Each time, operation was urged. In the fall of 1903, the vault was made clean and adenoid tissue, especially about the left tube, removed. She has had but few colds since and no earache.

Case III. F. E. B., six years. Large and well nourished. American parents. Seldom sick but from head colds which were always accompanied by earache, which his mother relieved by a few drops of warm oil. His parents were told of the probable outcome, especially as he had large tonsils as well as adenoids. He was not a mouth breather. Within three months, a more severe attack resulted in an acute serous ear and left facial paralysis. The paralysis gradually cleared up. Later his adenoids and tonsils were removed, as well as the glandular tissue in Rosenmüller's fossæ. Subsequent attacks of naso-pharyngitis did not involve the ear.

Case IV. A. F. F., five years. American parents. When first seen, he had a temperature of 103° for which his physician could not account. Examination of the ears showed both bulging, although he had not complained of pain. His previous history was that for two winters he had been kept in doors by attacks of bronchitis or broncho-pneumonia, while in the summer he was well and strong. Later his adenoids were removed, and for two winters now he has led an active out-of-door life. He has had one attack of earache, caused by too vigorous blowing of the nose during a slight cold.

## Reports of Societies.

### AMERICAN CLIMATOLOGICAL ASSOCIATION.

Twenty-first annual meeting held at Philadelphia, June 2–4, 1904.

(Concluded from No. 12, p. 331.)

Dr. Delancey Rochester (Buffalo): It seems to me that in Dr. Cobb's paper there is just one thing of value, and that is, his statement in regard to the swine being infected from cows' milk. The swine is very closely, physiologically, associated with the human being; and the fact that the swine can be infected from cows' milk seems to me to prove absolutely that other exported animals can also be infected with the cows' milk; and, along with Dr. Jacobi, I agree with him most thoroughly that the whole weight of negative cases proves nothing, and we have distinct evidence that milk can be a factor. Dr. Cobb's question is, "Is Milk a Factor?" Nobody thinks that it is the great factor; but it is possible, I think, and proven beyond dispute that it is a factor in the spread of tuberculosis.

Dr. Robert H. Babcock (Chicago): I understood the essayist to claim that the transmission of bovine tuberculosis in the herd was from the feed box. That, undoubtedly, is so in perhaps a large percentage of cases; but that the transmission in a herd is through the milk, is also well established. There is a well-known herd near Chicago kept by a man named Gerler who supplies milk to the city; his herd is tested for tuberculosis every year, and in one year the herd of one hundred and fifteen cows was tested with tuberculin and found absolutely free; not a single creature reacted. The next year a number of young cattle which had been calves the year before, were raised right on his own farm, were tested with tuberculin and a number of them reacted. Unable to explain

this fact, Mr. Gerler made inquiries, and found that those particular calves had been fed with milk obtained from a neighboring dairy; that the milk supplied by his own cows was not sufficient for his calves, and that the head herdsman had obtained milk from a neighboring dairy and fed it to those particular calves, and it was those particular calves that reacted next year to tuberculin.

DR. EDWARD R. BALDWIN (Saranac Lake, N. Y.): Professor Behring does not hold, without qualification, that all human infection comes from the bovine source; but he does think that the bovine is a very prominent and very frequent source of human infection; but he also admits, and he thinks it very probable, that the bovine milk becomes contaminated from *human* sources while the infant is being fed during the first weeks of life. This point has not been sufficiently brought out; and while Professor Behring has, himself, a great many opponents, I think it is only fair that we should fully understand his position; because a very few years may change our ideas fundamentally as to the time of infection from tuberculosis. Whether we change our ideas as to the origin of the infection or not remains less of a question to my mind. It does seem that it is proven beyond peradventure that bovine tuberculosis may be transferred to the human being; we do not need to go outside of our own country to have had proof of that before the German Commission undertook their work. Prof. Theobald Smith has had several cultures which were obtained from different children, and one out of three of these cultures (obtained from the mesenteric glands) proved to be highly virulent for all members of the bovine species, as I have personal reason to know. It produces typical bovine tuberculosis in the most virulent form. This culture was obtained from a child.

No proof is more direct, because in the majority of cases, as we know, human bacilli are unable to affect cattle; this particular culture infects cattle without any difficulty whatsoever. Professor Smith has no doubt in his own mind from this peculiarity of the culture and from the bacteriological point of view, that it was originally a bovine bacillus which was implanted in this child. The recent report of the English commission gives the unqualified statement that they think that bovine tuberculosis is transmissible to human beings; so that Professor Koch, whose statement at the time was somewhat unguarded, seems disproven. It was not held by him that it was absolutely *impossible* to infect the human being from the cow, yet his position has been to defend that view. On the other hand, Professor Koch has been proven wrong by his later investigations; so that the position to-day is one rather not as to where the infection of human tuberculosis originated, but as to the time of its infection, the time when the bacillus is implanted; and the most important thing, it seems to me, this association ought to have in mind is to adjust our ideas to the possibility of a very early infantile infection as Professor Behring holds. I do not say that the evidence is unquestionable; Professor Behring himself has the opposition of almost all the pediatrists; he has the opposition of almost all the prominent men who have given very much study to this question. On the other hand, his experimental work is worthy of every investigation; his authority in other things is unquestioned, and Professor Behring's present position requires the careful investigation of every member of this association.

DR. S. E. SOLLY of Colorado Springs read a paper on "Climatology as a Study in Medical Schools."

DR. N. S. DAVIS, JR. (Chicago): The difficulty in introducing climatology as a required part of the curriculum in medical schools has been referred to; it is want of time. There is just as much demand, just as much need of a full course in dietetics, a full course in electrotherapeutics and a variety of other subjects, as there is of climatology; and yet, as special topics, these have to be neglected or brought in incidentally. To-day all of the good medical schools are crowding five years' work into four. The students are overwhelmed with work and the curriculum is overcrowded. Under these circumstances it is absolutely impossible to require attendance upon any systematic courses in these subjects; furthermore, the methods of teaching have changed very considerably. Pharmacology is to-day taught largely as a laboratory and comparatively little as a lecture course; the result, I think, is that few lectures are given on general subjects like climatology and dietetics, except as they are given incidentally in connection with clinics and in connection with didactic teaching in practice.

As regards my own custom, and that of Northwestern University which I represent, I devote almost without exception at least two lectures a year, sometimes three, to the subject of climatology; but usually I have a tubercular patient before me as an excuse for giving the lectures. In two lectures I can cover the fundamental principles of climatology and point out the combination of conditions which characterize various typical climates; then I repeat the indications for choice of climate, not only I, but my colleagues, who are talking about climatology as applied to individual cases and diseases, do this. In this way the subject is taught.

Dr. Solly has referred to the fact that so many patients go for climatic treatment to climates that they ought not to go to, through ignorance. That is by no means always the fault of the physician who formerly treated them; indeed, I think very frequently, perhaps, in a large proportion of cases it is not his fault. Patients very frequently insist on going where they are not advised to go, or they make their own choice, or, as very often happens, they do not go when climatic treatment is ordered for them, but put off such treatment until the very last, all of which we know they should not do, but these are patients we cannot govern.

DR. A. JACOBI (New York): I simply want to draw the conclusion of what Dr. Edson has been saying. The science of therapeutics is an applied science. It is applied in this: that whoever has not learned any physics or meteorology and physiology cannot understand it — no one, no matter how big his laboratory is, nor how many books he has been reading; therefore the preparatory knowledge should be conveyed,— physics and physiology, — and if that be so, it is not necessary to spend very many lectures in a didactic course on climato-therapeutics.

DR. CHARLES L. MINOR (Asheville, N. C.) read a paper: "The Use of the Fluoroscope as an Aid in the Physical Diagnosis of Pulmonary Tuberculosis; Its Limitations and Its Advantages, Based on Three Years' Experience."

DR. A. C. KLEBS of Chicago read a paper entitled "Recent American Contributions to the Methods of Prevention and Treatment of Pulmonary Tuberculosis.

"1. Anti-tuberculosis Societies and Their Work.

"2. Exposition in Baltimore.

"3. Facilities for Out-door Treatment.

"4. New Sanatoria."

Dr. Klebs looks at tuberculosis as a house and family problem, and believes that the disease, although undoubtedly communicable, can develop to disabling proportions only when concomitant, chiefly unsanitary, conditions become active. The work of the Department of Health of New York was reviewed, and un-

qualified praise given to Dr. Biggs for his labors to secure registration and subsequent inspection and treatment. The work of the Maryland Tuberculosis Commission, the Pennsylvania Society for the Prevention of Tuberculosis, and the Boston Association for the Control and Relief of Tuberculosis was reviewed.

The committee on the prevention of tuberculosis of the Charity Organization Society of New York has issued a handbook on the prevention of the disease, and its work is highly effective. The Chicago tuberculosis committee, working under the auspices of the Visiting Nurses Association and with the Bureau of Charities, has several offices in crowded districts, where physicians who have volunteered for the service take charge of consumptives and their families in their homes. They improve domestic hygiene. The Phipps Institute was mentioned, and the organization of the National Association for the Study and Prevention of tuberculosis. Outdoor sleeping was probably first systematically practiced as a cure in the dry atmosphere of the western plains and mountains. The various shacks and tents were described. The growth of sanatoria was reviewed, and the very great share in these achievements which belongs to the activity of the American Climatological Association.

Dr. Otis (Boston): Dr. Klebs has indeed presented a very hopeful outlook of what has been done during the last year in the prevention of tuberculosis, especially in Chicago. Last year the legislature in Massachusetts appropriated $150,000 for the enlargement of Rutland Sanatorium. The addition is now in process of construction, and soon the institution will accommodate 400 patients of the incipient type. A bill to appropriate $150,000 for the hospital for advanced consumptives, to be built within ten miles of Boston, failed to pass. The city of Boston itself passed an appropriation for $150,000 for the same purpose, but the mayor withheld his approval for the alleged reason that the sum is inadequate for the purpose. The Boston Association for the Relief and Control of Tuberculosis has been very active during the last winter, which has been its first winter's work — in two directions principally: In the direction of relief of tuberculous patients at their homes. Food is furnished, if necessary, and sputum cups, and so on. An educational propaganda has been carried on, something, I think, like seventy lectures have been given by physicians before all sorts of audiences; the masters of the schools have been most enthusiastic in asking that lectures should be given to their scholars, and that has been one of the very encouraging portions of the work of this association. Thirdly, the association has been continually advocating for the construction of a municipal hospital to care for advanced cases among the poor. The accommodations for the hopeless consumptives are all very inadequate; therefore the actions of our Board of Health are restrained on account of having no accommodation.

Dr. Babcock: I must enter a protest against Dr. Klebs' very modest report given of the work done by the Association for the Prevention of Tuberculosis in Chicago. This association owes its inception and its success solely to Dr. Klebs. Were it not for Dr. Klebs' efforts in the city of Chicago, there would be practically nothing done to-day along this line; and I feel that it is nothing more than just that the modesty of this man should be recognized and his efforts in that direction in Chicago duly appreciated.

Dr. Thomas J. Mays (Philadelphia) read a paper, "Human Slavery as a Prevention of Pulmonary Consumption." See Journal, June 9, 1904.

Dr. F. I. Knight (Boston) read a paper entitled "What shall We Do with Patients having Pulmonary Tuberculosis?" See Journal, Sept. 8, 1904.

Dr. Robert H. Babcock (Chicago) read a paper on "Some Cases of Pus Infection Simulating Pulmonary Tuberculosis." The five cases cited represent a rather frequent class in which the differential diagnosis is difficult, and they illustrate the close relationship existing between disease of the lungs and derangements of circulation within the abdominal cavity. If, in endeavoring to pass judgment on an individual's lungs, the physician confines his attention to these organs, he will find his field of view too limited to permit of a really intelligent opinion. The first case cited had been pronounced tuberculous. The patient had been ill with cough and high fever with emaciation for two months. Nowhere was there pronounced dullness, yet both lungs were defective in resonance. An examination of the abdomen and a clearer history led the author to believe that it was not tuberculosis, but septicemia originating in a pelvic peritonitis with purulent and circumscribed exudate, and that the indefinite lung findings were due to some pulmonary change, resulting from the patient's infection following abortion, with feeble heart action. The diagnosis was confirmed by a surgeon who operated and by an a autopsy later. Four other cases were cited. Dr. Babcock advocated a leucocyte count in doubtful cases. In early tuberculosis the leucocytes are likely to be either not increased or actually diminished, whereas in cases of pus infection there is leucocytosis, although this may be slight. The tuberculin test was also advocated.

Dr. S. G. Bonney (Denver) read a paper on "The Principles and Management of Pulmonary Tuberculosis." See Journal, Sept. 15, 1904.

Dr. Carroll E. Edson and Dr. W. H. Bergtold of Denver read an account of the Agnes Memorial Sanatorium for the Treatment of Tuberculosis, built by Mr. L. C. Phipps at Denver, Colo. It is a closed sanatorium for the open air treatment of persons of small means. It occupies a plot of 40 acres, seven miles east of Denver, and there are 120 acres that may later be added. Access is by electric cars. There is an artesian well 750 feet deep on the grounds. The present capacity is for 80 patients, with a maximum, eventually, of 150. There are at present five buildings; they are two-story pavilions, face W.S.W., are of brick, covered with cement, and roofed with tiles in the Spanish mission style, and are all connected with open cloisters with subways below. The "direct-indirect" system of heating, so-called, is employed. There are verandas with canvas partitions that are fastened outside at the position of the walls between each room, so that by drawing out to the column between the arches, the veranda is divided into private porches, 9 x 12, one for each room. The beds may be rolled through the wide door upon the veranda, and patients are to sleep out of doors as much as possible. The screens prevent strong currents of air down the veranda, and at the ends are glass-enclosed corner rooms eleven feet square. The sanatorium is arranged for use all the year round. In Colorado, shade is desirable for some patients at all times, and for all during the mid-day in summer. A clinical laboratory with every appliance for scientific clinical work is provided. The steam plant, dynamos, fire pumps, refrigerating machine and incinerating furnace are of the most approved type. All laundry material is sterilized by steam before delivery to the laundry room proper. Messrs. Gove and Walsh of Denver are the architects. The report of the Medical Board, covering a large number of specifications on which the plans were drawn, was appended. The paper was illustrated with lantern slides.

DR. THOMAS DARLINGTON, Commissioner of Health of the city of New York, described the "Work of the Tuberculosis Clinic of the Department of Health of New York." It was opened March 1, 1904, and is located in the Health Department building at Sixth Avenue and Fifty-fifth Street. It is constructed in the most approved manner of hospital construction. The floors are tiled, the corners of the rooms rounded and the furniture is made of plate glass and enameled iron. It is intended that when a patient is discharged from a general hospital, if tuberculous, he will be given a card to this clinic, where he will be examined and treated. Patients' homes are also visited. If persons who have been so referred do not report, they are looked up, and all absentees are investigated. At the clinic, patients are supplied with sputum boxes, gauze, and printed matter in his own language. He is instructed in hygienic measures and taught breathing exercises. The examinations are thorough and include the x-ray. Patients with abnormal temperature, or those too sick to walk are sent to Riverside Sanitorium, on North Brothers Island, which belongs to the department, or to Seton, St. Joseph's or Lincoln hospitals. It is the intention of the department to supply milk and eggs when patients cannot procure them. The number of visits averages thirty-six daily. The Russian Jews number nearly half. Nine hundred and two specimens of sputum were examined in the first three months. Four hundred and seventy-one cases were under observation June 1, 1904.

DR. JOHN WINTERS BRANNAN (New York City) read a paper on "The Home Treatment of Tuberculosis by Means of Hospital Dispensaries."

DR. JOHN MADISON TAYLOR (Philadelphia) gave an abstract of his paper, "Remarks on the Treatment of Respiratory and Circulatory Disturbances by Passive and Active Movements."

DR. BABCOCK: I have seen very brilliant results accomplished in many cases of chronic myocarditis where there was no mechanical obstruction in the way of valvular disease, but merely the cardiac inadequacy resulting from the loss of proper equilibrium in the circulation, and from the degenerative changes in the heart muscle. I have seen men who were suffering from dyspnea and other manifestations of circulatory disturbances, restored to what they considered as good health as before they had any premonition of impending disaster. I think it is a measure that we should all consider; it is along the line of the means provided by nature, and that, so far as we can, we should endeavor to prescribe therapeutic measures which are not medicinal.

DR. JACOBI: There is a good deal in the Nauheim baths, if only on account of the large amount of carbonic acid contained in them. The carbonic acid you can have in other mineral springs; you have them, for instance, in Pyrmont, Schwalbach, in Spa, Belgium, and so on. I remember to have seen in a little book of that famous old Scotchman, Dr. Keith, the following remark: That he treats angina pectoris very frequently with massage of the intercostal nerves. The massage is a local one, and he asserts that very frequently he relieves or remedies attacks of angina pectoris by simply massaging the fifth and sixth intercostal nerve persistently, but gently, for some time. All this speaks for the value of massage when done gently and properly. That is so true that in New York City, as far as I am informed, more harm is done by so-called massage than good. There are hundreds of people, male and female, that make a living out of causing new attacks of pleurisy, new attacks of peritonitis and perimetritis, and so on. They are very active and, from a commercial point of view, they are great aids to the active practitioner who has to see their cases afterward. I have seen a great many cases of peritonitis that were the result of violent "massage"; but this experience of Dr. Keith's is a very interesting one, and it has appeared to be of some service in quite a number of cases of angina.

DR. BABCOCK: I have had considerable experience in this line of treatment, and although I cannot formulate any very, to me, trustworthy notions concerning the method or the relative value of the effects produced by the resistance exercises and the baths, I am satisfied there are some cases which are benefited by the one and some which are benefited by the other. As a rule, I generally combine them in any given case. I am not at all in sympathy, as perhaps you know, with Beslie Thorn, Schott, and some others who advocate the baths in cases of very seriously destroyed compensation. I am sure, however, that carefully given resistance exercises will accomplish very much in cases of very grave cardiac inadequacy. I am sure also, that resistance exercises are a very material aid in relieving angina pectoris, not so much during the attack perhaps (as I have had no experience in that), but given between attacks they relieve patients from frequency and severity of attacks. Both therapeutic measures are well worth careful study by every man who is interested in therapeutics of circulatory derangements, and I am sure that if properly given they will afford results which, in many instances, are far superior to the drug treatment of these diseases.

DR. BEVERLEY ROBINSON of New York City read a paper on "Some Unsettled and Important Problems in the Treatment of Acute Lobar Pneumonia." Dr. Robinson believes that with the first symptom of chill, fever, pain in the side, cough and expectoration, beechwood creosote should be vaporized more or less continually in the patient's room; this often will prevent pneumonia, as it is an anti-catarrhal agent of great value, and is eliminated through the bronchial mucous membrane. The sputa must be rigidly and systematically disinfected, and after recovery or death, fumigation, cleansing and ventilation should be practiced. If the patient is seen in the beginning of the attack, it is best in case of inadequate facilities for treatment, to transport the patient to a hospital. On the third, fourth or fifth day, such a move is often questionable. A private room should, if possible, be secured, and the patient isolated. Morphia in the beginning is to be occasionally used when pain in the side is present. Dr. Robinson does not believe that Dover's powder has any good effect on the march of the pneumonic process, as it is prone to lock up secretions which are too much interfered with by the disease itself. In this Dr. Robinson agrees with Professor Gairdner and disagrees with Sir Samuel Wilks. The author does not believe in the cold bath, cold pack, or even cold applications locally in the treatment of pneumonia. Occasionally he permits cold sponging if the fever is high, but, as a rule, he prefers tepid or warm water with alcohol, believing that the nervous shock caused by the toxin is better allayed with slight or moderate heat than with cold. He opposes all large doses of quinine to abate pneumonia or to act as a pronounced antipyretic. A solution of ammonia is valuable to keep the blood fluid. Alcohol is used as a stimulant. Large doses of digitalis are prejudicial in all stages. Nitroglycerine is useful when the heart weakens. Strychnine has been used too much. A good preparation of cocoa is of great value. Hypodermoclysis in moderation and oxygen should not be left until too late. Except in profound general toxemia and the beginning of pneumonia, and in specially rugged or full-blooded patients, venesection is not desirable, as

a rule. Absence of leucocytosis in acute lobar pneumonia presages death. Differential counts should be made and regarded. In treatment, harm proceeds almost invariably from ignorance or undue enthusiasm.

Dr. Howard S. Anders of Philadelphia read a paper on the "Pitch of the Normal Pulmonary Valve Sound, and the Practical Significance of Its Changes in Acute Lobar Pneumonia and in Emphysema of the Lungs." Dr. Anders said it was singular that the characteristics of pitch changes are usually unrecognized. They must be based on a comparison with the aortic sounds. After an examination of 470 individuals with this in view, Dr. Anders finds the pulmonic second sounds lower in pitch than the aortic sounds in 77%; in 10% no difference could be detected, and in 13% the pulmonary valve sound was a trifle higher than that of the aortic valves. The persons examined were presumably healthy. Physiologic irritability, nervousness, etc., caused a simultaneous elevation of the pitch. Accentuation or increase in intensity of the pulmonic second sound is more noticeable where the evidences of hypertrophy of the right ventricular myocardium are prominent. Extreme elevation of pitch accompanies those affections associated with excessive obstruction to the flow through the pulmonary capillaries, where the *vis a fronte* predominates. The primary effect of the consolidated lung in lobar pneumonia is to elevate the pitch of the pulmonic valve sound to a degree above that of the aortic sound, corresponding to the amount of increased tension in the pulmonary circulation. Such changes are a sign of impending danger and may be recognized earlier than any diminution in intensity or loudness of the sound. The pitch is also raised in emphysema, bronchitis and winter cough.

Dr. James M. Anders, Philadelphia, read a paper on "Meteorologic Conditions in the Causation of Lobar Pneumonia." He considered the data bearing on the climatic factors as recorded at the United States Weather Bureau for twenty years. The conclusions were: (1) That the seasons exert a marked effect upon the prevalence of lobar pneumonia, the maximum mortality being observed during the winter and spring months. (2) That insular climates probably manifest the greatest rise in pneumonia mortality in winter, while that of continental climates coincides mainly with the spring. (3) That the mortality of the epidemic form of the disease is to a less extent influenced by the seasons, and may occur in the fourth and even third quarter of the year. (4) That an apparently close relationship exists between periods of low temperature and the death-rate from pneumonia. (5) That the mortality rises and falls with the barometric pressure, the maximal pressure being reached during periods of high pressure. (6) That the average velocity of the winds and the death-rate from pneumonia would appear to stand to one another in the relation of cause and effect (a provisional explanation of this fact being found in the controlling influence exerted by the winds upon temperature and barometric pressure, or by the latter upon the winds). (7) The major influence exerted by the seasons, however, is probably not direct, *e. g.*, by a lowering of the bodily resistance due to low temperature, high barometric pressure, direction and velocity of the winds, etc., but indirect, namely, by bringing about that ineffective element in the causation — concentration and increased virulence of the specific poison in consequence of closed doors and windows and lack of free ventilation.

Dr. Phillips: With reference to the prevalence of pneumonia, it has no seasonal preference in tropical climates, but there is no doubt of the effect of something in temperate climates in bringing about its seasonal incidence. What that something is, is very interesting. The meteorological element that coincides most in its movements — in its ups and downs — with the ups and downs of pneumonic deaths, is the temperature. It is impossible, I may say absolutely impossible, at present to express the pneumonia death-rate in temperate climates as a function of the temperature; yet I think that a low temperature has a decided effect, and in a manner that has not been brought out by Dr. Anders. An exposure for a short time to a low temperature does produce in the human body a fall in the temperature of the human body itself. That I know from a series of experiments upon this subject I conducted some six years ago, and reported in the *Monthly Weather Review*.

Let any of you gentlemen that wish to try, go out from an ordinarily comfortable room to, we will say, a temperature of 32° or lower for a couple of hours and then come back. If you have taken the precaution to take your body temperature on leaving, before going out, while out, and after coming back, you will notice two things: you will notice that your temperature falls gradually for some time before equilibrium is reached, and when you return to the house you will find it will be from a half to three quarters or even three hours before your temperature gets back to the point it was before going out. In my experiments the temperature was taken in the mouth, taken under the tongue, and carefully taken. The temperature falls, dependent upon the clothing. I have taken at the same time the temperature between all wears of the clothing. On first going out, after five or ten minutes, all the heat of the clothes arising from the interior house temperature is usually lost; then the thermometer, placed immediately next the skin, begins to show a decline. I have stayed out in my own person until I got so chilled I could not stand it any longer, and the skin temperature was getting lower and lower and lower. It would be interesting to know how long a man could stay out.

Dr. Anders mentioned the relative humidity, but relative humidity does not mean anything of itself, and I wish our climatologists could get that into their heads — that relative humidity is merely a convenient term for expressing the relation between two absolute things: temperature on the one hand, and absolute humidity on the other; and when you say relative humidity is so and so, unless you state the temperature, you have not stated anything that is tangible. The absolute humidity in cold weather is low, decidedly low; at the same time the relative humidity may vary anywhere between 100% and almost 0%. May it not be that during cold weather the excessive evaporation from the mucous membrane and the naso-pharynx places that mucous membrane in a condition susceptible, much more susceptible, to permit infection? We know pretty well that the pneumococcus can be found in healthy throats; a great many of us are carrying it around, just simply awaiting an opportunity for it to get in its work.

Dr. Karl von Ruck of Asheville read a paper entitled "A Classification for Cases of Pulmonary Tuberculosis and Phthisis." This paper was submitted *a propos* of the report which a committee of the association presented at a previous meeting, when it was submitted with requests for opinions on the same. The object was to secure uniformity in classification. He reviewed the classifications of Andral, Bayle, Laennec, Grancher, Penzoldt, Prior, Musser, West, Cornet, Sir James Clark, Stokes, Louis, Meissen, Delafield, Loomis and others. The attempt to classify in a manner in which the anatomical lesions as shown by physical signs are attached to certain clinical phases

of the disease, is probably not applicable to all cases. The attempt to combine the physical phenomena, especially in regard to extent of area, with the clinical aspect of the cases falls because they stand in no necessary relation, either in the prospect for duration of life or in the prospect of a clinical cure.

The distinctive features of Dr. von Ruck's classification are: For chronic tuberculosis, the absence of softening, ulceration or excavation. For initial tuberculosis, that the destructive area is small, giving as yet no physical signs of cavity or having a correspondingly limited amount of expectoration.

For phthisis, that the destructive process has extended to a degree that a small-sized cavity is recognizable, the increase of the ulcerating surface corresponding with an increase in sputum. In this stage the larynx may show a mild degree of involvement. For advanced cavernous phthisis, the presence of a large or of a multiple cavity formation again reflected by a correspondingly larger amount of sputum, and with this stage are also classed all cases which, regardless of the extent of local destructive changes, have grave complications, be they tuberculous or otherwise. The classification is chiefly upon a clinical basis and was fully detailed in the paper.

At the business session the following officers were elected for the ensuing year: President, Dr. W. F. R. Phillips, Weather Bureau, Washington; vice-presidents, Dr. S. G. Bonney of Denver and Dr. S. D. Risley of Philadelphia; secretary and treasurer, Dr. Guy Hinsdale of Hot Springs, Va.; member of the council, Dr. J. C. Wilson of Philadelphia; representative on the executive committee of the Congress of American Physicians and Surgeons, Dr. Frederick I. Knight, Boston. The place of meeting for 1905 was not determined.

## Recent Literature.

*Manual of Clinical Microscopy and Chemistry, Prepared for the use of Students and Practitioners of Medicine.* By DR. HERMANN LENHARTZ, Professor of Medicine and Director of Hospital at Hamburg, etc. Authorized translation from the fourth and last German edition, with notes and additions, by HENRY T. BROOKS, M.D., Professor of Histology and Pathology at the New York Post-Graduate Medical School and Hospital; Member of the New York Academy of Medicine, etc. With 148 illustrations in the text and 9 colored plates. Pages xxxii, 412, octavo. F. A. Davis Company, publishers, Philadelphia, Pa. 1904.

This excellent work, which is a translation of the fourth German edition, represents a series of lectures in an augmented form delivered by Professor Lenhartz before the Leipzig clinic. We are now indebted to Professor Brooks for presenting for the first time the subject-matter in our own language, and for making important additions thereto. While we cannot fully agree with the author and translator on a number of points of detail, the book contains very little that deserves adverse criticism; most of the subjects are well treated and are as exhaustive as a volume of its size will permit. We would, however, call attention to a few points which seem to us important.

We question the advisability of devoting some thirteen pages to the construction and management of the microscope, for the catalogues of the different microscope manufacturers now-a-days deal sufficiently with the construction, and the use of the instrument is best taught in the class-room. The forensic identification of blood-stains (p. 188) is too briefly treated to be of value, and, it seems to us, belongs in works devoted to forensic medicine rather than in a book of this character. A certain amount of confusion exists in regard to the use of nitric acid instead of acetic acid in the heat test for albumin. On page 296 we find the following: "It is, therefore, advisable first to add nitric acid, which is preferable to acetic acid, because the latter, even in slight excess, dissolves small amounts of albumin." In the first place, an excess of either nitric or acetic acids cannot be used in the heat test for albumin because of the formation of acid albumin which is not precipitated by heat; and secondly, nitric acid, when added in small amount to the urine which has already been boiled will dissolve small amounts of albumin, while acetic acid will not dissolve traces of albumin under these circumstances. It is, therefore, far safer to use a weak solution of acetic acid, about 33%, to render the urine sufficiently acid to prevent the precipitation of the earthy phosphates, or to dissolve the precipitate after it has once formed.

Under the heading of Alkaptonuria (p. 308) we find no mention of the marked affinity that alkapton has for oxygen. Upon this fact depends an important test for alkapton by the use of sodium hydroxide. On page 323 the description of the quantitative test for sugar by Fehling's method is too brief for the inexperienced person to follow. We would suggest greater detail and more explicit directions of how to proceed.

The work is a credit not only to the author, but to the translator, and we can recommend it to anyone seeking a book on laboratory diagnosis. J. B. O.

*Diseases of the Gall-Bladder and Bile-Ducts, Including Gall-Stones.* By A. W. MAYO ROBSON, F.R.C.S., Hunterian Professor of Surgery and Pathology, 1897, 1899 and 1903: and Vice President, Royal College of Surgeons of England, 1902. Assisted by J. F. DOBSON, M.S. (Lond.), F.R.C.S. Lately Resident Surgeon to the General Infirmary at Leeds. Third Edition. New York: William Wood & Co. 1904.

This is the third edition of this valuable work. The progress that has been made in the surgery of the gall-bladder and bile-ducts has been so rapid that practically the whole book has been rewritten. An entirely new chapter has been written on the Operative Technique of Gall-Stones, giving Mr. Robson's personal views and experience. Appended is an account of 539 operations performed on the gall-bladder and bile-ducts by Mr. Robson. The work is of peculiar value in that it gives the experience of a man

who has had exceptional opportunities in this field of surgery. To the surgeon the book is of great value; to the general practitioner it is of value in that it shows what may be done by a skilled operator.

*Simon's Clinical Diagnosis.* A Manual of Diagnosis by Microscopic and Chemical Methods. For Students and Practitioners. By Charles E. Simon, M.D., late Assistant Resident Physician at Johns Hopkins Hospital, Baltimore. New (fifth) edition, thoroughly revised and much enlarged. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1904.

Five editions in eight years is Dr. Simon's record for his "Clinical Diagnosis." The present edition is similar in size and form to its predecessor but embodies a very considerable new material which has appeared in the last two years. The chapter on the blood has been largely rewritten and increased in size. A valuable addition is also a section dealing with the nature of aniline dyes and the principles of staining, matters about which even skilled laboratory workers are often poorly informed. The kryoscopic examination of the blood has been taken up in a new section and the general topic of leucocytosis has been rearranged. Other subjects dealt with in the book have been changed and altered as the necessities of an advancing knowledge have required. The book is deservedly popular.

*The Closure of Laparotomy Wounds as Practised in Germany and Austria.* Including Detailed Methods and Views communicated by over Fifty Leading Surgeons. Edited and Translated by Walter H. Swaffield, F.R.C.S. Ed., M.D. Ed. Fellow of the Obstetrical Society of London. London: J. & A. Churchill, 7, Great Marlborough Street. 1904. All rights reserved. Philadelphia: P. Blakiston's Son & Co.

We have often thought that it would be of interest to collect the various methods of closing celiotomy wounds. Mr. Swaffield has collected the detailed methods of over fifty surgeons, and it is really extraordinary to see the variations that exist in closing an abdominal wound. The majority of operators use some method of suture in layers. In fact, the simple through and through suture in median laparotomies is used by relatively few surgeons. This is an excellent compilation of methods, but we regret that Mr. Swaffield has not analyzed the different methods and given us his opinion as to what constitutes the best method

*The Practical Medicine Series of Year Books.* Comprising ten volumes on the year's progress in Medicine and Surgery. Issued monthly. Under the general editorial charge of Gustavus P. Head, M.D., Professor of Laryngology and Rhinology, Chicago Post-Graduate Medical School. *Volume II. General Surgery.* Edited by John B. Murphy, M.D., Professor of Surgery, Northwestern University, Medical School, Chicago: The Year Book Publishers, 1903.

This series of year books is intended for the general practitioner. The one on surgery, however, will be of interest to anyone doing surgical work. All the important and many of the minor advances in surgery are recorded in sufficient detail to be of value. It was published in November, 1903, and we have used it and found it to be of practical value.

*Infection and Immunity with Special Reference to the Prevention of Infectious Diseases.* By George M. Sternberg, M.D., LL.D., Surgeon-General U. S. Army (retired). New York and London: G. P. Putnam's Sons. 1903.

In this interestingly written volume the necessary measures are given for preventing the spread of infectious diseases. Although designed for non-medical readers, physicians will find it a valuable work of reference. We agree with the author that a knowledge of the chief facts bearing upon infection and immunity "should constitute an essential part of a liberal education."

The book is divided into two parts, the first of which is devoted to a general consideration of infection, disinfection and immunity. In part second all the important infectious diseases are taken up separately, the mode of transmission of each is discussed, and the best means of preventing its extension.

The author states that the first confirmation in this country of the discovery of the malarial parasite was made by himself in March, 1886. He appears to have overlooked the fact that a year previously Councilman and Abbot[1] described pigmented and hyaline bodies within the red blood corpuscles in two fatal cases of malarial fever.

Recent investigations in serum diagnosis and therapy are not described, as he does not regard this line of work suitable for popular treatment. For the same reason the theories of immunity are not presented.

*The Mother's Manual. A month by month guide for young mothers.* By Emelyn Lincoln Coolidge, M.D., Visiting Physician of the Out-Patient Department of the Babies' Hospital, New York; formerly House Physician of the Babies' Hospital, New York; Physician in Charge of the Babies' Clinic of the Society of the Lying-in Hospital of the City of New York. Illustrated. The Woman's Home Library. Edited by Margaret E. Sangster. pp. 263. New York: A. S. Barnes & Company. 1904.

This little book, while not the worst of its class, is far from being the best. We can therefore hardly recommend it. The arrangement is peculiar, each month during the first year receiving a chapter, the other chapters being devoted to longer periods. While this arrangement is, in a way, satisfactory, we hardly see why croup and vomiting should, for example, be spoken of in the third month, and earache and hiccoughs in the fourth month rather than anywhere else. The style of the book is suggested by the fact that hands are usually spoken of as "little hands."

[1] Am. Journ. Med. Sci., April, 1885, p. 416.

*The Summer Diarrheas of Infants. Their Etiology, Pathology and Treatment.* By H. ILLOWAY, M.D. Formerly Professor of Diseases of Children, Cincinnati College of Medicine and Surgery; formerly Visiting Physician, Jewish Hospital, Cincinnati; one of the Collaborators on the American Text Book of Diseases of Children (edited by Starr); Fellow of the Academy of Medicine, New York City, etc. pp. 150. New York: E. R. Pelton. 1904.

After setting aside dysentery as a separate disease, the author divides the cases of summer diarrhea in infants into three classes: heat stroke, cholera infantum and summer complaint. He says, and probably rightly, that heat stroke in infancy is usually unrecognized and mistaken for some form of diarrhea. He describes cholera infantum properly, but does not believe that it is due to bacteria or acute milk infection. He believes that it is caused by great heat in combination with great humidity. He includes all the other diarrheas, except those due to improper food, under the head of summer complaint. He claims that bacteria play no part in their etiology but that they are due primarily to pyrexia produced by the high temperature of the summer. The pyrexia inhibits or diminishes the secretion of hydrochloric acid and causes dyspepsia, as the result of which diarrhea and intestinal catarrh develop. His treatment is based on these lines: reduction of fever by the wet pack and hydrochloric acid for the dyspepsia.

We cannot, of course, agree with either the author's premises or conclusions, although we must admit that there is a modicum of truth in what he says. His arguments are ingenious, but will not bear very close analysis. The book is rather amusing to one familiar with the subject, but may, we fear, do harm if it falls into the hands of students or of those not well grounded in medicine.

*Post-Mortem Pathology.* A Manual of Post-Mortem Examinations and the Interpretations to be drawn therefrom. A Practical Treatise for Students and Practitioners. By HENRY W. CATTELL, A.M., M.D., Pathologist to the Philadelphia Hospital and the West Philadelphia Hospital for Women. Philadelphia and London: J. B. Lippincott Company. 1903.

This is one of the best and most complete works on post-mortem technique. It is equal and in some respects superior to the admirable *Sectionstechnik* of Nauwerck and the recently published French treatise of Letulle. Over two hundred pages are devoted to a description of procedures employed at the autopsy table and to pathological diagnosis. The remainder of the work contains chapters on the preservation of tissues, bacteriological investigations, weights and measures, comparative post-mortems, and medico-legal suggestions. This manual contains much of value to pathologists, medical students, coroners, physicians, and medical examiners. The book is well printed and contains 162 illustrations, including many excellent original photographs.

THE BOSTON
# Medical and Surgical Journal.

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## PHYSICAL DETERIORATION.

DURING the past few years a rumor has been current in England to the effect that the people of Great Britain were becoming physically weaker, the principal proof adduced being the large ratio of rejections for physical causes among recruits for the army. For this reason a committee was appointed in September, 1903, consisting of seven gentlemen, who on July 20, 1904, made their report to Parliament.[1] The terms of the reference were as follows:

1. To determine, with the aid of such counsel as the medical profession are able to give, the steps that should be taken to furnish the Government and the nation at large, with periodical data for an accurate, comparative estimate of the health and physique of the people. 2. To indicate generally the causes of such physical deterioration as does exist in certain classes; and 3, To point out the means by which it can be most effectually diminished.

The committee held 26 sessions and examined 68 witnesses of both sexes, including 34 members of the medical profession, 13 of whom held official positions.

The first part of the report consists of an examination of the evidence deducible from the War office, and a statement of the steps required to obtain reliable data for determining questions of national physique. From this examination it was concluded: 1. That the evidence adduced in the Director-General's[2] memorandum was inadequate to prove that physical deterioration had affected the classes referred to. 2. That no sufficient material (statistical or other) was at present available to warrant any definite conclu-

[1] Report of the Inter-Departmental Committee on Physical Deterioration: Vol. I. Report and Appendix; Vol. II. List of Witnesses and Minutes of Evidence; Vol. III. Appendix and General Index. London, 1904.

[2] Of the Army Medical Service.

sions on the question of the physique of the people by comparisons with data obtained in past times. 3. That a partial investigation, as for instance, into the condition of the classes from which recruits are at present mostly drawn, might be very misleading, however carefully conducted, and might give rise to erroneous conclusions on the general question, unless checked by expert knowledge.

One of the facts brought out in this part of the inquiry was that obtained by the British Association for the Advancement of Science in 1883, to the effect that the average stature of boys between the ages of eleven and twelve in the public schools of Great Britain was 54.98 inches, while that of boys in the industrial schools of the same ages was 50.02, a difference of nearly five inches. The difference in two extreme classes of adults was only three and a half inches. Professor Cunningham of the University of Edinburgh outlined a scheme embracing the establishment of a Central Anthropometric Bureau, which should include an Honorary Consulting Committee, a Central Bureau at London and a corps of surveyors or measurers, charged with the duty of obtaining the following data:

1. Height. 2. Chest girth, maximum and minimum. 3. Weight. 4. Head (length, breadth, and height). 5. Breadth of shoulders. 6. Breadth of hips. 7. Vision, by Snellen's types and by colors. 8. Degree of pigmentation.

The second part of the report deals with the causes and indications of degeneracy in certain classes of the community and the means by which it may be arrested. These topics are very fully treated. The committee states at the outset that "the impressions gathered from the great majority of the witnesses examined do not support the belief that there is any general progressive physical deterioration."

The chief points of interest treated in this part of the report are, the urbanization of the people, including overcrowding, and the pollution of the air. As an offset to these conditions, it was shown that very great improvement had taken place in the quality of public water supplies, the housing of the people, the cleansing of unhealthy areas, the abatement of nuisances and improvement of the supply of milk and other articles of food. In the matter of factory employment, the committee also state that "great amelioration has taken place in the circumstances of labor."

"Occupations had a profoundly selective effect, the strongest following the calling where their physical powers will have the maximum advantage in wage earning and the weakest drifting to those where their lack of vigor will tell least against them. By this pressure the weaker vessels are constantly recruiting those fields of employment least capable of fostering development, and the poorest in physique are those met with in the lowest paid and unskilled textile operations."

Prominence is here given to the injurious effects of dust-producing industries on the health of operatives, and to the excellent statutes recently enacted in England for the prevention of such injury. By an act of 1901, followed by an order of Feb. 4, 1902, a minimum of 600 cubic feet of fresh air per hour is prescribed for each person in certain textile factories. By another act, the compulsory notification by physicians of all cases of lead or of other metallic poisoning and of anthrax occurring among factory workers is also required. Dr. Young, President of the Association of Certifying Factory Surgeons, also recommends that all cases of tuberculosis in factory employes be notified. The injurious effects of alcoholism came in for a share of attention, and evidence was presented showing that the consumption of intoxicating drink had largely decreased in countries where wise legislation had been enacted with that end in view, especially in Norway and Sweden.

Other important topics considered were the depletion of rural districts by the exodus of the best types, the alleged tendency of superior stocks in all classes toward a diminished rate of reproduction, food, infant mortality, the employment of mothers late in pregnancy and too soon after childbirth, decrease in breast-feeding, defective milk supply, parental ignorance and neglect, medical inspection of schools and the feeding of school children, juvenile smoking, syphilis, insanity, care of the eyes, ears and teeth. Upon this latter point, the committee says there are happily no grounds for associating dental degeneracy with progressive physical deterioration. In the words of one of the experts examined: "It is undoubtedly the better class schools, in my experience, where the teeth are the worst, the higher the class, the worse the teeth."

In the third part of the report, the committee presents a condensed summary of its recommendations, which embrace fifty-three topics, the principal subjects being the establishment of a permanent anthropometric survey along the lines already carried out by Bowditch in Massachusetts, by Quetelet and Pagliani in Brussels and Turin, and by others in Sweden and Denmark. They also recommend the maintenance of a registration

of sickness, not confined to infectious diseases, the creation of an Advisory Health Council like the *Comite Consultatif d'Hygiene* of France, more drastic methods of dealing with overcrowding in cities, the formation of labor colonies like that of the Salvation Army at Hadleigh with the added power of compulsory detention, stricter enforcement of laws preventing smoke pollution. The powers of factory surgeons should be extended so as to enable them to examine employes at later ages than sixteen, and to re-examine when necessary at definite intervals. A scientific inquiry into the physiological causation and effects of over-fatigue is also recommended. Upon the subject of alcoholism, the committee believes that "more may be done to check the degeneration resulting from drink by bringing home to men and women the fatal effects of alcohol on physical efficiency than by expatiating on the moral wickedness of drinking. To this end they advocate the systematic, practical training of teachers to enable them to give rational instruction in schools on the laws of health, including the physical evils caused by drinking." To combat the evils of the influx from country to town the committee recommends that every effort should be made "to open the minds of children in the rural schools to the resources and opportunities of rural existence."

Other topics which are the subject of recommendation are the teaching of cookery and the preparation of food, better laws for the registration of deaths and especially of stillbirths, for the protection of married women employed in factories by placing upon the employer the burden of obtaining proof that the required period has elapsed since the confinement of the women he employs, the encouragement of provident societies and maternity funds, the improvement of the milk supply, the training of mothers by health societies established for this purpose, games and exercises for school children, *creches* for infants and many other recommendations of equal importance looking to the future welfare and improvement of the conditions affecting the population.

The committee concludes by hoping that "the facts and opinions they have collected will have some effect in allaying the apprehensions of those who, as it appears, on insufficient grounds, have made up their minds that progressive deterioration is to be found among the people generally."

Volume II contains 504 pages of closely printed minutes of evidence, of which those of Dr. Eichholz, H. M. Inspector of Schools; Miss Anderson, Inspector of Factories; Mr. Dolamore, Secretary of the British Dental Association; Dr. William Taylor, Director-General of the Army Medical Service; Drs. Scott and Young, Factory Surgeons; Mr. Lamb of the Salvation Army, and several medical officers of health, contain valuable and instructive information. Volume III contains twenty or more appendices, with statistics, diagrams, photographs and correspondence upon special topics having reference to physical deterioration.

## NEW BUILDINGS FOR THE BOSTON INSANE HOSPITAL.

THURSDAY afternoon of last week a large number of persons attended the formal opening of three new buildings in connection with the Insane Hospital Department of Boston. Those who attended were representative of this branch of hospital work. The building and opening of these added accommodations is of much importance to the work of the hospital itself, and of very considerable significance in relation to the general problem of hospital construction. The gradual tendency which has now assumed a perfectly distinct form, of constructing hospitals for the insane on the same general principles as hospitals for other types of patients, finds exemplification in these new buildings. We have been slow in recognizing the necessity of laboratories and ward arrangements which shall have in view the treatment of the inmates as individuals with diseases which require the same painstaking study as is called for in other types of disease.

The contract for the construction of the three buildings was awarded in August, 1903, and work was quickly begun. The three buildings contain ten wards and a mortuary; special provisions have been taken to insure protection against fire. The main building is three stories in height, and has two wards on each floor, planned in general after wards in hospitals of other character. Each ward contains thirteen beds, and adequate toilet, bath and other service rooms are provided, as well as the necessary dining rooms and kitchens. With these six wards it should be possible to effect a separation of the patients in such a way that the disadvantages of close association may in great measure be avoided. Therapeutic baths, a gymnasium, an operating room, a laboratory and a photographic dark room are all provided. Another excellent provision is the establishment of an observation ward in a building of two stories accommodating in all thirty patients. Special care has been taken that in these wards, which

will be devoted to suicidal patients who do not require bed treatment, a view of the entire ward may easily be had by the nurse in charge. For the more turbulent, noisy and destructive patients, two wards are provided in a detached building, planned in such a way that these usually troublesome patients may be the least possible source of disturbance to others.

These buildings were much needed, and we have no doubt will immediately prove their usefulness. The problems of properly caring for the insane, and the insane who are also bodily sick, are peculiarly difficult and require a degree of foresight and adaptation of means to ends which is hardly required among those who are mentally well, however physically incapacitated. That the city government and the people at large should take an increasingly active interest in the provision for the insane is an excellent indication that, slow as it is in coming, the curious and deep-rooted prejudice existing against hospitals for this class will gradually subside. This must be brought about by the recognition that mentally affected individuals are sick persons in precisely the same general sense as those afflicted with bodily ailments.

## MEDICAL NOTES.

International Dermatological Association. — The International Dermatological Association has voted to hold its next meeting in the United States and Dr. J. C. White of Boston has been elected president.

French Surgical Association. — The seventeenth congress of the French Surgical Association will be held in Paris, at the Faculty of Medicine, Oct. 17, 1904, under the presidency of Dr. S. Pozzi. Three questions are to be presented for discussion: Surgical Treatment of Cirrhosis of the Liver; Value of Blood Examination in Surgery and Traumatic Separation of the Epiphyses.

Distinguished Foreigners. — Prof. T. Escherich of Vienna recently addressed the Chicago Pediatric and Medical societies on the topic of Tetany in Infants. He also gave a public medical clinic at one of the Chicago hospitals. Sept. 15, Sir Felix Semon was given a dinner by two of the Chicago medical societies at the Chicago Club. Prof. A. Wassermann delivered an address on Sept. 28, at a special meeting of the New York Pathological Society on certain matters relating to immunity.

Death of Dr. C. L. Herrick. — The death of Dr. C. L. Herrick, editor of the *Journal of Comparative Neurology and Psychology*, is announced as having occurred Sept. 15, at Socorro, N. M. For ten years Dr. Herrick has been able to hold the disease, tuberculosis, which finally ended his life, in check, and during that period has been a prolific contributor to zoölogical and geological literature. During the last months of his life he was still able to formulate much unfinished work, particularly on philosophical topics.

Examination of Berlin School Children. — According to a statement in the *Medical News* this year, for the first time, all the children in the schools of Berlin were examined as to their health. There were 15,000 children and 36 examiners. The results were astounding. Ten per cent of the children were found insufficiently developed in body or mind, and had to be excluded for half a year or longer; 16% were not strong enough to attend school, owing to the debilitating effect of scarlet fever and other diseases; 15% suffered from anemia; 5% had tuberculous trouble.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon Sept. 28, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 44, scarlatina 11, typhoid fever 25, measles 3, smallpox 0.

Centenarians. — Lawrence Sullivan, the oldest resident of South Boston at the time of his death, died recently at the reputed age of one hundred and four. His life until 1865 was spent in Ireland whence he moved to South Boston. He was abstemious in his habits, and it is said that both his father and grandfather reached the one hundred-year mark. He had twenty-one grandchildren and fifteen great-grandchildren.

Mrs. Emily Everett, supposed to be the oldest person in Cambridge, died last week in that city at the reputed age of one hundred and five years. She was born in Haverhill, Feb. 4, 1799, and hence has lived in three centuries. Her husband was graduated in the Harvard class of 1815, and died in 1833.

Boston Board of Health Laboratory. — The Boston Board of Health Laboratory is now completely fitted up at its new quarters in the Boylston Chambers, 739 Boylston Street, and is open to the inspection of physicians every day, between 8.30 A.M. and 6 P.M.

For the reception and incubation of late cultures (reaching the laboratory after 6 P.M.) a new device has been installed. Two slots are cut in one of the laboratory doors, suitably lettered with directions, lighted by an electric lamp and accessible, without entering the laboratory itself, from the hallway of the building. One of these slots is fitted for the reception of outfits other than diphtheria. The second is for diphtheria outfits alone, and connects with a chute which conveys the outfit directly into an incubator, running at 37° C. The cultures placed in this chute at night are therefore ready for examination next morning, having been incubated from the time of deposit in the slot to the time of examination.

The elevator runs until 9 P.M. every day (Sundays and holidays included), and the building is open until 10.30 P.M. The physician himself, or a messenger sent by him, may therefore readily deliver cultures during these hours. After these hours and all night, admittance may be had by ringing the front door bell.

### NEW YORK.

APPOINTMENT OF PROF. CHARLES BASKERVILLE. — In the College of the City of New York there has just been appointed to the chair of chemistry, Prof. Charles Baskerville, late of the University of North Carolina, who is the discoverer of two new inorganic elements, *carolinium* and *berzelium*.

GIFT TO COLLEGE OF APPLIED SCIENCE. — It is announced that Lyman C. Smith of Syracuse, N. Y., has given $100,000 to erect an additional building for the Lyman Cornelius Smith College of Applied Science in Syracuse University. Four years ago Mr. Smith established the school with a gift of $750,000.

CORNELL MEDICAL SCHOOL. — It is already announced that the first year's class of the Cornell Medical School is much larger than that of any previous year. Changes in the faculty are Dr. Frederick Whiting, professor of otology in place of Dr. Gorham Bacon resigned, and Dr. Adolf Meyer, professor of psychiatry in place of Dr. Allan McLane Hamilton.

GIFTS TO NEW YORK UNIVERSITY. — At a meeting of the Executive Committee of the Trustees of the New York University held Sept. 12, Chancellor MacCracken announced several gifts to the medical and chemical laboratories and the presentation of an additional plot of three thousand square feet at University Heights to the department of Applied Science. This was given by Frederick W. Devoe in memory of the late Andrew H. Green.

FUND FOR NASSUA HOSPITAL. — About $8,000 was cleared for the Nassua Hospital at Mineola, the capital town of Nassau County, Long Island, by a bazaar and out-door fete given on Sept. 24 at Harbor Hill, Roslyn, the beautiful country-seat of Mr. and Mrs. Clarence H. Mackay. It was the largest affair of the kind ever held on Long Island outside of Brooklyn, some 3,500 persons being in attendance.

PHYSICAL CULTURE. — At a meeting of the Educational Section of the International Congress of Arts and Sciences, Dr. William H. Maxwell, superintendent of the public schools of New York City, made an address in which, after observing that no school was doing adequate work without physical culture in the form of play, gymnastics, athletics and manual training, he went on to say that even if every schoolhouse in the city were used at all reasonable hours for such purposes, this would still fall far short of counteracting the tenement-house evil. Nothing short of a revolution in the existing system, he contended, would restore the life of the poor in the city of New York to something like normal conditions. What he proposed was nothing less than the eradication of the tenement-house as it has been known in New York. He suggested the somewhat Utopian scheme that the municipality should employ its credit to purchase tracts of unoccupied land upon which to erect model homes for workingmen amid pleasant and sanitary surroundings, and rent or sell them at a moderate profit.

## Obituary.

### PROF. NIELS FINSEN.

THE death of Prof. Niels Finsen is announced from Copenhagen. He was born in Iceland in 1860, and, after a preliminary education at a small school on one of the Faroe Islands, he undertook the study of medicine at the University of Copenhagen. When about to begin his work in 1890, his health gave way, and from that time to this he had with much suffering contemplated the inevitable outcome of his disease. In spite of this handicap, which to a less determined man would have precluded all effort, he undertook and carried to a successful preliminary conclusion his theories of the curative effect, particularly in the treatment of lupus, of certain light rays. He at once offered his discovery to the scientific world, and out of his investigations

has developed the Finsen Ray Institute of Copenhagen where rich and poor alike have been treated. From 1890 to 1893 he was preceptor of anatomy at the University of Copenhagen, but later devoted himself more particularly to his studies of the effects of different types of light rays. His work in the treatment of smallpox, through the use of red rays, and particularly his investigations on the effect of ultra-violet rays in lupus, have served to bring his name into prominence.

In spite of the shortness of time in which Professor Finsen has been able to work, he has unquestionably made for himself a unique place in the field of medicine. For many years afflicted with an incurable disease, he had, nevertheless, so far as his strength permitted, continued to exercise control over the institution of which he was the head. The attention which his work has drawn to the significance of light in the treatment of disease will no doubt continue to bring forth results. It is, nevertheless, altogether regrettable that the brilliant discoverer of the rays which go by his name should not have seen a further fruition of his work. In this transitional stage of knowledge it is not possible to say with certainty how far the principles enunciated by Finsen are likely to find confirmation. It cannot, however, be doubted that he had drawn attention in a wholly scientific fashion to a means of physical therapeutics which demands and will no doubt receive the painstaking study of other investigators. In December, 1903, Finsen was awarded the Nobel medical prize by the Norwegian Government. It will also be remembered that a few months ago King Edward and Queen Alexandra visited the Finsen Institute with Sir Francis Laking for the purpose of studying the methods which have so largely had their inception in Copenhagen.

## Miscellany.

### CREMATION.

The Société pour la Propagation de l'Incineration held its annual meeting in Paris recently. The proceedings opened with a funeral oration in honor of the late Sir Henry Thompson, delivered by the General Secretary, M. Georges Salomon. Dr. Bourneville, President of the Society, stated that the number of cremations in Paris during 1903 amounted to 6,628 as against 6,710 in 1902. He expressed a confident hope that when the fine crematorium in the Pere-Lachaise Cemetery is complete, as it will be at no distant date, the number of incinerations will largely increase. The general secretary then read a report on the progress of cremation in various countries. In the United States the number of bodies disposed of in that manner has increased from 2,685 in 1901 to 3,160 in 1902. Great Britain has nine crematories, in which 452 bodies were incinerated in 1902 and 479 in 1903. In Germany there are 86 cremation societies, counting among them 20,000 members; there are 8 crematories, and the number of bodies burnt was 692 in 1901, 861 in 1902 and 1,074 in 1903. These figures are the more noteworthy since cremation is still forbidden in Prussia, Saxony, Bavaria, Württemberg, and some other parts of Germany. In Italy there were 340 cremations in 1902. In Switzerland there are crematories at Zurich, Geneva, Basel, and Saint-Gall. Denmark has 1, Sweden 2. There are crematories at Montreal, at Buenos Aires, and at Adelaide in Australia. In Japan there are 7.

Dr. Bourneville was re-elected President; M. Salomon, General Secretary; and among the Members of Council are Professor Cornil, MM. Camille Flammarion and Yves Guyot.—*British Medical Journal.*

## Correspondence.

### DR. SAJOUS ON "INTERNAL SECRETIONS."

Bar Harbor, Me., Sept. 19, 1904.

Mr. Editor: I observe with surprise and regret a review of Dr. Sajous' book on the "Internal Secretions" in the Boston Medical and Surgical Journal of Sept. 15, 1904, in which is expressed no deliberate judgment, but only condemnation. The reputation of your Journal for the fairness and wisdom of its reviews and opinions warrants my lodging a courteous protest against the tone and character of the review, which must have escaped your attention.

First, let me say I have enjoyed the opportunity of knowing Dr. Sajous and his work for many years, and am impressed with several important facts, among them his clear, judicial mind, his caution in expressing opinions, and the encyclopedic character of his knowledge acquired by the immense scope of his reading in the preparation of the Annual of the Medical Sciences and the Encyclopedia, which involves a constant survey of the entire realm of medicine. This first volume of his book is the product of a larger and broader familiarity with current medical literature than is possible to almost any other man to-day, or, indeed, ever. No man is better able to judge of the rise and fall of tenable or untenable medical belief. He would naturally be the last man to give utterance to chimerical views, but the one man who could best perceive the interrelationships between facts and fancies.

I am familiar with this first volume of the "Internal Secretions," and also with much of the data to appear in the second volume, which will present an immense array of confirmation of the opinions expressed in the first volume, along with the practical application of the generalizations enumerated. In talking with a number of men whom you would admit to be competent to exert authority, they are one and all of the opinion that this work will exercise great influence on medical thought in the future, and aid in making clear much which is to-day chaotic or unrelated. You, yourself, sir, if you gave it your personal attention and could talk with the author, would recognize the power of the argument, built up as it is from the carefully selected statements of leading physiologists, pathologists and others whose writings stand highest in medical confidence.

Finally, let me venture the opinion that to dispose of a large and novel subject, as your reviewer does, by condemning the favorable reviews (there are only a few otherwise) and warning the medical public to beware of giving attention to a book of such scope, is most unusual, to say the least. Again, this is merely the first volume, and in mere fairness a final opinion cannot be formed till the second one (promised) appears.

Respectfully yours,

J. Madison Taylor.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPTEMBER 17, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid Fever. | Diarrheal Diseases. |
|---|---|---|---|---|---|---|---|---|
| New York . . | 3,908,644 | 1,227 | 475 | 33.58 | 10.43 | 1.30 | 1.71 | 15.40 |
| Chicago . . . | 2,021,086 | 443 | 157 | 32.05 | 7.67 | 1.35 | 1.58 | 17.38 |
| Philadelphia | 1,407,968 | 408 | 116 | 31.62 | 4.41 | 2.20 | 3.68 | 10.54 |
| St. Louis . . | 683,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 169 | 55 | 25.44 | 2.96 | 1.18 | 3.55 | 10.06 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 99 | — | 39.39 | 9.09 | 5.05 | 9.09 | 17.17 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 70 | 28 | 30.00 | 4.29 | 1.43 | — | 15.71 |
| Boston . . . | 617,950 | 212 | 87 | 33.02 | 10.37 | 1.42 | 1.89 | 10.37 |
| Worcester . . | 136,925 | 39 | 16 | 33.33 | 10.26 | 2.56 | — | 20.51 |
| Fall River . . | 119,349 | 40 | 21 | 35.00 | 12.50 | — | 2.50 | 20.00 |
| Lowell . . . | 104,402 | 37 | 15 | 32.43 | 5.41 | 2.70 | — | 18.92 |
| Cambridge . | 100,998 | 33 | 13 | 42.42 | — | — | 6.06 | 21.21 |
| Lynn . . . . | 73,875 | 25 | 8 | 24.00 | — | 4.00 | — | — |
| Lawrence . . | 72,348 | 24 | 13 | 41.67 | 8.33 | — | 4.17 | 25.00 |
| Springfield . | 72,020 | — | — | — | — | — | — | — |
| Somerville . | 70,413 | 21 | 5 | 28.57 | — | — | — | 14.29 |
| New Bedford | 68,863 | 24 | 14 | 37.50 | — | — | — | 33.33 |
| Holyoke . . . | 50,538 | 20 | 10 | 25.00 | 5.00 | 5.00 | — | 10.00 |
| Brockton . . | 46,601 | 9 | 2 | 11.11 | — | — | — | — |
| Newton . . . | 39,310 | 12 | 2 | 25.00 | — | 8.33 | — | 8.33 |
| Haverhill . . | 39,061 | 13 | 6 | 23.08 | — | — | — | 7.69 |
| Malden . . . | 37,205 | 7 | 1 | 28.57 | — | — | — | — |
| Salem . . . . | 37,188 | 20 | 12 | 25.00 | — | — | — | 25.00 |
| Chelsea . . . | 36,499 | 11 | 2 | 45.45 | 9.09 | 9.09 | — | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 14 | 6 | 21.43 | — | — | — | 7.14 |
| Everett . . . | 30,209 | 4 | 2 | — | — | — | — | — |
| North Adams | 29,201 | 11 | 5 | — | — | — | — | — |
| Quincy . . . | 26,798 | 7 | — | 57.14 | — | — | — | 42.86 |
| Gloucester . | 26,121 | 5 | 3 | 20.00 | — | — | — | 20.00 |
| Waltham . . | 25,797 | 4 | 1 | — | 50.00 | — | — | — |
| Brookline . . | 23,576 | 6 | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | 4 | — | 25.00 | — | — | 25.00 | — |
| Medford . . | 21,956 | 1 | — | 100.00 | — | — | — | — |
| Chicopee . . | 21,692 | 2 | — | 50.00 | — | — | — | 50.00 |
| Northampton | 20,314 | — | — | — | — | — | — | — |
| Beverly . . . | 15,807 | — | — | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 5 | 2 | — | — | — | — | — |
| Adams . . . | 14,745 | 5 | 2 | 20.00 | 20.00 | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 3 | — | 66.67 | — | — | — | — |
| Newburyport | 14,478 | 2 | — | — | — | — | — | — |
| Woburn . . . | 14,315 | 5 | 3 | 20.00 | — | — | — | 20.00 |
| Melrose . . . | 13,819 | 3 | — | — | — | — | — | — |
| Westfield . . | 13,809 | 6 | — | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | — | — | — | — | — | — | — |
| Revere . . . | 13,609 | 3 | 2 | 33.33 | — | 33.33 | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 2 | 1 | 100.00 | — | — | — | 50.00 |
| Southbridge . | 11,716 | 3 | 2 | 66.67 | 33.33 | — | — | — |
| Watertown . | 11,575 | 1 | — | — | 100.00 | — | — | — |
| Weymouth . | 11,350 | 5 | 2 | — | — | — | — | — |
| Plymouth . . | 11,189 | — | — | — | — | — | — | — |

Deaths reported, 3,064; under five years of age, 1,089; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 984; acute lung diseases 241, consumption 347, scarlet fever 12, whooping cough 11, cerebrospinal meningitis 23, smallpox 3, erysipelas 2, puerperal fever 7, measles 4, typhoid fever 58, diarrheal diseases 446, diphtheria and croup 49.

From whooping cough, New York 9, Philadelphia and Cambridge 1 each. From measles, New York 4. From scarlet fever, New York and Baltimore 4 each, Philadelphia 2, Fall River and Quincy 1 each. From cerebrospinal meningitis, New York 19, Boston, Worcester, Cambridge and Southbridge 1 each. From erysipelas, Chicago and Philadelphia 1 each. From smallpox, Chicago 2, Philadelphia 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending Sept. 3, the death-rate was 18.2. Deaths reported 5,335; acute diseases of the respiratory organs (London) 49, whooping cough 91, diphtheria 39, measles 83, smallpox 3, scarlet fever 31.

The death-rate ranged from 6.4 in Hornsey to 28.7 in Bootle; London 16.4, West Ham 18.8, Brighton 17.3, Plymouth 27.4, Bristol 15.5, Birmingham 15.7, Leicester 18.4, Nottingham 13.6, Liverpool 27.2, Bolton 13.6, Manchester 24.6, Salford 26.6, Halifax 11.6, Bradford 17.0, Leeds 15.6, Sheffield 19.3, Hull 26.3, Cardiff 19.2, Rhondda 20.9, Merthyr Tydfil 22.9, Swansea 18.5.

## METEOROLOGICAL RECORD.

For the week ending September 17, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. . 11 | 30.14 | 62 | 66 | 57 | 84 | 91 | 89 | S W | E | 3 | 8 | C. | F. | 0 |
| M. . 12 | 30.00 | 74 | 86 | 62 | 90 | 86 | 88 | S W | W | 12 | 8 | O. | R. | .73 |
| T. . 13 | 30.38 | 61 | 65 | 57 | 68 | 68 | 68 | N E | S E | 9 | 6 | F. | O. | .02 |
| W . 14 | 30.16 | 66 | 74 | 58 | 81 | 94 | 88 | S E | S | 9 | 21 | O. | O. | .09 |
| T. . 15 | 29.84 | 62 | 74 | 50 | 100 | 66 | 83 | N W | W | 20 | 8 | R. | C. | 3.48 |
| F. . 16 | 30.15 | 59 | 70 | 48 | 72 | 70 | 71 | N W | S W | 5 | 14 | C. | C. | 0 |
| S. . 17 | 30.03 | 66 | 77 | 56 | 78 | 70 | 74 | S W | S W | 10 | 5 | F. | C. | 0 |
| ☞ | 30.10 | | 73 | 55 | | | 80 | | | | | | | 4.32 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for week.

## SOCIETY NOTICES.

ASSOCIATION OF MILITARY SURGEONS.—The annual meeting of the Association of Military Surgeons will be held at the World's Fair, St. Louis, from Oct. 10 to 15.

MEDICAL SOCIETY OF VIRGINIA.—The thirty-fifth annual session of the Medical Society of Virginia will be held at Richmond, Va., Oct. 18–21.

## OPERATIONS: BOSTON CITY HOSPITAL.

The following operations will be done and cases shown in the amphitheatre of the Boston City Hospital on Sept. 30, from 10 A.M. until 12.30 P.M.: Inguinal Hernia; Fracture Patella; Tumor Tibia; Tumor Bladder; Stone in Common Duct.

## RECENT DEATH.

GEORGE SEYMOUR CONANT, M.D., a well-known New York practitioner, died on Sept. 23. He was fifty-one years of age and a graduate of Bellevue Hospital Medical College in the year 1877. Dr. Conant had for a number of years been a sufferer from diabetes, and had naturally made a special study of the disease. His observations led him to conclude that it was of cerebral origin, and in the hope of adding something to our knowledge of its pathology he in his will bequeathed his brain to Cornell University.

## BOOKS AND PAMPHLETS RECEIVED.

Serums, Vaccines and Toxines in Treatment and Diagnosis. By William Cecil Bosanquet, M.A., M.D. Oxon., F.R.C.P. Lond. Chicago: W. T. Keener & Co. London: Cassell & Co., Ltd. 1904.

Transactions of the Massachusetts Medico-Legal Society. Vol. III, No. 6. 1904.

Some of the More Unusual Results of Movable Kidney. By Charles P. Noble, M.D. Reprint.

The Treatment of Fibroid Tumors of the Uterus. By Charles P. Noble, M.D. Reprint.

Report of a Case of the Invasion of a Fibromyoma of the Uterus by an Adenocarcinoma, which by Metaplasia had assumed the Appearance of a Squamous Cell Carcinoma. By Charles P. Noble, M.D. Reprint.

Medical Libraries, Medical Publishers and the Medical Profession. By Charles Perry Fisher. Reprint.

Grosse oder kleine Röntgenapparate? Von Diplom-Ingr. Dr. phil. Josef. Rosenthal. München.

State of New York. Seventeenth Annual Report of the Superintendent of the St. Lawrence State Hospital to the State Commission in Lunacy for the Year ending September 30, 1903. Albany: J. B. Lyon Company. 1904.

The Physiological Areas and Centres of the Cerebral Cortex of Man, with New Diagrammatic Schemes. By Charles K. Mills, M.D. Reprint.

Chirurgie Orthopédique par Le Professeur Paul Berger et Le Docteur S. Banzet. Illustrated. Paris: G. Steinheil, Editeur. 1904.

# Original Articles.

## GASTRIC ULCER IN CHILDREN.*

BY ELBRIDGE G. CUTLER, M.D.

The infrequency of gastric ulcer in children under fourteen years of age is so great that many pathologists and practitioners of large experience have never met with it, and others with equally large opportunities of observation have denied its occurrence. Kundrat [30] says that recent (acute) round ulcers of the stomach occur in every age of childhood, even in infants a few days old, though more infrequently than in adults. He says these ulcers are very small, usually the size of a hemp-seed to a lentil. Chronic ulcers, on the other hand, according to him, have not been observed under the age of ten years, and even above this age they are extremely rare (Dusser).[19] Rokitansky,[51] with his wide experience, never encountered the disease in a child under fourteen years. Widerhofer [50] says he has never seen gastric ulcer in children and is inclined to disbelieve in its occurrence. Among 262 cases of gastric ulcer that were examined post-mortem during fifteen years at the Berlin Pathological Institute, says Riegel,[43] no case under ten years was discovered. The Boston Children's Hospital, opened July 19, 1869, has never had a case. (Private letter from Rotch.) The Boston City Hospital, opened June 1, 1864, has had but a single case. (Letter from Dr. G. H. M. Rowe, superintendent and resident physician.) The Massachusetts General Hospital, opened Sept. 1, 1821, has had but three cases below the age of fourteen years, which have been diagnosticated as gastric ulcer. None of the members of the Pediatrics Department in the Harvard Medical School have ever met with a case.

Nevertheless, so many cases are now on record that it must be acknowledged by all to occur, though with extreme rarity. After careful search of the literature I have found twenty-four cases with autopsy, and two without, twenty-six in all, and perhaps have overlooked a few others, while doubtless a number of well-attested instances have never been recorded for one reason and another. I will add three cases from the records of the Massachusetts General Hospital.

In many of these cases of ulcer of the stomach the shape has been described as being circular, the edges perpendicular, smooth, soft, sharply defined, and in some it has been expressly stated that they looked as if they had been punched out. The different layers have been easily distinguishable with the naked eye, the edges and floor clean and but seldom showing necrotic shreds, the walls also exhibiting no marked pathological change, the base formed by the muscular or serous coat of the stomach. In the older ulcers the loss of substance has usually been oblique from below upward, the submucosa retracted (mucosa undermined), and the mucosa showing a marked inversion. Microscopically there has been a little interstitial cellular infiltration. In the most chronic ulcers there is callous induration of the floor and walls tending to the formation of cicatricial tissue and adhesion to neighboring organs. Aside from a very small zone of infiltration at the edge of the ulcer the mucous membrane is essentially normal. These differences then would seem to justify the division into acute and chronic forms, as given below.

* Read before The American Gastro-Enterological Association at the Seventh Annual Meeting, Atlantic City, New Jersey, June 6 and 7, 1904.

### ACUTE CASES.

Billard [4 20] reports two cases as follows:

(1) A new-born child died on its fifth day, of anemia from gastric and intestinal hemorrhage. The gastric mucous membrane for the size of a thirty-sous piece near the cardia was completely destroyed. The surface of the ulcer was blackish; its irregular pointed edges were of the same color, and looked as if burnt.

(2) Child fifteen days old. In the pyloric third in the greater curvature there was a deep, round ulcer about two lines in diameter with very elevated, dark, brownish-red edges. The floor, which was formed of serous membrane, had a blackish appearance. The ulcer was not surrounded by inflammatory tissue, and resembled the follicular ulcers in the intestine of consumption. The stomach showed nothing further abnormal. [20] I have not been able to find the original of this case.

Busch [9] gives the record of a post-mortem examination as follows:

A child seven days old. Autopsy about thirty-six hours after death. Hole in the anterior gastric wall the size of a pfennig, situated in the greater curvature near the pylorus. Edges of the opening fissured; the mucous membrane in the neighborhood of the perforation gone; tear in the muscular and mucous coats.

Buzzard [10] gives the following case:

A girl, aged nine, was attacked suddenly with violent pain in the belly. Fomentations were applied by her mother, and she passed the night apparently relieved and free from distress. The following morning at half-past five she became collapsed, retched once or twice, and died at six o'clock, before medical assistance could be procured. Her death was the subject of an inquest.

Post-mortem examination: The belly was found distended with gas, the peritoneum, especially where it invested the small intestines, intensely inflamed, and a quantity of brownish fluid in its cavity. In the lesser curvature of the stomach, midway between the pyloric and esophageal openings, was a perforation. The ulcer which had pierced the wall was of the usual funnel-shape with edges somewhat thickened. The mucous membrane of the stomach generally was free from any marks of disease, and there were no cicatrices of old ulcers.

The other organs were healthy, and the body presented a well-nourished appearance. At the inquest evidence was given that she had always enjoyed good health, the only exception to it being an occasional uneasiness, scarcely amounting to pain, felt at the pit of the stomach.

Rehn [39] reports as follows:

In the course of the winter of 1870-71, there came to autopsy at the Pathological Institute in Würzburg, a child of one and three-quarters years in whose stomach were two losses of substance; the larger one, situated near the smaller curvature, about 25 mm. distant from the cardia, was the size of a small lentil, funnel-shaped, and apparently penetrated to the serosa; its edges were in folds, not reddened. The other, smaller, one was situated in the middle of the stomach

about 4 mm. from the greater curvature and was more superficial; around its folded edges was a narrow yellowish-red zone of delicate blood vessels. The structure of the stomach was otherwise unchanged. No tuberculosis was found in the stomach.

Binz [3] reports as follows:

The child, female, after a labor of eleven hours' duration, seemed healthy at birth. The next day it appeared well, took to the breast, passed abundant meconium, but cried a great deal. The following day slight diarrhea of yellowish color, gradually increasing in quantity through two days. The child nursed well. The diarrhea continued and was of intense acid reaction. The stools became fluid, less well digested and followed every half hour. Treatment did no good and a healthy wet nurse was substituted, with cessation of diarrhea but continued evidences of pain in the belly. Then vomiting occurred; later chocolate colored points and lines in the stools. Collapse and death on the eleventh day.

At autopsy a perforating ulcer was found in the anterior wall of the stomach a few lines from the lesser curvature midway between fundus and pylorus, of not quite one line diameter and looking as if it had been cut out with a punch. The periphery showed radiating elevations of the mucous membrane.

Barlow [2] reports as follows:

A female child, aged one and three-quarters years. The history was that of diarrhea and wasting for two months, followed by slight cough, and then by squinting, convulsion, slight rigidities and coma. There was no symptom to point to special involvement of the stomach.

On the anterior wall at the cardiac end, close to the great curvature, there was an oval ulcer measuring a quarter of an inch by one eighth of an inch. The edges were undermined and the loss of substance extended nearly to the peritoneum. There was no surrounding thickening and no evidence of tubercular deposit on the floor or in the immediate vicinity. There were two smaller ulcers in the great curvature about the middle zone of the stomach and two others near the pylorus. In the line of the great curvature, about three inches from the pylorus, there was an elevation under the mucous membrane, which was pale, opaque white in color, measured about one sixteenth of an inch in diameter, and presented the appearance of a miliary tubercle. There was abundant tubercle in the pia, cerebellum, choroids, cervical, bronchial and mesenteric glands, lungs, pancreas, spleen, kidneys and Peyer's patches.

Barlow considered it an open question whether the ulcers present in his specimen had been produced by the breaking down of tubercle, or whether they had formed independently of it. The presence of what he considered a miliary tubercle near the pylorus suggested the possibility of the ulcers having started in similar deposits.

Colgan [14] gives the following:

A girl of two and a half years, previously perfectly healthy, complained of not feeling well. She soon had general convulsions. There was no pain and no vomiting. Temperature 106° F., pulse full and tense, 150 per minute. Death soon followed.

At autopsy a perforating ulcer of the stomach was found on the posterior wall at the cardiac extremity, close to the greater curvature. In some places there was an entire loss of substance, the floor of the ulcer being made up only of peritoneum. There was thickening of other parts of the stomach, especially on the anterior wall, extending to the lesser curvature.

Fenwick [20] gives the following four cases from the records of the London Hospital:

(1) A girl, thirteen years old, was admitted into the hospital with symptoms of typhoid fever of eight days' duration. Vomiting occurred once or twice but there was no complaint of epigastric pain. At the end of the fourth week of the disease when the temperature had begun to decline, the patient was suddenly seized with severe hematemesis after which she became unconscious and died.

At the autopsy the anterior wall of the stomach was found to be adherent to the under surface of the liver. Scattered over the inner surface of the stomach were numerous sharply defined ulcers, the largest of which was about the size of a florin. The edges were thin and undermined and the base formed by the muscular or peritoneal coat. In the first part of the duodenum there was an ulcer of a similar character, while the whole of the intestine from the jejunum to the rectum was riddled with typical typhoid ulcers.

(2) A girl, aged twelve years, was admitted to the hospital for severe burns of the arms and legs, from which she died at the end of a week.

In the centre of the lesser curvature of the stomach there was a circular ulcer the size of a sixpenny piece, evidently of recent formation. The mucous membrane of the organ was intensely injected and presented several ecchymoses. The duodenum also showed signs of inflammation, but no ulceration could be found.

(3) A boy, aged ten, was admitted to the hospital suffering from acute pneumonia of the right side.

At the necropsy the stomach was found distended with blood clot. On the lesser curvature, one inch from the pylorus, there were two round ulcers separated from one another by a thin ridge of mucous membrane. The larger measured one inch, and the smaller about one-half inch in diameter. Both ulcers exhibited sharp edges and had penetrated to the peritoneum. On the floor of the larger ulcer there was an eroded vessel which admitted a fine probe.

(4) A female child, twenty months old, succumbed in the hospital to noma following varicella.

On the anterior wall of the stomach, near the pylorus and close to the lesser curvature, there were two small ulcers with sharp edges.

Hibbard [28] reports a case from the South Department of the Boston City Hospital.

A girl, three months' old, entered the Boston City Hospital with diphtheria. Six days later the temperature rose to 102.5° F. and she began to vomit; diarrhea which had been present a few days increased; the color of the stools, at first green, became brownish. Diarrhea and vomiting persisted and death followed on the fourteenth day after entrance.

In the stomach and intestines altered blood in considerable quantity besides the ordinary contents was found. On the posterior surface of the stomach, extending down to the greater curvature, and nearer the pyloric than the cardiac orifice, was a circular area, 5 cc. in diameter, partially outlined on either side by deep losses of substance; on one side 2.5 cm. by 6 cm., rather elliptical; on the other 3 cm. by 5 cm. with its greatest breadth in the middle portion of the ulceration. In these places the circular layer of muscle fibres was laid bare, the edges were prominent, firm and undermined. In the area included between these ulcerations the mucous membrane was soft, rather prominent, and presented many small punctate losses of substance, usually circular, about the size of a pin's head and superficial, being apparently confined to the mucous membrane. Tests of the black debris for hemin crystals were positive. The intestines contained considerable quantities of blood-colored material in the upper portion, with black granular material in large amount further down.

Microscopic examination of the stomach showed a sharply circumscribed loss of substance, with deeply undermined necrotic edges on one side, and at the other the loss of substance gradually faded out to the surface of the mucous membrane. In the mucosa there was considerable cellular infiltration and accumulation of cells in the vessels. The base of the ulcer was necrotic, and in places extended down through the sub-mucosa to the muscular coat; there was a small amount of fibrin in the tissue beneath. There was no granular tissue and no chronic inflammatory reaction. Where the ulcer was most undermined, fibrin was seen in the submucous tissue, due to fibrinoid metamorphosis of the connective tissue. At various places beneath the mucous membrane and adjoining the ulcer there were distinct hyaline thrombi in the walls of the blood vessels, and hyaline masses completely occluding them.

It is possible that the ulcer is not to be regarded as a typical gastric ulcer, but as a more acute process due to a disturbance in the circulation in the stomach produced by the hyaline thrombi, and the necrotic mucous membrane has been afterward completely digested away by the action of the gastric juice. It is also possible that the ulcer started as a distinct diphtheritic lesion of the mucous membrane. The fibrinoid metamorphosis of the connective tissue and the hyaline thrombi in the vessels are not opposed to this view, for similar changes are not uncommon at the base of the diphtheritic ulcers in the pharynx. In the few cases of diphtheritic lesions of the stomach which have come to observation the process was more diffuse and would not have led to circumscribed ulceration.

Cocks [13] reports as follows:

Male child, born Feb. 24, 1891. Normal delivery. Child well formed and weighed about seven pounds. Nothing unusual noticed till Feb. 25 when he vomited fully an ounce of clear blood. Vomiting recurred three times during the forenoon, and also later in the day. The movements from the bowels looked normal.

Feb. 26. Had several rectal movements, one of which contained a large amount of blood. Death at night.

Feb. 27. Post-mortem examination revealed an ulcer, situated just at the end of the esophagus and the beginning of cardiac end of stomach, which had perforated one of the small vessels.

Northrup [37] reports as follows:

The infant, a female one year old, was under the care of Dr. Northrup and was under treatment one month. It had vomiting and diarrhea. During the first week in the hospital its temperature varied from 102° to 103° F., after that being normal or subnormal. Respiration was from 40 to 50, and the pulse from 120 to 140. In the second week it began to refuse food and to emaciate. The diarrhea continued and the vomiting was persistent. The vomitus was somewhat brownish in color and the child died of exhaustion.

On examining the stomach it was found that the lining mucous membrane was covered with small ulcers, varying in size from dots to 1 cm. in diameter. The lesions appeared to be follicular ulcerations. In the middle of the specimen was a much larger ulcer which perforated the posterior wall. There was no evidence of an inflammatory condition, and the cause of the lesion was unknown. There was, however, a certain degree of necrosis around the ulceration.

### CHRONIC CASES.

Reimer [40] gives the case of a girl, three and one-half years old, admitted to the Nikolai Children's Hospital in St. Petersburg, on April 27, 1869. From the history it appeared that the child since its first year had suffered from digestive disturbances so that it was much pulled down. Four weeks previously, without obvious cause, there was fever and vomiting. On April 28 the condition was as follows: An anemic, poorly nourished child with traces of a past rachitis. Tendency to cry. Temperature 39.5° C. Pulse, 128. Dry cough. In the lungs, vesicular but rough respiration. White coated tongue. The belly, particularly in the epigastrium, distended and tender. Liver and spleen not especially enlarged. Stools not very numerous, but of slimy character, clay colored and of offensive odor. Entire loss of appetite. In the course of the following weeks the condition so far improved that the liquid stools diminished in number, the pain and distention in the epigastrium lessened, the child became more lively and recovered its appetite. It lost all fever and on May 24 was so well that had it not been that its parents were dead and there were no relatives, it would have been discharged. It stayed in the hospital and on June 5 broke out with measles. Besides severe catarrhal symptoms of the respiratory organs, great pain in the epigastrium came on again, particularly in a rather circumscribed spot on the right, corresponding to the position of the pylorus. Tendency to vomit came on after taking food. Again coated tongue and diarrhea. Temperature, 40.3° C. On the seventh there was a very marked eruption on the whole body, high fever, severe cough without localization in the lungs. The child complained of headache and nausea. The evening before, shortly after eating some bread, vomited. On the ninth the eruption faded and the fever lessened. Diarrhea continued. The patient recovered slowly as appetite failed and the nights were restless. On the sixteenth desquamation was marked. Temperature, 38° C., pulse 112, respiration somewhat superficial as if the patient did not dare to inspire. The lungs, however, showed nothing and the whole epigastrium was very tender. The least swallowing of food now caused such severe pain and tendency to vomit that the patient refused all nourishment. She constantly asked for water. She had two to three fluid, carrion-like, stinking stools.

On the twenty-first the belly was still more distended and so painful that the weight of the bed clothes could not be borne. On paroxysms of cough she whimpered loudly, complained of burning pain in the pit of the stomach, and since early morning had twice vomited masses streaked with blood. There was moderate fever, 38.6° C.

On the twenty-sixth at midday the patient was suddenly nauseated and vomited a considerable quantity of blood, partly fluid and partly coagulated, and became very collapsed. The abdominal symptoms very much resembled peritonitis. In the night there were numerous black stools consisting of decomposed blood. In the next few days there was no special change. The nausea continued and occasionally blood tinged masses were vomited which, under the microscope, were found to be fresh blood, pus and necrosed gastric mucous membrane. Although the patient was very weak and lay in a continuous half sleep, the sensitiveness of the distended belly was so great that the least touch caused her to cry out. The tarry stools were not numerous, but were involuntary. Cold sweat. Temperature now 35.3° C. Small intermittent pulse. On the thirtieth diarrhea was profuse, and with the evidence of the severest irritation, the child died on July 1 at 4.30 A.M.

Autopsy July 2, twenty-nine hours after death. The intestines, and particularly the stomach, were blown up with gas. The peritoneum was very injected and somewhat thickened and cloudy. In the peritoneal sac was about one-half pound of bloody, puru-

lent fluid. The stomach was rose-red colored, ecchymosed, and posteriorly, in the region of the pylorus, intimately adherent to the pancreas. Its mucous membrane was in strong folds, its surface covered with elevated ecchymoses from the size of a lentil to a thaler, which were most numerous at the pylorus. Two cm. from the pylorus, corresponding to the lesser curvature, on the posterior wall of the stomach, was a circular ulcer of 4 cm. in diameter, with everted edges, suffused with blood, and a dirty fat base formed by the pancreas. The adhesions consisted of strongly developed cicatricial tissue. In the duodenum the mucous membrane was also very much swollen and injected. Further down, the intestine assumed normal appearance again, but immediately below the valve of Bauhini the mucous membrane showed a catarrhal condition, with a marked prominence of the solitary follicles, which were here and there eroded. The mesentery glands were hyperemic and pigmented. The liver and spleen were hyperemic. The pancreas was unusually red, and, as already remarked, covered with a layer of exudate. The kidneys were normal.

This case was at first regarded as chronic gastro-intestinal catarrh, and the entire complex of symptoms, the distention of belly, the tendency to vomit, the foul, slimy stools, the coated tongue and the anorexia appeared to point in that direction. The outbreak of measles threw the more important symptoms, which showed the stomach to be the chief seat of the disease, into the background. The circumscribed pain in the pyloric region and the constant nausea were the chief symptoms which pointed in the direction of the stomach. Very soon a considerable increase in the gastric pain was added and the further symptom of vomiting after all food. Only water, which was taken in very great quantities to quench the thirst, was retained. On the 21st of June a peritonitis occurred, and in the vomitus a few streaks of blood appeared as the forerunners of a more abundant gastric hemorrhage which occurred on the twenty-fifth, and again recurring, produced an enormous collapse with depression of the temperature and rapid death with paralytic pulse. On autopsy the adhesion with the pancreas proved that the ulcer was chronic, which probably first appeared in the second year of life as constant digestive disturbance. The hemorrhage was believed by Reimer to come from the vena-pancreatica because it was so profuse.

Gunz [26] reports as follows:

Sp. Carl, five years old, from Gandenzdorf, near Vienna, was brought to the hospital on June 21, 1860. The child without being obliged to be stinted in his food, or suffering from lack of care, would eat only when pains were taken with him, and never looked like a healthy child. In the last few months his appetite had become very small, he had vomited often both directly after food and some hours after as well. After a time severe, long continued diarrhea came on. All this time he complained of frequently recurring pain in the belly. Physical examination showed his development to be backward for his age, and a high degree of emaciation. The head was strikingly large, the forehead narrow, the hind part of the head very much developed and its transverse diameter considerable. The eyes were sunken. The skin was brown; subcutaneous fat little, dry on the belly. A fold of skin on being taken up remained. There was slight dullness on percussion on the right, behind in the middle of the scapula, and auscultation showed a somewhat rude respiration. The belly was sunken, not tender anywhere; liver and spleen not enlarged; the cervical and inguinal glands enlarged, the urine and stools normal. He was given barley coffee in the morning and evening, and a soup with bread and milk for dinner. He took only the liquid food. He vomited the milk unchanged directly after taking it, with choking and belching of a tough glairy mucous, sometimes streaked with blood, and then the more solid parts of his food followed. Sour milk was then ordered and well borne.

On the twenty-fourth the vomiting ceased, and the following night he had an abundant discharge of consistent gray feces; on the twenty-fifth, fever with pulse 160; sighing respiration; redness and swelling of the tonsils; difficult deglutition; redness of the face and neck; swelling of the spleen, and finally an eruption of scarlatina. On the twenty-ninth the eruption faded, the tongue became covered with aphthæ, and the gums ulcerated. The patient refused all food, took only water and complained of pain in the pit of the stomach, increased by pressure. Vomiting did not return. The scarlatina faded and on the night of July 1 there were three very copious coffee-ground stools, and at 5 A.M. he died of exhaustion. Diagnosis during life was made of scarlatina, chronic hydrocephalus and perforating gastric ulcer.

Autopsy twenty-eight hours after death. The stomach lay as follows: the anterior wall directed upward; greater curvature toward the front. After removing the omentum in attempting to lift the stomach up, a broad adhesion of the posterior gastric wall to the transverse colon was found and it tore through the grayish-yellow gangrenous peritoneum, emptying the contents of the stomach. Seen from the inside on the posterior surface of the stomach near the greater curvature 1½ inches from the pylorus, the mucous membrane was gone in a place the size of a gulden; the surrounding gastric wall thickened in folds, the edge of the ulcer from within outward punched out, the shape of the ulcer an ellipse corresponding to the longitudinal axis of the stomach.

Eross [18] gives the following case:

In the Pest Armenkinderspital this was the only case in forty-two years in a material of 17,745.

Anna Vidomansky, twelve years old, born in Budapest of poor parents, was admitted March 29, 1882, to the Pester Armenkinderspital. She had had measles and frequent intestinal catarrh in earlier childhood. For one year she had complained of gastric pain which had occurred at irregular intervals and frequently lasted several hours, but without being very severe; sometimes she was free from it for days at a time. These pains, which gave the sensation as of a strong pressure, were thought little of by the careless parents, and they became more frequent in the past six months, but still they did not become unbearable. The appetite was and still remained small; nausea or vomiting was said not to have occurred; the stools were always sluggish, never bloody. The general condition of nutrition kept getting worse.

Three weeks before entrance to the hospital the child had developed an acute miliary tuberculosis and had constant fever, frequent cough, difficult breathing, stitch in side, and she also complained of pain in the gastric region, and now and then vomited. The vomitus was never bloody. The patient spent eleven days in the hospital and during this time the symptoms of acute miliary tuberculosis were strongly marked. There was troublesome dyspnea and a very marked cyanosis so that the skin of the whole body was constantly livid and bluish black. Only the following gastric symptoms were observed: In the gastric and splenic regions at times very heavy pains, which were greatly increased by the least pressure; nausea was observed only one day; vomiting did not occur. The patient took only a little milk and soup; the move-

ments of the bowels were thin, watery (two to five a days), brown, but contained no blood. The autopsy was performed on April 11.

The stomach was in the normal position and like the intestine was moderately contracted. It contained a little slimy, coffee-ground fluid; on its posterior wall were three losses of substance, one the size of a lentil, the other the size of a ten-cent piece. These two losses of substance were circular with sharp edges and reached the submucosa; a thin, brown coat covered their surfaces; the surrounding mucous membrane was slightly swollen and moderately injected. The third loss of substance was also circular, with everted but not scarred edges, the mucous membrane about it being infiltrated and injected. Its diameter was 2.5 cm.; it pierced the entire thickness of the gastric wall connecting with the bursa omentalis. In the latter was a little coffee-ground fluid; there was no appearance of inflammation in the bursa. The mucous membrane of the intestine was slightly injected; in the Peyer's patches were some lentil-sized nodules surrounded by an injected zone and containing cheesy masses.

*Diagnosis.* — Scrophulosis of the cervical, mediastinal, bronchial and mesenteric glands; subacute tubercular peribronchitis, etc.; round ulcer of the posterior wall of the stomach, and recent perforation into the omental bursa of a maximum diameter of 2.5 cm.

Rufz [42] reports as follows:

A girl of thirteen years; perforation of the stomach in the smaller curvature, following an ulcer, almost two inches broad. The edges were roundish and thickened. The floor was formed of the blackish and thickened serosa. The rest of the stomach was healthy.

Chvostek [12] publishes the following case:

The patient, when first observed, was eighteen years old. The father died an unnatural death twelve years before. The mother still lived and was said to cough much and to have some pulmonary disease. One sister, a year younger, strong, well nourished and perfectly well at the present time, though for several years is reported to have had a similar but not very pronounced disease as the patient under observation. She is now said to be wholly well. The patient was brought up from childhood by others than his parents. It is reported of him that in his fourth year he was a healthy, relatively well-developed child. His disease is said to have begun then. The history of its beginning is as follows:

His foster parents left him, a cold winter's day, to collect wood in the forest. The patient is said, a little while after, to have run after them, clothed only in a shirt. He did not, however, get far, but collapsed with the great cold. It is reported that he was found stiffened and senseless by people who were going by. Immediately afterwards he is said to have been sick for a long time and his present trouble began then with pain in the abdomen, coming on in paroxysms. These pains occurred in the form of attacks, sometimes lasting several, sometimes as many as ten, hours. They were very severe and the patient had with them a feeling of a cramp-like retraction of the lower abdomen. The intensity and duration of these attacks increased in general with the duration of the affection. The abdomen was reported as only at times being sensitive to pressure. The attacks occurred in pauses of different length, sometimes almost every day, sometimes again less frequently. The longest interval between attacks was one year. During this whole time the patient suffered with very great constipation so that he often had no stool for a week.

On Dec. 13, 1880, the patient was taken into the wards of Professor Chvostek and presented the following appearance: The patient is very backward in his bodily development so that one would take him for a boy of eleven years old, if one did not know his age. There is no trace of pubic hair. He is of delicate bone formation, thin, flabby muscles; the subcutaneous tissue is almost free from fat; the skin and the visible mucous membranes are pale; his physical strength is small; the functions of the brain and his cerebral nerves show nothing remarkable, save that the patient has fainting and is oppressed in his head if he remains a long time out of bed. There is a slight venous hum in the neck, which is otherwise not abnormal. The cardiac impulse is in the fourth interspace in the mammillary line, and is of normal strength and area. The cardiac dullness extends from the upper border of the third to the lower border of the fifth rib, and from the left sternal edge to the left nipple. The first sound at the apex is a very little prolonged, otherwise the heart is not abnormal. There is a good percussion resonance over the lung, and rude vesicular breathing. The belly is slightly distended, nowhere sensitive to pressure. Corresponding to the cecum is to be felt a hard but not painful tumor; otherwise, no kind of tumor is to be found in the abdomen. The stomach is moderately distended; the liver and splenic dullness are normal. The urine is pale yellow, clear and without albumin. The movements of the bowels are sluggish. The appetite is moderate. There are no eructations, no heartburn, no vomiting. The temperature is 36.5° C. to 36.8° C.; the pulse 84 to 88.

From the 14th to the 27th of December the condition remained the same; no attack of cardialgia. Dec. 28 to Jan. 25, 1881, in spite of regulating the stools and giving an easily digested food at regular intervals (in the morning, milk, 100 gm. of semmel; at noon, soup and roast veal; at half past five, a veal cutlet) he now frequently has an attack of cardialgia at different times and of different durations. On the 28th, for example, in the night from nine to three in the morning; on the 4th of January, one attack, from twelve at night till nine in the morning; on the 5th of January, one attack, from ten to twelve, and another from two to six in the night; on the 10th of January, in the night from two to six; on the twelfth of January from ten to one in the night; Jan. 13, from two to four in the night; Jan. 14, from five in the afternoon till six the next morning; Jan. 18, from ten to two at night; Jan. 21, from twelve in the night till nine in the morning; on Jan. 22, from seven to ten in the morning; Jan. 23, from six to nine in the evening. The attacks lasted from five to fifteen minutes with remissions and the location was in the epigastric region. The quality of the pain was as above indicated. During the attack the epigastric region was very sensitive to pressure. In the intervals between attacks it was so only once, on Jan. 14, there being pain on pressure at the right edge of the ribs at the parasternal line.

On Jan. 26, the appetite was rather poor. He was fed only with milk. Last evening nausea and vomiting of a watery acid-reacting fluid containing blood, sometimes mucus and portions of food. The night was quiet. This morning had a cardialgic attack lasting nearly an hour. The abdomen was a little distended, soft, nowhere sensitive to pressure. From the 27th to the 29th of January neither vomiting, nausea nor cardialgia. On the 29th of January the epigastric and umbilical regions were sensitive to pressure. From the 30th of January to Feb. 12, there was loss of appetite. The patient took only a very little liquid food, and sometimes none. He had at times eructations, heartburn, and also nausea. On the morning of Jan. 30, had a cardialgic attack with vomiting; on Feb. 7 one without vomiting, and on the 11th and 12th, an attack of vomiting with the cardialgia. The vomitus consisted

of a bile-stained, slimy fluid. The patient visibly emaciates and gets more anemic.

From the 13th to the 16th of February, the patient had less pain in the lower part of his chest on eating; no vomiting, no cardialgia. Temperature for those days was 37.4° C., 37.7° C. and 37.8° C. During the night of Feb. 17, had pain about the navel and vomiting. On the 20th and 21st, in the evening and on the 22d at night, cardialgia relieved by injections of morphia. From the 24th of February to March 5, almost daily cardialgia, attack chiefly in the night; large morphine injections do not stop, but simply lessen; with it very frequently eructation, heartburn, and on Feb. 26, vomited as well. The pain usually went somewhat to the left of the navel and spread upward into the right portion; occasionally complained also of pain in the chest.

From the 6th to the 16th of March a little fever, 37.1° C. to 38.7° C., pulse 100 to 120. The patient had in the night all kinds of phantasies and was very restless. Cardialgic attacks come daily, are of considerable intensity, of longer duration, often accompanied by vomiting. They are simply lessened by the morphine injections. The stomach is very much distended, sometimes so that the cardiac impulse is palpable in the third intercostal space. The stomach is only somewhat sensitive to pressure except during the attacks. The emaciation, anemia and weakness have reached a high degree. There is a loud hemic murmur in the heart and a pronounced venous hum.

From the 7th to the 29th of March, no fever. In spite of receiving daily three injections of morphia, the cardialgic attacks are only a little relieved, and but temporarily. The attacks are extremely severe and last a very much longer time; the intervals between them are very short. The patient takes almost no nourishment, vomits only seldom, and gradually collapses and dies on the 29th of March, 1881, in the greatest state of exhaustion and emaciation.

*Autopsy.* — Stomach very much distended, filling not only the left hypochondrium but the greater curvature, reaching to the umbilicus, pylorus and a part of the pyloric portion lying in the right hypochondrium under the liver. In the stomach, a thin, sour-smelling, brownish fluid. Exactly at the cardia a round ulcer of 3 cm. diameter and ½ cm. depth with edges nearly smooth, wedge shaped and not thickened; its base formed by the somewhat thickened serosa of the left lobe of the liver. The stomach at the place mentioned was adherent to the left lobe of the liver. In the immediate vicinity of this spot the base is so thin over a space the size of a bean that the stomach tore on being handled. The rest of the base extended to the outer layers of the muscularis, or, as in the posterior wall of the end of the esophagus to the adventitia of the latter which is thickened with callous. Near the lower edge of the ulcer on its base are four hard, wart-like nodules the size of a hemp seed. Close above the pyloric valve there is an ulcer, also round, 2½ cm. in diameter with smooth edges and funnel-shaped reforming base. The latter is everywhere smooth, rather firm and white; it is intimately adherent to the head of the pancreas, and the adjoining parts of the latter are interspersed with whitish cicatricial tissue. The opening of the pylorus is so narrowed that it scarcely admits the tip of the little finger; it measured 8 mm. in diameter. The wall of the pyloric portion of the stomach was 5 mm. thick, the chief part affecting the muscularis which was 3 mm.

*Diagnosis.* — Round ulcer of the stomach at the cardia and pylorus with stenosis of the latter and consequent dilatation of the stomach and muscular hypertrophy.

*(To be continued.)*

## PERICEMENTAL ABSCESS.

BY D. D. SMITH, D.D.S., M.D., PHILADELPHIA, PA.

The affection here denominated pericemental abscess was first noticed by the author about 1890, and first described by him in a paper read at the Tri-union Meeting of the Virginia State, Maryland State and District of Columbia Dental societies, held at Old Point Comfort, Va., May, 1897. Prior to this all abscesses associated with the teeth and alveolus were styled alveolar abscess; the only exception to this being the occassional use of the meaningless term "blind abscess."

It was not until quite a number of these peculiar tumoric growths found on the roots of teeth — especially between the roots of molars — had been observed and noted that their distinguishing characteristics were made a subject of special interrogation and study.

While treating the putrescent root-canals of a superior left bicuspid in the year 1890, two hitherto unobserved diagnostic conditions came prominently into notice. It was evident that the tooth was associated with an abscess, yet the most persistent efforts to relieve it by treatment through the root were wholly without results; at the same time the previously cleansed and disinfected canals of the tooth remained entirely devoid of infection. Repeated dressings and medication during a period of three weeks failed to develop any odor or to make any impression whatever for the better. At the end of four weeks the tooth was extracted, when the cause of the trouble and the negative results in treatment became apparent. Lodged in an irregular depression of the root, formed by a slight, sharp bend, about one quarter of an inch from the apex, was a glandular, fibrous tumor of the size of an ordinary pea, covered with globules of pus. The base of this tumor, or abscess, was relatively large and strongly atached to the pericemental membrane. It was entirely independent of the pulp and canals, having no communication with them whatever, either at the basal attachment or at the apex. I remember well, that in reciting this feature of the case at the meeting referred to, several who took part in the discussion refused to believe that such conditions could exist.

In the dawning of my observation of these pathological conditions, the recognition of them was so confused and imperfect — for in the beginning only chronic cases were apprehended — that it required several years to differentiate them from the ordinary alveolar abscess.

The observation and conduct of an *acute* case, in the spring of 1895, developed the missing diagnostic links, opened the way to a more perfect understanding of the etiology of the trouble, and suggested the nosology we have adopted.

This case is of peculiar interest, and is here cited in the hope that it may serve to fix the special pathognomonic features of the disorder. It was in connection with a second left upper molar, a tooth of typical formation, in the mouth of a young M.D. — a mouth marked, because of virulent infection on all surfaces of the teeth.

The patient presented rather hesitatingly, complaining of an uneasy sensation only, which he hardly classed as pain, but which he located without hesitation in the offending tooth. Examination disclosed no diagnostic symptoms except a very slight loosening of the tooth and a barely distinguishable response to tapping and pressure. There being no evidence of periosteal irritation, and the pulp being alive, I was disposed to regard the complaint as having origin more in the imagination than in a real pathological state. Following an application of tincture of iodine to the gum over the affected tooth, the case was dismissed with the suggestion that the pain was probably due to some unusual or misdirected pressure in biting.

The next day the patient returned, with local symptoms equally obscure; there was little evidence of inflammation, no swelling, no decided pain on pressure. The most prominent feature of the case at this stage was the feeling of apprehension, the decided conviction of the patient that there was something wrong with that particular tooth.

The case was a regular daily visitant for about eight days. During the first five days no strongly marked diagnostic features developed, but it excited interest, and not a little anxiety. The treatment consisted of external applications only, the quieting effect of which seemed to be most evanescent. Neither heat nor cold applied directly to the tooth and gums gave rise to any unusual sensations of pain or relief. There was no appreciable swelling, no marked periostitis or other evidence of the inflammation save the pain; this had become continuous, and was definitely located *in the tooth*.

On the fifth day a diagnosis of acute pericemental abscess was made. The tooth had become more loose and perhaps more painful; it responded more acutely to tapping and pressure, but the pulp was deemed to be alive. To assure myself that it was not implicated in the trouble, I decided upon devitalization.

And here parenthetically I desire to put on record a protest against much that has been written in disparagement of arsenic for the devitalization of pulps, and present the one proper method for using this valuable agent.

Although wholly contrary to accepted teachings and practice, the *arsenical paste* — white arsenic, morphia acetas aa, creosote q. s. — should *never* be placed in contact with pulp tissue; this application should always be made to intervening vital dentin.

The cavity in the tooth in which the application is to be made should be so shaped and arranged that the arsenic shall be securely confined in contact with vital, sensitive dentin only. There should be no possibility of its escape to other mouth tissues, either through the confining filling or around the margins of the cavity. If the cavity of decay cannot be made to securely confine the arsenic — and very frequently it cannot — or if it is desired to destroy the pulp in a sound tooth, a special cavity or large drill-pit should always be made *in another part* of the tooth, one in which the arsenic can be perfectly confined. The application may be made in a cavity remote from the pulp with perfect assurance, provided it is secured there in contact with sensitive dentin (temporary gutta-percha stopping is the best confining medium).

It is placing the arsenic upon living pulp tissue that induces the pain, and it is the escaping of the arsenic from the cavity to the pericementum and gums, through or around the confining filling, that has been and is the cause of all supervening troubles — gum inflammations, alveolar absorption and necrosis — which result from the use of this agent.

Manipulation in accordance with the method suggested will insure painless and perfect devitalization in any tooth in from twenty-four to seventy-two hours, and that with no possible systemic injury, neither inflammatory manifestations in any contiguous tissues.

Drilling through a small crown filling into the dentin, the tooth-bone was found in an exalted state of sensibility. Assured of my diagnosis, I determined, if possible, to reach the seat of the abscess and evacuate the pus in the hope of effecting a cure. An arsenical application was accordingly made to the dentin, which so perfectly destroyed the pulp that its removal was effected within thirty-six hours. This operation produced no disturbance, neither was there any incident following it. The removal of the pulp and dressing of the roots had no appreciable influence on the abscess symptoms; the soreness of the tooth, the continuous (not throbbing) pain, and the mental disturbance — a feeling of apprehension — continued unabated. I next drilled entirely through the crown, reaching the alveolus at the point which extends down between the roots. This operation was very disappointing in that it failed to evacuate any pus or to develop any odor. The third day after the opening was made upon the alveolus, there appeared unmistakable signs of infection in the left antrum. Unwilling to risk further treatment, the offending molar was extracted, when the cause of all this trouble became apparent. Just above the opening which had been made with the drill, and closely adherent to the inner side of the distal buccal root, was the peculiar but well-developed lobular sac of the abscess, with small globules of pus disseminated over its surface. The night following the removal of the tooth there was a copious discharge from the antrum through the left nostril. An opening was at once made through the alveolus into the antrum and treatment instituted through it. The antral cavity was syringed twice daily with phénol sodique, diluted about one half with water, and at the end of two weeks the case was discharged entirely well.

This acute case should possess general interest for the profession, not alone because it presents the distinguishing peculiarities and diagnostic symptoms of this affection, but more because it discloses the serious nature of the malady and points to some of its usual but unrecognized complications.

It is manifest that the pathological condition we are discussing is not only far more common than has hitherto been suspected, but that the infection resulting from it is the occasion of many grave systemic diseases as yet unsuspected. It is a condition which may be readily diagnosed when in a state of activity, but when chronic and apparently inert, it may be difficult of recognition. In the guise of innocent inactivity it gives rise to perpetual infection, and frequently arouses most serious systemic maladies, conditions far more to be dreaded than its most aggravated local expressions.

During the ten years which have followed the treatment of the case cited I have seen and treated a goodly number of these abscesses, both acute and chronic, but never with encouragement or pronounced success. One of the former occurred in my own mouth in connection with a maltreated, split molar, which eventuated in an obstinate, double antral infection. Another — chronic — illustrated in this article, No. 3, was the occasion of a grave head trouble — a burning

pain under the scalp, attended with exhaustion and despondency. These conditions were immediately relieved through extracting the tooth. No. 4 was the cause of the development of a severe double antrum infection. No. 5 was the occasion of a marked condition of malaise, attended with mental depression and hallucinations. In the two latter cases, extraction of the offending teeth afforded immediate and pronounced relief; the antrum trouble progressed rapidly to complete cure, and the malaise and mental depression to complete systemic restoration.

In but two instances, where pericemental abscess has been surely diagnosed, has there been any prolonged effort to retain and preserve the tooth. In these cases — both teeth superior molars — the abscesses have extensive basal attachment, which supplants and occupies the territory on the inner surface of the roots at their junction with the crown. These abscesses are quiescent, and have no perceptible pus discharge; while the teeth are somewhat loose, they are in use in mastication, and occasion no complaint. In both instances the teeth were experimentally retained; there is absolutely no hope of bettering their condition by treatment, either through surgical removal or lymphatic absorption.

The histological researches of the late Dr. Formad, of the Medical Department of the University of Pennsylvania, as revealed in a private letter under date of Jan. 20, 1898, fully confirm the status ascribed this pathological condition as a new discovery; they also stamp its nosology as correct, and reveal why it may, and does, occur indiscriminately on teeth with and without vital pulps. Caused as it is by an irritant on the outer surface of the pericemental membrane, it is wholly unaffected by any known method of treatment, either through the root, by external applications, or by surgical interference.

The diagnostic symptoms of pericemental abscess are distinct and plain when once recognized. In acute cases the first manifestation is pain; not severe, but continuous, and located by the patient in the offending tooth. Nervous apprehension on the part of the patient is, I believe, always incident to it. The trouble is liable to be confounded with periodontitis, but is readily distinguished from it. In acute pericemental abscess, there are no marked inflammatory symptoms in the alveolar and gum tissue; no swelling, no acute pain in response to tapping or pressure; no marked distinction between hot and cold applications, and no relief afforded by any local medication. The loosening of the tooth, slight in the beginning, becomes more and more marked as the case progresses. It will thus be noted that while this affection has been, and is, liable to be confounded with periodontitis, all the diagnostic symptoms (except the pain and the response to pressure) in the former, are exactly the opposite to those in the latter.

Chronic pericemental abscess is distinguished by absence of pain and all other active inflammatory symptoms. Occasionally, there is some hypertrophy of the gum tissue, but no marked swelling, neither soreness of the tooth on pressure. The tooth can generally be used in mastication without special discomfort. The escaping pus is discharged at the edge of the alveolus, between the alveolus and the gum. The point of egress may be distinguished by a peculiar lip, or mouth-like opening, marked by a circumscribed turgescent condition of the gum tissue,— a condition wholly unlike the fistulous opening of an alveolar abscess.

Any tooth having a pericemental membrane, and a conformation to accumulate infection, may be the subject of pericemental abscess. Molars with large, bell-shaped crowns and constricted necks, because of their shape and location in the mouth, are more especially liable to it.



No. 1 No. 2

Two views of original specimen forwarded to me in autumn of 1897, by a practitioner in Connecticut, unable now to recall his name. Histological report made by Dr. Robt. Formad, Med. Dept. U. Pa. See "Abscess upon Teeth with Living Pulps." — *Kirk, Cosmos*, August, 1898. These cuts made by *Cosmos* press, 1897. Used by Dr. Kirk, the editor, only, to illustrate two of his papers: the first mentioned above; the second, "Pericemental Abscess," before N. Y. State Society, May, 1900. The latter paper ascribes the discovery of P. A. to Dr. Darby, and the making of the photograph to Dr. Cryer; see *Cosmos*, Nov., 1900, p. 1149.



No. 3

Right sup. 3d molar; the occasion of serious head trouble: extracted July 4, 1904.



No. 4

Left sup. 2d molar; the occasion of serious double-antrum infection: extracted July 21, 1904.



No. 5

Right sup. 3d molar; the occasion of malaise and nervous depression: extracted April 26, 1904.

The conditions preceding its development are neither systemic inclination through "aberrant nutrition," nor a circulation floating a so-called gouty poison. It is not a result of infection from putrescent pulp tissue, nor from the prolific gaseous emanations resulting from nitrogenous decomposition within the tooth. Infection from such sources finds expression on the *inner* surface of the pericementum near the apical foramen, and eventuates in the ordinary alveolar abscess. The nucleus of this inflammation, and the resultant tumoric abscess, is in touch with some stagnant, septic irritant upon the tooth or teeth, the external surface of the pericemental membrane alone being involved.

The amount of pus disengaged from these

abscesses is relatively small. It is not confined within a sac or limiting membrane, as is generally the case with an ordinary alveolar abscess, but it is sparingly distributed over the irregular surface and within the folds of the tumor-like body which forms the abscess.

The pus from a pericemental abscess never forces an outlet through the alveolus and gums in the form of a fistulous opening, neither does it come into the pulp canals through the apical foramen. It escapes at the edge of the alveolus, at the free margins of the gums — commonly between root bifurcations — or it may be found oozing around one particular root of a molar; frequently it is the palatine root of a superior molar or the distal root of a lower molar. Turgidity of the gum tissue at the point of egress marks the exact location of the abscess. No pus whatever can be obtained from a pericemental abscess in its earlier or acute stage. Even in chronic states the discharge is seldom profuse in connection with a single-rooted tooth. In a goodly number of cases where the abscess had assumed a hopelessly chronic form, I have found pus in large quantities and very offensive, in a few instances in connection with lower bicuspids, but more especially around lower molars. The incessant inflammatory action induced by this abscess not only increases its own substance, but it loosens the tooth, and through necrotic absorption forms, enlarges and deepens cavities and pits in the alveolus which become cesspools of pus, prolific in infection.

The nerve centres, from my observation, are the special points attacked by the pyemic toxins from this abscess. Depression of spirits, loss of appetite, enfeebled digestion, malaise, headache, tonsular and pharyngeal inflammations, are the direct outcome. They also become the exciting cause of many far more serious troubles, both acute and chronic; among these we have found neurasthenic, gastric, gastro-intestinal, rheumatic and renal complications, including diabetes and albuminuria. From all these maladies we have not only afforded relief but effected cures by relieving septic mouth conditions, complicated with pericemental abscess.

Since the publication of the article on "Systemic Infection Due to Natural Teeth Conditions," in January, 1903, there have appeared two papers by medical men, of marked significance; one by Dr. Robert T. Morris, of New York City, entitled, "Infections of the Lymph-glands of the Mouth and Throat," and the other, "Buccal Antisepsis," by Dr. E. Dunogier, Bordeaux, France. The former makes this significant and commendable remark: "We are finding at my clinic very many more infections proceeding from the teeth than are found in some other clinics," and then goes on to say, "One class of infections, very dangerous ones, have been frequently overlooked by dentists: these are infections following the removal of abscessed teeth. Patients die and the cases are not reported; they come in to be treated for pneumonia. There are patients dying this minute in this city from the result of having abscessed teeth extracted while in course of acute infection."

Dr. Dunogier speaks of "dangerous systemic results accompanying purulent conditions about the oral cavity," and recites the case of a "young man aged twenty-one, a sufferer from albuminuria for over six years," who was cured through, what seems to me, very indifferent attention to the teeth and mouth condition, which had previously been wholly neglected. To prove positively "whether the mouth-infection had been directly concerned in the causation of albuminuria, the patient was directed to abandon temporarily all dental care. This was followed five days afterward by the reappearance of the albumin, and thus the original diagnosis was definitely established." Another case of a diabetic is noted by Dr. Dunogier with similar treatment and like favorable results.

When the day shall dawn when medicine and dentistry shall fully recognize the human mouth as the field of most prolific and dangerous infection and truly differentiate its pathologic conditions, the prevention of disease, the relief of suffering and the lengthening of the average of human life will be accelerated a hundred fold.

If it is true, as Dr. Morris says, that in dentistry and surgery, "we find whatever we are looking for," how important that we keep our eyes fixed on actual conditions. Actual conditions do not reveal that the extraction of a tooth with an ordinary alveolar abscess was ever the precursor of pneumonia. Pericemental abscess, with its pyogenic infection and enfeebling results, has undoubtedly been a predisposing factor in many cases of pneumonia. How important that medicine and dentistry distinguish between the two conditions!

Mouth conditions would appear very different to both professions if they could be viewed in the light in which they really exist. We do not need the hypothetical conditions of "thrombi" and "embolic infection," said to be induced by equally hypothetical "crushing of cancellous bone structure in tooth extraction," for the induction of systemic infection. Infection is found as a natural exudate along the whole linear gum margin about the teeth; it is found upon the twenty to thirty square inches of tooth surface in every mouth, between and under the teeth, and in crypts and pockets about roots. It is found in nasal passages, upon the tongue, on tonsils and pharynx. There is infection in the breath, in salivary and mucous sediment, in decaying food remains and in mouth débris of every kind. Add to these *normal* infectious states, the many serious pathological mouth conditions, — decay in the teeth, putrescent pulp tissues, the retrograde metamorphosis of devitalized teeth, alveolar abscess, alveolar pyorrhea, and, more than all, the affection we are considering, pericemental abscess, — and we have a combination of infection in the human mouth which should startle the community, and rouse to highest intensity the interest of medicine and dentistry alike.

The question may arise, Is pericemental abscess a state of pyorrhea? My answer is emphatically in the negative. Pericemental abscess and alveolar pyorrhea are often associated in the same mouth, and they may have similar origin, but they are separate and distinct affections. Pericemental abscess develops from a point of irritation on the external surface of the pericementum, usually some inaccessible depression in which the infection lodges and is confined. It is generally found between the roots of double or multi-rooted teeth, or it may be at the end of a tooth having fused roots. Alveolar pyorrhea is as commonly found in connection with single as with double or multi-rooted teeth; when associated with molars, the infection is between, rarely, if ever, under them.

Pericemental abscess is a characteristic tumoric growth, generally between the roots of teeth; alveolar pyorrhea is an inflammation beginning in the pericementum at the free margin of the gums; in its progress it destroys cemental and alveolar tissue, uncovers portions of the roots of teeth, develops pus, and imparts a characteristic odor to the breath. This inflammation leaves in its train, not degenerate, sero-fibrous *growths*, but broken-down tissue remains, calcic sedimentary matter, and other débris which destroys permanently all vital relations between the uncovered portions of the affected roots and the alveolus.

Pericemental abscess, virulently infectious, is incurable, except through loss of the tooth.

Alveolar pyorrhea, often equally infectious, is wholly amenable to rational surgical treatment.

## A COMPARISON OF ANESTHETICS. RESULTS FROM CHLORETONE.

BY THEODORE C. BEEBE, JR., M.D., BOSTON.

The following observations were made through the courtesy of Drs. Munro and Bottomley, and the kindly aid of the surgical house officers and nurses of the Carney Hospital. The writer has endeavored to form, by the aid of statistics, some general ideas as to the relative values of the more common anesthetics used as preliminaries to ether in profound anesthesia. The attempt has also been made to discover in what manner the patients' recovery from ether narcosis may be made more endurable. The anesthetics used were nitrous oxide, ethyl chloride, and anesthol. Enough has been written by recent writers as to the method of administration, and the effects of these drugs, so that it is thought best not to go into these details here. Statistics were obtained from 214 cases; in 65 of which gas and ether were used, 34 ethyl chloride and ether, 110 anesthol and ether, and 5 in which anesthol was used for the full period of narcosis. For the administration of gas the Bennett inhaler was used. Ethyl chloride and anesthol were given in the usual manner described by recent writers. Ether was given by the Blake ether inhaler. Hypodermic injections of morph. sulph. gr. $\frac{1}{8}$ to $\frac{1}{4}$, and atropin sulph. gr. $\frac{1}{120}$ were used as indicated, with the commonly known good results. It may not seem out of place to mention here that those accustomed to watch the pupils are sometimes misled by partially contracted pupils due to the action of morphine. The action of chloretone on the nausea and vomiting after ether was observed in 164 cases. The cases operated upon have been the usual run of a hospital service.

Nitrous oxide was given to patients ranging from eight to sixty-seven years of age, ethyl chloride from thirteen to sixty-three, and anesthol from six to eighty-seven years. In cases younger than six years, ether alone was used. Out of the total of 214 cases, 102 were men, 103 were women, and 9 were children under fifteen years. The pulse rate and respirations were recorded before the anesthetic was started, and again as soon as deep narcosis was established. An average increase of pulse rate per minute was observed as follows: gas 14, ethyl chloride 20, and anesthol 12. The average increase in the number of respirations per minute ran almost in direct ratio to the pulse: gas 7, ethyl chloride 11, and anesthol 6. The shortest periods in which anesthesia was produced were: gas and ether 1 min. 10 sec., ethyl chloride and ether 2 min. 40 sec., and anesthol and ether 2 min. 10 sec. The average time was: gas 2 min. 30 sec., ethyl chloride 4 min. 30 sec., and anesthol 7 min. 30 sec. This does not represent the time in which the patient was made unconscious, but the time when he was ready for operation. The cases in which anesthol alone was used throughout were: (1) resection of rib, 22 min.; (2) amputation of thigh, 1 hour, 10 min.; (3) ovarian cyst, 45 min.; (4) cystoscopy, 40 min.; (5) cholecystotomy, 1 hour. As all cases were prepared on the table, the period of anesthesia was longer than it would otherwise be. Cyanosis to a greater or less degree was noticed in 12% of the cases, more often with gas than with the other drugs. Most of these cases were alcoholics. The stage of excitement was much less marked with anesthol, next with gas, and most with ethyl chloride, although there was less in all than with ether alone. An increase in the amount of albumin, varying from the slightest possible trace to a large trace, and clearing up within a few days, was found in 16 cases as follows: after gas 9, after anesthol 7, after ethyl chloride 0. An increase of uric acid was found in practically all cases.

*Expense.* — Nitrous oxide and anesthol are cheaper than ethyl chloride. Gas costs about 4 cents per patient, anesthol $3\frac{3}{4}$ cents, and ethyl chloride 12 to 18 cents, depending upon the quality used. The relatively small number of cases observed with ethyl chloride was on account of the expense.

*Odor.* — Nitrous oxide is odorless. The slight garlicky odor persisting after ethyl chloride makes that drug less agreeable than anesthol to most patients.

*Pulse and respiration.* — Anesthol causes least disturbance of pulse and respiration rate, gas next, and ethyl chloride most. Gas is the

quickest to produce its effect, ethyl chloride next, and anesthol last. On the other hand, profound anesthesia may be maintained with safety for a greater time with anesthol than with either of the other two drugs. It seems to be especially indicated in cases with either cardiac or pulmonary difficulty. During administration there is the least struggling with anesthol, next with gas, and most with ethyl chloride.

To sum up the relative values: There does not seem to be any class of cases in which ethyl chloride has any advantage over either gas or anesthol, while its expense is a distinct disadvantage in a large clinic. Again its record for safety has not proved equal to gas and anesthol. As between the last two mentioned, each has its special recommendations. In a large clinic where speed is required gas is by far the more desirable. The absence of odor also tends to make gas the more popular. In alcoholic or powerful individuals who take gas poorly, however, or where there is some heart or lung complication, anesthol has proved a very efficient adjunct. The writer will not consider the uses of the three drugs in minor surgery.

The prevention or lessening of nausea and vomiting after ether is a matter in which there has been very little advance in recent years. The writer has endeavored to approach this subject in two ways: first, by limiting the amount of ether used, second, by the action of chloretone. The cone has been kept away from the patient as much as possible, and the total amount of ether made as low as possible. Chloretone in amounts from 5 to 30 gr., given in 5gr. capsules, has been used in 164 cases. The best results have been obtained in adults with 10 gr. doses given twenty to thirty minutes before starting the anesthetic. If given inside of twenty minutes the patient is liable to vomit soon after the anesthetic is started, thereby losing all the benefit of the drug. Out of the total 214 cases, 119, or 55½%, were conscious of no nausea after ether. Of these 119, 97, or 81½%, had had chloretone, while 22, or 18½%, had had none. Sixty-seven out of 164 were nauseated in spite of the chloretone, while 28 out of the 50 who had had no chloretone were also nauseated. One hundred and twenty-eight out of 214 cases, or 60%, were conscious of no vomiting. Of these 128 cases, 105, or 82%, had had chloretone, while 23, or 18%, had had none. Fifty-nine out of 164 who had had chloretone vomited, while 27 out of the 50 who had had none vomited. It is only just, however, to say that 18% of those who had had chloretone vomited once or twice before the return of consciousness. Of the abdominal cases, 72 had chloretone; 35 were conscious of no nausea, and 37 were conscious of no vomiting, practically 50%. Out of 9 inguinal hernias 7 had no nausea or vomiting. Of 13 gastro-enterostomies 7 had no nausea, and 8 no vomiting. Of the 214 cases 9, or 4⅓%, complained of headache after the ether recovery, divided between general and frontal. Seven of these had had chloretone. Five cases had some cough after the operation.

While chloretone has not always proved a reliable specific in preventing nausea and vomiting, it has been a great aid. The patients make a quicker recovery than when nothing is given. Vomiting, when present, is likely to take place before the return of consciousness, so that the patient has no distinct recollection of the occurrence. In more than half of the cases there was no conscious nausea or vomiting, a great benefit not only to the patient, but to the nurses and friends. The writer believes it to be well worth a good trial.

## EXAMINATION OF PLEURAL FLUIDS WITH REFERENCE TO THEIR ETIOLOGY AND DIAGNOSTIC VALUE.

BY PERCY MUSGRAVE, M.D., BOSTON.

(Continued from No. 13, p. 352.)

Case 35.— J. P. K., fifty-three, m., Irish, janitor railroad station. May 14, 1903. F. H. negative. P. H. unimportant. Habits good. Pres. ill. — For four months intermittent pain in left side of chest; slight cough and expectoration. For three weeks dyspnea, and for two weeks orthopnea. Loss of weight. Chilly at times. Phys. exam.— W. D. and fairly N. Fair color. Heart displaced to right. Lungs: left pleural effusion; bronchitis on right. Temperature fluctuated between 99.5 and 102½, gradually becoming lower; pulse slightly irregular; arterial thickening. Considerable edema feet and legs. Blood: whites — 16,000. *May* 15, *chest tapped, fluid:* amount 960 cc., slightly hemorrhagic, alkaline, alb. 3.5%, sp. gr. 1,018: sed.: lymphocytes 97.2%, polynuclears .8%, endothelium 1.6%, large mononuclears .4%. Cultures: no growth. Pig inoculated; autopsied June 19, 1903; negative. Diagnosis from fluid: primary tuberculous pleurisy. Blood: whites — 10,400. Sputum: no tubercle bacilli found; four examinations. Steady improvement; May 22, discharged much relieved. Clinical diagnosis: pleurisy with hemorrhagic exudation. Bronchitis. Tuberculosis (?). Displaced heart with adhesions.

Case 36. — J. J. S., thirty, m., American, laborer, Oct. 19, 1903. F. H. good. P. H. unimportant. Habits: tobacco to excess. Pres. ill. — For four weeks pain on deep inspiration, increasing steadily; slight cough; small amount of sputum; no chills. Phys. exam. — W. D. and N. Color good. Heart negative. Lungs: right pleural effusion, slight bronchitis left lung; examination otherwise negative. Temperature 101 at entrance, falling to normal in four days. Pulse averaged 70 to 85; respirations 20. Blood: whites — 7,900. *Oct.* 23, *chest tapped, fluid:* amount 19 oz., straw colored, small coagulum, sp. gr. 1,022; sed.: lymphocytes 87%, polynuclears 10%, endothelium 1%, large mononuclears 2%; marked number of red corpuscles. Cultures: no growth. Inoscopy: negative. Pig inoculated; autopsied Dec. 6; negative. Diagnosis from fluid: primary tuberculous pleurisy. No sputum. Steady improvement. Oct. 30, discharged much relieved. Clinical diagnosis: pleurisy with effusion.

Case 37.— H. H. P., twenty-nine, m., American, conductor. Nov. 26, 1903. F. H. negative. P. H. unimportant. Habits good. Pres. ill. — Twelve days malaise, headache, anorexia, for four days pain in epigastrium shifting to back, relieved by left lateral decubitus. Phys. exam.— W. D. and fairly well nourished. Good color. Heart negative. Lungs: left pleural effusion; examination otherwise unimportant. Blood: whites

— 11,800. Temperature 102 at entrance, falling gradually to normal on the eleventh day, with the exception of one exacerbation on the seventh day. Pulse averaged between 80 and 90; respirations 20 to 25. No sputum. *Nov.* 27, *chest tapped, fluid:* amount 105 oz., straw colored, large coagulum, alb. 4%, sp. gr. 1,020; sed.: lymphocytes 96%, polynuclears 3%, endothelium 1%; moderate number of red corpuscles. Cultures: no growth. Inoscopy: negative. Pig inoculated; autopsied Jan. 1, 1904; negative. Diagnosis from fluid: primary tuberculous pleurisy. Steady improvement. Dec. 8 discharged well. Clinical diagnosis: pleurisy with exudation.

Case 38. — A. A. C., eleven, s., American, school. Jan. 29, 1904. F. H. good. P. H. unimportant. Habits good. Pres. ill. — For two months gradually increasing malaise and cough; no sputum; no dyspnea. Phys. exam.— W. D. and fairly W. N.; slightly pale. Heart negative. Lungs: signs of right pleural effusion; examination otherwise negative. Temperature remained below 100 most of the time, but on several occasions it reached 101 and over. Pulse rate irregular in waves, averaging about 90; respirations averaged between 25 and 30. Blood: whites — 6,700. No sputum. *Jan.* 30, *chest tapped, fluid:* amount 34 oz., considerable coagulum; sed.: count of 300 cells, lymphocytes 98%, endothelium 1%, large mononuclears 1%; moderate number of red corpuscles. Inoscopy: negative. Pig inoculated; autopsied March 8, 1904; negative. Cultures: no growth. Diagnosis from fluid: primary tuberculous pleurisy. Gradually improved; Feb. 27, discharged much relieved. Clinical diagnosis: pleurisy with effusion.

Case 39. — A. J. D., forty-nine, m., American, sign painter. March 29, 1904. F. H. negative. P. H. unimportant. Habits good. Pres. ill. — For five weeks has noticed growth of lumps in neck, axillæ and groins; has lost color and strength. Abdominal distention, wheezing in chest, no cough, dyspnea. Phys. exam. — W. D. and fairly W. N. Marked enlargement of glands in axille, groins and neck. Heart negative. Lungs: left pleural effusion; signs of slight effusion at right base. Abdomen, no signs of ascites. Hepatic and splenic enlargement; slight edema both legs. Temperature not above 99.8; pulse averaged 90; respirations 20 to 25. Blood: whites — 711,900; reds — 3,020,000; hemoglobin 20%. Differential count of 500 cells showed 500 lymphocytes. *April* 4, *left chest tapped, fluid:* amount 16 oz., orange yellow, very slight coagulum, alb. 4%, sp. gr. 1,018; sed.: marked amount, count of 300 cells, lymphocytes 95%, polynuclears 1%, endothelium 1.4%, large mononuclears 2.6%; marked number of red corpuscles. Cultures: no growth. Inoscopy: not sufficient coagulation. Pig inoculated; autopsied May 21, 1904; negative. Diagnosis from fluid: primary tuberculous pleurisy. March 9, discharged unrelieved. Clinical diagnosis: lymphatic leukemia. Died April 23. Autopsy: lymphatic leukemia. Chronic left pleuritis.

Case 40.— M. P. McC., twenty-three, s., English. March 25, 1904. F. H. Mother and two sisters died with chest symptoms, suggestive of tuberculosis, within eighteen months. P. H. negative. Habits: periodical alcoholic excess. Pres. ill. — For three weeks pain in right side, increased by deep inspiration. Cough; marked morning expectoration. Occasional chilly sensations. Night sweats. Increasing dyspnea with diminution of pain. Phys. exam. — W. D. and N. Color good. Heart negative. Lungs: right pleural effusion; examination otherwise negative. Temperature 103, gradually falling in the course of two weeks, and then averaging between 99 and 100. Pulse averaged 90; respirations 25 to 30. Blood: whites — 7,200. Sputum: no tubercle bacilli found on repeated examinations. *March* 30, *chest tapped, fluid:* straw colored, slight coagulum; sed.: slight, lymphocytes 92%, polynuclears 8%; few red corpuscles. Cultures: no growth. Pig inoculated; autopsied May 18; negative. Inoscopy: too little clot. Diagnosis from fluid: primary tuberculous pleurisy. Patient improved steadily; discharged April 15, much relieved. Clinical diagnosis: pleurisy with effusion.

Case 41. — L. C. (female), thirty, m., American, housewife. March 19, 1903. F. H. negative. P. H. unimportant. Habits good. Pres. ill.—Two weeks ago, eight days after birth of child, taken with fever and headache, slight cough, pain in right chest, worse on deep inspiration. Phys. exam. — W. D. and N. Color good. Heart negative. Lungs: right pleural effusion. Abdomen negative. Temperature chart very irregular with large diurnal excursions of the temperature. At the end of a month temperature averaged normal with slight evening exacerbations, always below 100. Pulse chart irregular, roughly following the temperature; respirations averaged below 30 on several occasions, however, reaching 40. Blood: whites — 7,400. Sputum, small amount; no tubercle bacilli. *March* 19, *chest tapped, fluid:* amount 200 cc., alb. 3.6%, sp. gr. 1,021; sed.: lymphocytes 94%, polynuclears 1%, endothelium 2%, large mononuclears 3%. Cultures: no growth. Pig inoculated; autopsied April 18, 1903; negative. Diagnosis from fluid: primary tuberculous pleurisy. Slow improvement; April 24, discharged well. Clinical diagnosis: pleurisy with effusion.

Case 42. — C. G. (female), thirty, s., Italian, farm laborer. June 2, 1903. F. H. and P. H. not taken. Pres. ill. — Sick for two weeks, pain, cough, chills and fever, dyspnea. Phys. exam. — W. D. and N. Good color. Heart negative. Lungs: left pleural effusion; examination otherwise negative. Temperature at entrance 100, after that not above 99.5 at any time. Pulse 110, after the tapping between 90 and 100; respirations 40, after tapping between 25 and 30. Blood: whites — 9,000. *Chest tapped, fluid:* amount 1,920; cc., straw colored, considerable coagulum, alb. 3%, sp. gr. 1,022; sed.: lymphocytes 90.4%, polynuclears 9.6%; few red corpuscles. Cultures: no growth. Pig inoculated; autopsied July 18, 1903; negative. Diagnosis from fluid: primary tuberculous pleurisy. Fluid re-accumulated in left chest and 48 oz. were removed on June 12. Patient had been up and about the ward for five days and was discharged much relieved June 13. Clinical diagnosis: pleurisy with exudation.

Case 43. — M. T. (female), forty, m., Russian, housewife. July 11, 1903. F. H. and P. H. negative. Habits good. Pres. ill. — For three weeks pain in right chest on deep inspiration, pain gradually increasing until one week ago. For one week cough with slight white expectoration, pain diminishing with onset of palpitation and dyspnea which gradually increased. Orthopnea. Phys. exam. — W. D. and N. Some pallor. Heart negative. Lungs: right pleural effusion; examination otherwise negative. Temperature for two days between 99.5 and 100, otherwise normal. Pulse for five days between 90 and 100, after that between 70 and 80; respirations 30 to 35 for a week, then between 20 and 30. Blood: whites — 5,400. Sputum; no tubercle bacilli found. *Chest tapped, fluid:* amount 60 oz., straw colored, considerable coagulum, alb. 1.3%, sp. gr. 1,020; sed.: lymphocytes 96%, polynuclears .8%, endothelium 2.4%, large mononuclears .8%; marked number of red corpuscles. Cultures: no growth. Pig inoculated; autopsied Aug. 13; negative. Diagnosis from fluid: primary tuberculous pleurisy. Patient im-

proved steadily and was discharged much relieved July 24. Clinical diagnosis: pleurisy with effusion.

Case 44. — B. C. C. (female), twenty-two, s., Canadian, waitress. Feb. 17, 1904. F. H. good. P. H. negative. Habits good. Pres. ill. — For five or six weeks sharp pain in side coming on in sudden attacks, lasting a few moments. Pain diminished, cough developed, headache, malaise, dyspnea. Phys. exam. — W. D. and N. Pale. Heart negative. Lungs: effusion; examination otherwise negative. Temperature at entrance 103, gradually falling to normal at the end of three weeks. Considerable diurnal variation with elevated evening temperature. Pulse 100 gradually falling to 80; respirations 20 to 25. Blood: whites — 5,600, Widal negative. No sputum. *Feb.* 19, *chest tapped, fluid:* amount 64 oz., straw colored, slight coagulum, sp. gr. 1,020; sed.: lymphocytes 92%, polynuclears 5%, endothelium 1%, large mononuclears 2%; marked number of red corpuscles. Cultures: no growth. Inoscopy: too little coagulation. Pig inoculated; autopsied March 25, 1904, negative. Diagnosis from fluid: primary tuberculous pleurisy. Patient gradually improved and was discharged much relieved March 16. Clinical diagnosis: pleurisy with effusion.

Case 45. — Miss X, thirty-seven, American, professional nurse. F. H. good. P. H. She had nursed tuberculous case for seven months up to six months ago and for the last year, when off duty, she has slept in a room which was formerly occupied by a tuberculous nurse. A year ago physical examination showed a healthy woman. Feb. 29, 1904, consulted her physician on account of the following symptoms: For ten days had pain on deep inspiration in the right chest, disappearing in a few days. It returned, however, in four or five days with increased severity. Morning temperature was 100, some cough, loss of appetite. Phys. examination showed a pleural effusion. Temperature 102, remained at that level for about three weeks. *March* 5, *chest tapped, fluid:* amount 16 oz., color deep orange, slight coagulum, alb. 2%, sp. gr. 1,020; sed.: moderate amount, count of 300 cells, lymphocytes 89⅓%, polynuclears 5⅔%, endothelium 3⅓%, large mononuclears 1⅔%. Cultures: no growth. Inoscopy: negative. Pig inoculated; autopsied April 18; negative. Diagnosis from fluid: primary tuberculous pleurisy. Patient made a slow recovery. Clinical diagnosis: tubercular pleurisy with effusion.

Case 46. — Mrs. X. (District case.) Woman about sixty years old, Irish, housework. April 17, 1903. F. H. one son, with whom she lived, died recently of phthisis. Pres. ill. — Slight cough for three months; for about ten days had pain in the chest gradually diminishing; dry cough, increasing dyspnea, and anorexia. Pale; slight cyanosis. Somewhat emaciated. Phys. exam. — Negative except for left pleural effusion. *Chest tapped, fluid:* amount about 1½ pints, reddish yellow, alb. 3½%, sp. gr. 1,021; sed.: almost exclusively lymphocytes, rare endothelial cell and few large mononuclears. Many red corpuscles. Pig inoculated; autopsy negative. Diagnosis from fluid: primary tuberculous pleurisy. Clinical diagnosis: pleurisy with effusion.

Case 47. — X, thirty-nine, m., American, physician. Dec. 30, 1903. F. H. good. P. H. twelve years ago injury to right chest; eight years ago pleurisy with effusion left chest. Tapped. Habits good. Pres. ill. — Three weeks malaise, slight cough, no sputum, increasing dyspnea, no pain. Phys. exam. — W. D. and N.; color good, heart negative. Lungs: signs of right pleural effusion; examination otherwise negative. Temperature irregular, averaging 99 to 102; pulse 90 to 100; respirations 25 to 35. No blood count made. *Chest tapped, fluid:* amount two pints, dark straw colored, alb. 2½%, sp. gr. 1,022; sed.: count of 500 cells, lymphocytes 95%, polynuclears 1.6%, endothelium 1.8 %, large mononuclears 1.6%; red corpuscles fairly numerous. Inoscopy: negative. Pig inoculated; autopsied Feb. 15, 1904; negative. Diagnosis from fluid: primary tuberculous pleurisy. Clinical diagnosis: pleurisy with effusion, probably tuberculous.

Case 48. — J. L. B., nine, s., American, school. May 12, 1903. F. H. and P. H. negative. Pres. ill. — Two weeks ago injury to left side, since when there has been pain in the left chest and abdomen, increased by deep inspiration. No cough, no chill, dyspnea since beginning of illness; headache. Phys. exam. — W. D. and N.; good color. Heart not displaced. Lungs: signs of left pleural effusion; examination otherwise negative. Temperature not higher than 101.8, most of the time below 100; pulse averaged between 100 and 110; respirations 25 to 30. Blood: whites — 10,500. *May* 15, *chest tapped, fluid:* amount 480 cc., dark straw colored, slightly turbid, alkaline, alb. 5½%, sp. gr. 1,022; sed.: lymphocytes 95.2%, polynuclears 3.2%, eosinophiles .4%, endothelium 1.2%; red corpuscles fairly numerous. Pig inoculated; died in two days; no cause for death found. Diagnosis from fluid: primary tuberculous pleurisy. Continued improvement; May 21, discharged well. Clinical diagnosis: pleurisy with exudation.

Case 49.— M.C., thirty-three, m., meat handler. July 28, 1903. (O. P. D.) F. H. negative. Pres. ill. — For three months cough, considerable white sputum, dyspnea. Phys. exam. — Heart not displaced. Lungs: signs of left pleural effusion. *July* 30, *chest tapped, fluid:* amount 1 quart, straw colored, turbid; sediment consists of broken down lymphocytes and polynuclears; difficult to differentiate elements; numerous red corpuscles. Cultures: no growth. Pig inoculated; autopsied Sept. 11; negative. Diagnosis from fluid: secondary tuberculous pleurisy. Clinical diagnosis: pleural effusion.

Case 50. — F. C., sixty-eight, w., Italian. Dec. 6, 1903. F. H. and P. H. negative. Habits unimportant. Pres. ill. — Cough and dyspnea, with edema of feet and ankles, for four months. Phys. exam. — W. D. and fairly W. N. Lips and ears slightly cyanotic. Pulse tension increased. Palpitation and tortuous artery. Lungs: left pleural effusion. Edema of feet, legs and thighs; temperature sub-normal; pulse averaged about 90; respirations 20 to 25. Blood: whites — 9,500. *Dec.* 7, *chest tapped, fluid:* amount 3 pints, color light orange, slight coagulum, sp. gr. 1,015; sed.: count of 500 cells, lymphocytes 97%, polynuclears ⅕%, endothelium 2%, large mononuclears ⅕%; considerable number of red corpuscles. Cultures: no growth. Inoscopy: negative. Pig inoculated; autopsied Jan. 16, 1904; negative. Diagnosis from fluid: primary tuberculous pleurisy. Continued improvement. Discharged much relieved Dec. 15. Clinical diagnosis: myocarditis.

Case 51.— C. S. H., twenty-nine, m., American, clerical work. Feb. 2, 1903. F. H. and P. H. negative. Habits good, except for occasional alcoholic excess. Pres. ill.— Three days before entrance had chill, nausea, headache, pain in left lower chest, feverish, cough, dyspnea. Phys. exam. — Well developed and nourished; otherwise negative, except for patch of pneumonia at the right base behind. Temperature between 103 and 105 for four days after entrance, followed by crisis. Sputum: typical pneumonia. Blood: whites — 15,000. *Feb.* 14, *right chest tapped, fluid:* amount 20 oz., slightly hemorrhagic, alkaline, alb. 4%, sp. gr. 1,019; sed.: lymphocytes 65%, polynu-

clears 28%, eosinophiles 2%, endothelium 2%, large mononuclears 3%. *Feb.* 16 *hemorrhagic fluid* again withdrawn; lymphocytes 80%, polynuclears 17%, endothelium 1%, large mononuclears 2%. Cultures: no growth. Pig inoculated; died in three days; no cause for death found. Diagnosis from fluid: primary tuberculous pleurisy. Case discharged well from hospital March 2, 1903. Clinical diagnosis: bilateral pneumonia and pleurisy with exudation.

CLASS II.

Case 52. — W. B., fifty-nine, m., Irish, coachman. Feb. 14, 1903. Previously been treated in hospital for aortic regurgitation. Pres. ill. — Partially broken compensation for four months. Phys. exam. — W. D. and somewhat emaciated. Heart enlarged; signs of myocarditis. Lungs: signs of a moderate pleural effusion, right base. Slight edema both lungs. Temperature not elevated; subnormal part of the time. Blood: whites — 12,600. *Feb.* 15, *chest tapped, fluid:* amount 26 oz., slightly hemorrhagic, alkaline, alb. 2%, sp. gr. 1,017; sed.: polynuclears 52%, lymphocytes 39%, endothelium 4%. Many of the polynuclears show diplococci resembling pneumococci. Many red blood corpuscles. *Chest tapped again* on the 19th: fluid approximately the same as on the 15th. Cultures: no growth. Sputum: typical pneumonia. Patient's condition remained without improvement, and was discharged; dead on March 12. Clinical diagnosis: endocarditis. Right pleural effusion. Autopsy showed aortic endocarditis, hemorrhagic infarction of the lungs with invasion of portions by the pneumococcus with resulting consolidation.

Case 53. — D. C., twenty-eight, s., Italian, laborer. June 20, 1903. F. H. P. H. habits unimportant. Pres. ill. — Three weeks (?) sick with cough, fever, and pain in right chest, chills at onset. Phys. exam. — W. D. and fairly W. N.; expression anxious. Heart negative. Lungs: pneumonia right upper lobe. Temperature averaged about 103 for two weeks, 102 for two weeks, and then 100.5. Pulse averaged 120; respirations averaged 30 to 35. Blood: whites — 46,400. Sputum: muco-purulent, greenish, many influenza bacilli. *July* 6, *right chest tapped, fluid:* amount 3 oz., cloudy, straw colored, considerable coagulum; sed.: large amount, muco-purulent; polynuclears 97%, lymphocytes 2%, endothelium 1%. Count of 300 cells; most of cells necrotic, but easily recognizable; organisms resembling pneumococci seen. Cultures: pure growth pneumococcus. On blood ager no influenza bacilli. Patient apparently improved and signs of fluid diminished, but on July 20 signs of re-accumulation of fluid appeared, and on the 22d right back was tapped and pus withdrawn. Pus slightly greenish. Cultures pure pneumococcus. Transferred surgical. Discharged relieved Aug. 6. Clinical diagnosis: influenza pneumonia. Empyema.

Case 54. — E. W. N., eighteen, s., American, chemist. May 8, 1903. F. H. and P. H. negative. Habits excellent. Pres. ill. — Seven days ago with sudden onset, chill, headache, fever and delirium, vomiting, cough, and bloody sputum, pain in right side, dyspnea. Phys. exam. — W. D. and fairly W. N. Color good. Heart negative. Lungs: pneumonia right lower lobe. Temperature between 102 and 103½; pulse averaged 100, respirations 30. Blood: whites — 32,400. *May* 13, *chest tapped, fluid:* amount 390 c.c., yellowish, cloudy, turbid, alkaline, alb. 3%, sp. gr. 1,018; sed.: somewhat necrotic pus, polynuclears predominating; lymphocytes few, eosinophiles rare, with moderate number of cocci seen, some of them intracellular. Cultures: pure pneumococcus. Pig inoculated; died in four days; autopsy, negative. Three cover-slip preparations examined for tubercle bacilli, negative. May 21, chest tapped, 6 oz. of pus withdrawn. Pus culture pneumococcus. Transferred surgical for operation. Clinical diagnosis: lobar pneumonia. Pleurisy with effusion.

Case 55. — T. T., thirty-four, m., American, laborer. May 13, 1903. (O. P. D.) F. H. good. P. H. unimportant. Habits: alcohol to excess up to three months ago. Pres. ill. — Came to the hospital May 12 for relief of stomach symptoms. Sept. 12, 1903, complained of pain in left chest. Physical examination showed left pleural effusion. Temperature 100.2. Examination of heart and lungs in May negative. *Chest tapped Sept.* 12, *fluid:* straw colored, moderate coagulum; sed.: count of 500 cells, polynuclears 58.6%, lymphocytes 38%, eosinophiles .4%, endothelium 1%, large mononuclears 2%; moderate number of red corpuscles. Cultures: no growth. Pig inoculated; autopsied Oct. 12; negative. Inoscopy: negative. Clinical diagnosis: pleurisy with effusion.

Case 56. — J. G., forty-three, m., Scotchman, farmer. July 29, 1903. F. H. good. P. H. negative. Habits good. Pres. ill. — Three weeks ago struck by heavy hook used for lifting hay, resulting punctured wound of right side. In bed since; dyspnea, pain; wound healed within a week. Slight cough for few days. Phys. exam. — W. D. and N. Color good. Heart negative. Lungs: right pleural effusion; examination otherwise negative. Temperature at entrance 101, falling in the course of five days to normal. Pulse averaged 80, respirations 20 to 25. Blood: whites — 13,000. *July* 30, *chest tapped, fluid:* amount 70 oz., slightly turbid, alb. .6%, sp. gr. 1,019: sed.: count of 305 cells, polynuclears 57.6%, lymphocytes 31.2%, eosinophiles .5%, endothelium 4.2%, large mononuclears 6.5%. Cultures: no growth. No sputum. Aug. 5, chest tapped, amount 18 oz., alb. 1%, sp. gr. 1,013. Steady improvement. Aug. 11, discharged much relieved. Clinical diagnosis: traumatic infectious pleurisy.

Case 57. — H. G., nineteen, s., Austrian, mattress-maker. Jan. 6, 1904. F. H. good. P. H. unimportant. Habits good. Pres. ill. — Four weeks ago taken sick with chills, headache, malaise, no cough. Was in Boston City Hospital twelve days when he returned home, and two days later was taken sick again with increase of pain, particularly in the joints. Dyspnea. Phys. exam. — W. D. and fairly W. N. Slightly pale. Heart: signs of mitral and aortic disease. Lungs: signs of pneumonia; patch left base; examination otherwise negative, except for rapid respiration. Temperature chart up to time of his death not remarkable. Pulse continually 100 and over, with few exceptions. Respiration chart extremely irregular, for the most part higher than 35. Blood: whites — 15,800. Sputum typical of pneumonia; no tubercle bacilli. Patient developed left pleural effusion. *Jan.* 14, *chest tapped, fluid:* color orange, considerable coagulum, alb. 2%, sp. gr. 1,018; sed.: count of 510 cells, polynuclears 50%, lymphocytes 34%, eosinophiles ½%, endothelium 13%, large mononuclears 2½%; considerable number of red corpuscles. Cultures: no growth. Blood: whites — 17,700. Patient's condition fluctuated until death finally took place on April 19. Clinical diagnosis: malignant endocarditis. Pneumonia. Pleurisy with effusion.

Case 58. — L. H. H., twenty-two, s., American, conductor, elevated railroad. March 7, 1904. F. H. good. P. H. unimportant. Habits good. Pres. ill. — Twelve day before entrance caught cold; one week ago cough, pain in left side, dyspnea, for two days chilly sensations; pain, heat and swelling in ankles, knees and

shoulders. Phys. exam. — W. D. and N. Good color. Heart: signs of endo- and pericarditis. Lungs: signs of consolidation at the left base with thickened pleura; examination otherwise negative. Temperature running between 102 and 106; pulse 70, gradually rising to 120. Respirations averaged about 30, gradually rising to 55. Blood: whites — 16,800. Sputum that of pneumonia. Patient developed signs of fluid at the left base. *March* 18, *chest was tapped, fluid:* orange color, slightly turbid with fibrin flakes and clots; alb. 3%, sp. gr. 1,020; sed.: abundant count of 500 cells, polynuclears 82.6%, lymphocytes 9.2%, eosinophiles .4%, myelocytes .4%, endothelium 5%, large mononuclears 2.4%; moderate number of red corpuscles. No organism seen on cover-slip. March 19: Blood: whites — 22,000. *March* 20, *left chest tapped again, fluid:* orange color, slightly turbid, one small fibrinous clot, sp. gr. 1,015, sed.: count of 500 cells, less by half than before, polynuclears 70%, lymphocytes 12%, myelocytes 1%, endothelium 17%; few bacteria in polynuclears. Marked increase in phagocytic endothelium. Cultures: no growth. Blood: whites — 19,600. March 29, patient died. No autopsy obtained. Clinical diagnosis: lobar pneumonia. Acute articular rheumatism. Pericarditis. Pleurisy with effusion.

*(To be continued.)*

## Medical Progress.

### RECENT PROGRESS IN GYNECOLOGY.

BY W. L. BURRAGE, M.D.

#### VAPORIZATION OF THE UTERUS.

Hautke,[1] in a recent discussion of this subject before the Berlin Obstetrical Society, stated that this method of treatment was not free from danger, since he had known of two fatal cases. The indications, he believes, are limited, being confined to those cases in which all other methods of treatment had failed, especially untractable climacteric hemorrhages. The writer always satisfies himself that he has not to deal with an atrophic or thin-walled uterus before introducing steam into it, and is sure that ample dilation of the cervix is maintained. Submucous fibromyomata form a contra-indication, and he never employs this method of treatment in young subjects.

Mackenrodt, in continuing the discussion, held that vaporization was a distinct step backwards in gynecological therapeutics, to be included in the same class with cauterization with chloride of zinc. He had been obliged to extirpate several uteri for hematometra, due to cicatricial contraction of the cervix following such treatment. Total extirpation of the uterus is not only safe, but more scientific in cases of recurrent bleeding. With submucous fibroids repeated curettement is better than vaporization, while if the hemorrhage is due to adnexal disease, the latter treatment is certainly useless.

The speaker did not find that the great expectations which had been held in regard to the intra-uterine use of steam had been realized, but in isolated cases of hemophilia he acknowledged that it might be indicated, though he had never met with one himself.

[1] Zeitschrift für Geburts. und Gyn. Bd., xlix, H. 2; abstracted in Amer. Jour. Med. Sciences, July, 1904.

#### REMOVAL OF STONE IN THE LOWER URETER BY WAY OF THE VAGINA.

Two very similar operations for removal of a calculus in the lower ureter are reported, one by E. Garceau,[2] and the other by R. Gradenwitz.[3] In Garceau's case a phosphatic stone, one cm. in diameter, was located 9 cm. from the bladder, in the left ureter; the patient, a married woman, thirty-four years old, was in a serious condition. Under anesthesia anterior colpotomy was performed, the bladder pushed up and back, the stone found and drawn towards the posterior cul-de-sac of the vagina with the last phalanx of the operator's finger; anchored there, a small incision was made over it through the vaginal and ureteral walls and the stone delivered. This opening was closed by silver wire sutures, including both vaginal and ureteral walls; the anterior vaginal opening was drained and left open. The entire operation took ten minutes, and the convalescence was a febrile and there was no fistula. Subsequent catheterization of the left ureter showed it to be pervious.

Gradenwitz's case was a v-para, forty-three years old, with organic heart disease. The uric acid calculus, the size of a cherry stone, located in the left ureter, was approached by an incision in the anterior vagina. After the bladder had been pushed out of the way, the lower portion of the left broad ligament was divided between ligatures, and the stone in its ureter pushed against the upper vagina with the operator's finger. The stone was then delivered by a second incision through the vagina. The ureter was sutured with fine thread, a sound being used as a guide at first. Both wounds in the vagina were closed without drainage. No anesthetic was used on account of the patient's condition, the operation lasting an hour. The convalescence was without fever, and there was no leakage of urine, and at the end of three weeks the cystoscope showed that the left ureter was performing its functions normally.

[2] Boston Med. and Surg. Jour., vol. cl., p. 426, 1904.
[3] Zentralblatt für Gynäkologie, vol. xxviii, p. 385, 1904.

#### THE METRANOIKTER. A SUBSTITUTE FOR TENTS.

B. C. Hirst[4] figures an improved form of a forgotten instrument designed for gradual dilation, and to maintain the patency of the cervical canal. The metranoikter (*μήτρα*, the uterus, *ἀνοίγω*, to open) consists of a four-branch dilator without a handle, the dilating power being furnished by the two steel springs which form the body of the instrument. Each spring is in the form of an oval, open at one end, the two springs being crossed at a right angle and held together by a rivet at a point opposite the open end. The four blades form the long ends of the springs, and are prevented from expanding by a set of levers and set screws which are loosened after the metranoikter is in place, by long-handled

[4] American Medicine, vol. vii, p. 886, 1904.

pliers introduced into the vagina. The instrument was first presented to the Leipsic Obstetrical Society by Schatz in 1881. Hirst has used his modified form during the past winter to obtain a wider and more permanent dilation than is possible with any other instrument and without the danger which attends the use of tents.

He says: "If the dilation is performed for dysmenorrhea and sterility, I have used (1) a Baer's modification of Goodell's dilator; (2) a heavy Wathen's dilator; (3) the four-branched Cleveland dilator; then have curetted the uterus, washed out the cavity, inserted the metranoikter, and packed the vagina with sterile gauze. The metranoikter remains in the uterus twenty-four hours. If the instrument is used for diagnostic purposes, only enough dilation is secured with a light dilator to permit its insertion. In multiparas no preliminary dilation at all may be required. At the end of twenty-four hours, when the metranoikter is withdrawn, it is possible to insert the forefinger to the fundus uteri, and to palpate with perfect ease the whole uterine cavity."

[It would seem as if this instrument were destined to meet a long-felt want for some means of gradual dilation of the cervix where the danger of sepsis does not enter in. The metranoikter can be rendered absolutely sterile, and the open blades permit of the free egress of the uterine discharges.]

### GELATIN IN UTERINE HEMORRHAGE.

H. C. Wood, Jr.,[5] reviews the action and use of gelatin in the control of hemorrhage. Recent literature shows that the most serious drawback to the use of gelatin is the difficulty in rendering it perfectly sterile. Various manufacturers have placed on the market a 10% solution of gelatin under the name of "gelatina sterilisata," which is guaranteed to be sterile.

In uterine hemorrhage of the milder grades, the use of gelatin by the mouth shows as good results as can be achieved by its hypodermic injection. The use of gelatin tampons is advocated in metorrhagia. For hypodermic use it should be dissolved in warm normal salt solution in the strength of from 2 to 5%, of which from 100 cc. to 200 cc. may be given as a dose.

### TREATMENT OF INOPERABLE UTERINE CANCER.

A. Martin[6] remarks on the increasing proportion of operable cases of uterine cancer which we now encounter, Mackenrodt even reaching the proportion of 94%. Zweifel has never observed a case of cancer in a patient whom he had previously treated for a gynecologic affection, but Lomer has had a case in which he was able to detect the incipient phase of a cancer and watch its development. Martin has observed two such cases. One was in a woman of thirty, a year after a benign adenoma of the corpus had been removed. She was a ii-para, with rachitic pelvis, requiring instrumental delivery of the second very large child. The ninth day the lochia showed traces of blood, and a nodule as large as a bean was found to have grown in the cervix. High amputation of the collum was done in two weeks, but the patient succumbed the seventh week after delivery with diffuse carcinoma metastases over her entire body. The other patient was a woman of forty-two, with extensive erosions of the portio. They were excised and showed no trace of cancer. She returned about a year later with a cauliflower cancer at the spot, and was treated by total extirpation. She died eleven months later, four months after the first symptoms of metastasis had been noted. In all of Martin's experience he has encountered but a single instance of spontaneous recovery from a cancer. This was in a woman of forty whose vagina and collum were the crater of scirrhus. The disturbances were slight and she refused an operation. Her physician gave her condurango, and reported recently that she was still alive after twenty-two years, and did not require treatment of any kind. Martin has also encountered three other instances in which the disturbances were so slight that the elderly patients bore them without trouble, and succumbed years afterward to senile exhaustion of the vital forces. His father, as long ago as 1871, called attention to the frequency of cancer of the uterus in women who had married again after having been infected with syphilis by their first husband, who had succumbed to some syphilitic brain affection. The frequency of this sequence in his experience was so striking that he made it a rule to advise such widows against remarriage. Two who followed this advice are free from cancer to date. Martin's observation has been that cancer in young, full-blooded women runs a more rapid course than in others, and that a pregnancy has a most baleful effect on it. No benefit was derived in his inoperable cases from any of the drugs recommended for general or local treatment nor from electrolysis. He prefers to curette and pack the crater with gauze impregnated with solution of ferric chlorid, leaving it in place for four to six days. The surface granulates, and after four or five days it is irrigated with dilute tincture of iodin, after which it skins over. As a rule, the crater heals completely and the patients are rejuvenated. The fetid secretions, hemorrhages and pains are arrested by this procedure, and the moral effect on the patient is a great gain. When symptoms of recurrence appear, he repeats the excochleation and the cauterization as long as it is possible to avoid injury of other organs in so doing. Later than this he uses antiseptics to deodorize, and narcotics to relieve the pain, with alcohol to delude the patients.

### VALUE OF LEUCOCYTE COUNT IN GYNECOLOGY.

M. Dützmann[7] bases his conclusions upon about 2,000 blood counts made in 223 cases. In 90 of these the increase of white blood cells led

[5] Therapeutic Review, vol. i, No. 4, 1904.
[6] Therapie der Gegenwart, xiv, No. 6; abstract in Jour. Amer. Med. Asso., July 30, 1904.
[7] Monatschr. für Geb. u. Gyn., Bd. xviii, H. 1; Amer. Jour. Obs., Jan., 1904.

to a correct diagnosis of suppuration, although examination under anesthesia failed to discover purulent collections. Counts were made in 11 cases of puerperal or post-operative exudate, 22 of purulent or non-suppurative inflammatory disease of the appendages, 9 of tuberculosis, 2 cases in which pus was present, yet the leucocyte count negative, 12 cases of myoma or carcinoma, 7 of tubal pregnancy, 10 of large ovarian cysts, 16 of puerperal and post-operative sepsis.

He found the leucocyte count a reliable means of diagnosis of the presence of pus in the exudative collections. In diseases of the appendages of suppurative or non-suppurative character, the blood count is of value for differential diagnosis and for deciding the choice of the abdominal route.

In myoma, carcinoma, and tubal pregnancy it is often the only sign of a simultaneous collection of pus in the abdominal or pelvic cavity. Tuberculous pus causes no leucocytosis and gonorrhea, but slight increase of white cells. In cases of large ovarian tumors, especially with torsion of the pedicle and peritonitic symptoms, there is marked leucocytosis without the presence of pus. In sepsis a persistent hyperleucocytosis indicates a favorable progress. This may furnish the indication for operative treatment in cases of puerperal fever. In eclampsia infrequent convulsions are associated with hyperleucocytosis. This points to the fact that eclampsia is an infection.

### COLPOTOMY AND RESECTION OF THE TUBES TO PRODUCE STERILITY.

P. Rissmann [8] describes an operation he performed on a patient who had had violent and frequent convulsions due to hysteria or epilepsy. The posterior cul-de-sac was opened by the usual incision back of the cervix, and the anteflexed uterus with the ovaries and tubes drawn down into the vagina by means of a bullet forceps in the posterior uterine wall. Then the uterine portion of both tubes was excised and the wounds carefully sutured, after which the uterus was replaced and the vaginal wound closed. The patient made a good recovery.

### SO-CALLED RECURRENT FIBROID POLYPS.

Grousdeff [9] reports a case of a woman aged forty-four years, who presented a typical recurrent fibroid. This term was introduced fifty years ago by English gynecologists, such as Hutchinson, Callender, Paget and others, to designate the tendency of some uterine polypi to return rapidly after removal. Although a number of investigators have studied this condition, it still presents many unsolved questions. The majority of authors believe these recurrent fibroids to be not fibroids in the proper sense, but sarcomas arising from the myometrium. There is a difference of opinion as to whether they are primary sarcomas or degenerated fibromyomas. In the case reported the polypi recurred ten months after removal. A hysterectomy was performed, but the uterus itself was not found to be the seat of a tumor. The microscopical examination showed that the uterine wall presented only inflammatory changes. The polyp showed the structure of a sarcoma. Six months after the operation the patient was seen again and showed a tumor in the pelvis near the bifurcation of the large vessels. The diagnosis was a sarcoma of the lymph glands, and a third operation was performed, consisting of the removal of these glands, so far as they could be reached. The patient made a good recovery, and examination of the gland showed the presence of a typical sarcoma. The author thinks that the polyp in these cases of recurring fibroid is really a primary sarcoma. A radical operation is indicated whenever the diagnosis is made.

### A CASE OF DOUBLE VAGINA WITH SINGLE UTERUS.

F. Marchand [10] reports a case of this rare condition. He thinks that double vagina with single uterus is the rarest form of the malformation resulting from partial union of Müller's ducts. According to Nagel's investigations, only the upper (proximal) tubular portions of the ducts are formed of cylindrical epithelium, while the lower (distal) solid portions are made of large cells rich in protoplasm. Normally, the upper portions are fused and the inner septa absorbed, to form the uterus; the lower portions become a single solid epithelial body, out of which the vagina is formed later. Persistent separation of the lower portion results in a single uterus and double vagina.

Dr. Löhlein performed an autopsy on Marchand's case, a virgin of twenty-two who died of brain tumor, and found a normally formed uterus connected with a double vagina into each half of which a finger could be introduced. One tube connected directly with the canal of the cervix, and the other by means of an opening in the septum at the top of the vagina. The vulva showed two distinct vaginal openings, at each of which there was a hymen.

### TORSION OF THE PEDICLE OF OVARIAN TUMORS.

Fritz Hammer [11] analyzes 43 cases of torsion of the pedicle noted in 248 ovariotomies performed at the Würtzburg clinic in twelve years. In 7% there were sudden clinical symptoms, in 60.5% there were several lesser attacks of pain, and in 32.5% there were no symptoms, the condition being diagnosticated only at operation.

Torsion was noted in 32 cysto-adenomata, 4 dermoids, 1 fibroma, 1 cystosarcoma and 3 parovarian cysts. Twenty-three torsions were from left to right, 18 from right to left, and 1 with a double twist.

The causation of torsion is assigned to the unsymmetrical development of the tumor, adopting Hofmeier's view, pregnancy and other supposable causes having little influence. All the cases recovered except two, who were in collapse when admitted.

[8] Zentralblatt für Gynaekologie, Dec. 12, 1903.
[9] Roussky Vratch, Feb. 28, 1904; N. Y. Med. Jour., vol. lxxix, p. 947, 1904.
[10] Zentralblatt für Gynäkologie, No. 6, p. 161, 1904.
[11] Abstract in Zentralblatt für Gynaekologie, No. 5, p. 149, 1904.

PATHOLOGY OF UTERINE FIBROIDS.

Watt-Keen[12] gives the following statistics from Hofmeier's clinic at Würtzburg: In 417 cases of uterine fibroids, these complications were met: Ovarian cysts, 27; diseased tubes, 19; uterine displacements, 14; carcinoma and sarcoma of the uterine body, 9; umbilical hernia, 4; inguinal hernia, 3; parovarian cyst, extra-uterine pregnancy, abscess of the ovary, of each one. Myxomatous degeneration was present in 8 and necrosis in 8 fibroids. Twenty per cent of the married women were sterile.

Myomectomy (abdominal) was performed 123 times, supra-vaginal amputation 44, and total extirpation 15 times. Forty-five vaginal myomectomies and 43 vaginal hysterectomies were performed. Total mortality, 6.48%.

*(To be continued.)*

## Reports of Societies.

### AMERICAN MEDICAL ASSOCIATION. SURGICAL SECTION.

First Day. — Tuesday, June 7.

Chairman, Dr. Charles A. Powers, Denver; Secretary, Dr. E. Wyllys Andrews, Chicago.

The Chairman read an address in which he reviewed the history of the section, giving the names of the previous chairmen and a résumé of their work. He referred to the progressive surgery in recent years and commented on the increase in the number of men who were devoting themselves exclusively to surgery. He detailed at some extent the history of surgery, and stated that he felt the younger men were inclined to overestimate the results to be got from surgical operations. He feared many operations were done without a due amount of previous study and considered that no one should perform an operation on any one else that he would not have allowed to be done on himself under the same circumstances. He urged that surgeons should have fine sensibilities, be courageous and hopeful and of the highest character, with most delicate feeling.

THE DANGER OF ALLOWING WARTS AND MOLES TO REMAIN LEST THEY BECOME MALIGNANT, WITH TWENTY-FIVE ILLUSTRATIVE CASES.

Dr. W. W. Keen, Philadelphia, read this paper which was chiefly clinical, intended to emphasize the danger of not removing warts and moles and sometimes nevi, because not uncommonly they became malignant. He pointed out that many of these moles and warts were congenital, or else having arisen later, had persisted in apparent harmlessness for many years and then, in consequence of injury, friction of the clothing, frequent scratching or other irritant, they began to increase in size and were then already malignant. To wait until they began to grow would be waiting too long. He advocated that they should be removed with the skin in which they grow *before* any malignant change occurred, that is, during the period of quiescence. Twenty-five cases were reported, arising on almost all portions of the body. Of the twenty-five, eleven were known to have died, sometimes in spite of multiple operations or even amputation, and several others probably died.

Dr. William L. Rodman, Philadelphia, said he felt Dr. Keen had rendered a great service in calling attention to this matter, and that his experience had been very similar to the author's. He gave the details of three cases occurring in his own practice, the first making a good recovery after operation, the second doing fairly well for the present time and the third dying within a year of the operation. The first was a case of a wart on the temple, the second a wart on the left hand and the third an ulcer on the back of the hand following a wart.

Dr. Gustave Futterer, Chicago, referred at some length to the important part played by mechanical factors in producing malignant changes in cells. He commented on the close relation between metaplasia and carcinoma and the fact that the former may occur in any part of the body. He had a number of specimens illustrating his points which he demonstrated to the members.

Dr. Robert F. Weir, New York, believed that every mole and wart had better be destroyed at once, but referred to the difficulty of getting the patient's permission to do so, largely on account of the resulting scar. He detailed his own method of dealing with these cases where an operation was refused, the principal point being the use of acetic acid.

Dr. Ernest Laplace, Philadelphia, considered that these cases usually occur in tissues of diminished resistance and believed old age to be a prominent predisposing factor. Warts proper in his opinion were of a true epitheliomatous type and a wart proper nothing more than a hypertrophy of the papillary layer of the skin. He made some remarks on moles of an angiomatous type where there was a great proliferation of the blood vessels which were likely to take unto themselves what any other form of proliferation might do.

Dr. A. D. Bevan, Chicago, feared the possibility of making a very rapid general involvement from the operation itself by apparently infecting the operative wound. He referred to cases of removal of melanotic sarcoma where the operation had been followed almost immediately by general involvement. To overcome this he favored making the growth absolutely dry before operation by the use of the Paquelin cautery; referring to cases where a large number of moles were present he showed how impossible it was to think of removing them all, but he favored early operation when any indication of irritation was present.

Dr. Keen in closing referred to a mole as a match which might be the starting point of a great conflagration. He agreed with Dr. Bevan as to the possibility of a general involvement following operation and urged the use of reason in these cases.

STARVATION. OPERATION FOR MALIGNANCY IN THE EXTERNAL CAROTID AREA; ITS FAILURES AND SUCCESSES.

Dr. Robert H. M. Dawbarn, New York, read this paper in which he gave a brief description of the technique of external carotid extirpation. He commented on the remarkable safety of the operation, and gave his deductions which were drawn from an experience of more than fifty cases. He showed why there was such a short respite in carcinoma as compared with the much better record in sarcoma. He pointed out when and under what circumstances the operation was indicated and what was its probable future.

Dr. G. W. Crile, Cleveland, reported that he had

[12] Zentralblatt für Gynäkol., No. 5, p. 150, 1904.

never tried the operation, but was very anxious to learn more about it. He felt it was much better to temporarily close an artery to control hemorrhage rather than to use a permanent ligature. He feared the occurrence of embolism, which danger, although small, he considered avoidable.

Dr. Bristow claimed to have operated eleven times on six patients, five of whom had epitheliomata and one a sarcoma, the latter dying shortly after the second operation. He laid great stress on the fact that the patients were all very promptly relieved of their severe pain so that their lives were made far more endurable. He reported never having lost a case on which he had operated for tubercular glands, although in some cases sudden death followed almost immediately after the operation. In itself the operation could not cause death from hemorrhage as it was practically a bloodless one, and he believed the cause of death to be due to nerve inhibition.

Dr. Dawbarn in closing agreed with Dr. Bristow on the sudden and complete cessation of pain following the operation, and referred to one case where a sufficient shrinkage took place to make an operation possible. He found it very difficult to make any estimate of mortality, but believed under ordinary circumstances that it would not be over 5%. He called special attention to the fact that the operation was always done as a last resort and it was simply a question between it and a coffin.

### WHAT IS THE PROPER SURGICAL TREATMENT OF SUSPICIOUS TUMORS OF THE INVOLUTING BREAST?

Dr. J. Clark Stewart, Minneapolis, urged the great necessity of acceptable procedure which would allow exposure and macroscopic, as well as, if need be, microscopic examination of the suspected mass, before deciding upon the extent and nature of the operative procedure to be carried out. He referred to the recorded cases, illustrating recurrence by grafting, which he said were too numerous to admit of any doubt of the practical value of this point. In referring to the technique of the exploratory operation, he commented on the several important details necessary, as follows: First, all tissues exposed to infection by the incision must subsequently be removed in case malignancy is not excluded. Second, the instruments used for the section of the tumor should be laid aside or resterilized before proceeding with the operation. Third, all lymphatic connections of the tumor should be cut or interrupted before making the tumor section. With these precautions he considered it difficult to see how grafting could occur. He discussed a paper on this subject by Dr. Abbe at considerable length and quoted from Dr. Abbe's paper, taking exception to several points contained therein. Reference was also made to the work of Dr. Bloodgood, at the Johns Hopkins Hospital, and attention was called to the difference in results obtained by Dr. Abbe and Dr. Bloodgood. Attention was called to an article on this same subject by Dr. A. G. Ellis of Philadelphia, and two illustrative cases were quoted in detail. In the author's opinion, these cases illustrated very well two conditions in which the surgeon may rightfully doubt the diagnosis and proper operative procedure unless he is aided by properly performed exploratory procedure.

The author concluded his paper by stating: First, there is a lamentable and unnecessary difference of opinion among surgeons as to the treatment of doubtful tumors of the breast; second, all tumors of the breast in patients over forty must be considered malignant until proven benign; third, most of such tumors demanded amputation with exploration of the tumor, and a complete Halsted if there was then doubt as to benignancy; fourth, an exploratory procedure should be planned to avoid contact of cut lymphatics with any tissues left behind, and any chance of dissemination of cancer cells by pressure before the removal of the breast; fifth, x-ray treatment, aspiration, or any but radical treatment was objectionable as causing delay and dissemination.

Dr. William Jepson, Iowa, urged the free use of the miscroscope in these cases owing to the symptomatology of the benign and malignant growths overlapping each other so much. He believed a large number of benign growths were really benign temporarily, and that one half of the sarcomas were cystic. He doubted if it was so essential to make a differential diagnosis simply to save a breast now and then from being removed on the supposition that it was malignant when it was benign. He considered that every growth in an involuted breast must be looked upon as being malignant in at least nine out of ten cases and ventured the belief that the day was not far distant when it would be considered good surgery to begin operative procedure by total extirpation at once in every breast that was the seat of a growth.

Dr. H. R. Wharton, Philadelphia, agreed with the essayist on the question of malignant growths in the breast and felt considerable difference should be made in the decision according to the age of the patient. In his opinion it did not matter so much after the menopause as it did before the age of thirty.

Dr. J. C. Bloodgood, Baltimore, took the stand that the successful removal of tumors depended more upon an early diagnosis than upon operative technique. He gave some statistics of Dr. Halsted's work in Baltimore and claimed that the number of benign tumors of the breast was increasing because the public was seeking advice earlier. He stated that in young women under thirty with multiple tumors in one or both breasts there was no indication for operation, but in single tumors of the breast at any age an immediate investigation should be started. The danger of an exploratory incision followed by operation he did not think amounted to anything, and advised immediate exploration of a single tumor of the breast at any age. He disagreed with the statements of Dr. Abbe of New York on this subject, as quoted by the author, and in alluding to the results which sometimes followed refusal of operation he mentioned five cases where the induration had eventually entirely disappeared. In his opinion every case of cystic tumor of the breast runs a 10% chance of developing cancer.

Dr. R. H. Gibbons, Scranton, agreed with Dr. Abbe's point of view as quoted by the author.

Dr. Morris, New York, suggested a way of influencing patients to submit to operation by offering to remove a small part of the growth, make a frozen section diagnosis on the spot, requiring but five minutes' time, and if benign agreeing to simply remove the growth, while if malignant total extirpation should be done at once. He believed that patients were usually as anxious to know definitely the nature of the neoplasm as the surgeon himself, and laid stress on the element of curiosity on the part of the patient.

Dr. Willy Myer, New York, gave a demonstration of his method of dealing with these cases.

Dr. Stewart, in closing, referred to the rule at the Johns Hopkins Hospital that only one person may examine a malignant tumor, and stated that if there was so much danger from examination there certainly must be more from the use of the knife.

THE INFLUENCE OF THE ADIPOSE TISSUE WITH REGARD TO THE PATHOLOGY OF THE KNEE JOINT.

Prof. Dr. A. Hoffa, Berlin, read this paper by invitation of the Section, and referred extensively to the work already done by surgeons in various parts of the world. He detailed the anatomical conditions found in a sound knee joint with special reference to the fat tissue, the character of which he dwelt upon fully. He reported having removed a number of growths larger than eggs, some of which showed clear evidence of hemorrhages. He advised the examination of all patients in a standing position so that both knees might be compared, and showed how different the crepitation elicited was from that of arthritis. He did not consider the diagnosis of these cases at all difficult, and while he admitted that some of his observations had been made by other surgeons they were mostly accidental while operating for floating bodies or other disturbances of the knee joint. He advised operation after massage, compression, etc., had been used without success, the incision preferably being on the median side of the patella. The results from his experience had generally been very satisfactory as the disturbance caused by the growths was removed together with their extirpation, and the operation was carried out with the necessary antiseptic precautions without danger.

SURGICAL LESIONS OF THE AXILLARY PLEXUS.

John A. Wyeth, M.D., New York, reported in detail four cases of neuromata of the axillary nerve, all in women, and stated that temporary paralysis following a surgical operation was generally due to accident or inadvertence which was largely his reason for calling the attention of the Section to the subject.

Dr. John B. Murphy, Chicago, reported having known of a case of paralysis of the deltoid following an operation for appendicitis. He considered that cases of paralysis of the musculo-spiral were more rare than they used to be and regretted that some of them would not get well, but would degenerate in spite of all one could do. He urged the avoidance of all extreme positions which produced pressure upon the nerves.

Dr. Walter M. Brickner, New York, felt that two things were to be avoided: (1) The keeping of the arm in an extreme position for any length of time without change, and (2) the dangling of the arm at the side of the table. He believed that these paralyses were more often the fault of the anesthetist than of the surgeon, and urged that the former's attention should frequently be called to the position of the arm.

Dr. E. W. Holmes, Philadelphia, related his experience while ligating the third part of the subclavian artery and common carotid for an aneurism of the transverse part of the arch of the aorta. He explained anatomically how these conditions arise and how they may be overcome.

Dr. Sommers, Omaha, referred to a surgical table in more or less general use at the present time which is provided with catches to hold the shoulders, from the use of which paralysis has occasionally resulted, and urged that these supporters should be well padded before being used.

THE MATAS TREATMENT OF ANEURISM.

J. F. Binnie, A.M., C.M., Kansas City, Mo., read this paper. In 1902, Dr. Rudolph Matas presented to the American Surgical Association his classical paper on the radical cure of aneurism. Matas' method of operating combined the advantages of ligation and excision, while at the same time it was easier, safer and might be more conservative. The operation was suitable both to the fusiform and sacculated forms of the disease. After having applied a constrictor above the site of disease, if in the limb, or temporarily ligating the proximal and distal trunks, if the carotid was the vessel at fault, one cut into the sac, thoroughly removed the contained clots, rubbed the serosa with gauze and proceeded to insert sutures. The sutures, preferably cat-gut, were first applied to the openings of all vessels entering or leaving the sac, then the deeper portions of the sac were closed by two rows of continuous Lambert sutures. The elastic constrictor was then removed, and if any blood escaped, one or two points of suture were inserted to control this. The next step consisted in folding the excess of sac wall on itself and in so doing invert the edges of the skin wound. The operation, carried out as described, had been very successful, and in some cases, *e. g.*, of sacculated aneurism, the circulation might be re-established through the repaired vessel. As Matas' operation had not yet been frequently performed, Dr. Binnie stated he deemed it the duty of those who had had even slight experience with it to publish their results; this was his excuse for the present short paper and report of a single case. J. K., fifty-two years, laborer, fairly hard drinker, as evidenced by his statement and face; several attacks of gonorrhea, syphilis at thirty-seven, with apparent cure under treatment; when twenty-five years old was confined to bed for six months with rheumatism; had had no recurrence of this; developed an inguinal hernia three years ago, and wore a truss. Two years ago he suffered from an acute pain shooting down the calf of the right leg; a tumor soon appeared in calf and had increased steadily in size; the affected calf measured eighteen inches in circumference — the normal one having been twelve inches; upon examination was found an expansile, pulsating tumor of the calf, reaching up into the popliteal space, which was well shown in an accompanying skiagram taken by Spaulding; there was a well-marked bruit over tumor; posterior tibial pulse was delayed; there was no tenderness and only a little pain which was referred to the foot. Diagnosis: Popliteal aneurism.

Nov. 10, 1903: Sister's Hospital; chloroform; elastic constrictor applied to thigh; incision into the tumor, through the altered gastrocnemius, showed a cavity six by three inches in diameter, largely filled with a very dense lamellated fibrinous mass. This mass was removed. The aneurism sac was thick walled and markedly athermatous. Only one opening into the sac could be found and this was closed by cat-gut sutures. The whole sac was now obliterated by several layers of Lambert sutures and the superficial wound closed without being inverted. Dressings were applied and the patient returned to bed with his limb elevated before the elastic constrictor was removed. Nov. 17: A slight elevation of temperature led me to change the dressings, when some bloody pus escaped from the wound. There was neither pain nor redness; drainage and cleanliness led to recovery; up to date there had been no recurrence. The above case was evidently one of sacculated aneurism, efficient circulation was promptly re-established, but the posterior tibial impulse can no longer be felt. The suppuration was undoubtedly due to some avoidable contamination acting on non-resistant tissues. The details of the operation were not exactly those of Matas. It seemed to me that complete closure of the sac by means of suture gave better assurance against recurrence than closure of a portion of it by two rows of sutures and obliteration of the rest by inverting the skin. The operation, in the case of popliteal

aneurism at least, was one of great ease, safety and efficiency.

Dr. Rudolph Matas, New Orleans, expressed himself as much pleased with Dr. Binnie's paper and commented on the simplicity of the operation on popliteal aneurism. He did not believe that suppuration persisting in any case in any way conflicted with the final result, and reported one similar case occurring in his own practice. The fundamental point at first was the free exposure of the sac with a minimum disturbance of the surrounding tissues, but he felt that as the cases multiplied modifications would naturally arise. He believed that the restoration of the lumen was possible in many cases as illustrated by those already reported, eight of which he was familiar with. Topographical distribution made certain modifications necessary while aneurism at the root of a limb required a different technique, according to his experience.

Dr. John B. Murphy, Chicago, congratulated Dr. Binnie on his success and Dr. Matas on his operation. He believed that in trauma of the popliteal artery where aneurism followed the mortality was very great. He gave a blackboard demonstration of his own modification of the operation in these cases.

Dr. H. O. Pantzer, Indianapolis, reported a case of a patient who was shot through the thigh twelve years ago in whom a popliteal aneurism developed, and gave a blackboard demonstration of his methods of dealing with it.

(*To be continued.*)

## CONFERENCE OF STATE AND PROVINCIAL BOARDS OF HEALTH OF NORTH AMERICA.

Proceedings of the Nineteenth Annual Meeting, held at the New Willard Hotel, Washington, D. C., June 3 and 4, 1904.

The President of the Conference, Dr. J. N. Hurty of Indianapolis, Ind., delivered his annual address.

The Secretary, Dr. Gardner T. Swarts of Providence, R. I., presented his report, and also the report of the Treasurer, in the absence of the latter.

Dr. John S. Fulton, Baltimore, Md., submitted the report of the committee appointed to investigate and report as to an approved disinfectant to be used by licensed embalmers when transporting bodies. The reports recommended the use of bichloride of mercury 1-1000, and formaldehyde 10% solution, for use on the exterior of the body and wrappings.

The report of the committee was adopted, and the committee continued for a further report at the next annual meeting.

The committee which had under consideration the question of affiliation with the American Medical Association presented its report through Dr. Henry D. Holton.

For several reasons, the committee thought that the interests of the organization could be better subserved by retaining its own identity to the fullest extent. The report was adopted.

There was also considered a resolution which was presented at the Baltimore meeting, last year, relative to legislation looking to the prevention of typhoid fever, caused by sewer contamination of oysters. Dr. Swarts reported considerable interest in the matter throughout the country, particularly in New Jersey and California.

There was considerable discussion on this subject by Drs. Lee, Fulton, Mitchell and Lindsley. It was stated that the infection took place after the oyster was removed from the salt water and put into fresh water ponds for the purpose of enlargement by absorption of the water. This water, often contaminated, caused the infection of the oyster.

The resolution offered by Dr. J. A. Egan of Springfield, Ill., at the meeting in Baltimore, in 1903, to the effect that measures be taken by Boards of Health, Boards of Education, and school authorities to compel legislation looking to the examination of the eyes and ears of all school children, was considered in connection with a paper by Dr. Frank Allport of Chicago. As Dr. Allport was not present, the Secretary read his paper.

Dr. C. E. Cooper, Denver, Col., introduced a resolution recommending the disinfection of railway cars and their contents by air pressure. The resolution was freely discussed, then referred to a committee to report at the next annual meeting of the Conference.

Dr. Holton presented the report of the committee which was appointed at the Baltimore meeting to consider the best means of controlling the spread of venereal diseases. The committee prepared a leaflet containing instructions for the patient, which it recommended should be widely distributed. The report of the committee was adopted.

In connection with the same subject, Dr. F. C. Valentine, New York City, read a carefully prepared paper on the dangers and spread of venereal diseases.

On motion, the committee on Venereal Diseases was continued with the request that everything possible be done to further the work.

A paper prepared by Mr. Henry Clay Weeks, Secretary of the National Mosquito Extermination Society, Bayside, L. I., was read by L. O. Howard, Chief Entomologist United States Department of Agriculture.

Dr. Carl L. Barnes of Chicago discussed disinfectants to be used by undertakers.

The officers elected for the ensuing year were: President, Dr. John S. Fulton, Baltimore, Md.; Vice-President, Dr. M. K. Foster, San Francisco, Cal.; treasurer, Dr. J. A. Egan, Springfield, Ill.; secretary, Dr. Gardner T. Swarts, Providence, R. I.

Conference then adjourned *sine die*.

## Recent Literature.

*A Textbook of Pathology.* By Alfred Stengel, M.D., Professor of Clinical Medicine in the University of Pennsylvania; Physician to the Philadelphia Hospital, etc. With 394 illustrations in the text and 7 plates. Fourth edition, thoroughly revised. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

Since its first appearance this work has been popular with students. In its present improved and enlarged form, a great amount of useful information is presented. Special attention has been paid to a revision of the chapters dealing with immunity, inflammation and certain bacterial diseases, including typhoid fever, yellow fever, tuberculosis and dysentery. Recent work of interest to the scientific clinician in general pathology and bacteriology has been incorporated. On the other hand, the results even of the most important of recent investigations in pathological histology are not presented. The descriptions of histological changes are totally inade-

quate. The illustrations of gross anatomical alterations are numerous. Many are original and the others have been carefully selected. The value of the present edition has been enhanced by an appendix devoted to pathological and bacteriological technic.

*A System of Physiologic Therapeutics;* A Practical Exposition of the Methods, other than Drug-Giving, Useful for the Prevention of Disease and in the Treatment of the Sick. Edited by Solomon Solis Cohen, A.M., M.D. Vol. VII. *Mechanotherapy and Physical Education, including Massage and Exercise.* By John K. Mitchell, M.D., Fellow of the College of Physicians of Philadelphia, etc. And *Physical Education by Muscular Exercise.* By Luther Halsey Gulick, M.D., Director of Physical Training in the Public Schools of Greater New York, etc. With Special Chapters on Orthopedic Apparatus by James K. Young, M.D.; on Corrective Manipulations in Orthopedic Surgery by H. Augustus Wilson, M.D.; and on Physical Methods in Ophthalmic Therapeutics by Walter L. Pyle, M.D. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1904.

Vol. VII of this series is taken up with the subjects of mechanotherapy and physical education, including massage and exercise, contributed by Dr. John K. Mitchell, and physical education by muscular exercise, contributed by Dr. Luther Halsey Gulick In addition to these general subjects many matters of interest to the orthopedic surgeon in the way of apparatus and curative manipulations are discussed, together with physical methods used in ophthalmic therapeutics. Dr. Mitchell discusses in systematic form and considerable detail the whole subject of massage and exercise taken in the broadest possible way, and outlines briefly the various systems of physical culture which have from time to time been in vogue. He speaks highly of Dr. Sargent's work and describes it as the only genuine original contribution of America to formal gymnastics. A few pages are given to the Zander method, and the usual defects of a purely mechanical method of treatment pointed out. He recognizes, however, the usefulness of mechanical appliances in certain forms of treatment, but sees in the great expense of the Zander apparatus and the cost of its running an argument against its use. It is quite impossible in the limits of a notice of this character to give in detail the various topics which Dr. Mitchell discusses. Let it suffice to say that the entire subject is brought in an accessible way to the reader's attention, and that there will be found in this book a mass of information which hitherto has been widely scattered. The illustrations of this section are numerous, largely photographic reproductions and highly instructive. Dr. Gulick carries the subject further in his discussion of physical education by muscular exercise, a matter on which he speaks with authority. This section also is to be commended. Among the addenda numerous illustrations of orthopedic apparatus are given. Correct manipulations as applied in orthopedic surgery are described by Dr. H. Augustus Wilson, including the Lorenz method. Dr. W. L. Pyle contributes an instructive chapter on physical methods employed in ophthalmic therapeutics. In general, the book is a worthy successor of those which have gone before, and will do its share toward establishing still further the reputation of this excellent series.

*Immune Sera. Haemolysins, Cytotoxins and Precipitins.* By Prof. A. Wassermann, M.D., University of Berlin. Authorized Translation by Charles Bolduan, M.D. 12mo. 77 pages. New York: John Wiley & Sons. 1904.

English and American students of bio-chemistry will welcome the publication of this translation of Professor Wassermann's admirable lectures. The modern theories of immunity and the results of recent studies are clearly and interestingly presented by one of the leading investigators in that new domain of science "which concerns itself with the reactions resulting from the injection of the organic constituents of one animal into the body of another." We know of no better exposition of Ehrlich's theories, and the original work has been held in high regard since its appearance in Volkmann's *klinische Vortrage* two years ago. The work of translation has been satisfactorily accomplished.

*General Pathology or the Science of the Causes, Nature and Course of the Processes of Disease.* By Dr. Ernst Ziegler, Professor of Pathological Anatomy and General Pathology in the University of Freiburg. Translated from the tenth revised German edition and edited by Aldred Scott Warthin, Ph.D., M.D., Professor of Pathology and Director of the Pathological Laboratory in the University of Michigan. Royal 8vo. 784 pages, illustrated by 586 engravings in black and colors. New York: William Wood & Co. 1903.

All teachers of pathology will welcome the appearance of this work. It is a translation of the latest edition of Ziegler's classical treatise by one of the leading American pathologists who has succeeded in rendering the text of the original in clear and idiomatic English.

The many changes which the advance in pathology has made necessary are incorporated. Numerous alterations have been made, and the first three chapters which deal with the causes of diseases and immunity have been entirely recast. Special attention has been given to the revision of the chapters on animal and vegetable parasites.

The value of the work is enhanced by the addition of a bibliography which was omitted in the previous translation. Not only the complete bibliography as given by Ziegler is included but the editor has added the most important American references.

In our opinion there is no better work on general pathology to place in the hands of American medical students.

THE BOSTON
# Medical and Surgical Journal.

THURSDAY, OCTOBER 6, 1904.

*A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.*

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## THE INTERNATIONAL CONGRESS OF ARTS AND SCIENCES.

The International Congress of Arts and Sciences at St. Louis was a noteworthy gathering, and doubtless has met in many ways the anticipations of its promoters. The programme shows that an active part in a most comprehensive plan to illustrate the co-relation of the arts and sciences was taken by men really prominent in their different and manifold lines of work, while the presence and participation of many European — and, indeed, Asiatic — leaders fully justified the adjective international. Without a programme before one it would be difficult to realize the full scope of the congress. A person, not much more ignorant than he ought to be, might there discover the existence or, at least, the names of certain branches of science of which he hears for the first time. The person who resisted all the temptations of the Exposition proper could attend eleven out of about one hundred and sixty meetings, from ten to one and three to six each day, and seek relaxation on the Pike in the evening.

The arrangements of the congress were admirable, with the exception of the acoustics of the halls, which were sometimes lamentably bad. The papers were usually of a high degree of excellence, and their topics were discussed from a broad and philosophic standpoint so that students from across the boundaries of any specialty could understand and be interested. For example, when Professor Ostwald, the renowned physical chemist, spoke on the "Methodology of Science," he was listened to not only by most of those attending the section in philosophy, but by many physicians, and by such workers in other fields as Arrhenius and L. Loeb. In the same way Dr. Councilman's paper in the medical section was listened to by many members of the section in sociology, among whom we noticed Felix Adler. Loeb's review of the development of biology in the past one hundred years drew many from the sections in medicine, and the spirited discussion of the Mission and Destiny of Physiology by Dr. Meltzer attracted many from other sections of the congress.

The congress succeeded, therefore, in making somewhat more transparent the walls that separate the different departments of science and in making it possible for us to feel the deeper relationship and fundamental unity of all the sects in science. A general "*rapprochement*" all along the line was to be felt.

Monday afternoon was given to a general meeting of the whole congress in Festival Hall. The audience — perhaps fifteen hundred — was large, and all could scarcely have heard the formal addresses of welcome from the president of the Exposition, the governor, the mayor and Professor Newcomb. Deep sympathy was felt for President Butler of Columbia University whose attendance was prevented by domestic illness. Tuesday morning was devoted to the seven divisions of the congress, each with one speaker. Tuesday afternoon the twenty-four departments, each with two addresses, had their meetings. Dr. Osler presided over the department of medicine, and Dr. Councilman was the only speaker, Dr. Billings, of Chicago, being detained by a railway accident. The remaining four days of the week were devoted to the one hundred and twenty-seven sections, each holding a three-hour session filled by two addresses of forty-five to sixty minutes, followed by short communications of ten minutes each. The plan did not contemplate any discussion of the addresses, which are to be published in due time, forming a library of twenty odd volumes. They will constitute a statement of the present state of knowledge in art and science, interesting, and it is to be hoped, valuable, to our descendants. That there should be *much* intercourse between those interested in widely different branches was, of course, impossible under the circumstances, and yet there was a chance for anybody specially interested in this or that subject or in this or that representation to listen to and see, perhaps to converse with, those whom he will always be glad to feel that he has greater personal knowledge of than can be derived only from reading.

The very comprehensiveness of the plan of the congress had its disadvantages. But where is there a rose without its thorn? In the late afternoons

and in the evenings some receptions and entertainments were held, and Friday evening Governor Francis, president of the Exposition, gave a dinner in the Banqueting Hall of the Tyrolean Alps restaurant to the officers and speakers of the congress. About eight hundred persons were present. Seats were not assigned, save at the high table, and a group of acquaintances could thus secure seats together if they chose. A delay in getting seated was due, as was learned the next day, to the refusal of the French Garde Republicaine band to play in a concession which they thought to be under German control. The band finally appeared under orders from the French commissioner. The only other musical hitch was that the band would not play "Die Wacht am Rhein" when the German commissioner was called upon to speak. Whether this fact was known to the German commissioner and accounts for his bumptious speech — a speech amiably applauded — it is vain to surmise. The French, Italian and German representative each spoke in his native tongue. Perhaps the best speech of the evening was that of Professor Hozumi, of the University of Tokio. The key note of the speaker was, of course, the solidarity of art and science which are independent of race and country. In conclusion he said in substance: "This is the only place in the whole world where the Japanese can meet the Russians on friendly terms." The Russian had, we believe, been given his innings the evening before at the Shaw banquet to the foreign delegates. Mr. D. J. Hill, formerly acting minister to Persia, also made a good speech.

The weather during the congress week was, on the whole, good. The arrangements reflected much credit on those who had them in charge. Whether the congress was worth all it cost in labor and money may be a question to which different answers will doubtless be given by different minds. It certainly brought together remarkable groups of men from all over the world, increased the knowledge of each other and of each other's work, and must have convinced some foreigners, who, without the liberal pecuniary inducement held out by the management, might never have visited the country, that we Americans are not wholly given over to the pursuit of the almighty dollar and the more purely material side of life.

To many the congress was of value simply for the opportunity of seeing and hearing the leaders of the world in one or another branch of knowledge,— the opportunity to get an impression of the personality of men such as Ostwald, Arrhenius, Loeb, Pfleiderer, T. Clifford Allbutt, James Bryce, Hugo De Vries, Erdmann, Adolf Harnack, Pierre Janet, S. Kitasato, Van t'Hoff, Oscar Liebreich, J. P. Mahaffy, Darboux, Henri Poincaré, Sir Wm. Ramsay, among foreigners, to say nothing of many distinguished and representative Americans.

At the medical section the attendance was excellent both in quality and quantity, and the discussions spirited and enlightening. The general attendance was small and disappointing, but this does not necessarily detract from the highest purposes and results of such a gathering.

## DR. PIERRE JANET AND HYPNOTISM.

For many years the Lowell Institute course of lectures in this city has afforded persons interested in various departments of knowledge, opportunity to hear authoritative expositions of the most varied subjects. This year the course opens with a series of lectures by Dr. Pierre Janet of Paris on the general subject of hypnotism as it has been developed at his hands. Probably no one now living is better able to present in a dignified manner the full significance of the phenomena which we now include under the general head of hypnotism. The subject has lent itself to quackery to such an unfortunate degree that a lingering prejudice is easily observable throughout the medical profession, especially regarding the value of hypnotism as a therapeutic agent.

Such lectures as those about to be given should do much to cultivate an interest which has often been lacking in this set of phenomena and should also do its part toward removing a prejudice which in many instances has been quite unreasonable and detrimental to the real progress of medicine. Presented to a semi-popular audience Dr. Janet's lectures, but one of which has already been given, will no doubt be comprehensible to those in the audience, not particularly trained in medical matters and in medical terminology, who are capable of understanding French as it is spoken. It is a matter of regret that such a course cannot be given at first hand in English, but no doubt those who are deprived of the satisfaction of comprehending the lectures as delivered will be able to go over the ground covered in English translation shortly after. That the course will excite much probable interest and from varied classes in the community is undoubted.

The lectures, under the general title of Psychological Problems of Hypnotism, are divided as

follows: 1. The Stages of Hypnotism; the Problems which It Suggests. 2. The Memory of Somnambulists and Alternating Personalities. 3. The Problem of Suggestion. 4. Sub-conscious Effects. 5. The Limits of Hypnotism and Occult Phenomena. 6. Psychological Therapeutics. 7. Limitation of the Field of Consciousness and the Oscillations of the Mental Level. It will be seen from this list that Dr. Janet proposes to cover many of the theoretical and some of the practical applications of hypnotism and allied states.

So far as we are aware, this is Dr. Janet's first visit to this country. He is one among many prominent scientific men who have recently taken part in the congress at St. Louis. For many years he has been identified with the work upon which he is now about to lecture. He received his degree in philosophy in 1882. In 1889 his work on Psychological Automatism appeared, and in the same year, 1889, he became a professor at Paris; in 1893 he took the degree of doctor of medicine, and in 1895 succeeded Ribot at the College de France. In 1898 he took charge of a course in experimental psychology at the University of Paris and carried on researches in the psychological laboratory connected with the Salpetriere, serving under the direction of Charcot. His published work on the subject which he has done so much to develop is too familiar to require repetition here. We may be sure that coming from such a source we shall have the opportunity of hearing a presentation of the problems of hypnotism which should be of great value in elucidating many phases of the subject with which physicians as a rule are but vaguely familiar. We hope, in spite of the fact that the lectures are to be given in French, that audiences of good size will collect to hear the presentation of the subject. Whether large or small there can be no doubt that the hearers will represent men to whom Professor Janet would wish to speak.

## MEDICAL NOTES.

Plague. — It is officially reported that a case of bubonic plague has occurred on a steamship recently arrived in the River Tyne, England, from Hamburg. A number of rats, presumably plague infected, had died on board the steamer, from whom, no doubt, the case developed.

Pneumonia. — According to the bulletin of the Chicago Health Department, it is stated that from statistics gathered in 1894 it was shown that the deaths from pneumonia had increased 160% during the previous thirty years. During the ten years since, the death-rate from this disease has increased from 11.35 per one thousand of the population in 1894 to 24.55 in 1903. This is an increase of 115% in the last decade, as compared with an average ten-year increase of 55% in the three previous decades.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon Oct. 5, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 52, scarlatina 12, typhoid fever 48, measles 9, smallpox 0.

Bequest to Hartford, Conn., Hospital. — By the will of Miss Mary Terry, who recently died abroad, the Hartford Hospital will ultimately receive in the neighborhood of $500,000.

Bequest to Brockton Hospital. — It is stated that Dr. George E. Keith has given $1,000 to the Brockton Hospital. Nearly $30,000 has been received in gifts by this institution during the year.

Visit of Foreign Men of Science. — Nearly a hundred members of the foreign men of science who have been attending the Congress of Arts and Sciences at St. Louis have been in Boston during the week with nominal headquarters at the Hotel Vendome, although many have been entertained in Cambridge. The time of their stay has been given up to sight-seeing rather than to the presentation of scientific communications. A reception was given them by Professor and Mrs. Hugo Munsterberg, and luncheons have also been given by the corporation of Harvard University and the Institute of Technology. To-day the guests left for New Haven where they are to be entertained by Professor Hadley of Yale.

Liberal Bequests. — By the will of the late Mrs. Sarah E. K. Potter of Boston many liberal bequests are made to diverse objects, among which those particularly interesting to the medical profession are the following: Boston Medical Library, $150,000; Kindergarten for the Blind, Jamaica Plain, $100,000; Boston Home for Incurables, $50,000; Hospital Cottages for Children, Baldwinville, $50,000; Free Hospital for Women, Brookline, $50,000; Massachusetts College of Pharmacy, $50,000; St. Luke's Hospital, New Bedford, $30,000; Association for Relief of Aged, New Bedford, $25,000; Convalescent Home of Children's Hospital, $25,000; New

England Peabody Home for Crippled Children, $25,000; Children's Hospital, Boston, $25,000; Massachusetts Eye and Ear Infirmary, $25,000; Home for Aged Couples, Roxbury, $20,000; Boston Floating Hospital, $20,000; West End Nursery and Infants' Hospital, $10,000; Home for Aged, New Bedford, $10,000; Massachusetts Infant Asylum, $10,000; New England Hospital for Women and Children, $10,000; St. Luke's Home for Convalescents, Roxbury, $10,000; Industrial Home for Crippled and Deformed Children, $10,000; the Consumptives' Home, $10,000; Sharon Sanatorium, $10,000; Boston Lying-In Hospital, $5,000; Children's Island Sanatorium, Salem Harbor, $5,000. It is rare for so wide a range of charity to be included in the will of any one person.

NEW YORK.

A Poor Food Law. — In the course of a paper sent to the recent International Congress of Arts and Sciences, Dr. E. J. Lederle, for a number of years chemist to the New York Board of Health and President of the Department during Mayor Low's administration, said: "Competition in trade has become so keen and the substitution of inferior constituents in foods so general, that the honest manufacturer has hardly a chance to succeed. The use of injurious preservatives has also been practiced to a scandalous extent. The only remedy for this evil condition will be the passage and enforcement of a Federal pure food law. Such a measure has already been before Congress, but, in the absence of an aroused public opinion, the mysterious influences which bar the way to much good legislation at Washington have been able to kill it. Much the same opportunity is offered in a campaign against the vendors of patent medicines and secret nostrums. Few people understand the extent to which these articles undermine the public health, and there has been little or no attempt to assume official control over their production and sale. The remedy is official control. Makers of patent medicines, nostrums, pills, etc., should be required to place upon each bottle or package the exact ingredients it contains, and should be prosecuted for any deviation which can be shown to be detrimental to the health of persons using the remedy, or designed to perpetrate upon them a commercial fraud."

New Boat for Health Department. — Mayor McClellan has approved the measure authorizing an issue of $67,000 of corporate stock to defray the cost of constructing a new steamboat for the Health Department. It is to be used for the transportation of patients suffering from contagious diseases, the old boat which has been employed for this purpose for many years being now in such bad condition as to be not worth further repairing.

## Obituary.

JUAN NAVARRO, M.D.

Dr. Juan Navarro, the Mexican consul-general at New York, died on Sept. 24, of cerebral apoplexy. He was born in Morelia, Mexico, and was graduated from a medical college in the City of Mexico. During the Mexican War he served with distinction as an officer in the army of his country, and before the end of hostilities attained the rank of colonel. In the attack on the convent of Cherubusco he was captured by the Americans and remained a prisoner for a number of months. After the close of the war he practiced his profession, and was made a professor in the medical college in the City of Mexico. Later he was elected a senator, and when Mexico was invaded by the French he was appointed surgeon-general of the Mexican Army. On one occasion he was captured by the French, but soon succeeded in making his escape from the prison in which he was confined. For many years he had served as consul-general at New York, where he was very highly esteemed.

## Miscellany.

VISIT OF FRENCH PHYSICIANS AND SURGEONS TO LONDON.

As has already been announced, a party of French physicians and surgeons will visit London from Oct. 10 to the 12th for the purpose of seeing the work of the London hospitals and laboratories. The Paris Committee has already received the names of about one hundred and thirty physicians and surgeons, chiefly resident in Paris, who propose to take part in the visit, and it seems probable that before the list is closed on Sept. 30 the number may reach one hundred and fifty. Among those who have definitely arranged to join the party are the following professors of the Faculty of Medicine in Paris: MM. Berger, Blanchard, Chantemesse, Chauffard, Le Dentu, Huchard, Lucas-Championniére, Peyrot, Ricard, Lepage, Marie, Netter, Hallopeau, Porak, Reynier. It is possible that MM. Bouchard, Gariel, Gautier and Gauchard may also be able to join the party. In addition, the names of some twenty-five other physicians and surgeons to the hospitals of Paris have been received, and some representatives of French provincial medical schools will also be among the visitors. As already announced, the London Committee has arranged to give a dinner to the French visitors at the Hotel Cecil on Wednesday, Oct. 12. Any medical man resident in London

who may wish to attend this dinner is requested to communicate with one of the honorary secretaries of the Executive Committee, Dr. Dawson Williams, 2, Agar Street, Strand, W.C.; or Dr. W. Jobson Horne, 27, New Cavendish Street, Portland Place, W. — *British Medical Journal.*

## RUSSIAN PRECAUTIONS AGAINST CHOLERA.

According to the *Lancet* the chief medical inspector (Russian) has returned from a six weeks' tour in the country bordering on the Persian confines where he concerted measures for preventing the importation of cholera from Persia. He asserts that the most comprehensive arrangements have been made particularly to keep the workmen's quarters of the towns clean and the work people well supplied with good water, food, and healthy houses. Orders have been issued for instant isolation in case of suspected illness and the disinfection of all things connected with the sick. At the ports on the Caspian Sea observation stations have been established, with special steamers attached to the health service, and a complete series of hygienic stations have been provided for the whole length of the river Volga, the great water highway leading from the Caspian Sea through a great part of Russia. Particularly Astrakhan and Baku have to undergo a thorough cleaning. In the latter town incredible filth had been found in the workmen's quarters. There unhealthy houses are to be closed until they are put into a sanitary condition, and temporary barracks meanwhile are to be provided. The medical staff and sanitary officers have been largely increased, hospital accommodation has been selected, and abundant supplies of disinfectants and medicines are being laid in. "Unfortunately," says the notice in the *Novoe Vremya*, "our towns are in such an insanitary state that it will require tens of millions of roubles and years of time to answer to the medical requirements." The Transcaucasian territory is the real danger zone. Temporary hospitals have been installed there, and the medical staff has been reinforced, including drafts from the Red Cross Society. Chief Inspector Anrep does not anticipate an invasion of cholera this year, but profiting by experience gained from past epidemics he entertains grave fears for next spring and summer. Further details as to cholera in the near East will be found in the communication from the British delegate to the Ottoman Board of Health, which appears in another column of the *Lancet.*

## Correspondence.

### INTERNAL SECRETIONS.

Philadelphia, Sept. 28, 1904.

Mr. Editor: In its issue of the 15th inst., your Journal published a review of the first volume of my work, "The Internal Secretions and the Principles of Medicine." Your reviewer doubtless believes that he is justified in referring as he does to the conclusions advanced therein. I would like to inquire, however, whether he has read the book at all. If he has not, as suggested by the fact that all his quotations are from the preface, I beg that this fact be made known through your columns. If he has read it with due care, I must insist on his publishing the scientific reasons he has deemed such as to render my views worthy of the scornful treatment they have received at his hands. In other words, I believe he should unequivocally demonstrate that the following fundamental conclusions, all of which he quotes, are untenable: (1) That "the secretion of the adrenals reaches the pulmonary alveoli;" (2) that it "holds in combination the various constituents of hemoglobin and endows both the latter and the plasma with their affinity for oxygen;" (3) that "contraction of the heart-walls is in great part due to oxygen-laden adrenal secretion;" (4) that "the adrenals are directly connected with the anterior pituitary body;" (5) that the latter is "the most important organ of the body as governing center of the adrenals and, therefore, of all oxidation processes;" (6) that "the posterior pituitary is the chief functional center of the nervous system;" (7) that the spleen and pancreas "unite in the formation of trypsin;" (8) that "a portion of this ferment passes into the splenic vein as an internal secretion and plays a leading part in immunizing processes." If he can show that these conclusions are utterly groundless, he need go no further, since the remaining ones will then fall of their own accord.

As your reviewer's comments are sweeping, it is incumbent upon him to controvert all these conclusions in order to justify his position. If his reasons are adequate, I will acknowledge my error publicly. If, on the other hand, they are not sound, I will combat them with the same respect for scientific accuracy that I require of him.

Again, as we are dealing with organs the functions of which are totally unknown, even a plausible working proposition, on the order of Ehrlich's side-chain theory, is of great value. Now, the subject matter of "Internal Secretions," etc., has been worked out on a much higher plane; *confirmed* experimentally and clinical data were alone used as factors; and each deduction submitted was the result of a process of reasoning in which preconceived interpretations, *i. e.*, theories, played no part. The quantity of material used (though the first volume is but an outline of my views) was evidently not lacking; the *Weiner klinische Rundschau*, for instance, recognizes that "an enormous number of experiments and innumerable observations and reports are grouped." And yet, I have asked no one to accept my deductions otherwise than as working propositions. May I also ask your reviewer to prove that they are not even entitled to that position?

He will doubtless conclude that a considerable labor is being imposed upon him. He must not overlook the fact, however, that he has incurred considerable responsibility through his closing paragraph, *viz.*: "This book has been reviewed in terms of praise by some of our leading periodicals. The publication of such works and their favorable review in representative journals will tend to discredit American medicine in the eyes of the scientific world." As the originator of this patriotic thought, he obviously becomes its sponsor — a post which involves the duty of proving that he is not himself gratuitously fouling his own nest. He is now given an opportunity to furnish this proof and, at the same time, to show that the eighty and odd periodicals which he directly and indirectly chides for their "terms of praise" (and to which I am also greatly indebted for many valuable and courteous criticisms) intrust their books for review to men who are his inferiors in knowledge and judgment.

Your reviewer is not asked to reveal his identity if he concludes that a cursory perusal of my work has misled him. If he maintains his position, however, it seems only fair that he should defend it openly.

Respectfully yours,
C. E. de M. Sajous, M. D.

[We regret that our notice of the first volume of Dr. Sajous' book has appeared to him unfair. If this be true, it was not due to lack of careful consideration of the book on the part of our reviewer. We await with interest the appearance of the second volume and beg to assure Dr. Sajous that his entire work will then receive a careful and impartial review. — Editor.]

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPTEMBER 24, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid Fever. | Diarrheal Diseases. |
| New York . . | 3,908,644 | 1,224 | 421 | 31.94 | 10.37 | 2.29 | 1.55 | 16.66 |
| Chicago . . . | 2,021,086 | 457 | 144 | 36.10 | 7.87 | 1.60 | 1.60 | 17.72 |
| Philadelphia | 1,407,968 | 401 | 113 | 27.43 | 9.72 | 1.99 | 3.99 | 8.94 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 181 | 63 | 32.04 | 3.87 | 3.87 | 2.21 | 8.29 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 89 | — | 28.07 | 11.23 | — | 5.60 | 13.47 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 57 | 21 | 28.06 | 12.28 | 3.50 | 3.50 | 17.54 |
| Boston . . . | 617,950 | 216 | 81 | 24.07 | 9.26 | 1.85 | 1.39 | 9.72 |
| Worcester . . | 136,925 | 29 | 14 | 20.69 | 3.45 | — | — | 17.24 |
| Fall River . . | 119,349 | 27 | 15 | 37.03 | 14.81 | 3.70 | — | 23.21 |
| Lowell . . . | 104,402 | 39 | 21 | 28.20 | 7.69 | 2.56 | — | 12.82 |
| Cambridge . | 100,998 | 21 | 9 | 38.09 | 9.52 | — | — | 23.81 |
| Lynn . . . . | 73,875 | 25 | 10 | 16.00 | — | 4.00 | 8.00 | 4.00 |
| Lawrence . . | 72,348 | 18 | 7 | 38.88 | 16.66 | — | — | 27.77 |
| Springfield . | 72,020 | 13 | 1 | 15.40 | 7.70 | — | — | 7.70 |
| Somerville . | 70,413 | 22 | 13 | 22.72 | 4.54 | — | — | 18.18 |
| New Bedford | 68,863 | 28 | 10 | 35.71 | 10.71 | — | — | 32.14 |
| Holyoke . . . | 50,538 | 10 | 2 | 40.00 | — | — | 10.00 | 20.00 |
| Brockton . . | 46,601 | 10 | 4 | 30.00 | — | — | — | — |
| Newton . . . | 39,310 | 6 | 1 | 33.33 | — | — | 16.67 | — |
| Haverhill . . | 39,061 | 7 | 1 | 14.30 | 14.30 | — | — | — |
| Malden . . . | 37,205 | 10 | 4 | — | — | — | — | — |
| Salem . . . . | 37,188 | 16 | 7 | — | — | — | — | — |
| Chelsea . . . | 36,499 | 13 | 7 | 7.70 | 23.10 | 7.70 | — | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 7 | 4 | 28.60 | — | 14.30 | — | 14.30 |
| Everett . . . | 30,209 | 8 | 4 | — | — | — | — | — |
| North Adams | 29,201 | 8 | 1 | 25.00 | — | — | — | — |
| Quincy . . . | 26,798 | 10 | 3 | 40.00 | 20.00 | — | — | 10.00 |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 8 | 2 | 12.50 | 25.00 | — | — | — |
| Brookline . . | 23,576 | 7 | 2 | 14.30 | — | — | — | 14.30 |
| Pittsfield . . | 22,870 | 6 | 1 | — | — | — | — | — |
| Medford . . | 21,956 | 10 | 3 | 10.00 | — | — | — | 10.00 |
| Chicopee . . | 21,692 | 5 | 1 | — | 20.00 | — | — | — |
| Northampton | 20,314 | 8 | 3 | — | — | — | — | — |
| Beverly . . . | 15,807 | 4 | 1 | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 5 | 0 | 20.00 | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 3 | — | — | — | — | — | — |
| Newburyport | 14,478 | 7 | 3 | 28.60 | 14.30 | — | — | 28.60 |
| Woburn . . . | 14,315 | 5 | 3 | 40.00 | — | — | — | 40.00 |
| Melrose . . . | 13,819 | 12 | 3 | — | — | — | — | — |
| Westfield . . | 13,809 | 1 | — | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 3 | 1 | 33.33 | — | — | — | — |
| Revere . . . | 13,609 | 2 | 2 | — | — | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | — | — | — | — | — | — | — |
| Southbridge . | 11,716 | 1 | 1 | 100.00 | — | — | — | — |
| Watertown . | 11,575 | 3 | 1 | — | 33.33 | — | — | — |
| Weymouth . | 11,350 | 1 | 1 | 33.33 | — | — | — | 33.33 |
| Plymouth . . | 11,139 | 7 | 2 | 28.60 | — | — | 14.30 | — |

Deaths reported, 3,050; under five years of age, 1,081; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 912; acute lung diseases 277, consumption 300, scarlet fever 7, whooping cough 11, cerebrospinal meningitis 18, smallpox 2, erysipelas 2, puerperal fever 16, measles 3, typhoid fever 61, diarrheal diseases 431, diphtheria and croup 61.

From whooping cough, New York 5, Chicago 3, Pittsburg 1, Boston 2. From measles, New York 3. From scarlet fever, New York 1, Baltimore 4, Boston 1, Worcester 1. From cerebrospinal meningitis, New York 13, Boston 2, Lowell, Brockton and Waltham 1 each. From erysipelas, Philadelphia and Baltimore 1 each. From smallpox, Chicago 2.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending Sept. 10, the death-rate was 17.5. Deaths reported 5,118; acute diseases of the respiratory organs (London) 61, whooping cough, 64 diphtheria 63, measles 53, smallpox 4, scarlet fever 23.

The death-rate ranged from 5.1 in Hornsey to 33.0 in Great Yarmouth; London 15.2, West Ham 16.5, Brighton 14.0, Plymouth 28.4, Bristol 13.7, Birmingham 17.5, Leicester 14.7, Nottingham 19.1, Liverpool 24.7, Bolton 18.4, Manchester 21.2, Salford 23.7, Halifax 15.0, Bradford 16.5, Leeds 14.2, Sheffield 22.6, Hull 21.2, Cardiff 15.1, Rhondda 24.3, Merthyr Tydfil 20.1, Bootle 23.6.

## METEOROLOGICAL RECORD.

For the week ending September 24, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S.. 18 | 30.02 | 72 | 82 | 61 | 75 | 72 | 74 | S W | S W | 10 | 18 | C. | C. | 0 |
| M. 19 | 30.14 | 66 | 72 | 59 | 72 | 76 | 74 | N W | S E | 10 | 7 | C. | F. | 0 |
| T.. 20 | 30.04 | 64 | 73 | 56 | 83 | 85 | 81 | S E | S W | 9 | 6 | F. | O. | 0 |
| W . 21 | 30.24 | 50 | 60 | 40 | 66 | 59 | 62 | N | N W | 15 | 20 | C. | F. | 0 |
| T.. 22 | 30.54 | 43 | 51 | 35 | 49 | 56 | 52 | N W | S | 12 | 6 | C. | C. | 0 |
| F.. 23 | 30.54 | 48 | 62 | 35 | 62 | 61 | 62 | N W | S W | 5 | 12 | C. | F. | 0 |
| S.. 24 | 30.08 | 58 | 68 | 49 | 72 | 69 | 70 | S W | S W | 12 | 18 | O. | O. | 0 |
| ☞ | 30.23 | | 67 | 48 | | | 68 | | | | | | | 0 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for week.

## OPERATIONS: BOSTON CITY HOSPITAL.

The following operations will be done and cases shown in the amphitheatre of the Boston City Hospital on Oct. 7, from 10 A.M. until 12.30 P.M.: Appendicitis; Hydrocele Hernia; Amputation leg; Hydrocele; Acetonemia; Appendix; Gall Bladder; Dislocation of elbow; Fecal fistula.

## RECENT DEATHS.

PHINEAS J. HORWITZ, M.D., died this week at Bar Harbor. He was a veteran of the Mexican and Civil wars and formerly medical director in the navy, his death occurring at the ripe age of eighty-two years. He leaves two sons, one of whom, Dr. Orville Horwitz, is professor of surgery at the Jefferson Hospital in Philadelphia, and one daughter. Following the Civil War Dr. Horwitz had charge of the tabulation of casualties during the war.

JOHN PURCELL, M.D., a native of Ireland, who was for thirty years a well-known physician of New York City, died at his summer home at Larchmont, on the Sound, on Sept. 26, at the age of eighty-six years.

MERRICK BEMIS, M.D., M.M.S.S., died in Worcester, Oct. 3, 1904, aged eighty-four years.

## APPOINTMENT.

DR. J. BERGEN OGDEN has been appointed medical chemist to the Carney Hospital from Oct. 1, 1904.

## BOOKS AND PAMPHLETS RECEIVED.

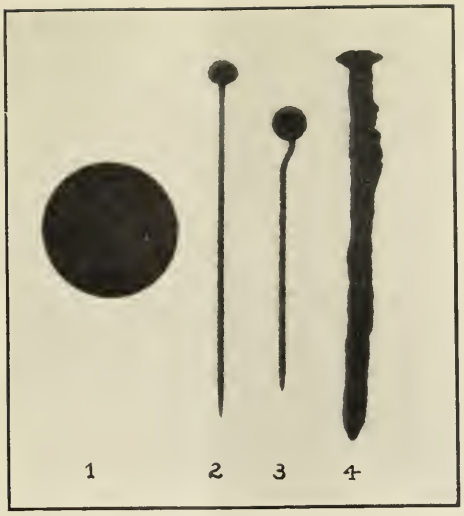
A System of Practical Surgery. By Prof. E. von Bergmann, M.D., Prof. P. von Bruns, M.D., and Prof. J. von Mikulicz, M.D. Vol. III. Translated and edited by William T. Bull, M.D., and John B. Solley, M.D. Illustrated. New York and Philadelphia: Lea Brothers & Co. 1904.

American Edition of Nothnagel's Practice. Diseases of the Intestines and Peritoneum. By Prof. Dr. Hermann Nothnagel. Edited, with additions, by Humphrey D. Rolleston, M.D., F.R.C.P. Authorized translation from the German, under the editorial supervision of Alfred Stengel, M.D. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

Index-Catalogue of The Library of the Surgeon-General's Office, United States Army. Authors and Subjects. Second Series, Vol ix. Washington: Government Printing Office. 1904.

Report of the Superintendent of Government Laboratories in the Philippine Islands for the Year ended September 1, 1903. (From Fourth Annual Report of the Philippine Commission.) Bureau of Insular Affairs, War Department.

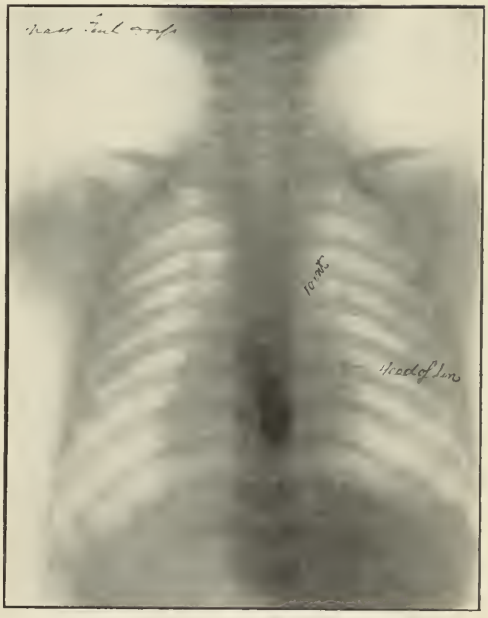
The Optical Dictionary. An Optical and Ophthalmological Glossary of English Terms, Symbols and Abbreviations, together with the English Equivalents of some French and German Terms relating to Physical, Physiological and Pathological Optics. Optical and Other Instruments of Precision, and Terms Descriptive of Color and Photo-Chemistry, to which are added a number of General and Mathematical Expressions. Edited by Charles Hyatt-Woolf, F.R.P.S. Philadelphia: P. Blakiston's Son & Co. 1904.




The four foreign bodies, actual size.



Case 1.



Case 2.




Case 3. — Front view.



Case 4. — Side view.




Case 4. — Back view.

# Original Articles.

## THE EXTRACTION OF FOREIGN BODIES FROM THE BRONCHI.*

BY A. COOLIDGE, JR., M.D., BOSTON,
*Physician for Diseases of the Nose and Throat, Massachusetts General Hospital; Clinical Instructor in Laryngology, Harvard Medical School.*

Five years ago I reported a case in which I had removed a broken tracheotomy tube from the right bronchus by means of a straight speculum through the tracheal wound.[1]

Although before this time Killian had introduced straight tubes, not only through a tracheal opening, but also through the natural passages, the subject of bronchoscopy was a new one, and had only a few times been applied to the extraction of foreign bodies. As indicated in the discussion on my paper, it was often considered wise to let a foreign body remain in a bronchus rather than to attempt to remove it. I think that it now would be an exceptional case in which a surgeon would advise waiting. This difference in the relative dangers of operating and of delay is due wholly to the knowledge of the fact that the bronchi can be explored through straight tubes easily and with comparatively little danger to the patient.[2]

During the last five years a large number of cases have been reported, and a goodly number of papers on the subject have appeared in our journals. For a review of this work I cannot do better than simply refer to a recent monograph by von Eicken,[3] first assistant in Killian's clinic in Freiburg.

Since reading my paper, I have removed a foreign body from a bronchus in four cases, three after tracheotomy, and one with the aid of Killian's bronchoscope through the natural passages.

Case I. — This case has been briefly reported before.[4] Edward B., age thirty-five, admitted to the Massachusetts General Hospital in the service of Dr. Warren, Dec. 24, 1900. Two days previously he had lost a silver dime in his nose, which had thence fallen into the trachea. A low tracheotomy had been done before admission, but attempts to seize the coin had then been unsuccessful. There were no symptoms of discomfort in breathing. The x-ray showed a foreign body just to the right of the median line at the fifth costo-vertebral articulation.

With the patient on his back, without a general anesthetic, a straight urethral speculum, 3½ inches long, $\frac{7}{16}$ inch in diameter, was introduced through the tracheal wound and pushed down nearly to the bifurcation. The coin was seen in the upper part of the right bronchus, and removed with alligator forceps. The illumination was by a head mirror and reflected light.

Dec. 29. — Patient discharged well.

Case II. — Nettie H., age twenty-two months, entered the hospital April 21, 1902, in the service of Dr. M. H. Richardson. Twelve days before admission, after being left alone, the child was found choking and cyanosed. Soon recovered, but has had frequent attacks of choking and coughing with perfectly normal intervals.

On admission nothing abnormal was found on percussion or auscultation. Respiration was normal, except for occasional spasmodic cough. The x-ray showed a shawl pin, head down, apparently in the right bronchus.

April 24. — The trachea was opened by Dr. Richardson below the isthmus of the thyroid. The tracheal speculum was introduced, pushed into the right bronchus until the point of the pin entered the tube, when it was seized with alligator forceps and removed. Illumination by head mirror and reflected light. The pin was 1⅞ inches long, with a head ⅛ inch in diameter.

May 13. — Patient left the hospital well, and has remained well to the present time (May, 1904).

Case III. — Miss Lena G., age twenty-four, entered the hospital March 21, 1904, in my service. The day before, while holding a scarf pin between her teeth, a friend startled her, and she inhaled the pin. At first there were absolutely no symptoms. Thinking that she had swallowed it, she excited vomiting, when she began to have a pain through the center of the chest, with cough, and a little bloody expectoration. The pain continued through the night and then disappeared, except a little in the left fourth interspace on coughing.

On admission, the x-ray showed a pin, with the point at the fourth interspace on the left side, and the head directly below it. A lateral view showed it about one inch from the vertebral column. Under ether anesthesia, I opened the trachea, introduced Killian's bronchoscope and pushed it into the left bronchus. I did not have an attachment for maintaining respiration in the right bronchus. The foreign body could not be seen, and the bronchoscope was removed, as the patient stopped breathing. It was necessary to do artificial respiration for a minute or two, before normal respiration was established. This was repeated, and in consequence, a tracheotomy tube was put in, and the patient sent to the ward.

The next day the x-ray showed the pin in the same place. On the third day, without a general anesthetic, the trachea was sprayed with cocaine, and the short tube inserted through the wound. The pin had in the meantime become dislodged, and was seen high up in the left bronchus, and was removed easily. The illumination was by Killian's electric head light. The pin was 1½ inches long with a head $\frac{3}{16}$ inch in diameter.

March 31. — Patient discharged well.

Case IV. — Robert D., age eight, entered the hospital May 12, 1904, in the service of Dr. A. T. Cabot. In June, 1903, the patient said that he had swallowed a nail, but this was not believed. Within a few days he developed a right-sided bronchitis which, although better, has persisted since. He also had slight, periodic asthmatic attacks on exertion, but these have disappeared in the last three months. Recently, on account of the localized bronchitis, the story of the nail was remembered, and an examination with the x-ray showed a foreign body apparently in the right bronchus.

The patient was given $\frac{1}{300}$ grain atropine subcutaneously and etherized. He was placed on a table on his back, with his head hanging over the end. With Kirstein's autoscope the interior of the larynx was brought into view, and cocainized with a 1% spray. I then introduced Killian's bronchoscope (20 cm. long, 8 mm. in diameter) without difficulty, and pushed it down the trachea, using cocaine spray through the tube. The nail was readily seen projecting from the right bronchus into the trachea, with the point imbedded in the tracheal wall. When the nail

* Read at the Twenty-sixth Annual Meeting of the American Laryngological Association, Atlantic City, June 3, 1904.

[1] New York Medical Journal, Sept. 30, 1899.

[2] Wood: Philadelphia Monthly Medical Journal, Sept. 30, 1899.

[3] Archiv. für Laryngologie, 15 Bd. 3 Heft.

[4] Boston Medical and Surgical Journal, April 10, 1902.

was touched with cotton to clear the field, or with Killian's forceps, coughing was excited, and a little bleeding. After two or three attempts the nail was freed from its impacted position, and although it slipped from the forceps, it followed the tube as it was withdrawn through the glottis, and was seized in the pharynx. The illumination was by reflected light. There was a little blood when the nail was first seized, which stopped immediately. The patient did not suffer in the least from the operation.

May 16. — Patient discharged well, except for a few coarse rales on the right side, especially in the scapula region, the same condition as before the operation.

May 29. — The child's father, who is a physician, reports that the patient is well, and that no rales are to be heard.

From the experience of these cases I have but little to add to the conclusions presented with my first case. I am, if anything, more in favor of operative interference in cases of inspired foreign bodies than at that time, and inclined to attempt their removal through the natural passages in a larger number of cases. The latter demands that there be at hand not only the proper bronchoscope, but what is equally important, proper instruments for working through the tube after it is in place. For the lower operation, almost any hollow tube of proper caliber, and long slender forceps will carry the operator well into the primary bronchi. The introduction of the bronchoscope after previous tracheotomy presents no difficulties. A general anesthetic is not necessary nor advisable if a tracheal opening already exists, and in many cases the tracheotomy might well be done with cocaine. The reflex respiratory inhibition which has been carefully studied by Crile is sometimes annoying, and may be serious. In my cases it appeared only under a general anesthetic, and did not occur after a subcutaneous injection of atropine and local application of cocaine, as recommended by Crile.[5]

In regard to the choice between the tracheal and natural passages, in the first two cases the presence of a tracheal opening or the absence of the proper instruments left no opportunity for choosing. In the third case, a pin, point upwards, was shown by the x-ray to be at the bottom of the left primary bronchus, with the point at the fourth interspace, and the head an inch and a half lower. I did not think that I could succeed in reaching it through the mouth, and feared that an unsuccessful attempt to do so might harm the patient. In the fourth case the point of the nail was probably as high as the bifurcation, a typical case for an attempt by the natural passage. Bronchoscopy through the natural passages is, of course, not so very simple and easy as through the tracheal wall, but the introduction of the bronchoscope in this case presented no difficulty. The added difficulty was due to the smaller calibre and greater length of the tube. With Kirstein's autoscope the glottis was seen, and after spraying with 1% cocaine, the bronchoscope passed easily. It is, of course, a satisfaction to the patient and to the surgeon to avoid tracheotomy, and there is no doubt that tracheotomy is a source of danger in itself. An unsuccessful attempt through the natural passages followed by tracheotomy not only lengthens the operation, but it must add a little to the danger of sepsis. The mouth and pharynx cannot be made surgically clean, and it is difficult not to come in contact with them. This, I think, should be considered, especially when there is probable wounding of the trachea or bronchi, or where any circumstance is likely to prolong the search for, or extraction of, the foreign body.

[5] Medical News, Feb. 24, 1900.

## A CASE OF MALIGNANT ENDOCARDITIS.*

BY J. F. ALLEYNE ADAMS, M.D., PITTSFIELD.

Mr. E. A. B., aged thirty-five, born in England, married, telephone manager.

On the morning of July 13, 1903, he was attacked with a chill, and came to my office, saying he could not get warm. He had been swimming the afternoon before, had been a long time in the water, and felt cold. He had previously been well, except that he had a bronchial cough for a short time the last winter, and in May complained of *muscæ volitantes* for a few days, caused by constipation. He was a man of nervous temperament and active habits, who worked very hard at his business and devoted the latter part of each afternoon to athletic pursuits, such as golf and swimming. I found his temperature normal at ten o'clock. He went home and I called to see him at 3 P.M. Temperature then 103, and the same in the evening, falling to 102 between these times. He complained of "soreness of the ribs," meaning the short ribs on both sides, especially the left. It hurt him to take a long breath, and he would frequently blow out the breath, explosively. His wife said this had been a habit with him. Examination of the heart and lungs revealed nothing abnormal. The area of the spleen was somewhat enlarged; liver normal size; abdomen rigid without tenderness or pain. In the evening he was dull, saying little and hardly answering questions. He said he could not see clearly. From this time the temperature continued high and irregular, rising to 104 $\frac{3}{5}$ on the fifth day. He was dull and sometimes mildly delirious during the first week. On the third day, an erythematous eruption appeared on the lower part of the chest, in front, disappearing the next day. On the fifth day, the abdomen was greatly distended, causing much pain and distress. This was relieved by a dose of calomel followed by a saline, which caused the expulsion of much gas.

On July 18, the sixth day, he was removed from his home to the Pittsfield "House of Mercy" where he was quite comfortable for ten days, with temperature rather lower than the first few days. He was still dull and talked very little, but was quite rational. He had no more soreness of the ribs, no dyspnea, no cough, and had the general aspect of typhoid fever. But no rose-spots appeared, there was no diarrhea,

* Read at the Annual Meeting of The Massachusetts Medical Society, June 7, 1904.

and the Widal test gave a negative result. This was made by Dr. H. C. Emerson of Springfield, Mass., with blood taken on the third, seventh, and thirteenth days of the disease, and also by Dr. R. A. Woodruff of Pittsfield on the eighteenth day, each time with negative reaction. Dr. Woodruff also made a blood count on the eighteenth day, showing:

| | |
|---|---|
| Red corpuscles | 3,200,000 |
| White corpuscles | 18,000 |
| Hemoglobin | 48% |

On July 27, the fifteenth day, he began to have epistaxis, the blood running back into the throat and most of it swallowed, blackening the stools. This continued for a week, and considerable blood was lost in this way.

On July 28, the sixteenth day, on making an examination with stethoscope, I discovered a *heart murmur*, systolic, at apex. This was soft, smooth and faint, and heard over a small area, below the nipple, not at all at the base of heart or anywhere above the nipple. The lungs were normal; there were no heart symptoms. The temperature was lower than usual in the morning, being 100; but it rose to $102\frac{3}{5}$ in the evening, to $103\frac{3}{5}$ the following morning, and to $104\frac{4}{5}$ the following evening. From this date, the patient rapidly grew worse; the murmur became louder each day and was heard over a larger area, until on Aug. 1, the twentieth day, it was a loud, rough, churning sound, heard all over the heart area and well around on the left side of the chest.

On July 30, the nineteenth day, he began to have dyspnea at times, breathing rapidly for a few respirations. The following day, the dyspnea was increased, and in the evening he would at times open the mouth wide and seem to gasp for air.

From July 30 to Aug. 2, there was retention of urine and the catheter was used, the amount drawn being three pints a day. The urine of July 30 contained a trace of albumin, but there was none previously nor later. Aug. 3, the urine was passed involuntarily and so continued until his death, the amount three pints or more. He grew more dull and looked very white and anemic. There was a reaching out with the hands and picking at the air. Epistaxis ceased on Aug. 2.

On Aug. 4, twenty-third day, the bowels moved involuntarily. There then appeared a partial paralysis of the right arm and leg, with a dropping of the left upper eyelid. There was no picking at the bedclothes after this, and the patient lay perfectly still. At times there was a gasping for breath, but never any orthopnea.

Aug. 5, twenty-fourth day, his color was ashy, and for the first time there was difficulty in swallowing. A few petechiæ appeared on the chest and abdomen about Aug. 2 and gradually increased in number until they covered the upper chest, abdomen and forearms.

Aug. 6, twenty-fifth day, died at 12.45 noon. He was unconscious during the night and morning, but could be made to swallow milk or medicine if spoken to.

During the last few days there was dullness over the base of both lungs, with absence of vesicular murmur, but without rales. There was no cough at any time. The pulse, throughout the attack, was soft, full, and regular. Toward the last it grew very soft and compressible, though still full and regular. Its frequency was from 80 to 100 until the sixteenth day, when the heart murmur appeared, and after this was 120 or more. The respiration ranged from 18 to 30 until the sixteenth day, and after that from 30 to 50. Urine was secreted freely to the end. There was never any diarrhea.

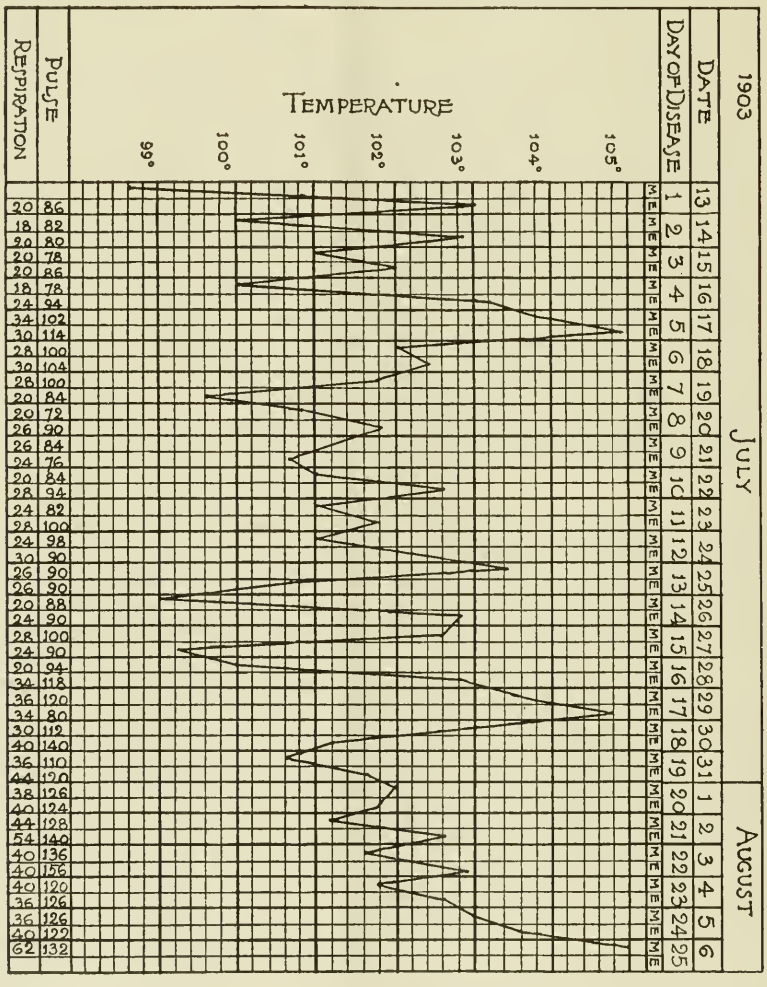
Treatment. — At the outset he had a dose of calomel, followed by a Seidlitz powder, and this was repeated on the fifth and eleventh days. During the first few days he took salicylate of sodium, grs. viii, every three or four hours. After this he was given a tablet containing guaiacol, menthol, thymol, and eucalyptol, every two hours until the end of the second week. Strychnia was given throughout the attack. During the last week he also had tr. digitalis and an anema thrice daily of a quart of normal salt solution, fully half of which was retained. At night he usually had one or two doses of codeine, $\frac{1}{4}$ grain each, which quieted restlessness and produced sleep. Tepid sponging was used several times daily, and was usually followed, especially during the first and second week, by a drop of temperature of one or two degrees. The bowels were kept open by enemata.

Autopsy. — *Heart:* The pericardium contains about one ounce of clear fluid; no adhesions. Size of heart $4\frac{1}{2}$ by $5\frac{1}{2}$ inches. Many petechial hemorrhages on anterior surface, particularly over right auricle and ventricle, just within the visceral serous covering. Heart fat fair in amount. Heart muscle flabby. Veins of heart distended with dark, liquid blood. On section, *right auricle* contains post-mortem clots and partly organized ante-mortem clots. The auricular appendage has organized clots (marantic). *Right ventricle* contains ante-mortem clots fully organized; probably marantic in origin. *Tricuspid valves* seem to be competent, but covered with a fibrinous exudate of recent origin, and valves are somewhat thickened. Papillary muscle and chordæ tendineæ practically normal. *Left auricle* negative. *Left ventricle* contains ante-mortem and post-mortem clots. *Mitral valves* are thickened and eroded and are covered with an ulcerative exudate forming excrescences of various sizes, some as large as a hazel nut, and in the exudate are pockets containing pus. Papillary muscle atrophied. Cordæ tendineæ thickened and imbedded in the inflammatory exudate. *Heart muscle* is pale and shows areas of brown atrophy, with areas of recent myocardial inflammation. Coronaries patent; no sclerosis. A few patches of beginning sclerosis in the aorta. Aortic and pulmonic semilunar valves normal.

*Left lung:* Free from adhesions. Petechial hemorrhages cover the visceral pleura. Upper

lobe crepitant in its upper and anterior portion. The rest of this lobe and the lower lobe firm to touch and dark in appearance. On section, lower half of upper lobe in a state of red hepatization. Lower lobe in an organized pneumonic condition. Bronchi contain a frothy, bloody exudate. Branches of the pulmonary artery supplying the lower and posterior portion of the upper lobe and the whole of the lower lobe contain thrombi, more or less organized. Bronchial mucous membrane thickened and injected.

*Right Lung:* Free from adhesions. The posterior portion of the upper lobe is hard and




consistency and of a chocolate color. On anterior surface there is an infarct 4 by 1½ inches, which extends through the organ from before backward. Also at the posterior and dependent angle there is an infarct 1 by 1 inch. This infarct contains liquid blood, on section. Spleen pulp very soft; all markings very indistinct. The large infarct is hard and cuts firm, and over the infarcted area there is a perisplenitis.

*Left kidney* 5½ by 3½ inches. Fatty capsule well marked. Fibrous capsule thickened and strips readily. Surface of kidney studded all over with petechial hemorrhages, some of them being ⅛ by ⅛ inch; and on section these hemor-

nodular and shows four or five old scars. Anterior portions of upper, middle and lower lobes are crepitant throughout. Posterior portion of all the lobes firm and solid to the touch and dark in appearance. The visceral pleura shows many petechial hemorrhages. On section, the bronchi contain frothy, bloody material and the mucous membranes are injected. The hard nodule in apex proves to be an infarct partly organized. The middle and lower lobes are pnuemonic, and the pulmonary vessels supplying the posterior portion of the lobes contain thrombi.

*Spleen* measures 6 by 4½ inches; very soft in

rhages extend into the substance of the organ. The inferior pole of the kidney is blue in appearance. Several small white infarcts. Cortex ½ to ¾ inch thick. Malpighian bodies distinct in appearance. In the pelvis of this kidney and extending into the substance of the organ, there is a small abscess.

*Right kidney* 5 by 3 inches, similar in appearance to the left, but without the abscess.

*Liver* 10 by 9 by 3½ inches, surface smooth, consistency fairly solid; free from adhesions; light yellow in color; no infarcts; cuts fairly firm, and yet the substance in scraping breaks readily.

The organ gives all the appearances and conditions of passive congestion.

*Stomach* normal in size; mucous membrane thickened and studded with petechial hemorrhages.

*Intestines* normal, except being in a state of passive congestion.

*Appendix* six inches long; filled with concretions, and adherent to the cecum in a circular manner, for three inches; not inflamed.

*Pancreas* 7 by $1\frac{3}{4}$ inches, fairly firm, and appears normal.

*Brain* and *Spinal cord* not examined.

Bacterioscopic examination of smears from the various organs and the blood from the heart showed staphylococci and a short rod bacillus, presumably the colon, as a terminal infection.

Portions of the heart muscle, spleen, liver and left kidney were examined microscopically at the Bender Laboratory in Albany, and the following report received:

*Spleen* shows a recent anemic infarct.

*Liver:* In cells about the glands of the lobules is an accumulation of pigment, of light yellow color, appearing in fine granules. The capillaries of center of lobules are slightly dilated; liver otherwise negative.

*Heart muscle:* Muscle fibres are slightly vacuolated. Nuclei somewhat pycnotic. The intermuscular tissue moderately edematous. On the endocardial surface are portions of small marantic thrombi.

*Kidney:* Tubules moderately dilated. Intertubular tissue edematous. In the lumen of tubules is an accumulation of fine granular coagulated material, but no definite casts. Glomeruli slightly lobulated. The enlarged capsular space contains granular coagulated material similar to that in tubules. There is no accumulation of lymphoid cells or increase of intertubular tissue.

Diagnosis. — At the outset the case looked like a severe attack of grippe, but, the fever continuing, without local symptoms, it was called provisionally atypical typhoid fever, though the negative Widal tests and the absence of diarrhea and rose-spots made the accuracy of this diagnosis seem very improbable. After the heart murmur appeared, the diagnosis of malignant endocarditis was made; and this was borne out by the rapid progress of the heart symptoms, and the supervention of local conditions, evidently embolic, of which the most striking were the double pneumonia and the partial right hemiplegia from cerebral embolism. The leucocytosis as well as the petechial eruption tended still further to support this diagnosis. This was confirmed by the autopsy, which revealed ulcerative endocarditis, double pneumonia, thromboses of branches of the pulmonary vessels, parenchymatous nephritis, infarcts in spleen, lung and kidney, abscess of left kidney, and passive congestion of liver and other organs, with staphylococcus infection.

This disease, which is variously designated malignant, ulcerative or infectious endocarditis, bears a general resemblance to typhoid fever, for which it is frequently mistaken. The temperature, however, does not follow the typhoid curve, but is distinctly that of a septic fever, being high at the outset, and subject to great and irregular diurnal variations. It differs from simple endocarditis in the greater size and abundance of the vegetations on the cardiac valves, the breaking down of these vegetations, with ulceration and suppuration, the numerous infarctions of other organs, the general violence of the symptoms, and the almost invariable fatal termination. Although the heart is the seat of the primary lesion, it is a curious fact that the heart symptoms are never very pronounced, that the heart murmur is seldom heard in the early stages of the disease and is sometimes wholly absent, the true nature of the disease being only learned at the autopsy.

Two symptoms which are common in malignant endocarditis were absent in this case — namely, chills and sweating. Sweating did occur toward the end of the attack, but not during the first two weeks, and the initial chill was the only one.

Before the appearance of the heart murmur, there was no possibility of making a definite diagnosis. The negative Widal reaction made the diagnosis of typhoid fever more and more doubtful, this test being applied on the third, seventh, thirteenth and eighteenth days. This almost positively excluded typhoid, and yet there are cases closely resembling typhoid, but not giving the Widal reaction. In these cases a bacillus has been found which appears intermediate between the typhoid and colon bacillus, and has been named the paratyphoid bacillus. The disease is usually of a milder type than typhoid, although fatal cases are reported.

On the other hand, the presence of the Widal reaction would not absolutely exclude malignant endocarditis, for Dr. W. Hale White reports a case in Grey's Hospital, London, of true malignant endocarditis of streptococcal origin which gave a positive Widal reaction on four occasions. Dr. Henry L. Elsner, in the *Medical News* of May 9, 1903, says, in reference to the diagnosis, that, "considered collectively, typhoid fever shows a surprisingly infinitesimal number of permanent heart lesions during the acute febrile period, or following. Hence, with evidences of endocarditis and the typhoid condition, we are justified in assuming that the disease is not typhoid fever. To make the diagnosis positive ante-mortem, we must have the presence of physical signs referable to the heart, and these we have in the majority of our cases before death. However, the endocardium may be plastered with vegetations without giving rise to physical signs. The presence of embolic infarcts is a valuable diagnostic fact."

Osler (Practice of Medicine, 4th ed., p. 705) says: "Perhaps a majority of the cases not associated with puerperal processes or bone disease are confounded with typhoid fever. A differential diagnosis may even be impossible, particularly when we consider that, in typhoid

fever, infection and parotitis may occur." He adds: "Points which may guide us are, the more abrupt onset in endocarditis, the absence of any regularity of the pyrexia in the early stage of the disease, and the cardiac pain. Oppression and shortness of breath may be early symptoms in malignant endocarditis. Rigors, too, are not uncommon. There is a marked leucocytosis."

In this case we had the abrupt onset and irregular pyrexia; but never any cardiac pain and little or no oppression or shortness of breath until the last week. Leucocytosis was very marked on the eighteenth day.

Although malignant endocarditis most commonly occurs as a secondary affection as in acute rheumatism, pneumonia, or septicemia, it is recognized as sometimes occurring as a primary disease. Such seems to be the case under consideration. At any rate I have been unable to discover any antecedent septic condition. All the lesions found were apparently secondary to the endocarditis. A possible exception is the nephritis, but of this there had been no symptoms, for I found the urine normal two months before this illness and also at the beginning of the attack. As for the small abscess in the left kidney, this was most likely metastatic. If these renal conditions are considered secondary, as they probably should be, we seem compelled to call the case one of primary malignant endocarditis. Perhaps it would be better described as a case of septic endocarditis, in which the origin of the infection was not discovered.

The autopsy and bacteriological examinations were made by Dr. R. A. Woodruff, of Pittsfield. The case was seen in consultation by Drs. Henry Colt and L. C. Swift of Pittsfield and by Dr. W. Gilman Thompson of New York.

DISCUSSION.

Dr. C. F. Withington of Boston: I have been very much interested in this extremely carefully prepared report of this case of Dr. Adams'. He mentioned the differential points in the diagnosis of this disease and typhoid fever. It seems to me that it is one of the most important discriminations to bear in mind. In the cases I have seen the temperature was almost always irregular with marked evening exacerbations. There were other signs of sepsis, including the one he mentions and emphasizes — petechiæ on the surface of the body. I saw a case a few weeks ago at the New England Hospital with multiple abscesses. There was an abscess of the ankle joint, one on the buttocks and one on the back. The sero-pus from one of these abscesses showed the streptococcus.

One very important point is the prognosis. It is a disease that is almost invariably fatal, although I have seen two cases which I have reason to believe were ulcerative endocarditis and which did not die. Two years ago I saw the first of these. The temperature was irregular, chills, sweating, with no other explanation than that suggested by the endocardial murmur. The diagnosis was confirmed by Dr. Whittier, and the patient, after a protracted illness, recovered. I have recently had a case at the hospital of a man of twenty-six. He entered the hospital April 19. He had had measles four weeks previously, but had recovered from them, and two days later had a chill, followed by an irregular temperature, cough, sweat and chills. Four days before coming into the hospital he had phlebitis, the limb being dark purple and swollen. The heart was enlarged, the action very violent, and the rate 160 to 170. There was marked gallop rhythm. He also had limited but distinct areas of consolidation in both lungs, which were believed to be embolic pneumonia. Six weeks before coming into the hospital he had had acute gonorrhea. That took place on the 17th of March, and the measles on the 22d of March. Forty-eight days after the gonorrhea blood cultures were taken and the gonococci were found. There was no doubt about the accuracy of the observations, and the diagnosis of malignant gonorrheal endocarditis seems established. Dr. Adams' case was from staphylococcus infection. This one was from gonococcus infection. This patient gradually improved, and his temperature became normal. For a month he has been practically well, his phlebitis has largely disappeared, and he is walking about. He has no symptoms at all now, though there is still a murmur. The white count has gone from 16,200 down to 9,400. I think we may say that although such cases are usually fatal, and the prognosis always exceedingly grave, occasional cases may recover.

Dr. Henry Jackson of Boston: It has always been my opinion that malignant endocarditis was fatal. I saw the case referred to by Dr. Withington in consultation with Dr. Ames, and we were much pleased to have the diagnosis confirmed by him. I look upon the case as the first one I have known to get well of this disease.

Dr. G. S. C. Badger of Boston: There are two clinical forms of malignant endocarditis, — the non-septic and the septic. The former is attended by bland infarcts, suppuration does not follow, and therefore there are no abscesses. Chills and sweating are not very common in this type of the disease. In the septic variety the infarcts suppurate, abscesses develop, and chills and sweating are very common. In the case mentioned by Dr. Withington there were multiple abscesses accompanied by chills and sweating. In the case reported by Dr. Adams the infarcts were bland and chills were not common. Both these varieties may be due to the same organism; for example, the streptococcus.

## ON "VARIANT" INFECTIONS: WITH REPORT OF CASES.

BY THOMAS HORACE EVANS, M.D., PHILADELPHIA.

The nominalism in medical theories must be resigned in view of the principles of cellular pathology and its further development.

No longer will a disease be thought of to possess, as an entity, the body and mind of the unfortunates who suffer it. For we are able, now, to reduce disease to a matter of physiochemic reaction. And the terms of disease are to be read in "replacement of radicals"; and in certain peculiar, primary, protoplasmic changes affecting the original faculties of irritability, contractility, metabolism, respiration and reproduction; and in the modifications of tissue and organ forms and functions in consequence.

Neither can we neglect the factor of personality in disease. Inheritance and environment have put together a vitalism, a mechanism, if you will, that will take its own nature into the pathologic equation.

I have been interested to note the effects of a

small epidemic of erysipelas within one block of my office, during the recent two months (May and June). All the cases referred to below occurred in that vicinity, a laboring district, and the free intercourse of the people therein will be of importance in weighing the facts. Additional cases occurred, not in my practice, during these two months and in the neighborhood.

Erysipelas, at date, is not a reportable disease in Philadelphia.

Case I. Mrs. D., forty-nine years, began a typical attack of erysipelas two days before I was asked to visit the case, May 18, 1904. Facial swelling and edema, with boardlike resistance (on palpation); redness and pain being intense.

In a few days the whole cranial scalp was invaded. Ichthyol 50% and dil. phenol applied, Tr. Ferri Chlorid. and salines internally administered. No unusual symptoms developed and a cure was effected in fifteen days, at which time the case was dismissed with suitable tonics. However, on May 29,

Case II developed. Esther D., the ten-year-old daughter of Mrs. D., began to complain of sore throat, and irritative cough which seemed accountable on the score of roughened vesicular breathing and a temperature of 102.4° F.

Usual treatment, however, failed to relieve. But on ordering a Tr. Ferri Chlorid. mixture the symptoms rapidly diminished. After-treatment consisted of iron, quinine and strychnine, cure resulting in the course of eleven days.

Case III. Harry A., eight years, living half a block beyond the preceding family.

May 20, gave history of having hair cut in neighboring barber shop three days previously, after which redness and swelling appeared around, and particularly behind, the right ear, extending over the helix. This redness and swelling had partly diminished when I first saw the case. At that time I noticed that the right parotid gland seemed swollen, and diagnosed unilateral mumps. Ichthyol was applied, and a Pot. Citrat., Liq. Ammon. Acetat. mixture given for the fever, which was 101.5° F. The parotid swelling continued until a small abscess developed beneath the ear, and to prevent any mastoid infection, the abscess was incised. Considerable purulent matter readily discharged and relief occurred at once. The left parotid showed a sympathetic inflammation soon afterward, which was reduced with an ichthyol ointment.

At this time iron was ordered, and the boy was well in about two weeks.

Case IV. Mr. A., the father of Harry A., developed sore throat May 26, which was quickly relieved on being touched with iron and pot. chlorat.

Case V. Elsie B., fourteen years, living on the next street, parallel with the one where the preceding families reside, developed sore throat June 5. It appeared to be a follicular tonsillitis. There was also a peculiar, general glandular swelling behind the ears and along the mandible, as well as by the margins of the trapezius and sternocleidomastoid muscles.

Internal ferric medication brought about some relief, but the disturbing symptoms continued active for over eight days; meanwhile,

Case VI. Mrs. M., aged seventy-two years, the grandmother of E. B., and living in the same house, developed erysipelas June 11. She told me that for two weeks her nose had pained her, and that latterly there had been swelling which became so intense as finally to alarm the family.

From the external meatus of the nose the erysipelatous inflammation spread viciously, covering the whole of the face, nose, both ears, and part of the frontal and parietal scalp.

Usual treatment rapidly prevailed, although two relapses complicated her recovery. The patient, at this writing, July 13, is still very feeble, by reason of age and a chronic nephritis which shows a tendency to acute exacerbations.

Case VII. Before Mrs. M.'s recovery, on June 29 her grandson, Harry B., twenty-three years of age, developed a follicular tonsillitis similar to that which his sister had had, but fulminating and with a higher range of temperature. Vigorous medication locally and internally soon controlled the case, and his cure followed in six days.

Case VIII. Mrs. B., the mother of H. B., showed some redness and swelling of the skin below the right ear; swelling of a patchy, erysipelatous nature, on June 20, to which was applied ichthyol, with the best results.

I do not care to say whether it was due to some passing irritation or really of specific cause.

Case IX. Alice S., twenty-nine years, residing in the house where my offices are, June 2, and also 10, showed slight erythematous patches on center of forehead, which were relieved by iron and quinine internally, with local ichthyol plaster. Also,

Case X, Harry S., aged sixty-nine, father of A. S., June 5, developed a typical erysipelatous patch around the left eye, and on the left aspect of the nasal arch. After five days of regular iron and ichthyol treatment all the trouble disappeared. He was left with a quinine tonic.

I could parallel this epidemic with cases of other infections. The argument, however, will speak for itself.

I believe it was Dr. M. H. Fussell who, in a lecture to the Senior (1899) Medical Class of the University of Pennsylvania, remarked on the frequency with which sore throat appears in families at the time of scarlet fever or diphtheritic infection therein,— sore throat which cannot be determined to be specific.

But why should we not associate such opportune appearances? We have evidently to deal with a specific cellular reaction, the mode of infection of which should be only too easy to explain. The marvel is that isolation of erysipelas, as well as other transmissible diseases, should not be the rule.

Possibly the day is near when variant manifestations of disease will be clearly recognized. The relation of tonsillitis, glandular involvement, and mucous reactions of many sorts are to be plainly seen in many forms of so-called specific disease. With a recognition of this fact, infectious variants have a most decided element of danger.

Samohrd [1] speaks of a general reaction of mucous membranes in typhoid attacks, when he describes the symptoms of hemorrhagic typhoid. It is possible, then, that from these mucous membranes typhoid infection may be disseminated.

The writer [2] ventures to suggest that there may be varying modes and manners of infection according to the state of the cycle of development of the pathogenic organism, as that proceeds or its toxins develop. Further, it is quite possible that the essential tissues of the body have a selec-

[1] Sbornik Klinicky, Tomo V, fasc. 1, 1903.
[2] Paratyphoid—Medical News, September 3, 1904.

tive preference for certain toxins or micro-organisms, or for them in certain stages of their cycles of development.

Following this theory we may come to find out that a number of related diseases are really only different aspects of one great process, in which variable factors play a part, factors of the life cycle of the parasite, or micro-organism, its toxins, and the physiochemic nature of the histologic tissues invaded.

The elemental histologic tissues are four. We should be able to reduce disease to a least common multiple of these elements, and in doing so, perhaps we may find that the primary changes are not so numerous; anabolic and katabolic elevations and depressions, chemic changes and functional mutations, with, on the contrary, a greater number of diseases traceable to the same micro-organism, toxins, or species of parasite. It is thus that we may come to admit "variant" infections.

## GASTRIC ULCER IN CHILDREN.

BY ELBRIDGE G. CUTLER, M.D., BOSTON.

(Concluded from No. 14, p. 372.)

Leith [33] records a girl aged ten, always remarkably well, who, on the 5th of February, developed croupous pneumonia of the left lung which went on to convalescence. The beginning of March she began to cough and to perspire freely at night. The temperature which had been normal a few days before began to rise, especially toward evening. The physical signs were negative over both lungs save under the left clavicle where the percussion note gradually became somewhat hyperresonant and the breathing cavernous with plentiful crepitations. Soon two small abscesses formed in the second left interspace toward the axilla. A few days later a left-sided empyema was opened with resection of portions on the fourth and fifth ribs. There was no improvement. The temperature remained irregular and the pulse and breathing rapid. Delirium became more continued and severe. Restlessness and delirium increased with frequent moaning but no complaint of pain. Death on April 25.

At the post-mortem examination an empyema cavity was found on the left side with a perforation of the diaphragm to the left of the pericardial sac. Blood was found in the intestines and the stomach showed an ordinary perforating ulcer nearly circular, measuring $\frac{1}{4}$ in. transversely and $\frac{3}{16}$ in. longitudinally. It was just in front of the greater curvature, $4\frac{1}{2}$ in. from the cardiac and 8 in. from the pyloric end. It was terraced on the side next the greater curvature and rounded and smooth on the other. There was no sign of thickening around it on the mucous coat; its floor was formed by the peritoneal and remains of the muscular coats. The ulcer was adherent by its floor to the spleen, some suppurative lymph intervening and a suppurating track passed upward and inward between the adherent spleen and stomach directly to the perforation in the diaphragm.

Donne's [17] case, which reports a cure from simple lesion in a child, is as follows:

In the midst of a punctated redness within the upper half of the small curvature there was a dark-red plaited place, a little bit depressed beneath the surface of the mucous membrane, the size of a ten-sou piece. Divergent rays seemed to run out from its center in every direction. The depressed spot was also in folds and the fibrous tissue was thickened showing a cure from a simple lesion.

The following case reported by Goodhart [25] I have included among the chronic ulcers from the description of the ulcer. Perhaps it should be classed with the acute cases:

Mr. Cock, one of the senior students and late resident obstetric assistant at Guy's Hospital, was called to see a new-born infant vomiting blood, from which it died thirty hours after birth. It was apparently well-formed and healthy, though a possibility of congenital syphilis existed. The stomach was distended by blood-clot and on turning this out, a small oval ulcer about $\frac{1}{8}$ in. long was seen at the cardiac end close to the greater curvature. The edge of the ulcer was peculiarly sharp and raised from the surrounding mucous membrane, it might almost be said to be knife-shaped and it was firm in texture and pink or vascular in appearance. In the bottom of the ulcer was a dark speck which, under a lens, proved to be an open vessel, a branch of an artery running along the greater curvature. The remainder of the stomach was healthy.

Cade [11] reports as follows:

Two months old. For one month sick with yellowish diarrhea and vomiting; this lasted for a fortnight and then death resulted.

At the autopsy on opening the abdomen there was a pocket containing yellowish fluid, very acid, and in considerable quantity. The pocket was limited behind by the pancreas, below by the mesocolon and the transverse colon, and above and in front by the posterior surface of the stomach and anterior part of the liver. Pressure on the stomach made the gas escape into the pocket.

The stomach was opened and showed towards the pyloric region above a single ulceration, rounded, larger than a fifteen-centime piece, and with clean edges, adherent at its anterior portion to the liver save below where one could pass a grooved probe without difficulty.

The stomach contained a yellowish liquid, acid, like that in the retro-stomachal pocket. There was no other lesion of the gastric mucous membrane. The vomiting and diarrhea had no special characteristics. There was never hematemesis or melena.

Wertheimer's [48] case of supposed gastric ulcer in a girl of ten is interesting, and though the child recovered, the history is so clear that I think he established his diagnosis. For several weeks the child had suffered from loss of appetite, feeling of fullness and distention in the gastric region and occasional nausea after meals. She looked badly. One day, on jumping from a ladder, the child had a sudden intense pain in the epigastrium which after a time abated. Several hours later the pain increased, nausea set in and a small amount (a few teaspoonfuls) of clear fluid blood was vomited; the next day there was blood in the stools. For a week there was daily, sometimes several times in the day, hematemesis; it was always small in amount, sometimes fluid, sometimes loosely clotted. Blood was found in the stools several times. Before the hematemesis there was almost always a severe cardialgic attack and nausea. Besides the cardialgia after food there was several times vomiting in the early morning with a fasting stomach, without previous nausea, of a watery, sour fluid. The appetite was much diminished and the bowels were constipated. Between the attacks there was epigastric tenderness and a tense belly. The child was kept in bed and given an exclusive milk diet for a week, which was well borne and caused neither pain nor vomiting. Later, white bread, milk soups and wheat flour or groats were added; then raw ham, cold

chicken and Bordeaux wine were allowed, and Carlsbad and Bilin water were given and an ice-bag was kept on the epigastrium. In the course of five weeks the child was well.

Lebert,[31 32] in his Breslau statistics, includes one case under his table of chronic simple gastric ulcer between the ages of five and ten years, but I have failed to find a detailed statement of the case.

The following three cases occurred in the Massachusetts General Hospital and are reported in full:

Massachusetts General Hospital, West Medical Records, V. 416, p. 34. June 25, 1889.

J. K., twelve years. Mother states that last summer boy was ill three weeks with inflammation of the bowels. Since then she says the boy has always been rather pale and has not seemed as strong as he used to be. Has noticed that boy's face and pillow would be stained with blood at times in the morning. Fifteen days ago boy had a pretty sharp attack of pain in the epigastrium, lasting two days. About two hours after beginning to complain of pain he vomited about a cupful of blood. Since then has occasionally complained of pain but does not appear to have more after eating. Appetite has been poor. The boy is nervous and bashful and cannot give much history. Says attacks have been short in duration and local; the pain just above and to the right of the umbilicus. Bowels regular.

Physical examination. Well nourished. Color good. Tongue clean. Heart, lungs and abdomen negative. No tenderness. ℞ Milk (peptonized) ℥ii hourly. June 29: Doing well. No vomiting, pain or tenderness. Hungry. ℞ Beef juice ℥ss 4 id.

June 30: *Urine.* Normal, acid, 1,026. Albumin, none. Sediment, slight. July 8: Has had no pain or distress. Constipated. Enemata. Sitting up. ℞ Some jelly. July 10: ℞ One dropped egg on toast. July 11: ℞ Two eggs. July 14: ℞ A little tender steak or chicken for dinner. July 16: Toast 3, t i d. Liquids. July 20: Liquids, custard. July 21: ℞ Extra diet (with care) without vegetables. July 26: For some days has been about yard. July 31: Doing well. Aug. 5: Sent to Convalescents' Home. Discharged.

Massachusetts General Hospital, East Medical Records, V. 433, p. 166. 1891, Aug. 12.

M. H., eight years. Family history unimportant. Personal history: Measles in infancy. Grippe last winter. Present illness: One week ago vomiting (food and bright red blood); pain immediately after eating; constipation; much headache. No nose bleed; vomited blood several times since. Blood in stools (?). Temperature 101° F., pulse 120, respiration 24.

*Urine:* Pale; slightly acid, 1,019; no albumin. Sediment, considerable; mostly urates and uric acid crystals, few bladder cells, leucocytes and blood.

Physical examination: Small, thin child. Face and mucous membrane pale. Tongue moist, clean. Pulse regular in force and rate, good strength. Heart and lungs not abnormal. Abdomen negative except area of tenderness just below ziphoid. Diet: Milk ℥iv with lime water ℥ii every two hours in divided doses. Aug. 14: Perfectly comfortable. No vomiting since entrance. Sleeps well. Milk ℥vi every two hours. Aug. 16: Stronger. No vomiting. No tenderness. Milk ℥viii every two hours. Aug. 17: Temperature normal. Tendency to constipation. Aug. 22: Now taking milk ℥vi every hour during day. Sleeps all night. No vomiting. No distress in stomach. One egg. Aug. 23: Two eggs daily. Aug. 24: Soft toast. Aug. 25: Steak or roast at noon. Two eggs daily. Aug. 26: Sits up. Aug. 29: Three eggs daily. Enema only p r n. Sept. 2: Herpes on legs. Aristol and later zinc and starch powder. Sept. 7: Steadily improved. Sept. 11: Discharged well.

Massachusetts General Hospital, East Medical Records, V. 577, p. 34. Feb. 7, 1903.

M. S., six years. Family history unimportant. Habits: Three cups of tea daily. Candy. Personal history: Measles, chicken pox and whooping cough. Dysentery when one year old. One year ago complained of a lump on right side of neck and this was soon followed by earache and a discharge from right ear. Operated upon ear at Eye and Ear Infirmary. Has never been a strong child. Appetite fair. Bowels regular. No cough or digestive trouble this winter. Has never had any cuts or wounds.

Present illness: For past week mother noticed that patient was restless. Three days ago complained of headache and pain in right side of abdomen and next day said that right hip was tender and painful and cried when it was moved. No swelling or redness. Appetite poor. Bowels moved yesterday. This afternoon coughed occasionally and dozed considerably. No vomiting. At half past four said that she wanted to spit and raised a little blood. This was immediately followed by bleeding from the mouth and nose. About one quart of blood came away, some in clots. Blood, bright red. Child did not cough or appear to vomit at time of attack. Given medicine sub-cu. and brought to this hospital. Slight bleeding from mouth on the way.

Physical examination: Well developed and fairly well nourished. Pupils equal and react. Skin and conjuctivæ pale. Tongue moist, slight, white coat. Teeth in fair condition. Throat negative. *Heart,* Apex. Impulse palpable and dullness corresponds in fifth space at nipple line. No + to right. Action slightly irregular. Sounds of good quality. A loud systolic murmur heard over whole precordia with maximum intensity at apex transmitted to axilla and heard in back. P. 2d + +. *Pulses,* equal, synchronous, of fair volume and tension. Arteries not palpable. *Lungs,* nothing abnormal found. *Abdomen,* full, soft, tympanitic. No masses or tenderness. *Spleen* not enlarged. *Liver,* dullness sixth rib to costal margin. Edge not felt. Right hip very tender on slightest motion, thigh slightly abducted and flexed. Muscular spasm on attempted motion. Point of tenderness over saphenous opening. No tenderness over sciatic nerve or any portion of thigh and leg. Reflexes all present and normal. No edema. Rachitic rosary present. Temperature 102° F., pulse 136, respiration 32. Hb. 85%. Whites, 25,300.

*Urine:* Normal, acid, 1,026, albumin slightest possible trace. Sugar and bile none; diazo, faint. Chlorides, normal. Sediment: a rare granular cast, leucocytes, bladder cells and squamous epithelium. Urates +. Diet, liquids only. Water, + by mouth. ℞ Strychnia gr. $\frac{1}{30}$ every four hours if awake. Hot water bottle to right hip and keep quiet as possible. Feb. 9: ℞ Extract cascara gr. iii, later a suds enema if necessary. Feb. 10: Temperature 100–101° F., pulse, 120; respiration, 25-30. Yesterday had good result from suds enema, containing a considerable amount of dark, old blood. No blood in stool this morning. Takes nourishment well. To-day hip can be moved in every direction without any pain. ℞ Suds enema with care. *Blood:* Hb. 60%. Whites, 27,600; reds, 3,460,000. Stained specimen shows slight degree of achromia. Red corpuscles not otherwise remarkable. No blasts seen. Differential count: Polynuclear neutrophiles, 88%; lymphocytes, 10%; eosinophiles, 2%. Feb. 11: Bismuth subnitrate ℥ss 4 i d. Omit strychnia. ℞ Orange

juice. Feb. 13: No more blood in stools. No nausea or vomiting. Takes nourishment well. Sleeps nicely. Physical examination negative except heart and pallor of skin. Feb. 15: ℞ Dr. Shattuck's Gastric Ulcer diet. Feb. 16, at 6.45 P.M., complained of nausea; vomited three small clots and one long thin clot of blood. Not any feces. ℞ Morphia, gr. $\frac{1}{8}$ o.c. Nothing by mouth. Ice bag to abdomen. Hb. 60%. Whites, 19,600.

*Urine*: Normal acid, 1,016; albumin, sugar, bile, and diazo, none. Chlorides, normal, Feb. 17: ℞ Liquids, ℥ii every three hours. Bismuth subnitrate, ℥ss every three hours. No more blood in vomitus. Feb. 19: ℞ Make liquids ℥ss every hour. No blood in stools. Seems very weak. Heart is irregular. Feb. 20: Dr. Shattuck's Gastric Ulcer diet with great care. Feb. 21: *Hb.* 70%. *Whites*, 14,000. Feb. 22: No further sign of bleeding; seems to be gaining strength. Takes food well. Heart exam. idem. Feb. 24: ℞ Bed rest. ℞ Blaud's pill powdered, gr. ii t i d.

*Urine:* Feb. 25: Normal, acid, 1,015; albumin, sugar, bile and diazo, none. Chlorides, normal. Color much better and seems stronger. Up in chair. Feb. 25: ℞ Cand. B. two hours. Feb. 26: *Hb.* 70%. March 1: Sits up. Feels finely. Still somewhat weak and pale. No gastric symptoms. March 4: *Urine:* Normal; acid, 1,019; albumin, sugar, bile and diazo, none. Chlorides: normal. Up and about the ward. Still somewhat pale. Takes nourishment well. No gastric symptoms. March 6: ℞ Liquor antiseptic M. G. H. mouth wash 2 i d. March 5: Doing finely. March 7: Seems to gain strength slowly. March 10: This morning at six o'clock had a severe nosebleed which was checked by a wad of paper between upper lip and gum. At 10.45 A.M., vomited about 2 oz. of blood. At 1 P.M. vomited ½ oz. of blood mixed with curdled milk and having an odor suggestive of gastric contents. Seemed excited and restless. ℞ Stop everything by mouth except cracked ice. ℞ Morphia gr. $\frac{1}{6}$ s.c. given twice. ℞ Suprarenal Extract gr. iv every three hours by mouth.

March 11: *Urine:* Normal; acid, 1,020; albumin, sugar, bile and diazo, none; chlorides, normal. ℞ Rectal feeding: Milk ℥iii with care to tolerance; egg, i; salt, ℥ss every eight hours. March 13: Is pale and weak but has had no more hemorrhages. Retains nutrients well. Seen by Dr. A. T. Cabot, who advises continuation of medical treatment. ℞ Fairchild's milk, ℥i every four hours. March 14: Water, ℥ii. Glycerine enema. March 15: No further signs of hemorrhage. Seems weak and sleeps considerably. Fairchild's milk, ℥i every two hours. ℞ Sip water. March 16: ℞ Fairchild's milk ℥ii every two hours and water ℥ii every two hours. March 17: ℞ Make milk and water ℥i every two hours. No further gastric symptoms. Retains all nourishment and feels a little stronger.

March 19: *Urine:* Normal; acid, 1,018; albumin sugar, bile and diazo, none. Chlorides, normal. Hb. 70%; reds, 5,124,000. ℞ Make milk ℥iii every two hours and water an equal amount. March 21: No nausea or vomiting. Doing well. Milk, ℥v every two hours. March 22: ℞ Milk, ℥vii every two hours. March 23: Increase to gastric ulcer diet. March 24: No further evidence of hemorrhage. No gastric symptoms. Seems brighter. ℞ Omit rectal feeding. ℞ Bismuth subnitrate ℥ss t i d.

March 26: *Urine:* normal; acid, 1,022; albumin, sugar, bile and diazo, none. Chlorides, none. March 27: Feels much better and color is improving. March 30: Doing finely. April 2: Feels much better. No further gastric symptoms.

*Urine:* Normal; acid, 1,016; albumin, sugar, bile and diazo, none. Chlorides, normal. April 5: Feels perfectly well. Color is better. April 6: Hb. 70%. April 8: Doing well.

April 9: *Urine:* Normal; acid, 1,016; albumin, sugar, bile and diazo, none. Chlorides, normal. April 10: Much brighter and stronger. April 12: Small nosebleed this afternoon. April 13: Doing well. April 14: ℞ Cand. B. two hours +.

April 16: *Urine:* Normal; acid, 1,017; albumin, sugar, bile and diazo, none. Chlorides, normal. Up about ward. No gastric symptoms. April 19: Still somewhat weak but is doing well. April 22: Seems stronger.

April 24: *Urine:* Normal; acid, 1,020; albumin, sugar bile and diazo, none. Chlorides, normal. April 26: Up and about ward. Feels perfectly well. April 30: Seems perfectly well, but is still pale.

*Urine:* Normal: acid, 1,025; albumin, sugar, bile and diazo, none. Chlorides, normal. May 1: ℞ Blaud's Pill gr. v 2 i d p c. May 2: Still pale. Systolic murmur still present. May 3: *Hb.* 70%. May 5: Feels well. About ward all day. May 8: *Urine:* Normal; acid, 1,016; albumin, sugar, bile and diazo, none. Chlorides, normal. May 9: Doing nicely. May 12: Plays about hospital all day and seems perfectly well. May 13: Directions given concerning diet. Is to continue Bismuth and Blaud's Pills. Discharged well. Relieved of mitral regurgitation.

The *situation* of the ulcer in the *acute cases* was: near the cardia, 1; in the pyloric third of the greater curvature, 1; in the anterior wall of the greater curvature near pylorus, 1; in the anterior wall near lower curvature, midway between fundus and pylorus, 1; cardiac end close to greater curvature, 1; toward pyloric end, above, 1; scattered over inner surface several ulcers, 1; posterior wall at cardiac extremity, close to greater curvature, 1; posterior surface, close to greater curvature and nearer pyloric end, 1; anterior wall, cardiac end, close to greater curvature, 1; and in greater curvature middle zone, 2 ulcers; in center of lesser curvature, 1; lesser curvature one inch from pylorus, 2 ulcers, 1; anterior wall near pylorus close to lesser curvature, 2 small ulcers, 1; beginning of cardia, 1; middle of stomach, 1.

In the cases developing immediately after birth, six in number, two showed the ulcer near the pylorus, three showed the ulcer near the cardia, and one had it midway between the pylorus and cardia. In three of these cases vomiting of blood was a symptom throughout, in one vomiting and diarrhea occurred, the stools showing blood only toward the end. In two cases the symptoms were not given. The region affected in four out of the six cases was the cardiac or central portion of the stomach near the great curvature, the usual seat of hemorrhagic erosions. The blackened, lacerated appearance in at least two of the cases suggests effusion of blood into the mucous membrane as the cause of the necrosis. Numerous instances of hematemesis or melena shortly after delivery are reported, which have recovered. In these the erosion was probably not so extensive as to prevent rapid healing.

In six of the acute cases the ulcers were apparently an intercurrent affection, one occurring after severe burns of the arms and legs, and

one each in croupous pneumonia, typhoid fever, diphtheria, tuberculosis, and a gangrenous affection of the mouth.*

The *situation* of the ulcer in the *chronic cases* was: 2 cm. from the pylorus, lesser curvature, posterior wall, 1; locality not given (Lebert), 1; in front of greater curvature, 4½ inches from cardia, 8 inches from pylorus, 1; posterior wall of stomach, 1; 1½ inches from pylorus, posterior wall, 1; upper half of smaller curvature, 1; at the cardia, 1; smaller curvature, 1; cardiac end close to greater curvature, 1; toward pyloric region above, 1.

The *situation*, then, in the *acute cases* was: near the cardia in 5, near the pylorus in 6, and midway between in 2 cases, and generally distributed in 2. In the *chronic cases*, near the cardia in 2, near the pylorus in 3, midway between in 4, and in 1 the location was not given. There seems then from these cases to be a greater frequency of the ulcer at the pylorus in the acute, and in the middle portion of the stomach in the chronic cases, which is absolutely the reverse of what is usually taught.

The following anatomical differences in the mucous membrane of the stomach in the child from that in the adult are the only ones I have been able to find:

Werber † says the glandular portions of the stomach of nurslings differ essentially from that in adults, in that the mucous glands in the newborn are present in greater numbers; in the glands of the fundus, labdrüsen, the simple tubular form predominates; further, these simple glands are evenly distributed over the whole surface of the stomach, instead of, as in the adult which are less numerous, have a more complicated structure, are also evenly distributed between the mucous glands, and are present in somewhat larger number only in the pyloric portion. Lymphoid follicles (Lenticulärdrüsen) were not seen by Werber.

Klein ‡ says the cylindrical epithelium in the newborn everywhere, even in the fundus, extends more than half-way into the follicle. He did not find either lymph follicles or Peyer's patches.

That these structural differences may well have a bearing on the infrequency of peptic ulcer in the child is quite probable.

With reference to the kind of gastric juice secreted by the child I have only been able to find the following record by Leo,§ to the effect that the sole difference between it and that secreted by the adult was the less amount of hydrochloric acid in the child.

*Sex.* — The preponderance of the female in these cases is remarkable. Of the twenty-nine cases, eighteen were females, five were males, and in six the sex is not stated. Of the acute cases, thirteen were females, two were males, three not stated. Of the chronic cases, five were females, three were males, three not stated.

*Age.* — Of the six cases occurring soon after birth, the youngest was thirty hours old, and the others were two, five, seven, eleven and fifteen days respectively. There were eight cases less than seven years of age, and nine cases between eight and thirteen.

The *symptoms* of gastric ulcer in children vary with age. In infants the first thing observed is restlessness and hematemesis or melena; there were evidences of pain in one case. In older children dyspepsia or abdominal pain usually precedes the more characteristic phenomena. But here, too, as in some of the very young cases, there were no symptoms in two, and one simply felt badly before the final catastrophy.

*Pain* in the epigastrium after food is stated to have been present in five cases and in one it was extremely severe. It usually began soon after a meal and sometimes persisted during the whole period of digestion or till vomiting occurred. Exacerbations occurred from time to time, probably an indication of extension of the ulceration. A violent attack not rarely preceded the occurrence of hematemesis or perforation. The pain was located usually in one spot in the epigastrium, occasionally it was in the back, sometimes it was spoken of generally as pain in the belly. A tender spot was frequently found below the end of the xyphoid cartilage, and pressure here was said to excite nausea and vomiting in some instances. General tenderness of the epigastrium was spoken of, and once, general abdominal tenderness.

*Vomiting* was mentioned in sixteen cases and was usually not immediately after food. It was preceded by nausea and sometimes by increased secretion of saliva as well. In all cases the vomitus was acid, sometimes spoken of as markedly so, but I find no record of an abnormal quantity of HCl.

*Hematemesis* was observed in eleven of the cases, six acute and five chronic. It occurred shortly after a meal. It was more frequently bright blood.

The *appetite* seems not to have been affected much, indeed in several instances food is reported to have been taken with avidity. In the chronic cases the ulceration exerted an inhibitory influence in the growth and nutrition, one of the cases being specially marked in this respect. Dilatation of the stomach from pyloric stenosis was spoken of in one instance. Perforation occurred in several of the cases. Eructations, fulness, distention, burning and nausea are mentioned the same as in adult cases though less frequently.

*Treatment.* — The patient, at any age, should be kept quiet in bed for at least three weeks and perhaps longer, according to the symptoms. When there is tenderness hot fomentations or poultices are advised during its continuance.

*Diet.* — Infants at the breast may be nursed a short time every hour if the milk agrees, but only a small amount of milk should be allowed

* Charcot (Mém. de Soc. Biol., 1853, p. 88) found two ulcers in the stomach of a six-months' foetus which was affected with smallpox. Malinowski (Index Medicus, Vol. V, p. 575) found an ulcer in the stomach of a child ten years old, who died of diphtheria, and Rilliet and Barthez (Maladies de l'Enfance, 2d Edit., Vol. II, p. 881) describe a somewhat similar case. (Fenwick *loc. cit.*)

† Werber. Verhandlungen der naturf. Ges. 3 u. Freiburg. Bd. III, Heft. 3 u. 4, p. 137.

‡ Stricker Gewebelehre. Magen.

§ Magenausspielung im Sauglingen. H. Leo. Zeitschrift für praktische Aerzte Frankfurt-am-Main, 1896 v, s. 447.

at each nursing. With bottle-fed children, cows' milk modified according to the modern methods and diluted with barley or Vichy water may be allowed with proper precautions. It may have to be peptonized before being given. With older children we must still make milk the chief article of diet, but soups, broths, meat extracts, raw or cooked meat juice, meat jellies and egg white may be alternated with it. As improvement advances the diet may be cautiously increased. Doubtless nutrient enemata would at times have to be given.

*Medicines.* — For pain opium in some form is the safest in the child and should be given usually by the mouth in doses sufficient to meet the indication. The administration of bismuth I believe to be advisable as in the adult. Small or single hemorrhages take care of themselves; when profuse or repeated, surgical consultation is obligatory, meanwhile exhibition of suprarenal gland extract or saline infusions may be tried. A bland form of iron should be begun as soon as permissible and later arsenic or cod-liver oil, perhaps be added. The diet must be regulated for several months after apparent cure.


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## EXAMINATION OF PLEURAL FLUIDS WITH REFERENCE TO THEIR ETIOLOGY AND DIAGNOSTIC VALUE.

BY PERCY MUSGRAVE, M.D., BOSTON.

(Concluded from No. 14, p. 381.)

Case 59. — C. O. B., forty-seven, m., Canadian, gardener. March 25, 1904. F. H. negative. P. H. unimportant. Habits good. Pres. ill. — Past winter began to have dyspnea on exertion, and swelling of legs and abdomen; severe cough; sputum white. For one week increase in symptoms. Orthopnea at times. Phys. exam. — W. D. and slightly obese. Heart: signs of myocarditis. Lungs: signs of bronchitis and right pleural effusion. Temperature 103, pulse 124, respiration 40. Blood: whites — 6,800. March 26, *chest tapped, fluid:* amount 40 oz., color yellowish red, turbid, some fibrinous flakes, alb. 1%, sp. gr. 1,012; sed.: considerable, count of 500 cells, polynuclears 96.6%, lymphocytes .4%, endothelium and large mononuclears 3%; few red corpuscles. Cultures: no growth on blood serum or blood ager; some digestion of the blood serum. Pig inoculated; autopsied May 31, 1904; negative. Patient transferred to surgical on March 26. Clinical diagnosis: empyema. Myocarditis. Broken compensation. Ascites.

Case 60.—E. S. (female), two, s., American. March 29, 1904. F. H. good. P. H. negative. Habits: tea and coffee to excess. Pres. ill. — For four days fever, slight cough, rapid respiration, thirsty. Grown rapidly pale. Phys. exam.— W. D. and N.; slightly cyanotic. Heart negative. Lungs: signs of right pleural effusion and consolidation; otherwise negative. Temperature between 102 and 104. Pulse 150 to 170, falling to 138. Respiration 55, falling to 40 after tapping. Blood: whites — 28,400. *March* 31, *chest tapped, fluid:* amount 8 oz., brownish yellow, turbid, few fibrinous flocculi, alb. 3%, sp. gr. 1,020; sediment: abundant, consisting of broken down leucocytes, chiefly polynuclear; many streptococci seen; no tubercle bacilli found on cover-slip. Cultures: pure streptococcus. Child was transferred to surgeons. Operated on, making an extremely slow recovery. Is still in hospital. Clinical diagnosis: pneumonia.

Case 61.— J. F. (female), eighteen, s., Italian. March 1, 1904. F. H. and P. H. negative. Habits good. Pres. ill. — For three weeks pain in left chest with increasing shortness of breath, slight cough, no sputum. Phys. exam. — W. D. and N. Face flushed. Heart displaced to right; examination otherwise negative. Temperature 103, pulse 120, respirations 40. Blood: whites — 19,600. *Chest tapped, fluid:* amount 48 oz., greenish brown, turbid, with fibrinous flakes, alb. 2%, sp. gr. 1,022; sediment: considerable amount, consisting of many broken-down necrotic leucocytes, mostly polynuclear; numerous cocci, many in chains without capsule. Cultures: pure streptococcus; no tubercle bacilli found; two slides examined. March 3, transferred to surgical. Operated

upon several times. Very slow convalescence. Patient still in hospital, June 2, 1904. Clinical diagnosis: pleurisy with effusion. Streptococcus.

Case 62.— E. Des R. (female), twenty-five, s., American, housewife. Dec. 28, 1903. F. H. good. P. H. negative. Habits good. Pres. ill. — Three days headache, malaise, chills and fever. Sharp pain in right axilla, rigor twenty-four hours before entrance. Dyspnea, increasing cough, orange-colored expectoration. Phys. exam.— W. D. and N. Labial herpes. Heart negative. Lungs: pneumonia right upper lobe; examination otherwise negative. Temperature ranging between 102 and 105 for four days, then sudden drop to 100½; for two weeks temperature was irregular, between 99 and 102, then normal. Pulse closely followed temperature line, and for four days was between 120 and 140, then for two weeks averaged 110, then between 80 and 90. Respiration curve followed that of the temperature and pulse. Blood: whites — 37,800. Sputum typical of pneumonia. *Jan.* 4, *signs of fluid in right chest, tapped, fluid:* amount 12 oz., orange colored, sp. gr. 1,015; sed.: polynuclears 44%, lymphocytes 34%, endothelium 8%, large mononuclears 14%; red corpuscles fairly numerous. Diplococci resembling pneumococci found in polynuclears. No cultures made. Not in sterile flask. Patient developed an arthritis which delayed convalescence. Discharged well Feb. 12. Clinical diagnosis: Croupous pneumonia. Pleurisy with effusion. Arthritis. Pneumococcus (?).

Case 63.—S. J. S., thirty-one, m., American, painter. March 20, 1903. F. H. negative. P. H. acute gangrenous appendix with abscess Jan. 17, 1903; operation; otherwise negative. Habits good. Pres. ill. — For two weeks malaise, chilly feelings, sweating, symptoms gradually increasing in severity. Phys. exam. — W. D. and fairly W. N. Pale. Heart negative. Lungs negative. Abdomen, small, discharging sinus at lower end of appendix scar, discharging a little greenish-white pus. Liver not enlarged. Spleen enlarged by percussion, not palpable: otherwise negative. Temperature irregular with evening exacerbations 100½ to 104; pulse averaged 90, respirations 25. Blood: whites — 16,400; no Widal. March 22, tenderness over liver region noted. March 29, transferred to surgical. May 4, signs of right pleural effusion; question of tuberculosis of the pleura and lungs at that time. *May* 5, *chest tapped, fluid:* amount 4 oz., straw colored, slightly turbid, alb. 3½%, sp. gr. 1,022; sed.: polynuclears 74%, lymphocytes 2%, eosinophiles 1%, endothelium 6%, large mononuclears 17%; few red corpuscles. Cultures: staphylococcus albus. Contamination? May 11, operation: abscess of liver found pointing into pleural cavity but not rupturing. Abscess due to actinomycosis with secondary infection. Oct. 1, discharged relieved. Clinical diagnosis: abscess of liver due to actinomycosis.

Note. — Has died since leaving hospital. No autopsy.

CLASS III.

Case 64. — M. C., fifty-seven, m., Canadian, blacksmith. April 21, 1903. F. H. and P. H. unimportant. Habits good. Symptoms of circulatory disease 3½ years ago. Phys. exam.— Well developed, emaciated, somewhat pale. Heart: signs of mitral insufficiency, palpable arteries, high tension pulse; examination otherwise unimportant except for a left pleural effusion. Extensive edema feet and legs. Temperature approximately normal except for two days when it was 101. Respirations averaged 25. Blood: whites — 11,000. Urine: normal, acid, alb. ⅛%, sp. gr. 1,020; numerous hyaline, fine granular casts, few leucocytes, small round cells and blood corpuscles. *April* 23, *chest tapped, fluid:* amount 56 oz., straw colored, alkaline, very slight coagulum, alb. 1.2%, sp. gr. 1,012; sed.: many large endothelial cells occurring free and in plaques; moderate number of lymphocytes, rare polynuclears. Cultures: no growth. Patient improved under treatment; discharged relieved April 9. Clinical diagnosis: arteriosclerosis. Mitral regurgitation. Chronic interstitial nephritis.

Case 65.— J. J. C., forty-eight, m., Maine, bar-tender. April 28, 1903. Previously treated in hospital for aortic insufficiency. Pres. ill. — Symptoms of broken compensation for six weeks. Phys. exam.— Well developed and somewhat emaciated. Heart: aortic insufficiency. Lungs: signs of right pleural effusion. Abdomen: slight ascites, enlargement of the liver and spleen. Edema of legs. Temperature averaged subnormal; pulse averaged 90; respiration 25. Blood: whites — 6,400. *April* 28, *chest tapped, fluid:* amount 54 oz., pale, serous, straw colored, alkaline, alb. 1.4%, sp. gr. 1,012; sed.: very few elements, few clumps of endothelium and few lymphocytes. Some of free endothelium swollen and evacuolated. Cultures: no growth. Discharged much relieved May 13. Clinical diagnosis: aortic insufficiency. Broken compensation. Enlarged liver.

Case 66.—C. W. H., fifty-three, s., American farmer. July 6, 1903. F. H. good. P. H. unimportant. Habits good. Pres. ill. — Symptoms of cardiac disease for 2½ years. Phys. exam.— W. D. and N. Cyanotic. Heart: signs of mitral regurgitation and broken compensation. Lungs: signs of right pleural effusion. Considerable edema lower extremities. Temperature normal or sub-normal with two transitory rises above 100. Pulse 65 to 85; respirations 25. Blood: whites — 6,400. No sputum. *July* 9, *chest tapped, fluid:* amount 52 oz., pale straw colored, very slight coagulum, alb. 1.2%, sp. gr. 1,011; sed.: very rare, more or less disintegrated endothelial cells. Cultures: no growth. Patient improved; July 28 discharged relieved. Clinical diagnosis: myocarditis. Mitral regurgitation. Hydrothorax.

Case 67. — F. W. C., thirty-nine, s., American, teamster. April 12, 1904. F. H. negative. P. H. unimportant. Habits: alcohol to excess, up to one year ago. Pres. ill. — One month ago swelling of legs and abdomen coming on insidiously without assignable cause. Dyspnea, no cough, anorexia. Micturates three or four times at night. Phys. exam.— W. D. and poorly nourished; pale. Heart negative. Lungs: pleural effusion both bases, marked on right. Abdomen: ascites. Edema, feet, ankles, thighs and back. Temperature chart unimportant. Blood: whites — 11,400. Urine characteristic of sub-acute glomerulo nephritis. *Right chest tapped, fluid:* amount 40 oz., color bright pink, coagulum very slight, alb. ½%, sp. gr. 1,010; sed.: marked amount principally red blood corpuscles; white elements no more numerous than the amount of blood would call for. Marked number of endothelial plaques. Cultures: no growth. Pig inoculated; autopsied May 21; negative. *April* 20, *chest tapped again, fluid:* amount 48 oz., pale opalescent, no coagulation, alb. trace, sp. gr. 1,008; sed.: scanty, few elements. Many partly necrotic endothelial cells, some in plaques, marked number of lymphocytes and a few polynuclears; many of cells ragged and broken up; very few red corpuscles. May 24, discharged relieved. Clinical diagnosis: sub-acute glomerulo nephritis.

Case 68. — B. L. C., forty, m., Russian, store-keeper. April 18, 1904. F. H. negative. P. H. negative. Habits: tobacco in excess. Pres. ill. — For ten months increased pain in lower right chest, no other

symptoms; for five weeks pain has been worse and accompanied by dyspnea and anorexia. Phys. exam. — W. D. and N., pale. Heart: slightly enlarged and irregular. Lungs: right pleural effusion; examination otherwise negative. Temperature normal; pulse 110 at entrance, gradually falling in four days, then ranging between 70 and 85; respiration at entrance 30, gradually falling to 20. Blood: whites — 10,400. *April* 19, *chest tapped, fluid:* amount 42 oz., hemorrhagic, no coagulum, sp. gr. 1,035; sed.: large amount, chiefly red corpuscles, white elements and endothelium scanty by comparison; endothelial plaques; lymphocytes 23%, polynuclears 11%, endothelium 65%, large mononuclears 1%. Cultures: no growth. Pig inoculated; autopsied May 21; negative. Patient improved fairly rapidly and April 30 felt well except for occasional pain in right chest. Discharged well. Clinical diagnosis: pleurisy with effusion.

Note. — Sp. gr. was either an error of record or was due to blood, probably accidental.

Case 69. — A. B. (colored), fifty-nine. July 21, 1903. P. H. Severe rheumatism twenty years ago; well until five months ago when he had attacks of dyspnea and stenocardia with increasing dyspnea; got better and was well until three weeks ago, since when he has had cough without sputum with increasing dyspnea. Phys. exam. — Signs of mitral regurgitation. Lungs: signs of left pleural effusion; lungs otherwise negative; physical examination otherwise negative. *Chest tapped July* 22, *fluid:* amount 3 pints, straw colored, very small coagulum, alb. 1.2%, sp. gr. 1,011; sed.: many endothelial cells in large and small clumps; some of the plaques contain as many as 15 or 20 elements; few lymphocytes and rare polynuclears; few red corpuscles. Clinical diagnosis: mitral regurgitation. Hydrothorax.

CLASS IV.

Case 70. — E. G. (female); thirty-five, s., American, housework. June 18, 1903. F. H. and P. H. negative. Pres. ill. — For three years patient has had lump in the left breast which has suddenly grown larger. Progressive loss of weight. For three weeks increasing dyspnea. Phys. exam. — P. D. and P. N. Marked dyspnea. Heart displaced to right. Lungs: signs of large left pleural effusion. Carcinoma of the breast and metastases in the axillary and supraclavicular glands. *Chest tapped, fluid:* amount 95 oz., serous, slightly hemorrhagic, alb. 3%, sp. gr. 1,022; sed.: considerable number of endothelial cells free and in plaques of two and three; lymphocytes 61.7%, polynuclears 6.3%, endothelium 32%; numerous red corpuscles. Cultures: no growth. Patient died within a few hours. No autopsy was obtained. Clinical diagnosis: cancer of the breast and metastases into the pleura.

Case 71. — Mrs. X. (private patient of Dr. X.) Patient had had an operation about two years ago with removal of the left breast for carcinoma. About eighteen months later, developed a pleurisy with insidious onset in the left side. *Fluid:* straw colored, considerable coagulum, alb. 1½%, sp. gr. 1,021; sed.: considerable number of endothelial cells free and in clumps, many with double nuclei and some with nuclear figures; lymphocytes 75%, polynuclears 5%, endothelium 20%. Cultures: no growth. Pig inoculated; autopsy negative. Clinical diagnosis: pleurisy with effusion, probably malignant.

Case 72. — Mrs. X. (private patient of Dr. X.). Previous operation within two years for cancer of breast. *Fluid:* dark straw colored, alb. 2½%, sp. gr. 1,019; sed.: many lymphocytes and few polynuclears, some very large endothelial cells, some showing two nuclei, and some evacuolated; these cells occur in plaques of three and four elements and more. Case died. Autopsy showed pleura studded with cancerous nodules. Pig inoculated; autopsy negative. Clinical diagnosis: recurrent cancer of the breast with metastases into the pleura. Autopsy showed diagnosis correct.

As a result of the study of this series of cases I think we are justified in coming to the conclusion that routine and systematic examination of pleural fluids will aid us greatly in diagnosis and in determining the etiology of pleurisy.

Of the methods of which I have spoken cytodiagnosis is the only one which can easily be employed clinically for the reason that animal inoculation, inoscopy and culture methods can only be employed in the laboratory.

Cyto-diagnosis is not accurate in every case any more than any other clinical method, but I think I am justified in saying that it is sufficiently accurate, especially when taken in conjunction with the history and bed-side examination, and the physical and chemical properties of the fluid itself, to justify its use as a routine procedure.

As we have seen in some cases it has not only been of more than probable diagnostic value, but has given us positive and signal results.

Routine examination of pleural fluids will not only enable us to study the question of pleurisy with effusion with reference to etiology and diagnosis, but will establish a basis upon which accurate prognostic statistics can subsequently be based.

In closing I wish to thank the Visiting, Outpatient and House Staff of the Massachusetts General Hospital for their kindness in allowing me the use of these cases, and for furnishing the material upon which this paper is largely based. My especial thanks are due Dr. J. H. Wright and Dr. Oscar Richardson of the Massachusetts Hospital for many favors and valuable suggestions rendered. Additional thanks are due to Mr. Louis S. Brown for photographs and lantern slides.

DISCUSSION.

Dr. E. A. Locke of Boston: My experience with this method has been so limited that I have very little to add to this very complete paper. In several cases in my wards I have had an opportunity to observe the accuracy with which a diagnosis has been made by Dr. Musgrave. Of even more interest to me than its aid in diagnosis is the light which it has thrown on the question of the etiology of a large class of cases of so-called "idiopathic pleurisy." In over 50% of these, Dr. Musgrave has been able by this method to demonstrate the presence of tubercle bacilli. As the reader has said, this laboratory method, like all others, is of most value when considered with the clinical picture, for in some instances, if taken alone, its significance may be misleading. Dr. Musgrave deserves great credit for this investigation, for it is, so far as I am aware, the most thorough and exhaustive yet reported.

Dr. F. W. Gay of Malden: Many of us hesitate about accepting some of the conclusions and discoveries which we see reported in the French medical journals. There is a flavor of absinthe about some of them; about others there is a suggestion of "the celebrated French case,"

PLATE I.



FIG. 1. — Lymphocytosis. Case of Primary Tuberculous Pleurisy. 750 diameters.

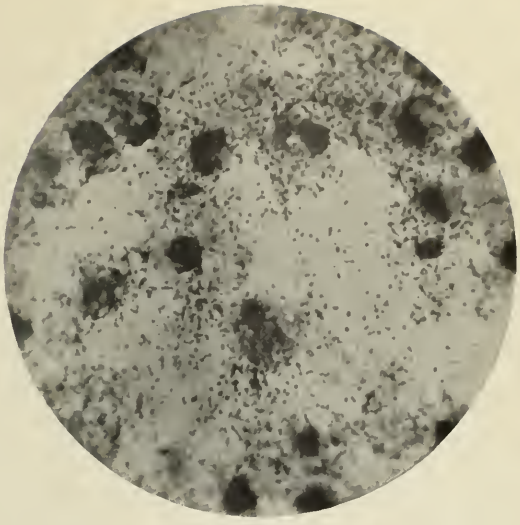


FIG. 2. — Necrotic cells and detritus. Case of Secondary Tuberculous Pleurisy. Hydropneumothorax. 750 diameters.

PLATE II.

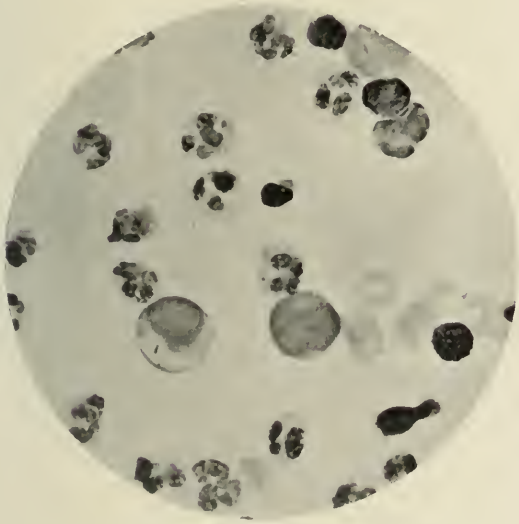


FIG. 1. — Polynuclear leucocytes and large mononuclears. Case of Traumatic Acute Infectious Pleurisy. 750 diameters.

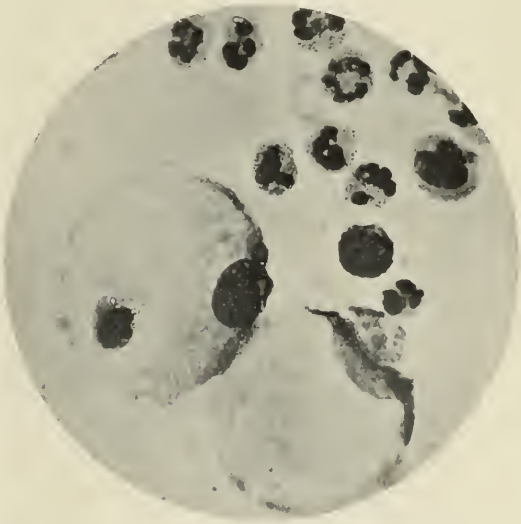


FIG. 2. — Large phagocytic endothelial cells and polynuclear leucocytes. Case of Acute Infectious Pleurisy. 750 diameters.

PLATE III.

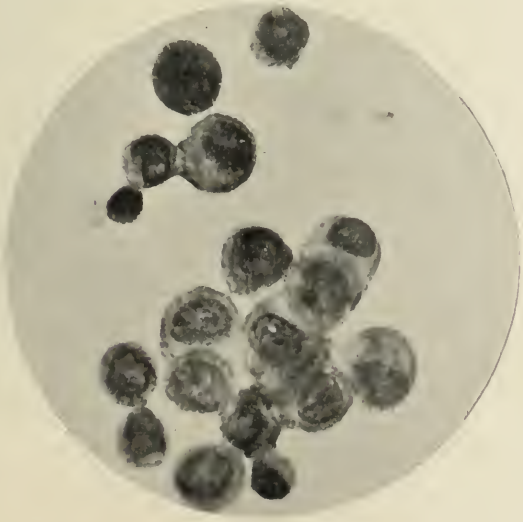


FIG. 1. — Endothelial placques and cells. Case of Hydrothorax due to cardiac disease. 750 diameters.

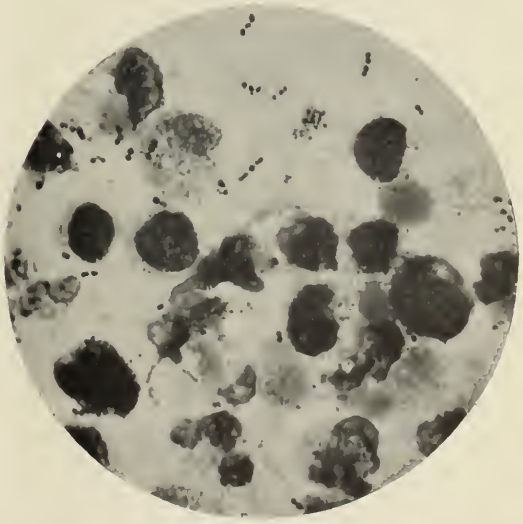


FIG. 2. — Necrotic cells and detritus with streptococci. Case of acute Streptococcus Pleurisy, calling for opera-

"the famous French discovery"; so in the case of cyto-diagnosis, for which such extravagant claims were made at first, most of us have waited for the verification of the original work of Widal and Ravant by other observers, before attaching much importance to it, as an aid to diagnosis. Now that Dr. Musgrave in his valuable paper has clearly shown its value, I think we shall all recognize cyto-diagnosis as of importance in the routine examinations. My own experience with cyto-diagnosis is limited to a series of forty cases of pleuritic fluids, which I studied two years ago, and to some thirty cases I have seen since then. I am free to confess that my results have not been so encouraging as those of Dr. Musgrave. My chief difficulty — and one which all observers have encountered — was in distinguishing the mononuclear cells. In some cases, it was very easy to say that a majority of the cells were the endothelial flakes. In others, I felt certain that a large percentage of the cells were small lymphocytes; but in the majority of the cases of my series, I confess I could not swear that the cells were anything more than mononuclear or polynuclear. In the first few cases I examined, I fear the fact that I knew the clinical history of the case helped me in making a distinction between lymphocyte and endothelial cell. As Wolff well says, "It is much easier to talk about small lymphocytes than it is to be sure of their accurate identification." Competent observers have reported cases of tubercular pleurisy in which most of the cells were polynuclear; others, cases where the majority of the cells were endothelial flakes. In the light of these facts and my own limited experience, I do not believe that we are as yet justified in concluding from the examination of the cells in the fluid alone, whether a pleurisy is tubercular or not. Furthermore, I consider that the value of cyto-diagnosis lies entirely in its association with other clinical facts.

Dr. Musgrave: I cannot agree with Dr. Gay that it is difficult to distinguish between the small lymphocyte and the endothelial cells. In the great majority of cases I have known nothing of the clinical histories until I have given my opinion as based on the examination of the fluid.

## Medical Progress.

### RECENT PROGRESS IN GYNECOLOGY.

BY W. L. BURRAGE, M.D.

(Continued from No. 14, p. 384.)

#### MALIGNANT DEGENERATION OF FIBROIDS.

In an article on the treatment of fibroid tumors of the uterus,[13] Charles P. Noble presents an analysis of the results obtained in 988 operations for fibroids by Martin, Frederick, Cullingworth, McDonald and himself. Chorio-epithelioma was found in 2, sarcoma in 14, carcinoma of the cervix uteri in 10, and carcinoma of the corpus uteri in 25; in other words, 5% of the 988 cases were found to have malignant degeneration.

Other complications found were necrosis of the tumor in 6.1% and cystic degeneration in 3.4%. He goes on to say that "These facts are incontrovertible; and when added to the probability of the continued growth of the tumor in any special instance and to the probability of various complications arising outside of the tumor and of the uterus, it seems to me clear that any one having an open mind must be convinced that the conditions surrounding any particular instance of fibroid tumor of the uterus must be exceptional, for it to be less dangerous for a woman to retain her tumor than to have it removed by a competent gynecologist."

[It is not altogether easy to agree with Noble when he says further: "The evidence which is now available proves conclusively that over one third of the women having fibroid tumors will die unless the tumors are removed," since, even if one third of the women who came to operation might have died had they not had operation, and the figures given by no means prove the proposition, no account is taken of the thousands of women having fibroids, who not only have not come to operation, but have not even consulted a physician.]

#### AVOIDANCE OF POSTOPERATIVE CYSTITIS.

K. Baisch[14] made the discovery that the death of a certain patient fourteen months after ablation of a uterine cancer — the general health being good during the interval — was due to a progressive postoperative cystitis. He believes that it is more than probable that many deaths which have been attributed to recurrence of the cancer or to an intercurrent affection, were in reality due to an unsuspected postoperative cystitis or its sequels. There has not been a single instance of postoperative cystitis in the 31 cases operated on by the Wertheim technic since he instituted systematic rinsing out of the bladder every time the catheter is used. Only one of the 31 was able to urinate spontaneously from the first, and 5 died in the course of the week with no manifestations of cystitis. Of the remaining 25, one had suffered from severe nephritis before the intervention, and it proved impossible to avert the cystitis in her case. In two, the last drops of urine were a trifle cloudy and the colon bacillus was found, but vanished in a few days with no further signs of trouble. The others — some of whom required catheterization for eighteen days before spontaneous urination was restored — all escaped any bladder trouble. Even after spontaneous urination is restored, it is at first imperfect, and the bladder is not completely emptied, thus favoring infection. Hence it follows that these irrigations must be faithfully kept up until the bladder function is completely restored to normal, and the last drops of urine are spontaneously evacuated. Wertheim himself now injects a solution of protargol or boric acid as a prophylactic measure. By this means all the germs introduced by the catheter are killed at once before they have time or opportunity to do any damage.

#### INTESTINAL OBSTRUCTION WITH DISEASES OF WOMEN.

Zeidler[15] found that in 64 cases of acute intestinal obstruction, 16 (25%) showed a dependence

[13] Jour. Amer. Med. Asso., May 21, 1904.

[14] Zentralblatt für Gynaekologie, 1904, No. 12, p. 380; Jour. Amer. Med. Asso., July, 1904.

[15] Roussky Vratch, Jan. 31, 1904; N. Y. Med. Jour., vol. lxxix, p. 803, 1904.

upon pathological changes in the female generative organs. The general mortality in the 64 cases of acute obstruction which came to the operating table was 51.56%. In the 16 cases, however, in which the obstruction was due to diseases of the female genitals, the mortality was only 31.25%. Zeidler attributes this difference to the fact that in this class of cases the diagnosis of obstruction is made earlier and more accurately. The most common form of obstruction following or accompanying diseases of women is that due to adhesions resulting from laparotomy. Such adhesions are almost constantly found after all operations in the pelvic cavity, and this complication is much more common in gynecological operations than in procedures involving the stomach, intestines, and other organs.

Another group of cases of acute obstruction occurs as the result of peritonitis from diseases of the female generative organs. Out of 8 cases, 2 were due to puerperal peritonitis and 6 to pelvic peritonitis due to other causes. In 3 cases, pelvic exudates filling the pelvis were the cause of the obstruction. In these three cases the exudate was so dense that it was taken at first for a tumor growing from the bones of the pelvis. In four cases inoperable tumors of the female pelvic organs were the cause of the obstruction.

### INTERNAL SECRETION OF UTERUS.

A. Schücking [16] believes that he has established the existence of an internal secretion in the gravid uterus, a metrotoxin, which has some influence on ovulation. His experiments were made on rabbits, which were injected with an emulsion of the tissue elements of gravid uteri. None of the rabbits conceived, although males cohabited freely with them. The emulsion seemed to have an inhibiting influence on the ovaries, and it also apparently induced hyperemia in the uterus. He supplemented these researches by injecting this emulsion of human or rabbit uteri into guinea pigs and it displayed marked cytolytic property in the cornua of the uterus. The serum of the animals thus treated acquired considerable hemolytic power for human red corpuscles, confirming its nature as a specific cytotoxin. He suggests that a serum of this kind might be used to advantage in inoperable cancers of the uterus and for post-operative treatment. The fact of an internal secretion may explain why women recover more rapidly after genital hemorrhages than from losses of blood otherwise. It may further afford the key to the extraordinary disturbances in the general health that is liable to follow even a slight interference with the circulation in a misplaced uterus. It further confirms the assumption in regard to the independence of the uterus from the ovaries.

### TUBERCULOSIS OF OVARIAN TUMORS.

This combination of lesions is in itself a rarity, but thirteen cases, including that of F. Prüsmann,[17] having been reported. The writer's case appears to possess the unusual feature of being one in which the tuberculous process was primary in the tumor. Of the 13 cases on record, 11 were glandular cystomata, and 2 dermoid cysts. The tumor described by Prüsmann was removed by laparotomy from a sterile woman of thirty-four. It was a multilocular cyst of the right ovary, whose inner surface was composed of granulation tissue, devoid of blood vessels, densely infiltrated with round cells, necrotic internally, and containing giant cells and tubercle bacilli. In the broad ligament there were areas of round-cell infiltration in the lymph spaces near the tumor, and in these areas were giant cells. This finding would point to a primary infection from the vagina by way of the lymphatics. Physical examination failed to show signs of tuberculosis in the lungs or elsewhere, but as the patient recovered, the existence of a primary focus other than in the tumor could not be excluded.

Cornet and Jani have shown what a prominent rôle coitus plays in the transmission of tuberculosis, since the tubercle bacilli in the semen are especially virulent.

### DANGERS OF INTRA-UTERINE INJECTIONS.

P. Zweifel [18] writes that it seemed possible, by avoiding entrance of air, infection and absorption of drugs, to render intra-uterine infections absolutely harmless, but Zweifel reports a case of convulsions simulating an eclamptic attack, which occurred during an extremely cautious intra-uterine injection of boiled water. Particularly remarkable features of the case were the coughing up of blood and hemoglobinuria and the rapid rise in temperature, which less than two hours after the injection was 104° F., and by three and a half hours, 106° F., subsiding to normal the next morning. The injection had been made as a last resort to induce artificial delivery, after failure of bougies and the metreurynter, the indications being heart disease, with edema of legs and rales heard over the lower lobe of the left lung. The fetus was expelled the day after the injection, which had been made according to Künne's technic, and recovery proceeded normally. Zweifel explains the convulsions as the result of the dissolving of blood corpuscles by the water flowing into the uterus, entailing coagulation, then infarct in the lung, and finally hemoglobinuria. The symptoms resembled those observed when water is injected into the blood. All the substances which dissolve blood corpuscles are liable, when injected into the blood, to induce coagulation, hemoglobinuria and general convulsions. He draws the inference that boiled physiologic salt solution should be used for intra-uterine injections instead of plain water. The danger is much less after delivery, as the injected fluid is not taken up so readily by the blood vessels. Tests with stains have shown that fluids

[16] Zentralblatt für Gynaekologie, No. 13, 1904; abstracted in Jour. Amer. Med. Assoc., July 16, 1904.

[17] Archiv. für Gyn., Bd. 68, H. 3; Amer. Jour. Obstets., vol. xlix, No. 3, 1904.

[18] Deutsche Medicinische Wochenschrift, xxx, No. 17; abstract, Jour. Amer. Med. Asso., May 21, 1904.

injected into the uterus are almost sure to pass through the tubes, which explains many of the mishaps after gynecologic injections. For this reason the amount of fluid used must not surpass one or two drops, unless the cervix is well dilated and a stiff tube used. No intra-uterine injection should be attempted when there is any inflammation in the uterus or vicinity, as even the most harmless substances and most approved technics are liable to prove fatally dangerous. Penciling is much safer.

TO DIMINISH THE PREVALENCE OF UTERINE CANCER.

G. Winter [19] gives the results of his many years' struggle to diminish the frequency of uterine cancer in Eastern Prussia. He believes that three factors are essentially to blame for the prevalence of the disease. The first is the lack of knowledge among practicing physicians, which he has combated by sending throughout the territory brochures dealing with the symptomatology and diagnosis of cancer of the uterus. The second is the conscienceless attitude of midwives, to whom he has addressed a leaflet calling attention to the main features of the disease, and urging them to have their patients consult physicians if any suspicious symptoms arise. The third factor is the attitude of women themselves, which he has attempted to overcome by publishing articles of a popular and not alarming character in daily papers. Statistics are given, showing that the operability of cases of uterine cancer presenting themselves in the clinics and to the specialists of East Prussia has risen from 62% in 1902 to 74% in 1903, and also that a larger number of patients came under observation in 1903 in the earlier stages of the disease, than in the period from 1898 to 1902. None of Winter's cases had been treated by quacks, but he considers that nevertheless quackery is responsible for much harm, in that the confidence imposed in quacks often leads to fatal postponement in consulting the physician.

SUPERHEATED AIR IN TREATMENT OF GYNECOLOGIC AFFECTIONS.

J. Salom [20] mentions that this method of treatment has been in vogue at Chrobak's clinic for two years. An apparatus is used of the Reitler type, heated by gas or an alcohol flame, the box made of wire netting and sheets of asbestos, covered with felt. An opening into the box containing calcium chlorid allows the moisture to be absorbed by the chlorid, thus promoting transpiration. The temperature is raised as high as can be borne by the patient, from 90 to 135° C., keeping it at a constant figure if possible, the duration of the application from half an hour to an hour. Fifty-seven patients were thus treated, all but 3 being between eighteen and forty. The number of applications ranged from 4 to 77, the average twenty-three. The relief of the pain is one of the most striking effects of the treatment; the patients are improved subjectively first, and the objective improvement — as resolution and absorption progress — soon follows. The greatest benefit was derived in the cases of parametritis, Nine of the 23 patients in this class were cured, and 12 essentially improved. Six patients with perimetritis were much improved, and 2 patients with pelveo-peritonitis with exudation were cured with an average of 26 applications. One of 2 patients with a postoperative fistula was also cured, and all but 5 of 22 cases of tumor in the adnexa were subjectively cured or much improved, but objectively 13 were unimproved. The inaccessibility of the internal genitalia does not allow us to hope too much from this treatment, but even with this restriction, it frequently accomplishes results unattainable by any other method.

[19] Zentralblatt für Gynaekologie, No. 14, p. 441, 1904.
[20] Wiener klinische Wochenschrift, No. 23, 1904; abstracted in Jour. Amer. Med. Asso., July 23, 1904.

REMOTE RESULTS OF EXTENSIVE OPERATION FOR UTERINE CANCER.

E. Wertheim [21] gives the results of his six years' experience with the radical operation for cancer of the uterus that bears his name. He operates entirely by the abdominal route and removes the uterus with the adnexa, parametric tissues and all the glands that can be found. Occasionally, cases of incipient cancer of the cervix are treated by vaginal hysterectomy, but these cases are not considered.

Eighty-eight cases are reported. Out of 14, representing an operability of 29.2%, 9 are free from recurrence after four years; out of 31 cases, representing an operability of 45%, 19 are free from recurrence after three years; and out of 43 cases, representing an operability of 51%, 26 are free from recurrence after two years.

Recurrence was noted in less than a third of the cases in which the extirpated glands showed no trace of cancer upon microscopical examination. In the cases of recurrence, the new growth always originated in the iliac glands and never in the inguinal glands.

Although it is impossible to remove all the glands, Wertheim considers that his improved results justify him in continuing with the use of the ultra radical operation.

[21] Wiener klinische Wochenschrift, No. 28, vol. xvii, 1904.

## Reports of Societies.

### AMERICAN MEDICAL ASSOCIATION. SURGICAL SECTION.

(Continued from No. 14, p. 387.)

FIRST DAY — (Continued.)

TWINE IN LIEU OF THE ELASTIC LIGATURE FOR PERFORMING GASTRO-ENTEROSTOMY.

Dr. J. W. DRAPER MAURY, New York City, detailed the history of work done in an experimental line during the past winter at the Surgical Laboratory of Columbia University. He described the twine triangular stitch in place of the square, being a modification of McGraw's method, and depending on a somewhat different principle for its efficacy. He showed the advantage

of the use of twine over elastic, the degeneration of the latter from contact with air being well known. The life of an elastic ligature does not exceed six weeks, or at least two months under the most favorable conditions. Strong white commercial twine, which will not break with the hands, can be easily obtained anywhere, and can be introduced with less difficulty than the elastic. Any large needle will carry the twine, while varieties of complicated needles have been made to facilitate the use of the elastic ligature. Three months ago, Dr. Maury said, twine was substituted for elastic ligature, and the triangular stitch used instead of the quadrangular, since which time thirteen dogs had been operated upon, the stomachs and intestines of all of which had been brought to this meeting and placed on exhibition.

It had been shown that this stitch invariably produced a large and commodious opening. He said they operated upon a pig, and a very perfect specimen of entero-enterostomy was obtained, it having been removed after the pig had lived for six months. This specimen was also brought to the meeting for exhibition. As the gut of this animal resembles more closely than dogs that of man, more satisfactory experimental results can be obtained. The introduction of twine, he said, could be accomplished in less than a minute and a half, but like every other stitch, it required some study and practice. The ease with which the stitch can be inserted was demonstrated by introducing it between two hats. Dr. Maury described the method of inserting the twine in triangular form, which was illustrated by a chart which Dr. Weir had had made for the purpose. The Lembert stitches, he said, were certainly necessary in the technique, although it did not appear to matter whether they were interrupted or continuous, but that the former was usually employed. Dr. Maury said that while it might reasonably be felt by some that not enough work had as yet been done in an experimental line to demonstrate positively the efficacy of the twine ligature, yet if anything could be judged from a small but consecutive series of successful experiments, the twine is at least the equal of elastic.

### REMARKS ON THE DISADVANTAGES OF THE MURPHY BUTTON.

Dr. ROBERT F. WEIR, New York, opened this paper by stating that he did not propose to decry the merits of the well-known Murphy button, for it was conceded by every one to be an admirable mechanical device, but since its introduction an enormous experience as to its value had been acquired, which it was well from time to time to take stock of. He referred to the great saving of time by the use of the button, and particularly if one avoided using any sutures of safety to hold together the peritoneal surfaces peripheral to the button, which, however, were from time to time found to be an additional necessity. He referred to the various mechanical devices in use previous to the introduction of this button and commented on their various merits, but admitted that the button was an improvement over all of them. He then detailed some of the mishaps which occur from time to time in the use of the button, among others the occasional escape of the button into the stomach, the failure of the button to come away, the imperfections in its manufacture and the various materials of which it was made, and explained certain methods of his own for overcoming these drawbacks. He alluded to the objection that both surgeon and patient felt at leaving within the body a metallic device with the imperfections that were inseparable from any mechanical contrivance, and said it was not to be wondered at that many surgeons of distinction both here and abroad should have recently reverted to the previously cast-off simple method of incision and suture. He spoke unfavorably of the oblong button which had lately been applied to a gastro-enterostomy by Murphy and Blake as he believed there was a greater risk of lodgment in the stomach and an increased amount and variety of mechanical contrivance. He was more hopeful of the elastic ligature suggested by McGraw of Detroit.

### EXCISION OF THE ULCER-BEARING AREA IN GASTRIC ULCER.

Dr. WILLIAM L. RODMAN, Philadelphia, considered that this was the most rational method of the treatment of this condition, other methods being not infrequently very disappointing. He admitted that excision of the ulcer alone might not cure, as in at least 20% of all cases the ulcers were multiple. He drew attention to the fact that gastro-enterostomy at times utterly failed to control hemorrhage and prevent perforation and always failed to remove cicatrices which might degenerate into carcinomata. He did not believe that the mortality following excision of the ulcer-bearing area would probably be any greater than the medical treatment of gastric ulcer or the less radical surgical procedures already established. In addition he claimed that this method left the stomach in better condition for future usefulness.

Dr. A. J. OCHSNER, Chicago, said he would limit his discussion entirely to the McGraw ligature. His experience covered 86 cases, 68 of which were operated upon in the hospital, while the balance occurred in various places where it was not possible to so closely observe them. Of the 68 cases done at the hospital 19 were for carcinoma of the stomach in which he did a simple gastro-enterostomy for the relief of the obstruction of the pylorus. Of these cases three died, but he believed such would have been their termination even had he not used the McGraw ligature. In 12 cases of benign stricture of the pylorus due to healed ulcers, all recovered. Thirty-three cases were operated upon for acute ulcer of the stomach of which 32 recovered, 1 dying at the end of the third week from probable thrombosis of the pulmonary. He also reported one successful entero-enterostomy for a carcinomatous obstruction of the splenic flexure of the stomach with recovery, 2 entero-enterostomies of which 1 died, probably from depression, and 1 operation for carcinoma involving the common duct. Of intestinal cases he reported 67 with 5 deaths, of which 3 were due to carcinoma, 1 to a thrombus and 1 to a very greatly depressed condition of the patient. He detailed a case operated upon about two weeks ago in which he did a gastro-enterostomy and excised about two thirds of the stomach. In his opinion it was a peculiar point about gastro-enterostomy when done with the McGraw ligature that the patients show practically no shock which might be supposed to be due to the fact that it is possible to do the operation with great rapidity, but he believed the shock in most cases to be due to manipulation.

Dr. WILLIAM J. MAYO, Rochester, believed that the Murphy button was of great service in certain cases. He preferred the posterior operation to the anterior one as in the posterior operation the mucous membrane was better able to protect itself. He admitted that all he knew about gastro-intestinal surgery he had learned from the Murphy button, and regretted very much having to partially give up its use. He looked upon Ochsner's method as a correct one. He referred to Dr. Rodman's operation as being the ideal one but one that could not be carried out in all cases.

Personally he had performed it seven times with recovery in every case.

Dr. John B. Murphy, Chicago, agreed with Dr. Weir as to the drawbacks to the button, and commented on the quality of the material used by many people in its manufacture. He laid great stress upon the bad results following excessive manipulation and dwelt on the advantages of the posterior operation. Dr. Rodman's paper impressed him very favorably, largely because it avoided any secondary opening. He did not believe, however, that the ideal operation for these conditions had yet been found and expressed the hope that some one would soon discover it.

Dr. Robert H. M. Dawbarn, New York, in referring to Dr. Weir's objection to the use of the special forceps advised by Dr. Murphy, explained a method by which he was enabled to make two corks answer every purpose and obviate the necessity of the use of the forceps.

Dr. L. L. McArthur, Chicago, in commenting on the work of Dr. Maury spoke of having been working on the same line himself and reported that most of his attempts had resulted in failure. He exhibited some specimens illustrating his method, although unsuccessful.

Dr. A. Palmer Dudley, New York, referred to a case of cancer of the uterus where he attempted to do a hysterectomy in which the small intestine was so friable that it broke into two pieces during the breaking up of adhesions. He inserted a Murphy button and after waiting nineteen days he became somewhat anxious about it. The patient developed a fecal fistula and an examination of this lesion demonstrated the presence of the button so that he felt he held the record for removing a Murphy button through the same incision in which it had been inserted.

Dr. Floyd W. McRae, Atlanta, spoke favorably of the McGraw ligature and argued that the use of rubber was just as good as twine and was more readily sterilized. Another advantage of rubber over twine was that it began its action quicker so that the feeding of the patient could be begun earlier. He claimed that one great advantage in the use of the McGraw ligature was the adding of the McClain needle, all tearing and pulling being entirely obviated. He gave the details of the case operated upon some years ago in which he did a gastro-enterostomy and found the abdomen filled with adhesions. Two years later he was obliged to open the abdomen again for intestinal obstruction which seemed to be high up, and he suspected that the McGraw operation had been a failure which would necessitate making a new opening in the stomach. Upon opening the abdomen he found that the original anastomosis admitted two fingers of his hand readily.

Dr. Maury in closing gave the details of some experiments with the elastic ligature on six dogs which were killed at the end of thirty-six hours after having developed symptoms of tetany. In referring to Dr. Lloyd's comments as to the time of cutting through of the twine, which he claimed was about three and a half days, he said it was very evident that the cutting process began some time prior to that. He felt that twine could be as readily sterilized as elastic and in addition it was more easy to get and did not deteriorate with age.

Dr. Weir in closing stated that he had called attention to all the drawbacks he had observed to the Murphy button, some of which had been made by the instrument-makers endorsed by Dr. Murphy himself. He alluded to Dr. Rodman's suggestion as being a scientific one and worthy to be considered. As to Dr. Mayo's inference that the procedure was one to be used where a gastro-enterostomy or some other procedure had failed he stated that he used it in conditions which only occur in about 6% of all cases.

Dr. Rodman closed the discussion by stating that he did not advise his operation in simple cases, but only in those where it seemed probable that a gastro-enterostomy would not prove successful, as, for example, where there were multiple ulcers some of which were probably on the point of ulceration. He called attention to the fact that it was not always possible at the time of operation to state whether or not an ulcer was benign or malignant, but he thought it was fair to assume that there was at least a fair probability of the presence of malignancy in men about fifty. As to mortality he did not feel that it ought to be greater than 10 or 15%, but he admitted it would probably always be followed by a somewhat heavier mortality than gastro-enterostomy, which is about 5 or 6%. It seemed to him that the operation surely had a place in surgery.

### RUPTURE OF MESENTERIC GLANDS DURING TYPHOID FEVER, SIMULATING INTESTINAL PERFORATION: REPORT OF A CASE WITH OPERATION AND RECOVERY.

Dr. Robert G. Le Conte, Philadelphia, called attention to the fact that the profession had long recognized that among the various lesions which may have produced a peritonitis in the course of typhoid fever, rupture of the mesenteric glands is one. It was judged that this occurrence was rare as no references were given in textbooks to such a case, and a search through the recent literature revealed but one recorded case. The anatomy of the mesenteric glands and their situation was described, and particular attention was called to the ileo-colic group as the regional glands of the lower segment of the ileum, and therefore the ones most likely to be enlarged in the course of typhoid fever. In discussing the pathology of the glandular enlargement it was shown that this was due to an active proliferation of the endothelial cells lining the lymph sinuses; that these cells invaded the coats of the smaller blood vessels producing thrombosis and minute necroses of the gland; such necrosis almost invariably ends in resolution, even if the typhoid bacillus is present in the gland in large numbers and pure culture. The post-mortem examinations at the Pennsylvania Hospital showed that in many cases the glands of the ileo-colic group were enlarged to the size of walnuts and usually presented microscopic necrosis, and yet in none of these cases had the capsule shown any sign or tendency towards breaking down. It was therefore concluded that some other factor must have been present for perforation of the gland in addition to thrombosis of the minute vessels and the presence of the typhoid bacillus. It was suggested that this factor may have been an extension of the inflammation outside of the gland producing a thrombosis of the larger vessels, and in this way a necrosis of the capsule of the gland; or, that staphylococci or streptococci gaining entrance through the eroded mucous membrane of the bowel obtained a firm foothold in the gland, liquefying its tissue, with ultimate perforation of the capsule.

A case was then reported of a Hungarian, aged twenty-two, in which the mesenteric glands ruptured on the estimated thirty-fifth day of the disease, with the production of a local peritonitis. Operation was performed, the broken down gland curetted, its cavity packed with gauze, and this area of the mesentery walled off from the general peritoneal cavity by gauze. An uneventful recovery followed. Abstracts of two cases of a similar character were briefly recorded, both of which were operated upon with death ensuing.

*Conclusions*: (1) That swelling of the mesenteric

glands was a constant lesion of typhoid fever. (2) That such enlargement was due principally to a proliferation of the endothelial cells lining the lymph sinuses. (3) That these cells by penetrating the walls of the capillaries and smaller veins produced thrombosis, with resulting minute necroses. (4) That such necrosis ended in resolution. (5) That perforation of the capsule of the gland was dependent upon some causes other than the presence of the typhoid bacillus and thrombosis of the smaller vessels. (6) That perforation was probably due either to the presence of the staphylo- or streptococcus in the gland, or to thrombosis of the larger vessels outside of the gland.

Dr. L. J. Hammond, Philadelphia, said there were so few recorded cases it was difficult to add very much to what the author had said, but from the five cases in literature sufficiently analogous to Dr. Le Conte's it was possible to at least draw some conclusion as to the mode of invasion of the infection. In two of the reported cases there were sufficient extensive complications to completely overshadow the intestines as the probable focus of infection, and besides, the intestinal ulcers found at autopsy were not sufficiently extensive to justify the probability of invasion from this source. He referred to twenty-nine cases where a slight perforation of the peritoneal coat had taken place into the peritoneal cavity, and the glands themselves were distended with pus so thoroughly that it was natural to assume the condition would have been free in the cavity. In most of the cases the presence of a lump was not noticeable earlier than the thirtieth day, and in one case it did not appear until four and a half months. In all probability Mallory's theory would be found to be the correct one, which was that the infection took place from endothelial cell proliferation.

Dr. L. L. McArthur, Chicago, reported one case similar to that of the author in which there were some symptoms of localized peritonitis during an attack of typhoid fever.

Dr. D. N. Eisendrath, Chicago, reported a case of typhoid fever operated upon by Dr. E. W. Andrews of Chicago in which absolutely nothing was found. In thirty hours the patient was dead, and while autopsy proved the existence of typhoid and failed to show any perforation it was found that a large mesenteric gland had ruptured similar to that reported by Dr. Le Conte. In addition to the localized peritonitis from this cause there was present an enormously dilated stomach.

Dr. Thomas, Scranton, reported a case of typhoid which in the sixth week developed a pain on the left side. Examination showed some thickening, and under cocaine six ounces of pus was evacuated. In a few days pain developed on the opposite side, from which eight ounces of pus was evacuated and the patient made a good recovery.

### Excision of part of the ileum and all of the cecum and ascending colon; ileum and transverse colon united by new method.

Dr. J. Shelton Horsley, Richmond, Va., alluded to the many ingenious methods in use for the uniting of the divided ends of the intestinal tract, and said it seemed to him that the trend of surgical opinion was in the direction of suture rather than mechanical appliances, which was due to the fact that an operative procedure requiring for its performance a special apparatus was thereby handicapped. He referred to a paper already published in which he gave the results of experimental work in intestinal suturing, the result being the method he now employs, which he believed simplified the technical difficulties and obviated stricture in many cases. He detailed his method at considerable length and freely illustrated the various points. He also reported in full a case in which his method had been employed, but death resulted four days after the operation. He described at length the results of the post-mortem examination and also the details of the microscopical examination of the specimen, from which the diagnosis was made of syphilitic gumma of the intestines.

Dr. Oliver C. Smith, Hartford, urged that there should be more reporting of unsuccessful cases since much might to be learned from such reports. He expressed the fear that too many men had an idea they were able to operate for appendicitis just as everybody used to think they were proficient in obstetrics, the result being that every now and again a novice runs up against a carcinoma or an intussusception and does not know what to do. An important question which often has to be decided is, Should a mechanical device be employed which is to be removed or should one be used which is to be allowed to stay? and he did not believe every man who thought he could operate for appendicitis was competent to make this choice.

Dr. A. J. Ochsner, Chicago, referred to the rarity with which surgeons had an opportunity of excising the cecum, ascending colon and ileum which he believed was the reason why the subject had never been thoroughly discussed before the Section. He urged the necessity of avoiding unnecessary manipulation, and commented on the fact of the great mortality in cases where much manipulation was necessary. He described in detail how he believed the operation referred to in the paper should be done, and alluded to the question of large and small intestine, which terms he said should have been dropped years ago. He advised the use of the Murphy button in such cases as that reported, with the use of a few stitches. He reminded the members of the Section of the great care needed to see that serous surface was brought opposite to serous surface and peritoneum opposite to peritoneum, so that the operation if properly performed would not take more than thirty minutes.

Dr. F. Gregory Connell, Colorado, expressed himself as very glad that Dr. Horsley used the through and through intestinal suture, and stated that the one great element to be remembered was the necessity of securing it. He referred to the teaching in years gone by that the suture must not cut through the submucosa, and admitted that a few years ago Dr. Horsley's method would have been looked upon as dangerous. He considered the point of infection a more or less theoretical one.

Dr. Horsley, in closing, commented on Dr. Ochsner's reference to the necessity of avoiding any unnecessary manipulation and explained why it became necessary to manipulate so much in this case, and why the operation took two hours to perform. He claimed he could have done the operation under ordinary circumstances in eight minutes, and drew attention to the fact that if the colon is closed there is but one wound, whereas if the Murphy button was used there would be two. He closed by recommending a direct suture with an ordinary needle and thread, as he believed it to be the method of choice and was something that was always at hand.

## Second Day. — Wednesday, June 8, Afternoon Session.

### A case of retro-peritoneal fibro-lipoma.

Dr. George Ben Johnston, Richmond, Va., reported this case very fully and reviewed the literature on the subject at great length. He regretted that these growths were so confused and were regarded in the same category with retro-peritoneal sarcoma as so

few of the cases in literature have shown any tendency to undergo sarcomatous degeneration. In speaking of the etiology he admitted but little was known except that the condition was about 30% more common in women than in men, and that the large majority occurred between the ages of thirty and sixty. As to the symptoms he noted that their absence was particularly striking, and thought it remarkable such an enormous growth could take place in the immediate neighborhood of so many important organs and yet remain unnoticed by the patient. The first symptoms are usually those of a dragging sensation, but not often amounting to actual pain, while later pressure and gastric symptoms become more marked. He alluded to the rarity with which diagnosis has been made previous to operation or autopsy, the most common mistake having been the diagnosing of a cyst owing to the semi-fluctuating sensation imparted by the fat. To avoid this mistake he advised a puncture as, in his opinion, a dry puncture into any fluctuating tumor always suggested the former. He went into some detail in reference to the differential diagnosis and took up a number of conditions with which such cases might be confounded. As to the question of treatment, he believed it to be necessarily operative which, however, was at the same time very dangerous by the time assistance has been sought or interference consented to. In his opinion the three possible dangers were, (1) destroying the blood supply to the overlying length of intestine crossing the tumor with resulting gangrene; (2) shock when operating for the necessary length of time in the exposed abdomen, and (3) tearing the vena cava in separating it from the growth. He quoted Adami's method of avoiding the first danger, and the best way of overcoming the others. The operation he employed was described in detail, and a list was given of the men who have successfully operated on these cases. The paper concluded by giving a very full history of the patient with the pathological condition of the tumor and a lengthy bibliography.

Dr. J. E. Allaben, Illinois, asked why the tumor could not have been treated in the same way as any simple cyst of the ovary where there were numerous adhesions, *i. e.*, simply opened and drained with counter drainage from the vagina. He reported having done this in a case of his own with good results.

Dr. Johnston, in replying to Dr. Allaben, said the tumor being a solid one it was not possible to open and drain it.

A brief discussion followed of certain questions regarding the surgery of the biliary tract more especially the indications for operation and the importance of drainage. Dr. Maurice H. Richardson, of Boston, especially emphasized the following four points:

(1) The prevention of hernia which he said was best accomplished by making a muscle-splitting incision in the right upper quadrant, avoiding the complete section of the motor terminals of the intercostal nerves. This incision sufficed for the majority of cases and for all easy operations, but the muscles in deep dissections of great extent might have to be cut.

(2) Permanent biliary fistula always meant unrelieved obstruction to the common duct, either from an undiscovered stone or the contraction of an inflammatory condition about the duct.

(3) The indications for operation to-day include the known existence of gallstone, as demonstrated at abdominal operations for other lesions, provided that the patient's general and local conditions were favorable. The removal of gallstones under those circumstances might be accomplished immediately if the original abdominal operation is not a serious one, but it should not otherwise be performed until convalescence had been fully established.

(4) Drainage was essential for a complete cure, especially when infections were present either in the gall bladder or in the biliary passages. This drainage should be full, free and persistent, and bile should be allowed to flow through the wound until the flow ceases spontaneously. His personal experience had convinced him that immediate closure of the gall bladder and of the billiary passages might be attended by complications of a grave nature.

Dr. Archibald MacLaren, St. Paul, Minn., believed that gallstones were first formed in the gall bladder and were usually associated with recurring attacks of cholecystitis, usually of a sub-acute character. He believed that after the formation of stones in the gall bladder they might, under favorable conditions, remain for long periods of time without causing any characteristic symptoms, the so-called slumbering gallstones. He urged great care in the removal of stones lest some should be left behind, and mentioned a case of his own in which after the removal of fifteen stones the patient died on the fifth day, and post-mortem examination showed several stones impacted low down in the common duct. He commented on the many analogies between the appendix and the gall bladder, and referred to the great uncertainty in the minds of many men as to when gallstones should be removed from the gall bladder. He advised that they be removed as soon as a diagnosis could be made with certainty. He gave as the complications produced by a stone in the common duct, first, jaundice; second, cholangitis; third, peritonitis; fourth, inflammation of the pancreas, and fifth, cancer; and then took up the question of the treatment of the opening after removing a stone from the common duct, which he said should usually be done by draining the duct. He reported having operated on fifteen gallstone cases within the past seven months, fourteen of which recovered and one died.

Dr. J. D. Bryant, New York, spoke in favor of full and complete drainage, and alluded to the fact that the duodenum and the gall bladder were very common points of entrance of infection.

Dr. C. O. Thienhaus, Minneapolis, gave a blackboard demonstration of his method of operating in these cases.

Dr. J. E. Moore, Minneapolis, stated that he had recently learned three important points in connection with this subject; the first of which was the advisability of early operation, second, the importance of thorough drainage, and third, how unwise it was to give up a patient as long as there was life.

Dr. Ernest Laplace, Philadelphia, referred to the work of Professor Kehr on this subject, agreed with the author on the question of drainage, and urged in addition to the drainage tubes the use of a large amount of gauze around the tube.

Dr. W. J. Mayo, Rochester, agreed with the author as to the advisability of early operation and the necessity for drainage in most cases.

Dr. J. C. Bloodgood, Baltimore, gave some details of the work done along this line by Dr. Halsted of Baltimore, and agreed in the assertion that secondary operations should, if possible, be avoided by making sure to remove all the stones at once.

Dr. Richardson, in closing, stated that he was still uncertain in his own mind as to whether the gall bladder should be removed in all cases, or simply drained, as he knew that when the gall bladder was removed some trouble always resulted, although he was not sure just what it was.

Dr. MacLaren, in closing, gave a blackboard demonstration of a part of his operative procedure.

APPENDICITIS IN CHILDREN.

Dr. A. J. McCosh, New York, thought there was still much to learn about appendicitis. As to its etiology there was great ignorance. Its symptoms were often puzzling, hence the almost universal advice to operate in the early stage of the attack. It was desirable, but often dangerous to wait for the quiescent stage. Dr. McCosh believed it to be wisest to operate at once if inflammation be confined to the appendix. If infection had spread beyond, delay of some hours or even days, was often beneficial. This was the drift of present surgical opinion. Dr. Ochsner's plan of treatment had saved many lives. Dr. McCosh believed in this treatment if not followed blindly.

The frequency of appendicitis in children was not always properly appreciated by the general practitioner. Surgeons often found that appendices after removal show signs of old inflammation corresponding with the so-called "bilious attacks" of infancy or childhood.

In children, symptoms were apt to be masked. Pain was not often localized, neither was tenderness. Muscular rigidity was apt to be absent, or not appreciable on account of restlessness and fright of the child. Vomiting was probably, in children, the most important, or at least the most manifest, symptom. Appendicitis in children was sometimes difficult to differentiate from acute indigestion, or the early stages of gastro-enteritis. It was often very difficult to differentiate from diaphragmatic pleurisy. The progress of the disease in children was marked often by its insidiousness. A case, apparently mild, would drift almost without signs into a desperate one with a general peritonitis. There seems in children less tendency for the inflammation to become localized. For these reasons he advised immediate operation in children at any stage of the disease.

He gave age statistics of 1,000 cases on which he had operated. Between the ages of twenty and thirty-five the proportion was over 50%. Before twenty, it was 26½%. Before fifteen it was 15%. Before ten it was .068%. The youngest cases were twelve and twelve and one-half months. The oldest was seventy-two and one-half years. In 1,500 cases which he had personally examined, he gave the age at which the first symptom of appendicitis manifested itself. The proportion in the first five years of life was 7½%. In the first fifteen years it was 31%.

(*To be continued.*)

## Recent Literature.

*A Textbook upon Pathogenic Bacteria.* For students of Medicine and Physicians. By Joseph McFarland, M.D., Professor of Pathology and Bacteriology in the Medico-Chirurgical College, Philadelphia; Pathologist to the Philadelphia Hospital and to the Medico-Chirurgical Hospital, Philadelphia. Octavo. 629 pages. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

We can heartily recommend this work both to students and practitioners. In its previous form it was regarded as one of the best treatises on bacteriology, and in the present edition its value has been increased by many additions. In fact, so much new matter has been incorporated, and the alterations and improvements have been so numerous that practically a new work is presented. The chapters on infection and immunity are specially commendable. The recent researches of Bordet, Calmette, Ehrlich and his school are described in sufficient detail to be intelligible to the elementary student, and the modern theories of immunity are clearly presented. An admirable feature which other American medical authors might do well to adopt is the introduction of references to the most important monographs in the literature. Appended to the work is a bibliographical index containing the names of over six hundred authors. The type and general appearance of the book deserve high praise. The illustrations are numerous and excellent.

*The Therapeutics of Mineral Springs and Climates.* By I. Burney Yeo, M.D., F.R.C.P., Emeritus Professor of Medicine in King's College, London, Consulting Physician to King's College Hospital, Hon. Fellow of King's College. Chicago: W. T. Keener & Co. 1904.

Dr. Yeo, whose published work has invariably been characterized by its peculiarly practical applications, now offers the profession a most useful compendium on the therapeutics of mineral springs and climates. There are few matters about which the ordinary, untraveled physician is less familiar than the exact attributes of various mineral springs and health resorts. This book of Dr. Yeo supplies this deficient knowledge. The book is founded on a popular treatise of his on "Climate and Health Resorts," which, however, has long been out of print. The present book is an attempt to write a systematic, complete and useful guide to the proper selection of suitable climates or mineral springs resorts. The volume of 760 pages, including an adequate index, is divided into two parts. The first part is devoted to the study of mineral springs, which are described in alphabetical order for convenience, those of minor importance to English invalids being printed in smaller type. In the second part the question of climate is discussed in a somewhat popular fashion, with no claim to the dignity of a systematic work on climatology.

The text is eminently practical in its general character, and offers all sorts of suggestions as to details in price, amusements and other accessories which the invalid and his physician desire to know. The manifest fact is taken into account that the efficacy of climate or waters depends in a measure at least upon the attractiveness of the surroundings and the character of the life which the patient must lead. Following the description of the various mineral springs, a section on the applications of mineral waters and baths to the alleviation and cure of disease is given, which should also be of very great use, particularly to physicians. With the wealth of information which the volume contains, it is written in so concise a fashion that its size remains small. We take pleasure in commending this book.

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## THE EXANTHEMATIC TYPE OF TYPHOID FEVER IN CHILDREN.

Some two years ago a thesis was upheld at Lyons by Dr. E. Boulin in which the author studied the exanthematic type of typhoid fever, principally as to its prognosis. This form of typhoid is remarkable from the extreme abundance of the rose spots, and the author gives the ideas which have been developed regarding the affection by Weill and Lesieur, who have laid much stress on this particular form which they have designated by the name of exanthematic in order to indicate the abnormal development of the cutaneous eruption. The researches of the two former authorities were carried out in two hundred and eighty cases of typhoid fever in children and they frequently met with this form.

The fundamental characteristic of this particular type is the prominence of the cutaneous eruption. Rose spots are often precocious in their appearance, and may be met with anywhere from the fourth to the seventh day of the disease. Their dimensions are frequently exaggerated, and they may be ecchymotic or papular, but under all circumstances their number is greatly increased, and generally they are to be found over the entire cutaneous surface. They are met with on the abdomen, the thorax, epigastrium, neck, back, the thighs, arms, and sometimes on the legs and forearms; they have even been observed on the face and hands. It is often quite difficult to determine the number of these rose spots, and these cases recall in a minor degree the remarkable one recorded by Murchison who was able to count over one thousand on his patient.

There does not seem to be any relationship between the importance of the exanthema and the extent of desquamation, another symptom to which Weill has drawn attention, and it is for this reason that both he and Lesieur did not wish to give the name of cutaneous type to the group of cases which they studied, but rather that of eruptive form or still better exanthematic, on account of the absence of intestinal lesions.

The second character of this form is the absence or the extreme reduction of symptoms of the enanthema, that is to say, the mildness or even absence of symptoms of the digestive tract. In point of fact, there are no disturbances of the digestion and there is no objective or subjective symptom which would draw one's attention to the gastro-intestinal tract; usually colicky pain, vomiting, diarrhea or constipation are wanting; the abdomen is flat, and no gurgling can be elicited in the cecal region. The liver is not increased in size, while the spleen may be normal or only slightly tumefied. The tongue does not present the ordinary characters possessed by it in typhoid fever. If diarrhea is present it is usually slight and rapidly disappears, but on the other hand, constipation is perhaps more frequent though easily overcome by the use of enemata. If by chance the tongue is coated it will usually clear up before the rose spots have disappeared, and a long time before the disease has attained the end of its evolution.

It is evident that one should take into consideration those mixed cases in which the external and internal lesions are associated, but it may be said that in the majority of these cases the digestive disturbances decrease or disappear the day that the skin lesions make their appearance or become generalized. For that matter this is a cutaneous form in which the symptoms simply predominate in the integuments, without absolute exclusion of the viscera, and these marked lesions in no way prevent the participation of the nervous system, for example. Then, again, there are the cutaneous types of typhoid fever accompanied by very high temperature, delirium, an exaggerated patellar reflex or even epileptiform attacks.

The excellent prognosis of exanthematic typhoid represents the third principal characteristic of the affection, and in all the reported cases a favorable outcome has been reported, except in one instance in which there was an abundant eruption of rose spots accompanied by an intense diarrhea. The child died of intestinal hemorrhage, and at the autopsy tuberculous ulcerations of the intestine were found which certainly played an important part in the complexity of the symptomatic phenomena and

the death of the patient. In the large majority of cases, however, the patient is well at the end of from fifteen to twenty days. The fever will frequently give way to the treatment by cold baths in eight or ten days, and rare are the instances where the temperature has remained high for longer than three weeks. It may be said that never has any serious complication supervened to disturb the benign evolution of the disease in contrast to the non-exanthematic forms in which the mortality has been estimated as upward of 6%.

Weill and Lesieur believe that at present one may solve the question of the prognostic value of lenticular rose spots. Leaving aside those severe cases in which the lesions exist, both in the skin and intestine, and the slight cases in which there is neither exanthema or enanthema, one may admit as a general rule, at least for the cases of medium intensity which are the most numerous, that an abundant eruption of lenticular rose spots indicates an attenuation of the intestinal symptoms and should render the prognosis excellent. The mildness of the affection, the extreme mildness of the digestive disturbances, the predominance of cutaneous lesions, would seem to justify the description of a new clinical type of the disease if one is able to prove that these three elements usually go together and that their association is relatively frequent. The following figures were obtained by Weill and Lesieur: Out of 280 cases, 73 represented an exceptionally intense exanthema, and among these 73, fifteen only presented digestive disturbances of sufficient severity to be noticed. On the other hand, these same authorities studied the cases of typhoid in which no marked digestive disturbances were present, and out of 73 cases they were able to find only fifteen in which the eruption was insignificant.

If these results are considered along with the fact of the absence of mortality in the eruptive forms without diarrhea and a mortality of more than 6% found in the forms in which the cutaneous manifestations are wanting or slight, it would seem to show that Weill and Lesieur were correct, including in the same description the three characteristics which so often are observed simultaneously.

## REPORT OF MARYLAND TUBERCULOSIS COMMISSION.

The preliminary report of the Tuberculosis Commission of Maryland, under the presidency of Dr. W. S. Thayer, is a document of interest and importance, containing much which the physician may take to heart as well as a vast amount of information for the laity. At the outset under eighteen headings are given the facts concerning the disease as regards methods of infection, mortality and instruction to the public. This is not new but is a valuable restatement of facts which the people at large should know and which we are inclined to think they are gradually learning.

Speaking of the mortality from tuberculosis in Maryland and in Baltimore, it appears that so far as statistics are available there are now ten thousand cases, at least, in the state, with a greater incidence of the disease among negroes. In 1902 there were 2,560 deaths from tuberculosis in all its forms showing slight difference in mortality from that elsewhere in the country. It is of interest that a comparison of the figures of Baltimore with New York and Boston shows that the improvement observed in the latter cities has not occurred in Baltimore, the reason for which is given as the active anti-tuberculosis campaign which now for some years has been carried out both in New York and Boston. Figures are adduced which go to show that from the deaths of wage earning men alone the community suffers a potential loss in one year of upwards of $7,500,000. These figures are undoubtedly impressive, and yet indirectly the death of the head of the family may mean much more than this by forcing the support of the dependents upon the older children who thereby must curtail their education and so generally lower the standard of education.

Such deductions as the foregoing are certainly worth making and expressing in type, and should do something toward impressing even the unthinking part of the population with the enormous consequences of the disease, which it is being called upon to combat in conjunction with the appointed authorities. We have not the space to enter into the admirable details carefully systematized which the first twenty-three pages of this pamphlet offer. We have seen no better presentation of the subject as addressed to the lay mind.

As a further means of impressing the facts upon the people, the Commission in conjunction with the State Board of Health proposes to hold a tuberculosis exposition in Baltimore from Jan. 25 to Feb. 1. This exposition is under the chairmanship of Dr. Henry Barton Jacobs, and will be held in McCoy Hall, which has been offered by the trustees of the Johns Hopkins University.

The history and nature of the disease will be illustrated by exhibits, and graphic statistics will be presented, together with plans and models of hospitals and sanitaria, both in this country and in Europe. Each day lectures and demonstrations from persons who speak with authority will be given. A somewhat similar exposition is now being held in Boston, to which reference is made in another column. If only such exhibits may be made to reach those who can most benefit by them, their success must be unquestioned; in any event, they cannot fail to do something toward calling further public attention to the disease, its prophylaxis and treatment.

Following this first and eminently practical section is a carefully prepared statistical study of the prevalence and distribution of the disease in Maryland, illustrated by several graphic charts. The volume also includes several papers which have been read on previous occasions relating to the general subject by Drs. Thayer, Flick, Ravenel, Salmon, Adami and Knopf. We have on previous occasions so often called attention to the desirability of promulgating what this pamphlet represents that a reiteration is unnecessary. We are glad, however, to commend this report as one of the most thorough and painstaking which it has been our fortune to see. That the Commission will do much towards the relief of tuberculosis in the state is a foregone conclusion.

## DIMINISHED MEDICAL CLASSES.

The effect of added requirements for the student of medicine is having its effect in certain institutions in reducing the enrollment. We note that at the College of Physicians and Surgeons in affiliation with Columbia University the present entering class is approximately one hundred students as against one hundred and ten the previous year. This falling off is explained by the increased entrance requirements and also by an additional fee tuition of fifty dollars. Considering the fact that the graduating class at this same institution numbers nearly one hundred and ninety, the reduction is the more significant. We do not know what the entering class at the Johns Hopkins University is this year. A bachelor's degree or its equivalent has always been required at this institution and the classes have never been large, although we believe increasing year by year. The Harvard Medical School likewise has an exceptionally small enrollment of first-year students, due presumably to the same cause. Unquestionably the requirement of a degree will have a far more wide-reaching effect upon enrollment than the lengthening of the course to four years, which, when first undertaken, was regarded as a radical step. The reflection from these facts is forced upon us that not a few medical students up to this time have been men inadequately educated preliminary to their medical course. The ultimate effect of increased requirements will no doubt be salutary, and it is not to be supposed that the community will ever suffer from lack of doctors. Nevertheless, the extraordinary reduction in the size of classes should lead to a careful reconsideration of the whole subject, and a clear recognition of the fact that too stringent entrance requirements may be as harmful as too lax ones in keeping capable men out of the profession.

## MEDICAL NOTES.

"Laute Barbarei." — We learn from one of the foreign visitors from St. Louis, who has remembrances of the modest *Circus Renz* in his home in Berlin, that he has been duly impressed with the triple ring of the American circus, and particularly was he overcome with the American spirit of competition at St. Louis where in some instances at the Congress of Arts and Sciences two speakers were called upon to address audiences in the same room to the manifest detriment of the weaker voiced orator. His general characterization of the Exposition was: "laute Barbarei."

New Surgical Building and Clinical Amphitheater of Johns Hopkins Hospital. — There was a formal public opening of the surgical building and new clinical amphitheater of the Johns Hopkins Hospital, Oct. 25. The exercises consisted of addresses by invited guests and others in the new clinical amphitheater. These were followed by luncheon in the administration building of the hospital. In the afternoon a memorial to Dr. Lazear was unveiled with appropriate addresses in the clinical amphitheater. The committee of arrangements consisted of Drs. William H. Welch, William Osler, William S. Halsted and Henry M. Hurd.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon Oct. 12, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 51, scarlatina 12, typhoid fever 48, measles 5, smallpox 0.

Bequests. — By the will of the late Joseph P. Flatley the Carney Hospital received $500, St. Mary's Infant Asylum $500, St. Elizabeth's Hospital $250, and various other charities are also remembered.

Meeting of the Vermont Medical Society. — The Vermont State Medical Society holds its ninety-first annual meeting at Rutland, Oct. 13 and 14, under the presidency of Dr. W. H. Bryant of Ludlow.

Street Car Ventilation. — The Board of Health of Cambridge has expressed the opinion that the health of citizens is threatened by improperly ventilated cars. An order has, therefore, been adopted directing the attention of the State Board of Health and the Railroad Commissioners to this defect in the cars and requesting that steps be taken to procure adequate ventilation.

Tuberculosis Exhibit. — At the fair now being held at Mechanics Building in Boston, the Boston Society for the Relief and Control of Tuberculosis has arranged an exhibit illustrating the work being done toward combating tuberculosis. Among many objects of interest the following are worthy of mention: a complete photographic exhibit of the grounds at Rutland, together with a lifelike model of a young woman in a chair arranged for the morning, with spit cup, novel, knitting, thermometer and hot water bottle; exhibits from the Boards of Health of New York, Baltimore, Massachusetts and Boston; photographs from Dr. Trudeau of Saranac; models of tents, shacks, chairs, chair tents and tents made on approved models; statistical charts from the Prudential Insurance Company. The exhibit is designed primarily for such people as would naturally attend a fair of this character, but it is also of value to one wishing a working knowledge of what is being done toward combating tuberculosis.

Legality of Christian Science in New Hampshire. — The Supreme Court of the State of New Hampshire has recently handed down a decision concerning the practice of Christian Science in that state. Suit was brought to recover damages by a person said to have been injured through treatment by a practitioner of Christian Science. The claim was that the patient had not been cured and that her cure was delayed by the treatment to which she had been subjected. In the lower court the verdict was for the defendant. The Supreme Court has reaffirmed the decision and dismissed the bill. The significance of this ruling is not at first clear, but it appears that the court was not passing upon the legality of Christian Science treatment as such, but rather upon the relations between the individual claiming damages and the practitioner. It was evident that the patient undertook the treatment with sufficient knowledge of what she was entering upon to render her claims invalid. On evidence presented the law was not violated, and the case was dismissed simply because there was not sufficient evidence to maintain an action in tort. This, however, has no bearing upon the status of Christian Science healing in relation to the criminal law of the state.

## NEW YORK.

Bequests by Mrs. M. A. Ogden. — Among the bequests in the will of the late Mrs. Mariana A. Ogden of New York, in addition to $200,000 to the Arnot-Ogden Home at Elmira, N. Y., are $5,000 each to St. Mary's Free Hospital for Children, New York, and several other charities.

"Fest-Commers" for Foreign Visitors. — On Oct. 8 a "Grosser Fest-Commers" was given at the Arion clubhouse by the Vereinigung Alter Deutscher Studenten in Amerika, of which Dr. Carl Beck is president, in honor of distinguished foreigners who have been attending the Congress of Arts and Sciences at St. Louis.

Dr. A. E. Macdonald Retires. — On Oct. 1 Dr. A. E. Macdonald retired from the superintendency of the Manhattan State Hospital, East, on Ward's Island. His successor has not as yet been appointed. Dr. Macdonald had held the position ever since the state hospitals were established, and for many years previous was superintendent of the city hospitals for the insane on Ward's and Blackwell's islands.

Professor Orth. — Professor Orth of Berlin, who sailed for Germany on Oct. 4, was given a dinner at the Yale Club on Oct. 2 by former pupils and others of the profession. The guest of the evening expressed his great pleasure at the advance of pathological study in this country, and among the others who spoke were Drs. W. W. Keen of Philadelphia, and Drs. Jacobi, Janeway and Carl Beck of New York. Professor Cullen of the Johns Hopkins University was toastmaster.

The Sunken Village. — What has been known as the Sunken Village, a colony of "squatters" who have lived for many years in shanties on a lot several feet below the street grade, on

Broadway between 61st and 62d streets, has just been cleared of its occupants by order of the owners. The health of this little settlement, which was quite populous, is said to have been always excellent, owing possibly to the following notice (for the exact wording of which it is to be presumed the Health Department is not responsible) displayed near an old well on the premises: " The watter from this well must not be used for drinking purposes. It contains sewage by order of the Board of Health."

Columbia Gives Honorary Degrees and Receives Endowments. — At the first regular meeting of the trustees of Columbia University this season, held Oct. 3, the honorary degree of Doctor of Science was conferred upon Sir William Ramsay, and also upon William H. Nicholls of New York, who was recently elected president of the Society of Chemical Industry. Among recent gifts to the university there were announced $225,000 additional, from Mr. and Mrs. William D. Sloane, for the Sloane Maternity Hospital, and $60,000 from Horace W. Carpentier for endowing a chair in the medical school. The particular professorship is not stated.

Recent Work of the Board of Health. — At the first meeting after the summer recess of the Medical Society of the County of New York, held Sept. 26, officials of the Board of Health had an opportunity of telling something of the recent work of the Department. The President, Dr. Darlington, read a paper on " Precautions Used by the New York City Department of Health to Prevent the Spread of Contagious Diseases in the Schools," in the course of which he stated that by the employment of trained nurses to look after children excluded from the schools on account of various contagious affections and to instruct the parents in their proper care, the number of exclusions had been reduced in a few months from about 25,000 to 500. Dr. John J. Cronin, assistant chief medical inspector, read a paper on " The Work of the Summer Corps," and Dr. Robert J. Wilson, assistant bacteriologist, one on " Disinfection as Practiced by the Department."

## Miscellany.

### RADIO-ACTIVITY OF THE WATERS OF THE HOT SPRINGS RESERVATION.

Dr. Bertram B. Boltwood, of New Haven, Conn., who was authorized by the Secretary of the Interior to examine into the radio-active properties of the waters of the Hot Springs Reservation, at Hot Springs, Ark., has submitted his report, and the Secretary now has it under consideration. The Hot Springs Reservation, comprising about 911 acres, belongs to the United States and is under the control of the Secretary of the Interior. There are about 48 springs issuing from the base of Hot Springs Mountain, of varying degrees of temperature and having a combined flow of about 850,000 gallons daily. There are 23 bath-houses receiving water under lease from the United States, besides the government Free Bath House for indigent persons, and the Army and Navy General Hospital, the latter being under the supervision of the Secretary of War. The reservation is managed by a superintendent who maintains order and sees that the bath-houses are conducted in a proper manner. Many thousands of persons visit Hot Springs every year for the purpose of taking the baths, and the government is spending large sums of money in improving and beautifying the reservation.

In the introduction to his report, Dr. Boltwood gives a lucid and interesting account of the present state of our knowledge concerning the radio-activity of matter, and a brief résumé of the history of discoveries relating to this phenomenon. He states that the phenomenon of radio-activity exhibited by certain substances consists in the spontaneous emission of radiant energy, and was first observed by Becquerel, in the case of the salts of the element uranium. The phenomenon was later noted by Schmidt, in the case of the salts of the element thorium. Then followed the striking investigations of M. and Mme. Curie, which led to the discovery of two new elements, polonium and radium, which possess the property of radio-activity to a marked degree. A third element, actinium, discovered by Debierne, is also strongly radio-active. The existence of another radio-active element is claimed by Hofmann, but very little is known at present of the properties of this substance. A very considerable number of ordinary substances (rocks and metals) have also been found to be very slightly radio-active; but it is as yet doubtful whether this is due to the properties of the simple substances themselves, or to the presence of minute traces of the strongly radio-active elements. The rays sent out by radio-active substances are known as " Becquerel rays," and have been shown to be complex in character. In the case of the radiations of radium salts, the rays have been found to consist of three different types, differing in the readiness with which they are absorbed by matter, and the extent to which they are deflected in a magnetic field.

When solutions of radium salts are allowed to stand in a closed vessel it is found that an extremely minute quantity of a highly radio-active gas gradually accumulates. This gas is known as the " radium emanation." Its radio-active existence is of relatively short duration, its radio-active power falling to about one half after four days. The walls of a vessel which has contained this radium emanation also become radio-active, by what is called " induced " or " excited " activity, and the theory is that by the radio-active disintegration of the radium emanation a solid has been deposited on the surface of the wall which is itself radio-active. This solid is called " emanation x," and its rate of decay is very rapid. The emanation contained in any solid salt of radium can be entirely removed by dissolving the salt in water and boiling the solution. If the solution is evaporated to dryness, the solid salt will again be formed. This freshly prepared salt is found to be only about 25% as radio-active as the same salt before the removal of the gas emanation. Its radio-activity, however, will gradually increase on standing until at the

end of about one month, its activity will have reached a maximum beyond which no further change will take place. This increase in the radio-activity of the salt is due to the production of fresh quantities of emanation within it. The action of the Becquerel rays may be divided into two general classes. They produce a latent image on a photographic plate, and they cause gases through which they pass to become conductors of electricity. They also give rise to the phenomenon of fluorescence when they impinge on certain other substances, notably barium, platinocyanide, willimite, kunzite and diamond. For the accurate determination and measurement of the radio-active power of substances, only the effect of the rays on the conductivity of gases has been found suitable, and the instruments usually employed for this purpose are the electrometer and the electroscope.

The occurrence of radio-active properties in a natural water was first observed by C. T. R. Wilson, who found that rain water on evaporation left a slightly radio-active solid. The water from the municipal supply of Cambridge, England, was found by J. J. Thomson to contain a radio-active gas which could be removed by boiling the water. The properties of this gas were found to be very similar to the radium emanation. The water was found to contain no radio-active solid in solution and did not possess the property of forming more of the radio-active gas on standing. The water supply of New Haven, Conn., was also found to contain a radio-active gas resembling the radium emanation. Curie and Laborde have recently examined the gases given off at certain European mineral springs, and also by the waters of the springs on boiling. They found that the gas obtained from the Gratenbucker Spring at Bad Gastein, Austria, was by far the most highly radio-active of any examined by them. Very little, if any, radio-active gas was obtained from water which had stood in flasks for a couple of months, thus showing that the radio-activity was not due to radium salts dissolved in the waters, but to the absorption by the waters of radium emanation which had been formed elsewhere.

In making an examination of the waters of the Hot Springs Reservation, the samples were collected at the springs and placed in sealed glass receptacles. These were shipped to New Haven, Conn., where the tests were conducted. The method of examination used by Dr. Boltwood was to separate the gases and emanations from the water by boiling the water in an apparatus which is a modification of that described by Reichhardt, after which the emanation was measured by an electroscope somewhat similar to that used by Wilson. In expressing the results of his experiments, Dr. Boltwood found it necessary to devise a new system of standardization, which will permit the direct comparison of the results obtained with the different waters and by different experimenters. Curie in his investigations of European mineral springs used as a standard the quantity of emanation produced by a known weight of pure radium bromide. The objection to this is that it is impossible for others to obtain at present even small quantities of radium bromide of known and established purity. The plan used by other investigators, of expressing the result in the number of ions produced, involves a standard which is uncertain and difficult to determine. The standard originated by Dr. Boltwood, and for which he is entitled to great credit, is the quantity of radium emanation set free when a known weight of uranium contained in a natural mineral is dissolved in a suitable reagent. This standard can be readily reproduced and will permit the reduction of the results to terms of pure radium, if that becomes the future basis of expression. The mineral used by Dr. Boltwood was pure uraninite from Spruce Pine, N. C.

Dr. Boltwood describes in detail the methods pursued by him in his investigations, which were very exhaustive and covered a period of several months. The results of the electroscopic tests of the gases obtained by boiling the waters were very satisfactory, as they showed that the waters at Hot Springs are radio-active to a marked degree; and from other tests, taken to determine the properties of the emanation from the waters, it was found that the properties of these radio-active gases were identical with those of the radium emanation.

On the other hand, when water from which the gas had once been taken was boiled a second time, after being allowed to stand, no radio-activity was detected in the gas obtained from the second boiling; and it was therefore concluded that little or no radium salts existed in the waters. This conclusion was strengthened by the fact that a test of the residue of the waters which had been left by evaporation also failed to disclose any sign of radio-activity of this solid substance. A sample from the tufa deposit formed by some of the springs on issuing from the ground was also tested, and it was found that the amount of radium contained in 100 gm. of the tufa was less than one millionth of the quantity of radium associated with an equal weight of uranium in pitchblende. Samples of the gas which arose from the springs were also tested, and its radio-activity was found to be less than that of an equal volume of gas obtained by boiling the waters from the springs. The following conclusions are reached by Dr. Boltwood as the result of his investigations:

1. The waters of the springs on the Hot Springs Reservation are all radio-active to a marked degree.
2. The radio-activity of the waters is due to dissolved radium emanation (a gas) and not to the presence of salts of radium or other radio-active solids.
3. The tufa deposited by the springs does not contain appreciable quantities of radium compounds.

## THE CHAIR OF MEDICINE AT OXFORD.

The *Medical News* London letter, Oct. 8, contains the following statements in regard to the chair of medicine at Oxford:

The most important event connected with it [the meeting of the British Medical Association] was the engineering which ended in the capture of the Regius Professorship of Medicine by the anti-Sanderson faction. The state of affairs was described in your columns some months ago. Sir John Burdon Sanderson, the previous occupant of the chair, was anxious that it should be transformed into a chair of pure pathology, and strongly urged the appointment of Dr. James Ritchie, who is the University lecturer on that branch of medical science. Ritchie, however, has the disadvantage in the eyes of Oxford men, of the high and mighty type — a breed of superior person peculiar to this happy island — of being only an adopted son of their august Alma Mater; moreover, his speech betrayeth him perhaps too readily as a native of Caledonia, stern and wild. Against these deficiencies it matters nothing to your academic prig that he is one of the first pathologists in the United Kingdom and a man of large culture and breadth of mind. Therefore, although the teaching staff supported Ritchie, he has been set aside. Till shortly before the announcement of the election of Prof. William Osler, it seemed likely that Ritchie would get the appointment, as his opponents had no candidate of real eminence whom they

could put forward for the office. The suggestion of Osler must have been a veritable godsend to them, and plans were at once laid to secure him. It had been arranged that he should stay with the Dean of Christ Church, but at the last moment Burdon Sanderson carried him off to his lair. Sanderson has, rightly or wrongly, the reputation of an arch-Jesuit, and it was greatly feared that he might cajole or bore Osler out of accepting the post. Nevertheless, Osler was hooked and safely landed, and by way of compensation Ritchie's lectureship is, I believe, to be raised to the dignity of a chair, to which an increased stipend will be attached. This question of stipend, it may be mentioned, was one of the difficulties in the way of getting a clinician of any professional position to accept the chair. From this point of view, the University has certainly been fortunate in securing Osler, but it may be doubted whether that distinguished physician has made an equally good bargain for himself. The Chair of Medicine at Oxford is an expensive luxury. It is an open secret that the Regius Professor at Cambridge spends a good deal more than he receives on maintaining the dignity of his position, entertaining distinguished visitors and the like. Moreover, his time is so fully occupied with multifarious academic duties that he has no time for private practice. Dr. Clifford Allbutt is, for a physician, a wealthy man, having for many years had the lion's share of consulting practice in the north of England, and he was thus enabled to accumulate a fortune which makes him altogether independent of his profession. I do not know if Dr. Osler is so fortunately situated, but it is to be presumed that he counted the cost of the dignity offered to him and accepted it with his eyes open.

## Correspondence.

### THE ASSOUAN CURE.
### FROM A LAYMAN'S POINT OF VIEW.

October, 1904.

Mr. Editor: While concurring so far as a mere layman can in the very good views expressed so clearly in Dr. Morrill's article, I am disposed, in the first instance, to accentuate one point of his advice even more strongly, for the modern version of the old proverb should certainly be "See Cairo and die." Increasing throngs of invalids, arriving at Alexandria after a more or less exhausting sea voyage, engage in the necessary conflict with the Arab boatmen, hustle themselves into the train, and arrive at Cairo half an hour before a chilly sunset to deposit themselves, with their vast zoölogical collection of assorted microbes, in the damp and sunless rooms which alone remain vacant in the huge stone Cairo hotels. The sun has probably been shining brightly all day, and the unwonted spectacle gives them, particularly the British and the Germans, the notion that they have come to a land of perennial warmth. This prejudice is further deepened by the spectacle of the while flannel trousers and straw hats of the more robust young winter residents, who are returning from their golf and tennis, and the bare chests of their stronger sisters, who are bravely taking their open-air, five o'clock tea upon the terrace, there being, indeed, no place within-doors, for the moment a Britisher sees the sun in winter he rushes into flannels. Exhilarated by the hope of instant cure, they plunge into the most fatiguing forms of sightseeing, possibly upon a donkey's back. The day after this they usually send for the resident doctor and are duly impressed with the gravity of their situation. They eagerly accept his advice to rest a fortnight or so before going up river, and probably go to Mena House, Helouan, or possibly even a Cairo sanitarium. Here they live in fireless rooms, which have been inhabited for many seasons by their forerunners, and meet and associate with their companion invalids. American systems particularly will here meet and be exposed to all assorted European and Asiatic germs, coming to Yankee constitutions as a novelty. If they are not really ill when they begin this rest, they undoubtedly will be after a week or two. They will have to keep to their rooms and cower over a gas fire at the rate of some thirty shillings to two pounds per day; perhaps once or twice a week, if the sun and wind permit, being allowed to sit for an hour or two under heavy blankets in a sunny spot in the garden. Helouan is possibly a little better. Moreover, arriving there the invalid has the satisfaction of being first called upon to pay the expense of thoroughly disinfecting his rooms against the last tuberculous patient. This is not done in the other places. Moreover, the climate both at Helouan and Mena House is somewhat better than that of Cairo, which resembles in the two winter months nothing so much as an extremely raw week of an early Boston April.

On the other hand, I need not repeat Dr. Morrill's warning against the invalids embarking on the Nile steamer. No! The only thing for him to do is to go through Cairo, if necessary with a gun in his pocket. One night there even may do the mischief. The wagon-lit train is extremely comfortable and leaves Cairo for Assouan every other evening at eight o'clock. I feel confident that it is far better for one who is not perfectly strong to ship himself directly to Assouan on this train, though, if necessary, he can break the journey at Luxor, where he arrives on the following morning.

I am convinced that no microbes can live at Assouan. To assure a cure, therefore, the patient has only to live and breathe the air. If he does that, all will be well. No layman is allowed or would be permitted to say anything more about the cure, though I may perhaps venture a statement, which, I take it, corresponds with the last sentence in the second of Dr. Morrill's propositions, that there is a general feeling among those experienced in Egypt that it is not particularly good for the throat.

In other respects I do not think Dr. Morrill does quite justice to the attractions of the place. The main point that clearly impresses us both is the necessity of showing the vast difference that exists between the climate of Assouan and that of Cairo, and the advisability of not breaking the journey at the former place. Even if the patient goes into his comfortable stateroom on the train in a very weak condition, he is sure to feel himself another man with the first breaths of the wonderful desert air. But I should say that there were certainly more attractions and amusements at Assouan than at the ordinary summer hotel in the United States. The varied interests and wonder of the desert and the desert hills — almost mountains they look from the absence of any tree with which to scale — should satisfy him for many weeks, while almost every rock is covered with the hieroglyph if he wishes to learn that by no means difficult alphabet. The donkeys are not as our donkeys, but go with speed. The nature of the camel is various and amusing, and his gait, by measure of his foot-steps, may be geared as high as eighteen miles an hour, while the Nile is there with all its fascination and its excursions.

The hotels are attractively situated and well managed in every respect. They are necessarily rather expensive, and the commissariat, of course, is difficult. Good milk, meat and fresh vegetables especially are hard to get, and this is unavoidable in a land where there is no grass and no soil other than that upon the persons of the natives. The climate, too, even at Assouan, is slightly changing. Raindrops have been seen and there is an occasional chill at sunset. Doubtless this may be accounted for not only by the great reservoir but by the presence of so many Englishmen on the upper Nile. It will probably not be long before some enterprising company ventures to build a hotel away from the town and high above the river on the great sand hills by the old Coptic convent opposite Assouan. But even now I make bold to say, although I have not seen southern California, but after considerable acquaintance with all the winter resorts of Europe, that the Cataract House for winter climate is probably the best place there is.

F. J. Stimson.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, OCTOBER 1, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid Fever. | Diarrheal Diseases. |
| New York . . | 3,908,644 | 1,261 | 471 | 30.88 | 10.40 | 2.46 | 1.43 | 12.25 |
| Chicago . . . | 2,021,086 | 476 | 153 | 31.08 | 8.40 | 1.05 | 1.89 | 17.22 |
| Philadelphia | 1,407,968 | 399 | 120 | 27.56 | 8.27 | 3.00 | 1.75 | 9.27 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 182 | 48 | 31.41 | 4.94 | — | 3.30 | 10.28 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 120 | — | 34.98 | 7.50 | 4.16 | 11.66 | 11.66 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 54 | 19 | 33.33 | 7.40 | 3.70 | 1.85 | 16.66 |
| Boston . . . | 617,950 | 213 | 70 | 23.94 | 9.39 | 1.88 | .94 | 9.86 |
| Worcester . . | 136,925 | 28 | 13 | 17.85 | 3.57 | — | — | 7.14 |
| Fall River . . | 119,349 | 42 | 15 | 42.85 | 2.38 | — | 4.76 | 26.19 |
| Lowell . . . | 104,402 | 33 | 16 | 21.21 | 6.06 | 3.03 | — | 9.09 |
| Cambridge . | 100,998 | 31 | 9 | 29.03 | 16.13 | — | — | 9.68 |
| Lynn . . . . | 73,875 | 18 | 6 | 16.67 | — | — | — | 5.55 |
| Lawrence . . | 72,348 | 27 | 8 | 29.62 | 14.81 | — | — | 25.92 |
| Springfield . | 72,020 | — | — | — | — | — | — | — |
| Somerville . | 70,413 | 14 | 3 | 28.57 | 7.14 | — | — | 14.28 |
| New Bedford | 68,863 | 30 | 11 | 33.33 | — | — | 3.33 | 20.00 |
| Holyoke . . . | 50,538 | 22 | 8 | 63.63 | — | 9.09 | — | 27.27 |
| Brockton . . | 46,601 | 10 | 0 | — | 20.00 | — | — | — |
| Newton . . . | 39,310 | 9 | 3 | 11.11 | — | 11.11 | — | — |
| Haverhill . . | 39,061 | 13 | 5 | 30.80 | 15.40 | — | 7.70 | 7.70 |
| Malden . . . | 37,205 | 5 | 2 | 20.00 | — | 20.00 | — | — |
| Salem . . . . | 37,188 | 10 | 4 | 20.00 | — | — | — | 20.00 |
| Chelsea . . . | 36,499 | 16 | 7 | 18.75 | — | — | — | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 8 | 4 | 25.00 | 12.50 | — | — | — |
| Everett . . . | 30,209 | 3 | 0 | 33.33 | — | — | — | — |
| North Adams | 29,201 | 10 | 2 | 40.00 | — | — | 20.00 | — |
| Quincy . . . | 26,798 | — | — | — | — | — | — | — |
| Gloucester . | 26,121 | 7 | 3 | 14.30 | — | — | — | — |
| Waltham . . | 25,797 | 3 | — | 33.33 | — | — | — | — |
| Brookline . . | 23,576 | 7 | 2 | — | 14.30 | — | — | — |
| Pittsfield . . | 22,870 | 6 | 2 | 33.33 | — | — | — | — |
| Medford . . | 21,956 | 1 | 1 | — | — | — | — | — |
| Chicopee . . | 21,692 | 6 | — | 33.33 | — | 16.67 | — | 16.67 |
| Northampton | 20,314 | 9 | 3 | 22.22 | — | — | — | — |
| Beverly . . . | 15,807 | 7 | 1 | 28.60 | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 3 | 1 | 33.33 | — | — | — | 33.33 |
| Adams . . . | 14,745 | 1 | 1 | — | 100.00 | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 4 | 2 | — | — | — | — | — |
| Newburyport | 14,478 | 5 | 1 | 20.00 | — | — | — | 20.00 |
| Woburn . . . | 14,315 | 4 | 1 | 50.00 | — | — | — | — |
| Melrose . . . | 13,819 | 3 | 2 | — | 33.33 | — | — | — |
| Westfield . . | 13,809 | 4 | — | 25.00 | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | — | — | — | — | — | — | — |
| Revere . . . | 13,609 | 3 | 2 | — | — | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | — | — | — | — | — | — | — |
| Southbridge . | 11,716 | 4 | — | 50.00 | — | — | — | 25.00 |
| Watertown . | 11,575 | 5 | 2 | 40.00 | — | — | — | — |
| Weymouth . | 11,350 | 5 | 0 | 60.00 | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,121; under five years of age, 1,021; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 935; acute lung diseases 269, consumption 350, scarlet fever 8, whooping cough 6, cerebrospinal meningitis 19, smallpox 2, erysipelas 5, puerperal fever 13, measles 7, typhoid fever 63, diarrheal diseases 396, diphtheria and croup 65.

From whooping cough, New York 2, Chicago 1, Philadelphia 1, Baltimore 1, Boston 1. From measles, New York 5, Baltimore 1, Pittsburg 1. From scarlet fever, New York 1, Chicago 1, Philadelphia 1, Baltimore 5. From cerebrospinal meningitis, New York 13, Baltimore 1, Worcester 2, Somerville 1, Watertown 1, Weymouth 1. From erysipelas, New York 1, Philadelphia 1, Baltimore 1, Pittsburg 2.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending Sept. 17, the death-rate was 17.0. Deaths reported 4,989; acute diseases of the respiratory organs (London) 59, whooping cough 73, diphtheria 48, measles 45, smallpox 5, scarlet fever 33.

The death-rate ranged from 6.1 in Handsworth, to 31.6 in Wigan; London 15.3, West Ham 14.3, Brighton 16.1, Plymouth 17.8, Bristol 16.6, Birmingham 17.5, Leicester 16.5, Nottingham 14.5, Liverpool 22.3, Bolton 14.5, Manchester 20.9, Salford 27.8, Halifax 13.1, Bradford 18.5, Leeds 15.6, Sheffield 20.2, Hull 25.1, Cardiff 12.1, Rhondda 15.8, Merthyr Tydfil 20.8, Hornsey 12.8, Great Yarmouth 23.0.

## METEOROLOGICAL RECORD.

For the week ending October 1, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S.. 25 | 29.86 | 68 | 78 | 59 | 84 | 69 | 76 | S W | N | 8 | 10 | F. | F. | .17 |
| M. 26 | 29.85 | 60 | 65 | 56 | 94 | 92 | 93 | E | S W | 5 | 8 | O. | O. | .10 |
| T.. 27 | 30.02 | 60 | 64 | 55 | 78 | 80 | 79 | N | S | 12 | 8 | C. | C. | 0 |
| W. 28 | 30.23 | 56 | 60 | 53 | 88 | 76 | 82 | E | S | 4 | 10 | O. | C. | 0 |
| T.. 29 | 29.96 | 59 | 66 | 52 | 74 | 94 | 84 | S W | S W | 10 | 20 | O. | R. | .71 |
| F.. 30 | 29.54 | 68 | 79 | 57 | 75 | 58 | 66 | W | W | 10 | 15 | C. | C. | .05 |
| S.. 1 | 29.38 | 62 | 50 | 56 | 55 | 61 | 58 | W | W | 16 | 12 | C. | C. | T. |
| ☞ | 29.83 | | 66 | 55 | | | 77 | | | | | | | 1.03 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for week.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING OCTOBER 8, 1904.

JOHN M. STEELE, surgeon. Ordered to the Naval Station, Baltimore, Md.

R. E. LEDBETTER, passed assistant surgeon. Commissioned passed assistant surgeon, with rank of lieutenant, from Oct. 19, 1903.

J. H. IDEN, passed assistant surgeon. Commissioned passed assistant surgeon, with rank of lieutenant, from May 4, 1904.

W. SEAMAN, R. R. RICHARDSON, F. A. ASSERSON, passed assistant surgeons. Commissioned passed assistant surgeons, with rank of lieutenant, from May 18, 1904.

A. W. BALCH, passed assistant surgeon. Commissioned passed assistant surgeon, with rank of lieutenant, from June 22, 1904.

R. L. SUTTON, assistant surgeon. Ordered to the Naval Hospital, New York, N. Y.

W. N. MCDONELL, assistant surgeon. Ordered to the Naval Museum of Hygiene and Medical School, Washington, D.C.

C. E. STRITE, H. W. SMITH, A. B. CLIFFORD, assistant surgeons. Appointed assistant surgeons, with rank of lieutenant (junior grade), from Sept. 27, 1904.

C. E. STRITE, assistant surgeon. Ordered to the Naval Museum of Hygiene and Medical School, Washington, D. C.

D. N. CARPENTER, surgeon. Ordered to the Naval Hospital, New York, N. Y.

R. T. ORVIS, passed assistant surgeon. Detached from the Naval Hospital, New York, N. Y., Oct. 4, and ordered to the "Chattanooga."

R. R. RICHARDSON, passed assistant surgeon. Detached from the "Wabash," and ordered to the Navy Yard, Mare Island, Cal.

H. A. DUNN, assistant surgeon. Detached from the Naval Proving Ground, Indian Head, Md., and ordered to the Naval Hospital, Newport, R. I.

H. W. JUDD, acting assistant surgeon. Ordered to the Naval Proving Ground, Indian Head, Md.

## RECENT DEATH.

S. C. MORRILL, M.D., of Concord, N. H., died Oct. 8, at the age of sixty-five. He received his academic education at Brown University, later studied at Harvard Medical School and also at the College of Physicians and Surgeons in New York. He returned to Concord, where he continued in practice up to the time of his death, being for a time associated with his father. He held membership in the New Hampshire Medical Society and was one of the staff of the Margaret Pillsbury Central Hospital. He was also active on the Concord Board of Education, and in general took much interest in educational matters apart from his profession.

## OPERATIONS: BOSTON CITY HOSPITAL.

The following operations will be done and cases shown in the amphitheater of the Boston City Hospital on Oct. 14, from 10 A.M. until 12.30 P.M.: Amputation of leg; Thyroidectomy; Intestinal Suture; Excision of Epithelioma Lip; Ligation of External Carotid; Choledochotomy; Appendectomy; Prostatectomy.

## Address.

# THE MODERN CONCEPTIONS AND METHODS OF MEDICAL SCIENCE.*

BY W. T. COUNCILMAN, M.D., BOSTON,
*Shattuck Professor of Pathological Anatomy, Harvard University.*

An acquaintance with present conditions in medicine and with the literature of the past makes us aware of a great change, both in the conceptions of medicine and in the methods by which the conceptions are reached. There has been a great increase of knowledge brought about by investigation and experiment, a realization of the value of knowledge and its acceptance and utilization. Medicine has severed all connection with speculative philosophy and taken its true place among the natural sciences. It has been brought into closer accord with other sciences than ever before and has accepted the methods of science. There are no systems, no schools, no paramount authority; no hypothesis is so firmly held that it is not instantly rejected when it fails to accord with new knowledge. Progress in medicine has gone hand in hand with progress in all departments of knowledge.

Medicine has for its problems the cause, the nature, the prevention, the cure, of disease. It is a branch of biology in that in all of its relations it has to do with living things. The ontological conception of disease as a thing differing from and entering into the organism is no longer held, but disease is regarded as a condition of living things in which there is disharmony of function. The phenomena of life depend upon actions exerted upon living tissue by its surroundings. When the influences exerted lead to forms of activity which differ from and fail to come into accord with the usual activities, whatever produces such an influence is a cause of disease. The causative agencies acting on the tissue produce structural alterations, in consequence of which even the action exerted by the ordinary surroundings may result in disharmony. The terms health and disease both carry with them the conception of activity. Although the abnormality of function is always associated with and depends upon structural alteration there may be extensive structural alteration which is so repaired or compensated for that it does not result in disease.

In the history of the advance of knowledge in medicine we find two methods by which knowledge has been sought. In one the endeavor has been made to form conceptions of the objects studied by means of impressions conveyed by the senses. Great advances have always followed the discovery of methods and instruments by means of which the territory of investigation has been extended. The inquiry does not stop with the mere description of the conceptions derived from the sense impressions, but an effort is made to correlate them, to ascertain preceding conditions, and the meaning or idea involved. When the inquiry passes beyond the immediate investigation, an ideal conception of the nature, the interrelation, the cause or the result of the condition studied, an hypothesis may be formed based on experience and analogy. The hypothesis must be tested by further observation under natural conditions and by the experiment which involves observation under known and controlled conditions. When the hypothesis has been so tested and found to hold good in all cases under the same conditions it can be used as a basis from which new questions may arise.

The other method is by speculation. By a wide and illegitimate use of analogy, conceptions are formed and projected into the objects instead of being derived from the sense impressions. A tendency to speculation is inherent in the nature of man. Confronted always with the unknown which has such enormous proportions compared with the known, and so much of which seems to be removed from the possibility of actual investigation, man is led to attempt to answer the questions which the unknown thrusts upon him by means of the imagination. As knowledge becomes deeper and more extended speculation tends to become more confined. True philosophy aims at a complete understanding of the causal relation of all processes in nature and of man's relation to these processes. Disease, as one of the most important conditions in nature affecting man in all of his relations has always had an important place in philosophy. All the systems of philosophy in the past from Plato down have embraced speculations concerning disease. The true ends of philosophy cannot be reached by speculation but by the use of all the material for observation given by the natural sciences, and a philosophical system will contain just so much truth as there is natural science in it. Nature seems to delight in refuting all conceptions of her processes which are not based on sense impressions.

The progress of knowledge by these two methods has been the same in all sciences as in medicine, but it is more easily followed in medicine because of the important place which its subject, disease, has always held in the thoughts of man. It is possible to trace the past in the conditions of the present. In the earliest period of medicine, before there were any records of the study of the phenomena of disease and any differentiation of disease, disease was regarded as the visitation of the wrath of offended deities, and the surest mode of its relief was the propitiation of the deity by supplications and offerings. Such beliefs are still held, or at least practices which were based on such beliefs are continued. In almost all countries at the present time it is the custom to offer supplications that the disease of an important individual may be removed by divine interposition. It is true that such prayers may be a part of past tradition or a part of the discipline of a religious system, but undoubtedly their efficacy is believed in by many. Disease has played an important role in systems of religion, and the teachers of the system who had most fully embraced its tenets were supposed to be the most efficacious in removing disease.

* Read before the Section in Medicine of the Congress of Arts and Sciences at St. Louis, Sept., 1904.

Christian science is only one of a great number of religious systems held to-day in which treatment of disease forms an important part of the cult. In the past there have been systems of medicine which gave explanations of all phenomena, and the system being perfect the phenomena were removed from further investigation. Homeopathy is the most prominent survivor of such speculative systems.

Speculation has undoubtedly been fostered by systems of religion founded on what was accepted as supernatural revelation. Revelation which sufficed for the explanation of phenomena at the time when it was given becomes firmly and inseparably blended with speculation when it must be expanded to meet a wider range of phenomena. Knowledge cannot be diffused, accepted, or utilized beyond the general development of culture. Any general influence which can be exerted on the people, turning thought into new directions, giving new subjects and proper methods, is of great importance. Darwin by substituting a rational and easily comprehended hypothesis, based on observation and experiment, with a clear statement of the method by which the hypothesis was formed, for a revelation which did not suffice and which could not be twisted to conform to what was of general and accepted knowledge, exerted probably the greatest influence on general scientific progress in the last century. Medicine like all other sciences has felt its vivifying influence.

One of the greatest changes which has taken place in the last century is the general acceptance of the idea that medicine is a natural science in which knowledge must be sought by the methods of science, namely, observation and experiment, and that disease is the result of injurious conditions acting upon the tissues. A great part of the mystery surrounding disease has been removed by knowledge of the conditions which give rise to it with the further knowledge that it is possible to prevent disease by removing such conditions. Even though some may still believe that an epidemic of typhoid fever is an act of God, they must see that the action is exerted by means of a defective water supply, and that the surest way of removing the epidemic is not by supplication but by purifying the water. At no time in the world's history has the importance of knowledge been so fully recognized as at present. People see the application of knowledge in the arts, and that improvement in the processes involved is directly dependent upon increased knowledge of the processes. There is a closer union between science and art than has ever been before. We see the influence of the appreciation of knowledge in medicine in the general acceptance of the idea that the hospital in addition to taking care of the sick shall furnish facilities for the investigation of disease, in the creation of institutes devoted to the furtherance of medical knowledge and in endowments in universities to the same end.

A brief glance at some of the more important periods in medical history will enable us to trace the influence and the results of the two methods by which knowledge has been sought. The history of medicine begins with Hippocrates. Before him there were only superstition and tradition without systematic observation and description. Hippocrates described accurately the results of his study of the phenomena of disease, classified the phenomena and based his methods of treatment on his observations. The influence of Greek philosophy made him attempt to explain the phenomena, by the assumption of a force residing in and presiding over the body. The contemporaries and successors of Hippocrates, who regarded him as a god and his conclusions as unfailing axioms, entirely neglected the methods by which he arrived at them. It must ever remain a source of wonder that the light which burst upon medicine with the advent of Hippocrates should so soon have passed into darkness. The Greeks chose rather to speculate on the meaning of phenomena than to investigate them. Galen, next to Hippocrates, had the greatest influence on medicine, an influence which was dominant for more than fourteen hundred years. Galen mastered all the knowledge and traditions of medicine at his time and made important contributions to anatomy and physiology. He was the first to introduce the experimental method into medicine, and gave a firm foundation to nerve physiology by observing the paralysis of certain muscles after section of the nerves. A voluminous writer as well as investigator, Galen created a complete system of medicine which remained as authority until men became bold enough to throw over authority when it did not conform with what could be learned from investigation. The stagnation and decline in medicine which followed Galen and continued during the Middle Ages was due to the dominance of a dogmatic religion in lands in which the general culture of the people should have given the conditions for knowledge to increase. The Church regarded its dogma as sufficient, and all inquiry, all free activity of men's minds, was prohibited. Dogma based on supposed revelation sufficed. There was some attempt at progress made by the Arabians, but their most important contribution was the preservation of the old learning. Even the period of Renaissance passed with little or no influence on medicine, for activity was exclusively turned into channels in which dogma could not be disturbed.

Three circumstances served to bring about a new era in the progress of knowledge in which medicine shared. The discovery of the art of printing, by which knowledge became diffused and more exact by the substitution of record for tradition, the discovery of America with the stimulation which this gave to thought and imagination, and the Reformation which gave freedom to thought, removed the weight of authority and allowed investigation. The reform in medicine was introduced in Europe by Paracelsus whose work was chiefly the overthrow of the Galen system which had sufficed and under which investigation was not possible. Progress

in the new reform was more active in England than in the land of its birth. This was due to the freedom from war, the greater freedom of the people in all ways and to the work of Francis Bacon, who for the first time showed clearly the methods by which knowledge must be sought. With few exceptions English medicine has remained true to the precepts of Bacon, that knowledge increases by the observation of things with the proper utilization of past observations. There has been an almost continuous line of great physicians in England who have enriched medical knowledge by investigation and who remained free from speculation. The contributions which such men as Harvey, Sydenham, Hunter and Bright have made remain and have served as bases from which knowledge has grown. The theories which were founded upon their work have passed without influence. That there came a time in England when medical investigation was greatly surpassed in other countries is to be attributed to the introduction of methods of investigation which could not be utilized in England. It was the introduction of the laboratory with the facilities for, and the systematization of, medical investigation which gave medicine on the continent its ascendancy. Young men, at an age when authority has the least weight, and before there was opportunity given them for the investigation of the clinical phenomena of disease, found in the laboratory opportunity for investigation, and had small questions placed before them which could be solved. The laboratory gave the workers scientific methods which formed the basis and gave the direction of further work in the clinic. With the laboratory came also a division of labor which allowed certain men to devote their time to investigation and teaching. Ambition was stimulated for advance and the further career was made dependent upon the ability for investigation.

It is interesting to follow a wave of speculation in medicine which reached its acme in Germany in the early part of the nineteenth century. In the period following the Reformation the most striking figure in medicine was Albrecht v. Haller, a man who as investigator and clear thinker has been equalled by few. Haller recognized the important fact that life was a property inherent in the tissues and manifesting itself by sensation and movement. On the work of Haller is founded the system of Brown who though a Scotchman can be regarded as the forerunner of the German *Natur-Philosophie* in medicine. The system of Brown is founded on the principle which he states clearly that the living animal body is distinguished from the dead and from all lifeless matter by the capacity for excitation by external influences. The difference between health and disease lies in the degree of irritability of the tissues. He divided disease into the sthenic and asthenic types according to the degree of irritability developed by the excitant, and the treatment of disease was based on this. In the hands of Brown's pupils and successors treatment of disease was productive of great harm. The theory of Brown found ready acceptance in Germany, not only by physicians but by a group of men who sought to explain nature by the creation of laws. The law once made was regarded as more correct than the observation. Schelling, who was the foremost figure in this philosophy, sought to give a representation of all the phenomena in nature, to develop the interrelation of the phenomena, to show the action of natural laws in all bodies, and that these laws originated in a common point and were characterized as an advancing series of higher phases of development of matter. Not only was it impossible to construct a system of the world from the knowledge of nature at that time, and it probably never will be possible, but Schelling very imperfectly utilized what knowledge there was. This *Natur-Philosophie* dominated medicine in Germany during the first quarter of the nineteenth century. It is expressed to a greater or less extent in all medical writing. The most gifted men could not entirely withdraw from its influence. Under it medicine was not a science following the methods of observation and experiment; investigation was banished from the clinic and laboratory and found its place at the writing desk. Hartmann says that one reason why the *Natur-Philosophie* found such ready acceptance was the ease with which it was possible by its aid to become famous as a writer. The young physician found it no longer necessary to become acquainted with the material for study by toilsome investigation; he only needed the philosophical forms of expression and could apply these to what he knew or did not know of medicine. Many systems of medicine were founded which purported to give a complete explanation of all the phenomena of disease. Of all these systems the one which has endured the longest was almost the most fantastic in its structure. The success of the system of Hahnemann or homeopathy is in the first place due to the fact that under it the treatment of disease represented a great advance as compared with treatment under the systems of Brown and Rasori. However zealous the exponents of a system may be it will find its condemnation from those who suffer most from it. The system as presented by Hahnemann was complete; it offered names and seeming explanations for all conditions. The practice of the medical art under the system was easy and involved no toilsome investigations. It was put forth at an early period of the *Natur-Philosophie* and was carried upward on the tidal wave which swept through Germany. It at once found great favor with the people and was taken up by great numbers of physicians. In the course of time the adherents of the system have become divided into three camps. In one its principles have been extended far beyond the conception of Hahnemann in that the products of disease have been used as remedial agents; a second have remained true to the principles of the founder, and a third, comprising a large number of intelligent physicians, hold only to the name. Under the *Natur-Philosophie* combinations between religion and

medicine arose, and a system which represented a return to medieval mysticism was formed by Windischmann and Ringseis. In this it was taught that the causes of disease are immaterial and not to be sought for, since disease merely represents discord between body and soul.

Such a remarkable phenomenon as the dominance of the speculation which was a part of the *Natur-Philosophie* must be regarded as a part of the romantic movement which swept through Germany and found its chief expression in poetry. All barriers to idealism and speculation were cast aside. The movement was a part of the awakening of Germany to a new national life. The great questions of the time involving political liberty and even national existence were absorbing. Under such circumstances only a few could turn from the pressure of such large questions to the narrow field of scientific investigation. It is remarkable that the great awakening in France which preceded it should have been characterized by the opposite tendencies. During this period of speculation in Germany valuable contributions to knowledge were continually being made in anatomy and physiology. The chief exponents of the *Natur-Philosophie* were physicians who had to do with the clinical phenomena of disease. Speculation was fostered because the methods of gaining information from the study of disease were at the time so meagre that observation was restricted. So confirmed was the habit of speculation that each new discovery in anatomy and physiology, instead of serving as a basis for investigation, became food for new speculation.

It is possible to see the influence of the *Natur-Philosophie* on its greatest opponent, Rudolf Virchow. No one more clearly laid down the methods of scientific investigation than did Virchow in the opening articles of his *Archives*. He was a born investigator and made valuable contributions to knowledge in every department of medicine. The protocols of his autopsies are models of full and accurate descriptions of observations. He made important additions to the technic and methods of work by the use of which new knowledge was gained. He was a great teacher as well as investigator, and men trained in his methods are among the most famous in medicine. It is difficult to find in the history of modern medicine any one who can be compared with Virchow in the contributions made to medical knowledge and in the influence which he exerted. He substituted for the ontological conception of disease, which was prevalent in Germany at that time, the conception which we adopt to-day, that it consists in life under altered conditions. This is not an explanation but a simple way of stating the summation of the most obvious phenomena. He created the cell theory of disease which, though it represented an enormous advance over prevalent theories and has been most stimulating to investigation, can no more be held in its entirety as Virchow gave it than any of the systems it supplanted. Unlike the other systems it did not pretend to be all-satisfying and all-explaining. The cell theory of disease should be regarded as an hypothesis fully justified in being formed from the knowledge at that time available. In Virchow's theory of inflammation we see the great value of an hypothesis which though gradually proven incorrect by continued observations has been most stimulating to investigation. It is interesting to see the contention which has been excited by theory. No one contends for the acceptance of an observation but is content to leave this for time, but the contention is for the conception based on the observation and the theory formed from the conceptions. Virchow properly opposed the ontological conception of disease, but this led him also to oppose the proof given that certain diseases which he regarded as due to the action of general causes were due to parasites. Virchow appeared in medicine at the time when *Natur-Philosophie*, though seemingly dominant in Germany, was really far advanced in decline, and his mighty blows were delivered against a feeble body. It was the knowledge of French and English medicine, where the advance had been by investigation, the increase in knowledge in all the natural sciences giving too much to be covered by any system, which gave the death blow to this period of speculation in medicine.

It is possible now to see the effect of this period of unrestricted imagination on medicine. It is true that it inhibited progress by restricting observation and experiment, that it substituted theory for knowledge, and found satisfaction in empty phrases and juggling with terms. But it gave birth to fruitful stimulation and opened wide and distant vistas which science has utilized. The excitation of the imagination, provided the imagination be controlled and theories be recognized as theories, is most useful in science. Without the imagination, without the tendency to seek for explanations of phenomena, there would be no progress. There is only danger in the failure to recognize the true relation of the hypothesis and in attempting to progress by adding hypotheses. There was but little progress in the period, but progress resulted from the stimulation which the period gave and from the reaction which followed it. Although as playing a great part and affecting an entire people such a movement has passed and will probably not return, we constantly see the same tendencies. The medical systems often connected with religion which are constantly arising in all countries, and especially in this, the attempt to form theories in explanation of the unknown, are due to the same mental states which produced the *Natur-Philosophie*. They arise, have a ready following composed of birds of passage resting temporarily on any bough provided, and disappear without making any real impression. How completely the period of the *Natur-Philosophie* has passed in the country of the creation is seen in the history of medicine in Germany for the last fifty years. By the adoption of scientific methods, by the fostering influence of the government which provided facilities for research, and by a system which gave reward for investigation, Germany has become the leader of the world.

At no time in the world's history was there such rapid advance, such a complete transformation in methods, such an array of great men in all the departments of medicine as in France following the Revolution. The foremost of the men in this school in France was Bichat. He undertook the gigantic task of creating for medicine a solid foundation derived from the study of objects and from experiments. He carried the anatomical study of disease further than ever before, endeavoring to ascertain not only the lesions in the organs but in the tissues which compose them. The relation between the anatomical lesions and disorders of function, he says, must be studied by experiment. The work of Magendie in physiology was hardly less important than that of Bichat in pathology. Physiology had suffered from the theory of vital force which as a seeming explanation weighed upon it as an incubus, opposing investigation. He claimed for physiology the same methods as in physics and chemistry, saying that the carefully conducted experiment is alone decisive in testing the conclusions formed from observation of phenomena. The work of Magendie had full recognition in France and he was followed by Claude Bernard and Brown Séquard who further developed his methods. Corvisart, Andral, Louis, Rayer and Cruveilhier were among the most brilliant men in the new school which was founded by Bichat and Magendie. Corvisart and Laennec deserve especial mention, in that the former brought to general knowledge the method of percussion of Auenbrugger which had been forgotten, and the latter introduced and further developed the methods of auscultation.

In the advance of science new technical methods of investigation play a most important rôle. The technical method enables the observation to extend further and more deeply. Virchow has said that the introduction of the microscope into medical research enabled us to approach several hundred times nearer disease than before. The microscope introduced a new era in the study of disease; it came into general use when the study of gross pathology in the absence of new questions had almost reached its limit. It gave more correct ideas of disease by increasing the powers of observation, it overthrew at once many theories and gave new points of view and new questions from which further observation could proceed. Every improvement in the microscope by which its efficiency is increased has the same influence. The knowledge of the influence of bacteria in disease is due in the first instance to the improvement of the microscope, and in the second to the discovery by Koch of methods of cultivation by means of which the individual species can be studied. Until this was possible our knowledge of bacteria was inexact and their causative relation to disease only an hypothesis. The development of knowledge of the minute structure of cells and tissues is principally due to the use of methods of staining which started with the simple carmine stain of Gerlach. In clinical medicine the introduction of the microscope, the thermometer, the methods of chemical investigation, the blood counter, the x-ray, have all led to a closer insight into disease and the substitution of knowledge for conjecture. There is a further indirect advantage which comes from the use of instruments of precision in investigating phenomena, in that the continued use of the methods, the constant seeking for exact knowledge of conditions, removes the tendency towards speculation.

The brilliant results which have been reached in surgery, changing this from the most despised to the leading branch of medicine, show the advantage of methods which are founded on knowledge. Surgery was despised in the period in medicine in which speculation was in the ascendancy, when the answers to its problems were sought in the study rather than at the bedside and in the laboratory. The art of surgery has been dependent upon direct observation of disease, and its remedial measures were applied to the disease as revealed by sense impressions. Theories and systems in medicine have come rather from internal medicine in which field the diseased conditions were not so susceptible to study as things. The broken leg, however, is revealed by sight and touch; the tumor is an object. Moreover, the training in the anatomical and other laboratories, so essential for a surgeon, gave the knowledge and the methods, and the manual skill to make them effective. At an early period surgery had recourse to animal experimentation, for the animal body offered the readiest means for testing new devices. In surgery new knowledge has been readily accepted and utilized. The first demonstration of anesthesia was made under the auspices of surgery, and the surgeon was the first to accept and apply the knowledge that infection is due to the action of living organisms. By the use of anesthesia and of measures of preventing infection, surgery has been extended into fields formerly supposed not to be open to the exercise of its art. Medicine owes a debt to surgery, for not only what it has accomplished but for holding to proper methods and demonstrating their importance. The less advance in modes of treating disease which internal medicine has made, compared with that made in surgery, is to be attributed to the difficulty of obtaining definite knowledge of the conditions of disease in internal organs.

That the lack of power is due primarily to lack of knowledge is shown by the fact that for diphtheria, formerly one of the most dreaded, now probably the best known, of diseases, there is a remedy which leaves little to be desired. The production of antitoxin is the greatest triumph of scientific medicine, and is due to knowledge obtained by the application of scientific methods to the study of a disease which gave unusual opportunities for investigation. It points out what may be accomplished in the future by not seeking for analogies between other diseases and diphtheria but by pursuing the same methods.

Modern therapeutics is guided by two principles in each of which efficiency is dependent upon

knowledge of disease. In the most important, the remedial agent has a specific action on the cause of disease, either destroying it or opposing its action. In the second, the remedial agents are used not with the view of exerting any specific action against the cause of disease nor even in assisting in the restoration of the tissue which has been injured but with the view of restoring function. Any agent acting as a cause of disease produces injury of the tissue, and the effect of this is alteration or diminution or destruction of function. There is a close interrelation of function, that of one organ depending upon the others. The effect of the alteration of function is seen in the supervention of phenomena which differ from the ordinary. The effect of impaired function may be remedied by supplying the body with some substance which was formed by the impaired organ. Substances directly derived from glands in the animal body, such as thyroid and pancreatic extract, may be supplied. Or the functional activity of an organ may be increased by direct stimulation or increasing its blood supply. Or the function of some other organ nearly related to the organ affected may, by increased function, be caused to supply the deficiency. Therapeutics acts either as a guard against or as a caretaker of the body in disease. Its greatest triumphs are in prevention. When the injury has once been produced its effects are minimized by the capacity of the body to adapt itself to new conditions. There is a third use in therapeutics in the case in which the disease produces so much pain and discomfort that the remedial agent is used for the purpose of diminishing the effect of sense impression on the central nervous system. It is clear how complicated the questions are and how much greater is the task presented to the physician than to the surgeon. The surgeon acts directly, either adjusting parts which are deranged or by removing tissue which is diseased. The study of medical literature shows the mistakes and follies which have been and are being perpetrated in therapeutics. The more obscure the disease the greater the number of remedies; the more ignorant the practitioner the more confidence that certain drugs will act as remedies in all diseases. Each year has served to discard some remedy considered infallible and to substitute for it another equally infallible. The discontent of the general public with such therapeutics is shown in the success of charlatans who advertise nostrums for the cure of all diseases. It is just as easy for them to obtain certificates of cures by the nostrums as it is for the practitioner to become convinced of cures effected by certain favorite drugs.

The greater knowledge of the infectious diseases which has come with their experimental study has especially served to place therapeutics upon a proper basis. It has become apparent that many diseases are self-limited and tend to recover under any treatment provided this be not too injurious, and that the medical art can be more successfully exerted in preventing disease than in its cure. The first effect of increased knowledge of disease was to produce a feeling of powerlessness in the face of it, followed by a nihilism in therapeutics which was as much to be deplored as overconfidence for it acted as a bar to progress. This nihilism was a prominent feature of the Vienna school in the sixth decade of the past century. The science of therapeutics as we find it to-day is founded on experimental pharmacology and pathology. In experimental pharmacology the action of drugs on the healthy animal is investigated. It is sought to discover the mode of entry of the drug into the tissues, the mode of exertion, the changes the drug undergoes while in the body and the changes in structure and function it produces. The action of the drug may differ in different animal species. Knowledge of the pathology of disease shows in what part changes are produced by the causative agent, the nature ot the changes, and the effect of these changes on function. The determination of what is taking place in the body in disease is the most important question in medicine to-day. For its answer all the resources of science must be brought to bear. The subject is rendered more complicated by the fact that we are not dealing with a fixed but with a variable quantity. Age, heredity, temperament and social environment must all be considered. We cannot say except with wide limitations what changes and variation in function will be produced by the action of certain conditions. With the knowledge of the effect of the drug on the healthy body, and the knowledge of what changes are being produced in disease, and the effect of which we wish to minimize, an intelligent experiment may be made. Previous experimentation on animals should deprive the experiment of all danger.

Another change which has become apparent is the greater specialization, not only in the exercise of the medical art but in investigation. All increase of knowledge must bring with it specialization, for with the enlargement of the field comes the impossibility of its control by one individual. Specialization has both advantages and disadvantages. The advantages are that investigations are more easily carried out by the simplification of the questions, and the familiarity with technical methods. Methods of investigation have become so complicated that the necessary skill can only be attained by the constant exercise of methods only applicable in a very narrow field, and an investigator of exceptional ability in one line of work may be powerless in another. A man may profitably devote his entire energies to the study of the changes in nerve cells in disease, or may confine himself to the study of a single species of bacteria. With the enormous increase in medical literature there has come specialization in this, and certain journals are devoted to special subjects and are read only by those working in the field covered. The first differentiation came in the separation of anatomy, physiology and pathology from practical medicine; that is, the medicine concerned with the exercise of the art. The separa-

tion was a natural one, for not only could progress be more rapid, but the subjects could be better taught by one who had the knowledge which came from his own investigations. It is no longer possible for a single individual to control the knowledge in any of these primary subdivisions. The most obvious disadvantage in specialization is the loss of the more general aspects of questions. The large questions become broken up into smaller, and the smaller questions become again leading questions to be again broken up. It is also felt that the knowledge gained in such special investigations may not be of a character which can be utilized in the treatment of disease. But few of the questions which arise and form the basis for investigation come from the clinic, and they apparently have only the most remote relation to the problems of disease. The investigator very properly feels that his investigations are justified in that they form contributions to general knowledge, and whether or not the results are directly applicable to the treatment of disease does not disturb him. There was an error perpetrated in not giving to those devoted to the study of the clinical aspect of disease the same opportunity to devote themselves to research, to answer the question which came from the phenomena of disease, which was given to anatomy, physiology and pathology. Clinical medicine, the study of the problems of disease coming from the bedside, must have the same opportunity, and must advance by the use of the same methods as physiology and anatomy. Clinical medicine is behind the special departments in the contributions it has made to knowledge, in the methods by which it seeks to advance, and in the efficiency of teaching. Provision must be made in the universities which will enable men in the clinical departments to devote themselves to research teaching, and laboratories must be provided for such research. Only one who is himself an investigator can direct investigation by recognizing and properly stating the questions. There need be no fear that the knowledge which comes from investigation will not be utilized. In what way may not be apparent at the time; often knowledge which seemed furthest removed from utility has become the most important. That knowledge is power, and that it is the only power is an accepted axiom.

Anatomy and physiology originally arising from human medicine for the furtherance of knowledge which could be applied to the treatment of disease in man have long outgrown such limitations. Both have become comparative. Physiology undertakes the study of the processes taking place in living things, anatomy their form and structure. The comparative view has more slowly entered into pathology, for this has been more closely in contact with clinical medicine, and most of the questions for investigation have arisen in connection with the diseases of man. Disease is found in every living thing, in all animal and plant life. The phenomena of disease must differ according to the conditions peculiar to the organism. Strictly speaking, there can be little similarity between the phenomena of disease in a plant and in an animal. The functions which are destroyed or altered by disease are too dissimilar. But this is not true when we study the closer details of disease. In both, changes are produced, and the changes affect function. We can study unicellular organism directly under the microscope, see the changes which are being produced by injurious conditions and the effects of the changes. Knowledge derived from such study may be said to be the basis of our conception of inflammation. The studies of plant diseases have been almost entirely directed from the economic side. The economic results which have come from this study by enabling the prevention of disease are almost incalculable. General medicine has gained by this study a greater knowledge of parasites, their mode of action and the means by which the organism is protected against them. That the knowledge has been so rapidly gained is due to the facilities for investigation and experimentation. Plant experimentation has never given offense. It should be regarded on the whole as very much better that the study of plant disease has been directed from the economic side, for progress has been more rapid; but there would be advantage in the closer association of plant and animal pathology and the extension to plant diseases of questions coming from disease in man. Careful study of diseases in animals has been chiefly directed to the infectious diseases, and especially to those artificially produced. The questions have been chiefly those concerned with the parasitic cause of disease and the mode of action of the parasites. The more obscure diseases of animals have attracted but little attention, and only from the economic side. The phenomena of disease in the higher animals have much similarity to the phenomena of disease in man, and in certain aspects the diseases of animals are more capable of investigation. Diseases are found in animals which are similar to the most obscure diseases in man. Our ignorance of these diseases in man is due to their complexity and the difficulties of investigation. To their understanding chemical and physical methods are necessary, and some of these methods cannot be carried out for they may be harmful to the individual. In animals we have the advantage that the disease can be interrupted at any stage and the conditions studied at this stage. We know the infectious diseases of animals chiefly by their experimental production. There has been but little study of these diseases under natural conditions and much knowledge can be gained by the mode and conditions predisposing to infection. Questions of heredity have an important bearing on disease. The susceptibility of animals to disease varies. Common experience has shown in man, also, that under circumstances apparently the same certain individuals will acquire diseases, others remain exempt. There is also foundation for the belief that susceptibility for certain infectious diseases is inherited and in other diseases inherited sus-

ceptibility is beyond doubt. The most striking recent discovery in medicine is that the blood serum contains many complex substances. Some of them play an important rôle in the animal economy; for others we can as yet discern no purpose, and our knowledge of these substances is chiefly confined to their effects, but it has recently been found possible to isolate one substance in pure form with a known chemical composition. While these substances may serve an important rôle in protecting the body against disease they may act in the opposite way by providing a means by which injurious substances are brought in contact with cells. Whether chemical variation may not arise, be inherited and play an important part in disease susceptibility is an important question to be answered by comparative medicine. For the purpose of such investigation an animal clinic is necessary which should be provided with thorough facilities for the study of disease. The questions for solution should come both from comparative medicine and from the clinic of human disease.

Comparative medicine is intimately associated with experimental medicine. There can be no contention as to the relative advantages of observation and experiment. The experiment is only observation under simple and known conditions, and supplements observation under the more complicated natural conditions. In the experiment it is possible to divide questions into their simpler components and make each the subject of experiment. In experimental medicine, just as in the animal clinic, the questions for solution should come from both comparative medicine and the human clinic. The most brilliant results in experimental medicine have come from the study of the infectious diseases. Knowledge of these diseases stands in direct relation to the possibility of their experimental production. It is true that we have not been able to produce in animals many of the diseases which are found in man. Experimental medicine is comparatively new and the number of animal species experimented with has not been large. It has recently been found possible to produce syphilis in the chimpanzee, and there is every reason to hope that this will lead to knowledge of the nature of this most obscure disease. Questions concerning the circulation and respiration in disease which are closely related to physics will find their answer in experimental medicine. The opponents of animal experimentation should remember that the greater our knowledge of disease which comes in this way, the further will disease in man be removed from experiment. Before our present knowledge of diphtheria, tuberculosis, tetanus, and anthrax, all treatment of these diseases was experimental. In certain cases experiments must be carried out in human beings, and even when the experiments may have a fatal termination. Such experiments will only be resorted to when this forms the only method of obtaining knowledge of the highest importance, and the subjects of the experiment must be adults who submit with full knowledge of the possible consequences. Let us give all honor to the men who devised and the brave men who submitted to an experiment, the knowledge obtained from which has placed yellow fever in the list of preventable diseases.

There has been in the past too wide a separation between the public and the medical profession. The public has derived its medical information chiefly through the newspapers, and the information so given has been sensational and unreliable. Without correct information of the problems which face the medical profession, and of the methods by which these problems are being solved, neither the sympathy nor co-operation of the public may be secured. Active or passive opposition may be encountered. There is evidence that this is being slowly changed. The medicine of the romance is not so fantastic as it was formerly. The general information in biology, human anatomy, and physiology necessary for any appreciation of medicine is being imparted by the schools. Many of the popular magazines contain admirable articles on disease. The stories of such diseases as malaria and yellow fever have actual fascination. The medical education of the public is also furthered by the work of boards of health in the control of infectious diseases. The public is slowly but none the less surely learning that disease is not a mysterious entity dwelling like a devil in the body, to be driven out by the use of some equally mysterious agent, but a condition of life which can be guarded against. The public is not slow in the appreciation of the results of the work of boards of health, and is willing to make provision for their work.

Medical education, the training of men to exercise the art of medicine, has been revolutionized in the past twenty-five years. The most marked change has been in the substitution of object study for the didactic lecture. The didactic lecture is still used, though not with the idea of imparting knowledge but of showing the interrelation of knowledge coming from object teaching. The successful practice of medicine depends more than ever before upon the use of methods which give accurate knowledge of the condition of the sick individual, and training in the exercise of these methods is the most important part of medical education. It is certainly of importance that the student should learn the structure of the body, the functions of the different organs, and the changes which organs and functions undergo in disease. The knowledge acquired will be constantly used in solving the problems presented in the practice of medicine. While this is true a great part of the value of these studies consists in the discipline which laboratory study enforces. In the laboratory the student learns to acquire conceptions of objects and of the activities taking place in them, by means of sense impressions, and to use and appreciate methods by means of which the field of investigation is extended. He learns to approach problems from the scientific point of view. Progress and success in medicine are directly dependent upon the habit of investiga-

tion. Medicine is not and probably will not be an exact science with definite laws by the application of which the exact sequence of phenomena can be foretold. Every case of disease is a problem, and on the knowledge acquired from investigation successful treatment of the individual depends. Science demands to know, and methods by which knowledge can be obtained are of supreme importance. Methods of obtaining knowledge have been widely extended in clinical investigation. Every year sees the discovery of new methods. There should be, and with the foremost men there is, no distinction between the clinic and the laboratory. In both knowledge is sought by the use of the senses, and methods of investigation have a supreme importance. The laboratory discipline can be given just as well in the clinic as in the other laboratories, with the advantage that the methods of the clinic are the methods which are used in the practice of medicine, and facility in methods can only be acquired by continual exercise. It is evident, however, that the laboratories and clinics should only be conducted by men who themselves know and fully appreciate the importance of methods. It is probable that in the medical education of the future there will be a restriction of the laboratory training in anatomy, physiology and pathology, and an extension of the training in the methods of the clinical laboratory.

## Original Articles.

### HEART COMPLICATIONS IN DIPHTHERIA. A CLINICAL STUDY OF 946 CASES.

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This paper consists of a clinical study of nearly one thousand cases of diphtheria treated at the Boston City Hospital, South Department, during one year. We have studied mainly the condition of the heart to determine the character and frequency of heart lesions and their practical importance in prognosis and treatment. We shall present some general statistics of all the cases, taking up certain cardiac signs and symptoms which were common to large numbers of the patients, and also a special consideration of a small group of cases in which the heart symptoms were especially prominent and important.

*Age.* — The patients, naturally, were mostly children; their ages were as follows:

| Age. | |
|---|---|
| Up to 1 year | 57 |
| From 1 to 5 years | 331 |
| From 5 to 10 years | 248 |
| From 10 to 16 years | 109 |
| Over 16 years | 201 |

About 5% were less than one year, nearly 40% less than five years and about 70% less than ten years old.

*Sex.* — The sexes were almost equally represented.

*Severity.* — In about one quarter of the cases the course was mild, about one half were moderately ill and in one quarter the illness was severe. Over one half of the severe cases proved fatal, namely 132. This classification is based on the amount of toxemia, the amount of membrane and the presence of complications. The following table gives the number and per cent of deaths at different ages:

| Whole no. of cases. | | No. of deaths. | % of deaths. |
|---|---|---|---|
| 1 year and under | 57 | 19 | 33 |
| 1 to 5 years | 331 | 43 | 13 |
| 5 to 10 years | 248 | 20 | 8 |
| 10 to 16 years | 109 | 6 | 5 |
| Over 16 years | 201 | 6 | 3 |

About one half of these patients died of bronchopneumonia, usually following operative interference, such as intubation or tracheotomy. About one fourth died of heart complications. Of the remaining one quarter, the majority died of early severe toxemia and a few of asphyxia, or late paralysis. These facts contradict Villy's statement that the majority of fatal cases of diphtheria die on account of heart complications.

About 50% of the patients were discharged from the hospital within four weeks, about 40% between the fourth and seventh weeks, only 10% remained longer than seven weeks. The length of the stay in the hospital was governed by the presence of diphtheria bacilli in the throat as well as by the severity of the illness.

#### BEGINNING OF TREATMENT.

The hospital patients come largely from the poorer classes where the illness is likely to be neglected at the outset and proper treatment deferred. In most of the cases treatment with antitoxin was not begun until the second or third day of the illness, and it is important to note that the large majority (at least two thirds) of the severe and fatal cases averaged four or five or more days without treatment with antitoxin.

#### CARDIAC SIGNS AND SYMPTOMS.

The physical signs of a greater or less degree of cardiac disturbance, such as murmurs, and rapid and irregular pulse, were very common. Ordinary symptoms of heart disease, such as dyspnea, dropsy, cyanosis and hemorrhage, were not common. We will take up the physical signs first on account of their far greater frequency.

#### PULSE RATE.

This table shows the relation between maximum pulse rates and mortality:

| Pulse rate. | No. of cases. | No. of deaths. | % of deaths. |
|---|---|---|---|
| 100 or under | 127 | 4 | 3 |
| 100 to 120 | 114 | 11 | 9 |
| 120 to 140 | 378 | 19 | 5 |
| 140 to 160 | 226 | 33 | 14 |
| Over 160 | 98 | 49 | 50 |

About 65% of our cases had a maximum pulse rate of less than one hundred and forty, and the mortality among these was about 5%. In general, the higher the pulse rate, the greater the mortality, as would naturally be expected. About 20% of the cases with pulse rate of one hundred and forty or over were fatal. It is, however, a fact, that a prognosis from the pulse rate alone is of little value, because so much depends on the age of the patient. The pulse rate at discharge in cases which were not fatal was 100 or less in about 68%, between 100 and 120 in about 31%, and over 140 in five cases, or less than 1%.

*Irregularity of Pulse.* — This was noted in nearly 60% of our cases, and the actual number of patients having an irregular pulse at any time may be even larger than this. It was frequently observed in severe, moderate and even in mild cases. It was observed at the entrance to the hospital in about 12% of the patients, often combined with cardiac murmurs. In the majority of cases its time of onset was one or two weeks after entrance, and in about 35% of the cases the heart was irregular at discharge. In about 1% of the patients it was the first sign of cardiac disturbance observed.

It was very variable in its appearance and duration. The rhythm would often change within half an hour from marked irregularity to perfect regularity, or the reverse. The duration varied greatly, some patients had only short intervals of irregularity scattered through several days, others had an irregularity which was constant for several weeks; when the patient's condition improved periods of regularity appeared or became longer, but excitement or exertion would make the pulse very irregular and rapid again. Irregular rhythm was most frequently observed in the severe and fatal cases, but Romberg's statement that irregular pulse is in general a sign of great weakness and approaching death is certainly not true.

This table gives the number of cases at different ages with irregular pulse:

| Ages | 1 to 5 | 5 to 10 | 10 to 16 | Over 16 years. |
|---|---|---|---|---|
| Total No. of cases . . | 332 | 248 | 109 | 201 |
| Cases with irregularity, | 164 | 189 | 81 | 66 |
| % irregular . . . . | 49 | 76 | 72 | 33 |

The statement of Villy that irregularity of the heart is much more frequent in young patients is borne out by our statistics, though we have not found as great a difference between children and adults as he did. Irregularity of the pulse was found in two thirds of the cases under sixteen years, but in only one third above that age. We have no explanation for the fact that irregularity of the pulse was less frequently observed in children under five than in older children, except the greater difficulty in determining the pulse rhythm at that age.

### CARDIAC MURMURS.

One of the most striking features of our study and the one in which it differs from most published records is the very large number of patients who were found to have heart murmurs.

The following table shows the number of patients who had heart murmurs during their stay in the hospital and at discharge, and the position of these murmurs:

| | |
|---|---|
| No. of patients with murmurs at any time: | |
| At apex and base . . . . . | 681 |
| At apex . . . . . | 172 |
| At base . . . . . | 25 |
| Total number of patients with murmurs . . . | 878 |
| Total number of patients without murmurs . . | 53 |
| No. of patients with murmurs at discharge: | |
| At apex and base . . . . . | 433 |
| At apex . . . . . | 169 |
| At base . . . . . | 90 |
| Total number of patients with murmurs at discharge . . . . . | 692 |

All the murmurs were systolic in time with the exception of those in a few cases of chronic heart disease. A systolic murmur at the apex or base of the heart was noted in all but 53 patients, namely: 94% of the cases where the condition of the heart was carefully observed and recorded. The number of cases with murmurs is probably even larger than these figures indicate, because the 53 patients recorded as having no murmurs include cases in which the heart examination was unsatisfactory, because the patient was moribund at entrance, or because the respiratory sounds, due to intubation, tracheotomy or bronchopneumonia, made it impossible to hear the heart sounds.

In view of the great number of murmurs found, it is desirable to say that these observations were confirmed in each case by two or three competent observers; that the murmurs were not doubtful or faint, or such as required change in the position of the patient to bring them out, but were, for the most part, loud and blowing in character.

In the cases having murmurs their position was at both apex and base in 77%; at the apex alone in 20%; at the base alone in about 3%. To sum up, the murmurs were loud, sometimes musical; were usually heard at the apex, frequently transmitted to the axilla and usually associated with accentuation of the pulmonic second sound; they were not affected by change of position of the patient. The majority were associated with irregular heart action and outlasted the fever. We do not, therefore, consider them simply functional murmurs, but for the most part due to the actual changes in the heart wall or papillary muscle.

The heart murmurs developed within the first few days of illness in most cases. In 90% of the cases having murmurs, they were present at entrance to the hospital; in the remaining 10% the first note of the presence of a murmur was made within one or two weeks after entrance. These notes probably do not always represent their first appearance.

The duration was usually several weeks, at

least, and in about 78% of the cases one or more murmurs were present at discharge, the relative frequency at base and apex being the same as during their stay in the hospital. The duration of the murmurs after leaving the hospital is unknown, except in a few instances. Five or six patients were examined eight or ten months after leaving the hospital and each showed a murmur, and of these, two cases had some cardiac enlargement and irregularity with a weak first sound, indicating a probably chronic myocarditis. Many patients were seen at an interval of several weeks after leaving the hospital. In many of these cases cardiac murmurs or irregularity were found, and yet the patients were attending school and taking moderate exercise without any heart symptoms or other perceptible bad results. The authors hope to look this matter up later, to determine, if possible, the permanent effects of diphtheria upon the heart. Schwaltz says that permanent disease of the heart after diphtheria is not rare.

The mere presence of a murmur has little or no prognostic value, it is so nearly universal. The cardiac signs which are important in prognosis are gallop rhythm, rapid and irregular pulse, cardiac enlargement, late vomiting, etc., which will be considered at length later.

The large number of children discharged from the hospital with a rather rapid and irregular pulse and cardiac murmurs is very striking, and contrasts strongly with the condition of children at the end of other acute infections, such as measles and scarlet fever, or the condition of adults at the end of such acute infections as typhoid, grippe or pneumonia, and at first sight it would seem to be very desirable to keep these patients under observation in the hospital until the heart had entirely regained its equilibrium. This matter will be considered under treatment.

The clinical course of the cases does not explain the cause of these murmurs, it only indicates their frequency and relative importance. Pathological studies have shown that the murmurs are probably due largely to relative mitral insufficiency resulting from changes in the heart muscle or to changes in the innervation of the heart. Autopsies have shown that endocarditis and pericarditis are extremely rare complications of diphtheria.

The first sign of cardiac disturbance was the appearance of a murmur in 89% of the patients, of a murmur combined with irregularity of the heart in 10%, and of irregularity alone in 1%; these signs were present at entrance to the hospital after only a few days' illness in 95% of the patients.

Cardiac enlargement was infrequent, and apart from the changes due to chronic heart disease was found only in the severe cases. We have considered the heart to be normal in size when the right border was at the parasternal line and the left border at or just outside the nipple line in children under five, and at or just within the nipple line in older children.

Lees insists on the importance of the diagnosis of cardiac dilatation by a careful determination of the area of cardiac dullness. We believe that he exaggerates the frequency and importance of acute dilatation and syncope. In our series almost all the fatal cases showed a gradual heart failure; cases of sudden death from heart failure during rational treatment were extremely rare. We agree with Poynton that dilatation of the heart is not so marked in diphtheria as in rheumatic fever.

Seventeen of the patients had chronic heart disease at entrance to the hospital, 13 had mitral regurgitation, 1 mitral regurgitation and stenosis, 2 aortic regurgitation, and 1 congenital heart disease. All these patients recovered and the course of the illness was no more severe than in the average patient. We could find no evidence that the heart in these patients was more susceptible to the diphtheritic poison than a normal heart. The patient with the congenital heart was two years old. He was intubed four times, had bronchopneumonia, was in the hospital twelve weeks, but made a perfect recovery from the diphtheria, and the heart was left apparently in the same condition as at entrance.

We shall now consider the small group of cases in which the heart symptoms were especially important. Some fatal cases of diphtheria are overwhelmed with poison and die in two or three days with all the symptoms of toxemia. The serious heart complications, however, usually develop only during or after the second week of illness. There is no way in which one can foretell in which case such a complication will occur, but the more severe the illness and the longer without treatment, the greater the liability of its occurrence.

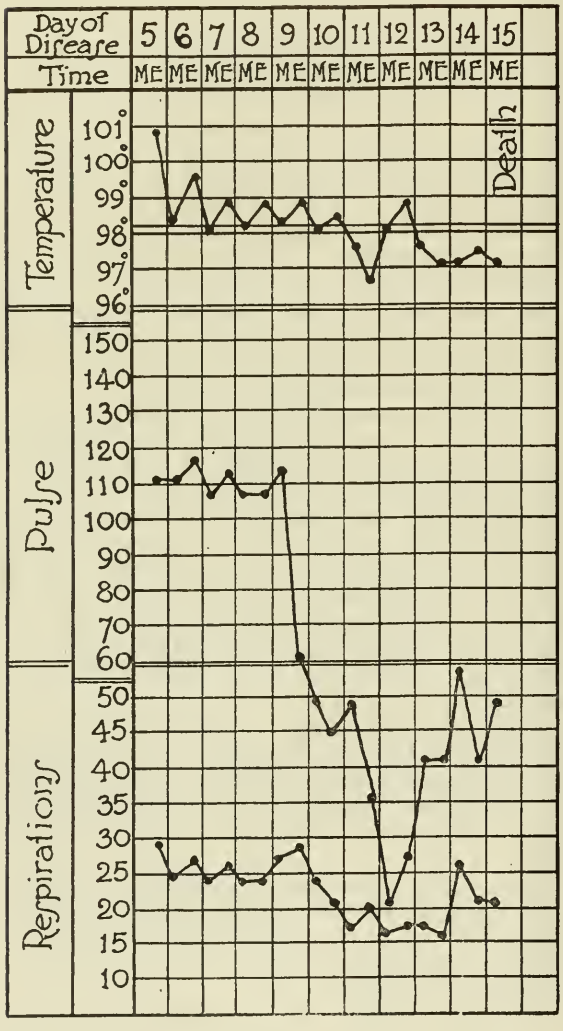
There are three separate types. The first and most serious type have gallop rhythm, vomiting, epigastric pain and tenderness, run a short course of two or three weeks, and die in the majority of cases. Most of our severe heart cases are of this type.

The second type lasts for weeks or months with a rapid, regular or irregular heart, easily affected by slight exertion and gradually becoming normal in rate. As a rule there are few other important symptoms.

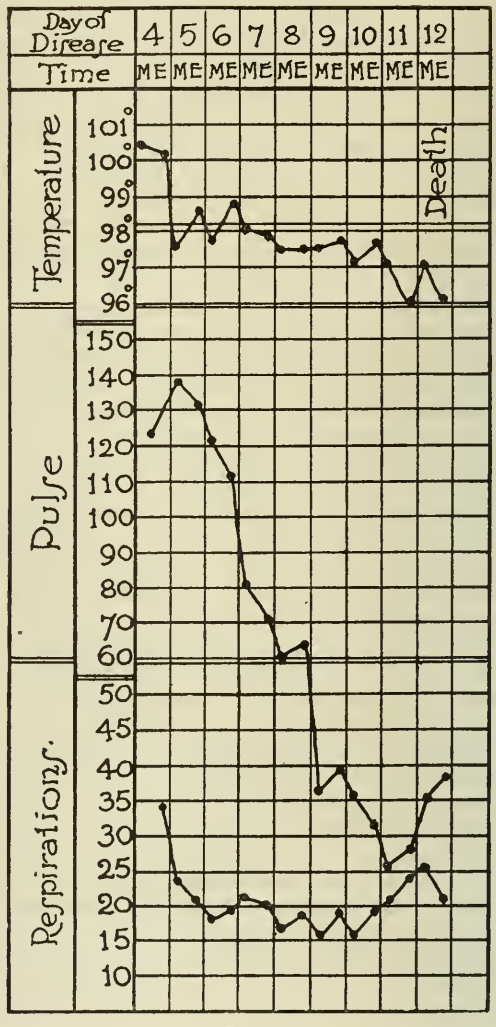
The third type is rare, occurring only once in every 600 or 700 cases; its main feature is a very slow pulse occurring at the end of the second or the beginning of the third week. There is a marked decrease in rate over a period of three days, the pulse dropping from 110 or thereabouts, to 30 or even 20. Until the pulse reaches a low level (40) the subjective symptoms are slight, but when the rate gets below this there is marked prostration. The heart sounds are very weak, a moderate dilatation of the heart occurs; there is no vomiting. There were three such cases in our series, all fatal. These are so unusual that the charts are appended and a brief description given.

The first two illustrate the usual course in this type. In each case the disease was severe and treatment had been delayed for four or five days.

The drop in the pulse rate was sudden and not accompanied by subjective symptoms until the rate was below 40; after this time a gradual dilatation of the heart occurred which continued until death. There was pallor, slight tibial edema, marked diminution in the amount of urine which contained albumin in each case.




No. 1.




No. 2.

Vomiting and epigastric pain and tenderness were not present. The patients failed gradually and death occurred a few days after the development of the bradycardia.

The third case is of especial interest. Here the pulse varied between 30 and 40 for four days. Three days later it was 120 and a well marked gallop rhythm was present, which lasted for seven days. From this time the patient slowly improved until the sixth week when paralysis of extremities, palate, and muscles of deglutition and respiration developed which caused his death. The striking feature of this case is the fact that the patient survived the period of bradycardia and gallop rhythm, only to die of late paralyses.

We will now outline a brief clinical picture of the group of heart cases characterized by such symptoms as gallop rhythm, vomiting, epigastric pain and tenderness.

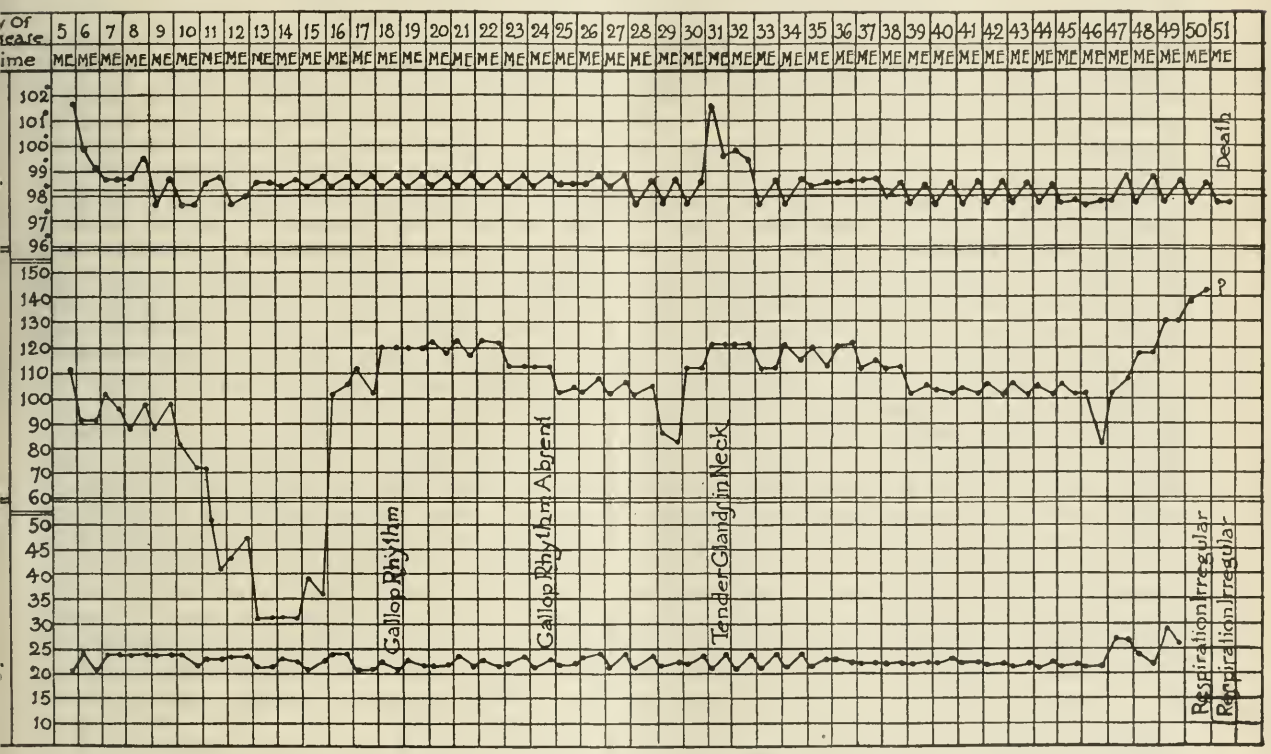
The appearance of gallop rhythm is usually indicated by an increase in the pulse rate. The pulse may increase in frequency for a day or so, often reaching 140 or more, when the gallop appears. In other cases it appears in comparatively few hours, usually the more rapid its appearance the more serious the outlook. By the time it is well marked the pulse is 140 to 160 or more, weak and thready and often irregular at the wrist. The gallop may continue several days and the child be apparently not much affected except for a little pallor, loss of appetite and restlessness. Rapidly increasing prostration, however, soon follows and the child becomes blanched and vomiting occurs.

Vomiting is apparently unattended by nausea; anything taken by mouth is almost immediately returned, and even if no food is taken vomiting in small amounts occurs. First, yellow fluid with mucus, and later, brownish material containing altered blood. About the time that vomiting occurs the child complains of epigastric pain and tenderness, and on examination well marked spasm is found. These signs are not transitory but continue until death occurs or recovery begins. Very little urine is secreted; it nearly always contains albumin. There is often slight edema over the shins, but no general edema. The respiration may be a little hurried but there is no dyspnea. The heart is usually moderately dilated. last from a few days to several weeks. After recovery the heart is usually rapid, weak and irregular for weeks or months.

Palatal paralysis may occur in these patients and is indicated by nasal voice and regurgitation of the food through the nose.

We will now give the statistics in the 36 cases having very serious heart complications as indicated by gallop rhythm. Nineteen were males and 17 females. The ages were as follows:

| | |
|---|---|
| Under 2 years | 1 |
| Between 2 and 5 years | 10 |
| Between 5 and 10 years | 15 |
| Between 10 and 15 years | 9 |
| Over 15 years | 1 |




No. 3.

The duration of life after these symptoms have developed is usually short, one to three days. The heart is dilated, the pallor becomes extreme, vomiting becomes more frequent, the vomitus running from the child's mouth, the pulse becomes more and more rapid, the child is restless and continually cries for water which if given is immediately returned mixed with altered blood. The pulse is finally lost at the wrist and death occurs in from twelve to forty-eight hours. Cyanosis is absent.

In other cases the gallop rhythm continues without much effect upon the child's condition. The pulse is rapid and weak and the heart may be dilated. There is no vomiting and no epigastric pain and tenderness; the gallop gradually grows less marked and finally disappears leaving the heart weak, irregular and rapid. Exertion may cause the gallop to reappear. This condition may

Two thirds of these patients died, one on the second day, the others on the fourth to eighth days. The effect of late treatment upon the mortality is shown by the fact that four fifths of the fatal cases had no treatment until after the fourth day. Among the cases which recovered, three fourths were treated before the fourth day. The severity of the illness is indicated by the fact that at entrance all but two patients had a pulse of over 120 and several a pulse of 140 or over.

The first important cardiac symptom that we consider is gallop rhythm; this was found in all the cases. It appeared in one case on the sixth day, in one on the twenty-seventh, in all the others from the ninth to the eighteenth day. When gallop rhythm appears, murmurs which usually are present become indistinguishable.

Late vomiting is the next important symptom. This occurred in about two thirds of the cases.

It was present in all but four of the fatal cases; of these four cases three died of paralysis of respiration and deglutition in the sixth to the eighth week, having recovered from the gallop rhythm, leaving only one patient who died during the gallop stage and who had no vomiting. Thus we see that late vomiting was almost invariable in the fatal cases. Among the patients who recovered, on the other hand, there was only one with gallop rhythm who had also late vomiting. In nearly every case the appearance of the gallop rhythm preceded the onset of vomiting from one to four days, occasionally longer.

The next symptom is epigastric pain and tenderness. Nine tenths of the patients who had this symptom died; of the two who recovered one had only slight tenderness and no vomiting, the other had well marked tenderness and pain, with vomiting. The time of appearance of this fatal symptom varied; it usually was closely associated in time with the appearance of vomiting, either a day or two before or a day or two after.

Palatal paralysis was noted in 19 of these severe cases, sometimes before, sometimes after the onset of heart complications; its earliest appearance being the ninth day of the illness and its latest the seventeenth day. It was found in ten of the fatal cases. There is difficulty in recognizing its presence in very sick patients and it probably was present but not observed in others.

We have said enough to show that gallop rhythm, late vomiting, epigastric pain and tenderness, were very frequent in severe and fatal cases, and very rare in those who recovered, which is sufficient to emphasize their importance as danger signals and their value in prognosis.

The illness of the patients who recovered was protracted, one third of the patients remained in the hospital six to eight weeks, one third from eight to ten weeks and one third from ten to twelve weeks. During their stay in the hospital all but one had marked paralysis of legs, arms and eyes. In the fatal cases the duration of life was short, all but three died between the tenth and twentieth days of their illness, three lived from six to eight weeks; all the latter suffered from late paralyses.

The condition of these patients at discharge was interesting. Among those who recovered, two thirds had an irregular pulse, all but one had murmurs at the apex and base of the heart, all but one had a weak first sound, all had a rapid pulse rate, the slowest being 110. In two cases which recovered the heart was enlarged at discharge; in practically all of the fatal cases the heart was dilated. The other signs of cardiac disturbance were not striking, sometimes there was slight edema of the ankles and scanty urine; the respiration was rapid, averaging 35, and often irregular, especially at the latter part of the illness; there was no cyanosis. One case discharged at the end of six weeks had no paralysis; all the others had severe paralyses. The great danger in delaying treatment with antitoxin is emphasized by the occurrence of so many serious and fatal heart complications, the likelihood of prolonged or permanent damage to the heart even in cases which recovered, and the abundant and severe post-diphtheritic paralyses, for it will be remembered that four fifths of these fatal cases had no treatment with antitoxin until four of five days after the illness began. The cases which recovered had no treatment for at least three days, and they proved to be long, severe and dangerous.

The relative importance of pathological changes in the heart muscle and in the nerves controlling the heart has been much discussed from both the clinical and pathological point of view. The subject is interesting, but we propose to say very little about it in this paper.

The evidence at present is conflicting. Veronese, Councilman and others have frequently found degeneration in the vagus, cardiac nerves and ganglia, and sympathetic system in fatal cases of diphtheria. Schamshin in studying the heart in similar cases found that the nerves and ganglia of the heart showed no changes whatever.

Leyden, Romberg, Councilman and Hesse have demonstrated the frequency of degeneration of the myocardium in diphtheria. Mollard and Regaud have produced similar changes by injecting fatal doses of diphtheria toxin into animals. Martin found that diphthereal albumoses produced an advanced degeneration in the cardiac muscle but was unable to find any degeneration of the vagus.

Villy considers the condition of the heart muscle most important. He points out the fact that the heart is automatic and the nerves simply govern it; that cardiac irregularity is earlier and more frequent than definite paralyses due to nerve degeneration; that in very extensive paralyses about the pharynx where a part of the vagus is involved the heart only shows a gradual failure; and that the lesions in the heart muscle, such as granular changes and fatty degeneration, are sufficient to account for the symptoms without nerve changes.

Pässler and Romberg have concluded from studies of experimental diphtheria in animals that the changes in the circulation which are usually attributed to heart weakness are in reality the results of damage to the vasomotor apparatus.

We have no pathological evidence from our group of cases; the autopsies were too few to base conclusions upon. We have seen, however, that in the severest type of heart cases degeneration of the vagus was indicated by the very frequent appearance of palatal paralysis, late vomiting, epigastric pain and tenderness, and it is reasonable to suppose that the faulty heart action in these cases was due in part to these nerve changes.

### TREATMENT.

It has been our experience that rest in bed and nursing are most important in the treatment of heart complications, and that drugs play a small part.

Our figures show that the serious complications nearly always develop within three weeks from

the onset of the illness, although in rare cases they may appear several days later.

It is usually safe to allow the mild cases to be out of bed at the end of two weeks. The presence of murmurs and a slight degree of irregularity are no contra-indication, if the first sound is strong and the heart is not dilated. Many of the cases, severely ill or ill several days without treatment, apparently do well for two weeks or more, the pulse may be a little irregular and rapid but the condition of the patient causes no anxiety. It is not, however, safe to allow these cases out of bed, even if the pulse is normal in rate and of fair strength. If four or five weeks pass and no serious heart complications arise, the danger from this source is usually over, although death may occur from other late effects of the disease such as paralyses of respiration and deglutition. It has been our experience that after four or five weeks a patient with well marked murmurs and irregular pulse, even if rapid, experiences no ill results from being allowed to sit up if the heart is carefully watched.

We will separately describe the treatment in ordinary cases, in those with persistent rapid pulse, and in those with gallop rhythm. In cases with a murmur and little irregularity the treatment is directed to improving the general condition of the child. The patient is allowed to sit up after two or three weeks of illness, but active exercise is forbidden. Digitalis and alcohol rarely do any good; strychnia is the best drug and is given in doses of $\frac{1}{60}$ of a grain every four hours for a child of five to ten years. In many cases larger doses seem to be useful and produce no unfavorable effects.

Cases with persistently rapid pulse should be kept in bed at least four or five weeks and then allowed to sit up for short and progressively longer intervals, the heart being carefully watched on each occasion. Frequently, after four or five weeks' rest in bed the heart action is improved by this change. Strychnia seems to be the only drug of any value.

In cases with gallop rhythm absolute rest in bed is necessary and a liquid diet is given. At the first appearance of vomiting food should be given by rectum and cracked ice given by mouth for thirst. Strychnia in doses of $\frac{1}{60}$ to $\frac{1}{40}$ of a grain every four hours for children three years and over is given with the best results, although drugs influence this condition but little. If there is vomiting the strychnia should be given subcutaneously. Cocaine in doses of $\frac{1}{12}$ gr. every four to six hours in ice cold water at times relieves the vomiting; alcoholic drugs, even champagne, are not well borne, and often increase the vomiting. Morphia in doses of $\frac{1}{16}$ to $\frac{1}{8}$ gr., depending on the age, is of value to quiet restlessness. Predigested beef products, if given in small amounts, are often retained when everything else is rejected. Hot applications to the epigastrium sometimes relieve the vomiting and pain. Digitalis is useless and usually increases the vomiting.

Sudden deaths have occurred in our series of cases from asphyxia, but there have been no sudden deaths in the hospital from heart complications. It has occurred several times, however, that patients who have been taken out against advice about the end of the second week have died suddenly during the stage of gallop rhythm when allowed out of bed. For example, a child of three years after three weeks' stay in the hospital was taken home against advice just at the time in the illness when serious heart complications are common. A few days later the child died suddenly while being held up to the window to see some friends. This emphasizes the necessity for absolute rest in bed until all likelihood of the development of gallop rhythm has passed. The rest does not prevent the appearance of the complications but renders the outlook relatively favorable.

The cases of bradycardia require no special treatment beyond rest in bed and strychnia. Long duration of murmurs and irregularity of the heart indicate the necessity for following cases of diphtheria long after convalescence, to study and prevent possible permanent changes in the heart.

The after-treatment of all except the mild cases consists in watching the effect of mild exercise upon the heart for several months at least, and grading it to meet individual requirements.

The points which we especially wish to emphasize in summing up are as follows:

(1) The great frequency of heart murmurs and of irregularity of the pulse. The prognosis does not depend on the mere presence of these signs, but upon the severity of the infection, the length of time without treatment, the rate and degree of irregularity of the pulse and the presence of the graver signs of cardiac disturbance.

(2) Moderate disturbance of the heart is very common; severe complications are infrequent.

(3) Frequent examinations of the heart are necessary to really determine its condition, because of the marked changes in rhythm from one hour to the next.

(4) Gallop rhythm, late vomiting, and epigastric pain and tenderness are important as danger signals of severe heart complications. The association of late vomiting with gallop rhythm renders the outlook almost hopeless.

(5) Antitoxin does not affect the heart unfavorably, but on the other hand, its early use prevents the appearance of grave heart complications.

(6) Frequent examination of the heart and pulse in the second and third week of the illness are necessary, that being the time when severe heart complications most frequently occur.

(7) Bronchopneumonia is a more frequent fatal complication of diphtheria than heart disease; sudden death from heart disease is very rare when patients are kept in bed for a proper period.

(8) Prolonged rest in bed is necessary in al severe cases; it is not necessary to keep all patients in bed who have cardiac murmurs and a pulse which is somewhat irregular and increased in rate. One should be governed by the stage of

the illness and the patient's general condition. If no serious heart trouble has developed within four weeks the patients are usually safe from this complication.

(9) Heart murmurs and irregularity are of long duration in many cases, and make it necessary to watch the condition of the heart long after convalescence in all severe cases.

We wish to acknowledge our indebtedness to Dr. McCollom, medical director of the South Department of the Boston City Hospital, for the opportunity to study these cases, and for his valuable suggestions and kindly interest in our work.

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## THE ASSOUAN CURE.

BY F. GORDON MORRILL, M.D., BOSTON,
*Consulting Physician to the Boston Children's Hospital.*

A FAIRLY good excuse for venturing to add to the present list of "cures[1]" may be found in the fact that the one in question comprises no baths, no special diet nor consumption of medicinal waters. One is neither steamed, starved, nor nauseated; the benefit is derived from the air only, and as one must breathe to live, no extra trouble is involved.

The quality of this air of the Nubian desert differs essentially from that of any other which can be found in conjunction with the comforts of civilized life. Dryness is its main characteristic (an average relative humidity of 41° during the "season") together with a comfortable degree of warmth. An idea of what this low degree of relative humidity means may be found in the records of the chief engineer of the great dam, which show an average daily evaporation (from 60 square miles of back water) of 1,400,000 tons. During exceptionally hot spells this amount of atmospheric absorption is greatly increased, as, for instance, during three days in early April of the present year, which included thirty-six hours of *khamsin* (sand storm), when 5,000,000 tons *per diem* were taken up. This dryness of the air, taken in connection with an average mean temperature of 67° F. and absence of rain, constitutes an almost ideal winter climate.

But it may be asked, Are there no drawbacks to these delightful conditions? There are, and they will be frankly stated later on.

The freedom with which advice about climates based upon an insufficient knowledge of facts is given (and accepted), both by laymen and doctors, is remarkable. Even men who are rather conservative in most things occasionally commit themselves fully when a question arises as to what sort of weather may be looked for in almost any known spot of the habitable globe, and this in apparently good faith, although the informant's recollection of his ten days' sojourn at the place in question may be vague, or he may never have visited it, and is merely repeating what he has read or has heard from others. It is to this loose custom and the printed matter scattered broadcast that is due the widespread belief that delightful weather may be confidently anticipated on the Riviera during the winter months, and that the air of Southern Italy and Sicily ("where oranges[2] ripen in January") is warm and balmy throughout the entire year. The same sort of thing obtains as regards Egypt. Invalids are advised to "winter" there without any specific directions as to location in a country which is a thousand miles in length. "Dahabieh life" is prescribed in cases where grave risks would be involved, for unless in robust health one had better stay ashore (between Cairo and Assiut in any event) during the three months succeeding the middle of December.

For one who has known the country even five years there is no need of consulting meteorological records to make sure that the rainfall of lower Egypt has increased in proportion to the irrigation. The old-fashioned *fellah* says that formerly Allah provided sunshine, and that the farmer was perfectly willing to pump the water needed for cultivation from the Nile, and dislikes this inversion of the source of supply. Twenty odd years ago, before the present structure was built, the guests at Shepheard's were surprised by a sudden downfall of rain, which penetrated the mud roof and soaked their bedding; and to prove how little this sort of thing was expected in those days, no provision had been made for conducting the water off the terrace floor, where it stood until the mud brick supports of the railing softened and gave way. At the present time a similar downpour would surprise none but a first season tourist.

But to return to Assouan and state certain disagreeable features of its climate which one occasionally experiences during the "invalid season," by which is meant the fourteen or fifteen weeks beginning about Dec. 10, the season proper being somewhat shorter. Aside from two (possibly three) full blown *khamsins* (during each of which one must remain indoors for an average of thirty-six hours), there is another peculiar condition of the atmosphere which occurs with about equal frequency and lasts equally long: an apparent mist hangs over the Nile valley. So strongly does it resemble a moderate degree of fog that it was only by means of a sheet of white paper smeared with vaseline and exposed to the open air that I have been able to convince myself that it is due to the presence in the atmosphere of sand, so fine as to be impalpable.

[1] The word "*cure*" (Fr.) signifies in Europe the *treatment* by which a cure (Eng.) may be obtained.

[2] There is one particularly leathery variety which might do fairly well within the Arctic Circle.

The cause of this curious phenomenon is as follows: The prevailing wind at Assouan is N.N.W., and as one rides in the desert he observes that in many places the surface sand lies in ridges at a right angle with this point of the compass. After several days, during which the wind has veered but a point or two, the finest grains lie on the surface of the southern slope of the crests. Now a south wind is very rare at Assouan in winter, and when it blows is like a blast from a furnace, and is usually the precursor of a sand storm,— the operation being completed by a shift to the usual quarter, and a rate which would be logged as a "moderate gale." Not so under the conditions to which I refer, when a gentle and temporary puff from the south sends this finest sand a dozen feet or so in the air, and the usual northerly breeze which quickly follows whirls it aloft, where it hangs until it descends by its own weight. This state of the atmosphere often extends hundreds of miles along the river, and is irritating to sensitive mucous membranes, but counts for little in the long run as compared with the benefit which the climate confers on the great majority of respiratory diseases. It must be remembered that one can no more find a desert climate without sand than a sea bath without salt, and that taking the season through, there are no more than five or six days when the invalid is better off indoors. Again, the evenings from Jan. 1 for an average period of five weeks are decidedly cool, and open fires in the foyer of the hotel are grateful; but no place on earth, so far as I can ascertain, is uniformly warm throughout the winter and at the same time free from rain and malaria, from both of which Assouan is exempt.

In early March here, there come one or two extremely hot days (say 95° F. in the open shade), but these are always followed by delightful weather, and those who hurry North thinking that the heat will soon become unbearable are very likely to find Cairo and its environs still chilly, and lose a portion of whatever gain in health they may have made. On the other hand, delaying one's departure after March 25 is unwise, for at any time now may be expected the sort of thing which arrived on April 3, 1904, when the thermometer stood at 106° F. on the covered terrace of the Cataract Hotel, and the air was too dry to satisfy one's respiratory hunger. This condition was present for a day and a half (a *khamsin* blowing steadily), and I for one felt that I had delayed my departure too long, and was glad enough to board a steamer four days later and seek a cooler and moister atmosphere.

Complaints of the monotony of a long stay at Assouan are frequent, and it is certainly not the sort of life that a well person would choose if the object sought were amusement only. On the other hand, the amount of entertainment which one extracts from any place, after the novelty of the surroundings has worn off, depends in a great measure upon the quality of his mental equipment. It is true that many people soon tire of the Nile, the desert, and the "everlasting" sunshine, but this can in a measure be prevented by getting one's mind into receptive condition[3] for actual knowledge of a most interesting country, which is inhabited by a people whose customs, dress, mental characteristics and robust faith in El Islam form an endless source of entertainment — and all this aside from what is usually recognized as "Egyptology," which may or may not appeal in any given case. The list of available amusements includes camel, horse, and donkey riding, poor golf, good facilities for tennis and most excellent ones for boating. The offhand advice, "Go to Assouan and sit in the sun" is unsafe, for but few can stand a sun bath of such potency. One feels it less when walking or riding, but even when under the protection of a sun hat it is well to keep in the shade from noon to within an hour or so of sunset.

A well-seasoned Egyptologist, whose work often involves long camel rides in the desert, tells me that he feels much less exhaustion from the sun's rays when clad in a thick ulster with collar upturned, than in thin clothing; and this statement is amply confirmed by the natives, who evidently find comfort in a shawl wrapped about the head and shoulders when in the open, to be discarded in the shade. The nights are comfortably cool as a rule, and one sleeps well. Many object to the wind, which blows steadily most of the time, and occasionally too hard for comfort, but without it the air would be lifeless and the appetite would fail. Incidentally, much amusement may be had by intercourse with the natives along the river front, for a study of the "gyppy" is a source of delight to the student of human nature.[4] The bazaar, too, is most attractive, and one finds there far more curious things from the Soudan than in the Mousky of Cairo.

As to food, the quality of Egyptian meat is not high, and when one sees what the cattle are fed on (no hay is made in Egypt), their diminutive size and lack of adipose tissue is easily explained. Importation "on the hoof" is forbidden, and until a cold storage plant is established in Cairo,[5] one must make the best of food which, after all, compares favorably with that of the ordinary continental *iable d'hote*. As the season advances and the hotel becomes emptier each day, the temptation to go North increases; but it is far safer to delay until one is sure of warm weather in Lower Egypt. One feature of the "cure" is very gratifying,— the visible improvement (as a rule) in the invalid's condition shortly after reaching a cooler and moister air. Those who have made but slight perceptible gain while

[3] One should read Lady Duff Gordon's Letters, Warner's "Winter on the Nile," Milner's "England in Egypt," in order of succession, and have on hand at Assouan (where news from the Soudan is constantly drifting in) Sir Samuel Baker's "Albert Nyanza" and "Ismailia," Slatin's "Fire and Sword in the Soudan," Gordon's Journal, etc., As for Egyptology, the average person gets all he cares for (and considerably more than he can assimilate) from his Baedecker.

[4] One may occasionally buy a good scarab of a most unpromising looking vagabond, but is far more likely to acquire modern imitations fresh (I had almost said "*hot*") from the oven of Abdul Halim of Gorna — most artful of fakirs, whose productions pervade all Egypt.

[5] This is very likely to come about in the near future.

at Assouan suddenly realize that, after all, progress has been made, while such as have done better take at once a longer stride towards health.

Another temptation has now to be resisted by those who are dependent upon warm weather: after a winter passed in what many consider a dull place and having "done" Cairo, one naturally wishes to join the general exodus for the continent. But it is safer to remain until about May 1, unless to visit the Riviera,[6] *which is the only place in Europe where continuous warm weather can be found in the spring before May* 15 *in average years.*[7]

For such as remain in Egypt after April 25, Mena House is the best stopping place, Ghezireh Palace being now closed, and Cairo itself unsuitable. Or one may go to Ramleh, near Alexandria, where the season opens May 1, if sea air is desirable.

So far as temperature goes, Lower Egypt is by no means unbearable at this time of the year if one keeps in the shade; 96° F. was the highest point in April, 1904, the average maximum not exceeding 85° F.

The diseases which derive the greatest benefit from a prolonged stay at Assouan are as follows, and are given in an order of succession indicating the comparative suitability of the climate:

1. Nervous exhaustion from any cause and delayed convalescence from prolonged illness. In such cases the ability to lead an outdoor life and tonic properties of the air are very beneficial.

2. Chronic bronchitis with emphysema and cardiac dilatation, perhaps accompanied by a tendency to asthma. Cases of this sort usually make a very decided gain, even when their respiratory mucous membranes are congested and sensitive.

On the other hand, when the larynx or nasopharynx is *alone* affected, the climate is unsuitable.

3. Rheumatic affections and neuralgias. Curiously enough, cases of this kind are more subject to pain during *khamsins* or periods of extreme heat. The same thing obtains among the natives who, while entirely free from anything like acute rheumatism, are often troubled by pain and stiffness in their joints, due to sleeping on the dirt floors of their mud huts, surrounded by growing crops, which are freely irrigated. As a rule, the class of patients above mentioned improve radically.

There is no place more suitable for the establishment of a "sand cure" (by which is meant covering the affected parts or even the whole body with heated sand) than Assouan. In the solitary instance in which I saw it tried (without any professional supervision) it proved too exhausting; but this method of treatment has an established reputation in Germany, and I look forward to some day seeing it properly carried out at Assouan under the supervision of a competent physician.

4. Cases of prolonged albuminuria, in which the renal conditions are such as to render the prognosis (at best) doubtful. I have known of more than one of these "border line" cases which have cleared up completely.[8]

5. I have observed two or three cases of incipient pulmonary tuberculosis which have done remarkably well. In one instance the patient camped out in the desert a short distance from the town, and the change in his condition for the better was phenomenal; but I am not yet satisfied that Assouan is the best place after the disease has become well established.

In conclusion, the writer would say that he must by no means be understood as condemning the climate of Lower Egypt, which is excellent as winter climates go (and certainly far better than anything which can be found in Europe between Jan. 1 and the middle of April), but not to be compared with that of Assouan for health seekers.

[6] The Messageries boats run from Alexandria to Marseilles.

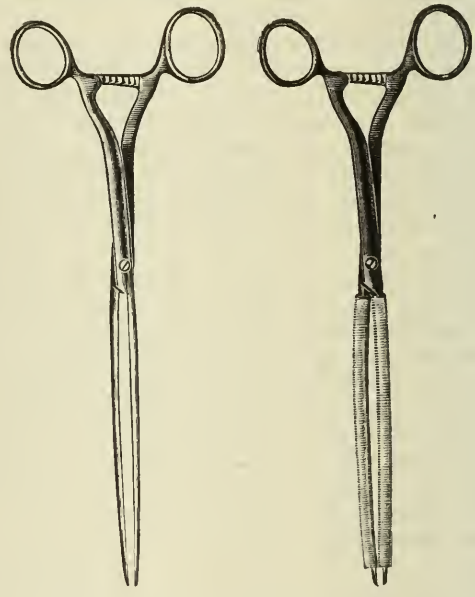
[7] June 1 is the date consecrated to leaving off winter flannels by modern Romans. It is only after a series of mistakes, due to crediting some of the generally accepted notions about continental climates, that the writer has at last reached what he believes to be the truth.

## New Instrument.

### A GASTRO-ENTEROSTOMY CLAMP.

BY CHARLES L. SCUDDER, M.D., BOSTON,
*Surgeon to the Massachusetts General Hospital.*

A VERY important improvement in the technique of the operation of gastro-enterostomy is the proper use of rubber-covered clamps. The clamp ordinarily used is that of Doyen, devised primarily as a broad ligament clamp in the operation of hysterectomy. There are three objections to the clamp in common use. It is awkwardly heavy with its long handles and clumsy blades. Its blades are too short in many instances in which a large opening is needed, and it un-



[8] The Germans (who are much addicted to having their urine tested for albumin in whatever part of the world they may happen to be) regard Assouan as the Mecca for renal diseases.

necessarily compresses the stomach and gut at the base of the blades, damaging the peritoneum at this point. A straight clamp is most convenient in this operation. The reasons for using the clamp are the assurance of cleanliness and the securing of hemostasis.

The clamp, made for me by Codman & Shurtleff, when rubber-covered, as illustrated in the drawing, permits the pressure upon the bowel and stomach to be graduated to a nicety, occluding the gut and preventing hemorrhage. The use of the clamp also facilitates the employment of the continuous suture, which is most efficient and more rapidly taken than an interrupted suture. The use of the clamp also precludes the puckering of the wound, which is said to occur when a continuous suture is used. The clamp being removed after the suture is applied, it is impossible to pucker the wound by the continuous suture. One of the early publications suggesting the use of the clamp in gastro-enterostomy was made by Littlewood of Leeds, England, in a communication to the Leeds and West Riding Medico-Chirurgical Society in October, 1900. This communication was published in the London *Lancet*, Nov. 3, 1900, p. 1275.

## Clinical Department.

### CASE OF RUPTURE OF THE SPLEEN.

BY JOSHUA C. HUBBARD, M.D., BOSTON.
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A. D., thirty-three years old, was brought to the hospital on Sept. 10, 1903. Twenty-four hours previous, during a scuffle with her husband, she had been thrown to the floor and kicked in the lower part of the chest on the left. She paid little attention to the bruise and went to bed. In a half hour the pain was sufficient to wake her and prevent her from lying on that side. She remained in bed till the next day when she sent for a doctor who referred her to the hospital.

*Examination:* Patient lay on right side with knees flexed, in considerable shock. Skin cold. Mucous membranes pale. Pupils contracted and reacted but slightly to light. Lungs normal. Heart sounds faint. No murmurs detected. Pulse at wrist counted as 90, but very weak, of poor volume and tension. Abdomen lax and protuberant. No muscular spasm. Tenderness in left upper quadrant where an indefinite mass was felt. Free fluid in the abdomen. Leucocyte count 8,900.

The case presented, therefore, the symptoms of an internal hemorrhage, and a provisional diagnosis of rupture of the spleen was made.

Ether was immediately given and a three-inch incision was made through the left rectus. The peritoneal cavity was found full of blood and clots. The spleen was identified and was so freely movable that it could be delivered on to the abdominal wall. The patient was so nearly exsanguinated that the slight tension necessary to hold the spleen thus delivered was sufficient to entirely obliterate all pulsation in the splenic artery. A laceration was found in the lower part, two inches long, and one surface was badly bruised. The pedicle was transfixed and tied off and the spleen excised. The abdominal cavity was hurriedly irrigated with salt solution though no attempt was made to wash it free from clots and blood. The abdominal wall was sutured.

With the beginning of the operation intravenous and subcutaneous infusions of salt solution were begun. Under these and the usual treatment for shock the pulse improved and the patient rallied from the operation.

In this particular case there was no opportunity to attempt to stop the hemorrhage from the splenic tissue by sutures, for the almost bloodless condition of the patient contra-indicated any procedure but the quickest *i. e.*, excision.

The patient made a steady and uninterrupted convalescence from the abdominal operation. One of the sites where the salt solution had been given became somewhat inflamed but gave no trouble; numbness and pain developed in the feet and legs after having been out of bed for two days. This was considered as possibly due to neuritis. It, however, proved of no especial consequence and the patient was discharged on Oct. 5, well.

Several blood examinations were made during the convalescence; none, however, showed any change which could be attributed to the absence of the spleen. The following is given as an average count: Leucocytes 16,600; erythrocytes 3,250,000; hemoglobin 50%. The differential count was: polymorphonuclear 69½%, large mononuclear 4½%, small mononuclear 22%, eosinophiles 4%.

The patient is still alive at the end of a year and apparently none the worse for the loss of her spleen as she is leading the same life of dissipation as before the operation.

## Reports of Societies.

### AMERICAN MEDICAL ASSOCIATION. SURGICAL SECTION.

(Concluded from No. 15, p. 416.)

SECOND DAY — (Continued.)

#### THE DIAGNOSIS OF APPENDICITIS. SHOULD THE APPENDIX BE REMOVED WHEN THE ABDOMEN IS OPENED FOR OTHER CAUSES?

Dr. FLOYD W. MCRAE, Atlanta, Ga., stated that the diagnosis of appendicitis was not always easy, and must in a limited number of cases be made by exclusion and careful marshaling of symptoms and physical signs. He advised thorough examination, the avoidance of routine and snap diagnoses and have a summary of the most important diagnostic points. He believed that the appendix should be removed when the abdomen is opened and the organ is accessible unless there be some special contra-indications, as the non-removal of the appendix is such a frequent cause of incomplete cures following abdominal and pelvic operations. He claimed that disease of the appendix was often associated with floating kidney, gall bladder and rectal troubles, advised removal under such conditions when practicable and gave illustrative cases.

#### FACTORS IN THE MORTALITY OF APPENDICITIS.

Dr. JOHN B. DEAVER, Philadelphia, spoke of the influence of a previous attack of appendicitis on the severity of subsequent attacks, and the limited value of adhesions as barriers to the spread of infection. He commented on the collections of pus in the pelvis, right iliac fossa and upward which give rise to various states of toxemia, retrocecal abscess, retroperitoneal, lymph adenitis, pylephlebitis, liver abscess, etc., and especially on secondary operations for hernia or fecal fistula.

Dr. Ernest Laplace, Philadelphia, agreed with Dr. Deaver as to the removal of the appendix in all cases.

Dr. J. E. Sommers, Jr., took exception to Dr. Deaver's advice and was inclined to favor Dr. Ochsner's starvation method in many cases.

Dr. A. Jacobi, New York, spoke on the question of appendicitis in children, and after relating the details of a recent fatal case which came under his observation, he spoke at some length on the importance and difficulty of diagnosing the disease, especially in children.

Dr. H. O. Marcy, Boston, agreed with Dr. Deaver, and said he did so after eighteen years' experience.

Dr. William H. Wathen, Louisville, spoke on the relation of gynecology to surgery and particularly in reference to appendicitis, at the same time taking exception to the free flushing advocated by Dr. Laplace.

Dr. A. J. Ochsner detailed at some length his starvation method of treating appendicitis, and gave some illustrative cases with statistics.

Dr. John B. Murphy, Chicago, stated that his experience with appendicitis had been somewhat different from either Dr. Deaver's or Dr. Ochsner's.

Dr. Joseph Price and Dr. Mordecai Price, Philadelphia, agreed with Dr. Deaver as to the necessity of immediate operation in all cases when seen early.

Dr. Robert T. Morris, New York, doubted the advisability of at all times removing the appendix when the abdomen was open for some other cause.

Dr. Deaver closed the discussion by reiterating the advisability of at all times removing the appendix immediately upon making a diagnosis in every case when seen early.

## Third Day. — Thursday, June 9.

### The anatomy of inguinal hernia. Andrews's operation for radical cure.

Dr. D. N. Eisendrath, Chicago, dealt with the general considerations on the anatomy of this subject, which he demonstrated by a very ingenious model, explaining the objects to be accomplished by a radical cure. He gave his experience with the Andrews operation and freely illustrated his paper by models and charts.

### Three years' experience with the autoplastic suture for hernia.

Dr. L. L. McArthur, Chicago, gave a final report of his experience with this suture, and stated that three years' experience with its use in inguinal herniæ encouraged the continuance of its employment. As a result of trying it in ninety-three cases and as judged by the histologic findings in experimental work it had been shown that the transplanted tendon lived. He demonstrated this fact by an examination of the scar of a patient dead of a subsequent appendicitis a year after having an autoplastic suture.

Dr. W. P. Coley, of New York; Dr. E. W. Andrews, of Chicago; Dr. C. F. Stokes, Dr. J. C. Bloodgood, of Baltimore; Dr. H. O. Marcy, of Boston; Dr. A. D. Bevan, of Chicago; Dr. W. B. DeGarmo, of New York; Dr. Walker, of New York; Dr. Charles L. Leonard, Philadelphia, and Dr. E. W. Holmes, of Philadelphia, discussed these papers, all congratulating Dr. Andrews on his operation, Dr. Eisendrath on his success with it, and Drs. Eisendrath and McArthur closed the discussion.

### Surgery of the trifacial nerve and its ganglia.

Dr. John B. Murphy, Chicago, went very fully into this subject which he divided into five stages: (1) Resections of branches down to the cranial foramina; (2) Division of branches within the cranium, with efforts to occlude the foramina; (3) Removal of the Gasserian ganglion, with intracranial segments of nerve; (4) Extraction of sensory root, and (5) Intraneural injections, and made clinical reports with the result in eleven cases.

### Intracranial neurectomy for trigeminal neuralgia, cases and comments.

Dr. Harry M. Sherman, San Francisco, gave a brief report of five operations on four patients, in three of which uneventful recoveries from the pain were secured. He mentioned some slight modifications in the incisions of the soft parts and of the bone, and recommended the pouring of salt solution into the skull before the suture to fill all vacant spaces and exclude the air.

### Summary of the final results of four cases of division of the sensory root for tic douloureux.

Dr. Charles H. Frazier, Philadelphia, spoke of the theoretical advantages of this method over operative procedures and showed the immediate results obtained. He claimed to have had no evidence of recurrence, three, two and one years after operation.

Dr. Charles K. Mills, Philadelphia, Dr. William G. Spiller, Philadelphia; Dr. Robert F. Weir, New York; Dr. J. Shelton Horsley, Richmond, Va.; Dr. Cushing, Baltimore, and Dr. John B. Murphy, Chicago, discussed these papers from various points of view, the general conclusion being that the relief of the condition was not as yet an assured fact by any of the methods mentioned. Drs. Sherman, Murphy and Frazier closed the discussion.

### Laminectomy. A further contribution.

Dr. John C. Munro, Boston, reported from twenty-five to thirty cases of laminectomy and pleaded for the simplification in the technic as being important in reducing the severity of the operation.

Dr. F. B. Lund, Boston, and Dr. Cushing, Baltimore, complimented the author on his excellent results and heartily endorsed the points he made.

### Treatment of cold abscesses and sinuses in tuberculous diseases of bone.

Dr. V. P. Gibney, New York, took up the routine surgical treatment of the day and dwelt extensively on the orthopedic treatment, bacteriological findings, value of asepsis from beginning to end and comparative results of the methods employed.

### Old unreduced dislocations.

Dr. DeForest Willard stated: (1) Early immediate diagnosis was the most important element in the prevention and treatment of all dislocations. With ether, the x-ray and anatomical and surgical knowledge, the displacement should always have been discovered by the surgeon. The only excuse for non-recognition would have been extreme injury in other portions of the body. (2) An unrecognized or unreduced dislocation should have been carefully examined under ether to discover the extent of adhesions and the possibility of effecting reduction without measures; failing in this, continuous extension in bed should be practiced for several weeks; the second attempt, without the application of extreme force, should be made, the permission of the patient having been previously obtained to permit of open operation if deemed necessary. (3) Open section should include the division of all muscular, tendinous, capsular and

bony obstacles to reduction. When the socket is filled up with dense fibrous tissue, such tissue should be excavated and the head of the bone placed *in situ*. (4) Partial or complete excision of the head and of fragments in case of fracture will frequently be necessitated. (5) In cases that have existed more than a year, or where the original injury had been extreme, operation should be avoided unless pressure upon nerves or blood vessels was seriously impairing the usefulness of the limb or giving pain. Resection should be reserved for bad late cases with pain and serious nerve symptoms. Sepsis was frequent on account of the severity and length of the operation. (6) Pain and disability were the two most important measures in arriving at a decision concerning operation. When a limb was useful in its new position, gave no pain or difficulty, it should be left alone. (7) In the after-treatment, muscular gymnastics, electricity and massage were very important measures and should be persistently employed.

Dr. A. F. Jonas, Omaha; Dr. Thomas, Scranton; Dr. A. D. Bevan, Chicago; Dr. Joseph A. Blake, New York; Dr. Vaughan of the Marine Hospital Service; Dr. Lord, Omaha, and Dr. Charles A. Powers, Denver, discussed this paper fully, and heartily endorsed what Dr. Willard had said, Dr. Willard closing.

### CONSERVATIVE PERINEAL PROSTATECTOMY. REPORT OF FIFTY CASES.

Dr. Hugh H. Young, Baltimore, called especial attention to the absence of mortality and the simplicity of the procedure, many of the patients being over seventy-five and some over eighty years of age, and laid stress on the importance of cystoscopy and careful preliminary treatment.

### PROSTATIC OBSTRUCTION.

Dr. Parker Syms, New York, read a fully illustrated paper on this subject.

### PROSTATECTOMY IN GENERAL, ESPECIALLY BY THE PERINEAL ROUTE.

Dr. George Goodfellow, San Francisco, gave the indications for his adherence to this method, described his method of operating, referred to the mortality in seventy-five cases according to his method and gave the ultimate results of each.

### IS IT WISE TO TRY TO MAKE ANY ONE OPERATIVE METHOD APPLY TO ALL PROSTATECTOMIES?

Dr. Eugene Fuller, New York, read this paper. The author opened the paper by stating that the results obtained by prostatectomy had put the operation on a firm footing. When the operation was first introduced numerous surgical makeshifts were brought forward to compete with the radical operation. Most of these had now been discarded, owing to the unsatisfactory results attending them and to the increasingly better results following prostatectomy at skilled hands. The criticism was made that most of the present writers on the subject concerned themselves only with the problem of operative removal of the prostate, paying little or no attention to the questions of after-treatment and general management. All prostatectomies were grouped under three headings: (1) Where the hypertrophy is removed through the employment of a suprapubic cystotomy; (2) where it is removed through the employment of a perineal cystotomy; and (3) where it is extracted along the path to a perineal dissection, the aim of which is to avoid opening the urinary tract or the rectum. Dr. Fuller stated that as far as the mere removal was concerned it could be done by any one of the three methods. He then discussed the *pros* and *cons* of the different methods. Few cases were found where the third method seemed advisable. The second method when performed according to the writer's ideas was advocated for most cases in connection with which there existed good expulsive force to the bladder. Where this was impaired and where serious lesions of the urinary tract existed the suprapubic operation was the one usually chosen. Attention was called to the fact that at present most writers showed a strong tendency to try to make some special form of the perineal operation apply to all cases and to entirely discard the suprapubic operation on the ground that it was either unnecessary or operatively extra hazardous. These objections were ably met. It was asserted that the suprapubic operation should in itself give no extra mortality if certain rules were observed in its performance, if the incision were properly sutured and drained, and if the surgical supervision of the after-treatment were efficient. The value of the suprapubic vesical drainage vent, a feature connected with the suprapubic operation, was especially dwelt upon. In fact, it was the establishment of such a vent that decided the writer in a certain class of cases to choose the suprapubic operation. In conclusion, a protest was entered against classing as true prostatectomy cases of middle-aged or even younger men, which represented simply inflammatory effusions in connection with the prostate or its periphery. In such cases an operator attempting prostatectomy would find nothing to enucleate, or for that matter to remove.

Dr. Orville Horwitz, Philadelphia; Dr. Robert H. M. Dawbarn, New York; Dr. John C. Munro, Boston; Dr. Martin B. Tinker, Ithaca; Dr. D. N. Eisendrath, Chicago, and Dr. Archibald McLaren, St. Paul, freely discussed these papers and endorsed most of what had been said.

### KIDNEY STONE. DIAGNOSIS AND TREATMENT.

Dr. Arthur D. Bevan, Chicago, took up the question of etiology, symptoms, differential diagnosis, prognosis, technique of operative procedures and the question of recurrence after operation.

Dr. Charles L. Leonard, Philadelphia; Dr. James B. Bullitt, Louisville; Dr. Joseph A. Blake, New York; Dr. John B. Deaver, Philadelphia; Dr. H. H. Young, Baltimore; Dr. Winslow, Omaha; and Dr. Thomas, Scranton, agreed fully with what the author had said and congratulated him on his excellent deductions.

## Fourth Day. — Friday, June 10.

Dr. I. V. Iglauer, Cincinnati, demonstrated a new etherizing apparatus.

### THE TREATMENT OF FRACTURES OF THE PATELLA BY LATERAL SUTURES.

Dr. Joseph A. Blake, New York, dwelt fully on the anatomy of this subject and reported the results of eighteen operations, both as to union and as to function according to his method.

Dr. Gibbons, Scranton; Dr. Vaughan, of the Marine Hospital Service; Dr. C. O. Thienhaus, Cincinnati; Dr. J. F. Binnie, Kansas City; Dr. D. N. Eisendrath, Chicago; Dr. James B. Bullitt, Louisville; Dr. Lemon, Milwaukee; and Dr. Charles A. Powers, Denver, endorsed the methods employed by the author and mentioned various others they were in the habit of using under certain circumstances. Dr. Blake in closing gave a blackboard demonstration of some phases of his method.

SURGICAL TREATMENT OF CERTAIN CASES OF ARTHRITIS DEFORMANS.

Dr. Martin B. Tinker, Ithaca, N. Y.: Before beginning a discussion of this subject, it is necessary to keep in mind the exact character of the disease under consideration. He said the condition was not a subacute or chronic rheumatism or tuberculosis, but a distinct diseased condition characterized by its long course, with progressive involvement of many joints, which lead eventually to absolute disability from ankylosis. Many interesting suggestions he stated had been made as to the etiology of the affection. In some cases it followed severe nerve strain and the nervous element was no doubt an important factor. Disturbance of metabolism he stated was also always present, but these were probably only contributing factors. The infectious origin seemed most probable, as several cases had been observed in which the disease had developed directly after a severe infection. He stated pain, swelling and stiffness of the joints were the most important symptoms — the pain gradually ceased as the joints became fixed. The swelling at first was from effusion, but this would soon disappear, and later the enlargement was from bony or fibrous thickening. He stated that the use of tuberculin was of great value in the diagnosis in distinguishing it from tuberculosis, a condition with which it might be confused. In the treatment both palliative and operative measures should be considered; as a rule the general principle followed in the treatment of joint trouble, to put the joint at rest, was reversed, for if the joint was kept quiet, stiffening was certain to occur at once. Gymnastics, massage and passive motion were to be judiciously employed; baking at from 280 to 350° F. was of value, as were also the use of various forms of baths; general hygienic measures were also of importance. In the operative treatment forced motion under anesthesia was condemned for the stiffness was not from adhesions, but from bony deposits and change of the contour of the bones affected. Arthrotomy and excision of osteophytic deposits might be employed where the stiffness of the joint was dependent upon the presence of only one or two such bony prominences that lock the joint and where the acute symptoms had entirely subsided. Excision of the joint was indicated in cases of complete ankylosis, to restore motion, and often enabled the patient to feed and dress himself and perform other necessary duties impossible with an ankylosed joint. He thought operative treatment was limited to a comparatively few cases of this kind. The condition was generally a most pitiable one and the general condition was incurable.

Dr. Vaughan, of the Marine Hospital Service, and Dr. H. M. Sherman, San Francisco, partly agreed with the author in the points he made in his paper, but each called particular attention to various other methods which in their opinion would be likely to be at times preferable to employ. Dr. Tinker replied to their suggestions in closing.

IMPACTED FRACTURES OF THE NECK OF THE FEMUR.

Dr. LeMoyne Wills, Los Angeles, reported two interesting cases which he illustrated with radiographs. He laid particular attention on the marked difference in treatment in each case and to the good results obtained.

Dr. H. O. Sherman, San Francisco; Dr. Thomas, Scranton; Dr. William L. Rodman, Philadelphia; Dr. M. R. Crane, Vermont; Dr. D. N. Eisendrath, Chicago; Dr. James P. Bullitt, of Louisville, and Dr. Fenner, New Orleans, in discussing this paper spoke very emphatically on the question of the x-rays and their great uncertainty at the present day. All were agreed that too much reliance was placed in x-ray pictures and urged more care in other means of diagnosis, in which Dr. Wills coincided on closing.

FAT EMBOLISM OF LUNG, FOLLOWING FRACTURE, WITH REPORT OF TWO CASES.

Dr. F. Gregory Connell, Leadville, Colo., reported two cases of fat embolism of the lung which followed fractures of the long bones, both of which recovered. In a study of the history of the subject he found that about two hundred and fifty cases had been reported, and of these not over a dozen had been contributed by American writers. The anatomy of the parts involved was reviewed, and among the causes other than fracture, were enumerated orthopedic operations, open operations upon bones and joints, surgical operations on structures, other than bone inflammation of bone or periosteum, laceration, bruising or suppuration of the fat containing soft parts, or extensive burns or scaldings, rupture of fatty liver and also causes that had arisen within the circulation, such as atheromatous changes of the vascular walls, etc. The symptomatology was considered at length; the milder form was rarely diagnosed, and was of little import; the acute and rapidly fatal form was rarely differentiated from shock and was often unsuspected. The ordinary form of fat embolism, that was recognized as such, usually presented the following symptoms: An interval of euphoria; lipuria or fat in the sputum; extreme debility, anxiety, malaise, somnolence, pallor, cyanosis; respiration, rapid and irregular, with dyspnea, cough, pain, hemoptysis, rales, edema, or consolation; pulse, feeble, irregular and rapid; temperature unreliable; loss or diminution of sensibility, and of the reflexes, pupils contracted, Cheyne-Stokes, respiration, spasm, convulsion, vomiting, paralysis or coma. Each of these were considered *pro* and *con*, but the temperature, which was perhaps the most perplexing and unsettled symptom of fat embolism, was gone into at length, and it was concluded that the temperature might be high — in 37 cases in which the temperature was given, collected from the literature, 29 had an elevation of the temperature while in the 8 the temperature was mentioned as being either normal or subnormal. The diagnosis during life was first made by Lucke, and in the same year, 1873, by Bergman; the first in America to diagnose the condition during life, was the late Christian Fenger, in 1879. Among the conditions more likely to be confused with fatty embolism, might be mentioned: Shock, septicemia, pulmonary embolism, and, less commonly, the effects of anesthetics, congestion of the lung, or kidneys, cerebral hemorrhage, concussion of the brain, atheroma of the coronary arteries. The prognosis was most uncertain, owing to the fact that the frequency of the condition was unknown. Fat embolism of a greater or lesser degree followed practically all fractures, but it gave rise to serious symptoms comparatively seldom. The fat in the circulation had no deleterious effect upon the blood, its sole action was a mechanical one, in obstructing the capillaries. The treatment was unsatisfactory, in fact, it might be said that there was no treatment. Prophylaxis would consist of gentle handling of the limb, so as to rupture as few fat cells as possible and then immobilization. After the symptoms were present, drainage, as it lessens the tension at the site of the injury, might be of advantage. But the closest attention should be given to the heart, and as the bulk of the fat is eliminated through the kidneys, attention should be given to these organs.

Case I. Compound comminuted fracture of the left tibia and fibula; no medical attention for nine hours after accident, rough transportation. On the fifth day respiratory symptoms appeared, temperature was high; on the sixth day a sudden and marked fall of temperature, and the onset of cerebral symptoms. Fat found in both urine and sputum. Symptoms persisted for five days and then gradually disappeared; ultimate recovery.

Case II. Compound fracture of the left femur; did well for fifteen days, then for one week had pulmonary symptoms of fat embolism, with lipuria, fat in the sputum, and an inguinal phlebitis. Apparent recovery, but on the forty-third day after the receipt of his injury, after sitting up for the third time, he had a return of all the embolic symptoms, which lasted for a week, terminating in recovery.

Drs. McKenzie, Portland; Lemon, Milwaukee; Jackson, Kansas City; Sommers, Omaha, and Joseph A. Blake, New York, agreed that too little attention had been paid to watching for this condition and too little importance had been attached to it.

## Recent Literature.

*Simon's Physiological Chemistry.* A Text-Book of Physiological Chemistry. For Students and Practitioners of Medicine. By Charles E. Simon, M.D., late Resident Physician, Johns Hopkins Hospital; author of Simon's Clinical Diagnosis, etc. New (2d) edition. Revised and enlarged. Octavo, 500 pages. Philadelphia and New York. Lea Brothers & Co., Publishers. 1904.

The second edition of this excellent work shows a number of changes which are, for the most part, in keeping with the advance that has taken place in physiological chemistry in the last three years. The chapters on albumins, nitrogenous catabolism, and gastric and tryptic digestion have been rewritten and brought up to date. Some forty-eight laboratory exercises have been included in this edition in the form of an appendix. The real value of this addition is a question, for no doubt most teachers of this subject would prefer to outline such exercises as are best suited to the needs of their students. There is, however, very little to be adversely criticised in the book, and we can earnestly recommend it as a textbook and as a book of reference in the subject of physiological chemistry.

*Elettricita Medica.* By Dr. A. D. Bocciardo. 16mo. pp. xii, 201. With 54 illustrations and 9 plates. Milan: Ulrico Hoepli. 1904.

This charming little volume forms one of the extensive series of Hoepli "manuals," of which several dealing with medicine have already been noticed in these columns. It gives in condensed form the necessary facts, not only in regard to static, galvanic and faradic electricity, but also in regard to high frequency currents, Röntgen rays, radiotherapy and phototherapy. All unessential matter has been omitted, and the author has succeeded in his efforts to be clear and concise. The book is trustworthy, and would be of decided value to the student beginning the study of electricity in its medical relations.

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## SMALLPOX INFECTION FROM ISOLATION HOSPITAL.

A decided opinion has been formulated among many English health authorities to the effect that smallpox has been spread by isolation hospitals in which large numbers of persons ill with that disease were being treated. At least a half dozen reports have been published within the past twenty-five years presenting the results of investigations upon this subject, those of Dr. Power and Dr. Barry upon the epidemics at Fulham (London) and Sheffield being the most noted.

So long ago as the close of the eighteenth century, Dr. Waterhouse of Cambridge appears to have believed in the possibility of aerial transmission of the infection of smallpox. He declared "that we have the clearest proof of the smallpox being communicated to the distance of several hundred rods, *viz.*, from the hospital at West Boston to several families in the neighborhood."

After all the evidence which has been presented, however, in support of the theory of aerial transmission, it is very difficult to exclude the effect of other modes of transmission by means of communication with the surrounding neighborhood through the medium of hospital employees, clothing, etc. Dr. John Glaister [1] has reviewed the whole subject very thoroughly in the *Journal of Hygiene.* He has very carefully reviewed the evidence presented by the serious epidemics of smallpox which have occurred in the last twenty-five years in English towns, notably in Fulham and Orsett (both London districts) and in Sheffield, Warrington and Leicester. His conclusions are that "the mere existence of a smallpox hospital in relatively close proximity to a populous neighborhood is a source of danger to the population, and tends to the spread of smallpox there-

[1] Journal of Hygiene. August, 1904, p. 218.

from, and that infection may be and has been conveyed to outsiders, both directly and mediately. The reasons for this conclusion are these: In the *first* place, and perhaps mainly, the hospital is the center, during an epidemic, of a large amount of traffic. Ambulance traffic to and from, visits of friends and relatives of those afflicted to inquiry room and to wards, under certain general precautions, to see friends or relatives whose lives are in danger, ' leakages ' of various kinds from the hospital through the agency of the staff, workmen, tradesmen, cleaners and others, under circumstances of imperfect supervision, or from infringement of hospital regulations."

" If we examine the records of the foregoing places (where the aerial theory of convection has been invoked to account for the spread of disease in the surrounding population) abundant evidence of imperfect administration or structural deficiencies or of other factors will be found.

" So far most persons will agree: but when we critically examine the *second* proposition, *viz.*, that smallpox hospitals near to populations exert a special capability to spread infection by the atmosphere, we are met by special difficulties, because there must first be eliminated the possibilities of spread by ordinary means. This cannot be said to be a trifling difficulty; but it must be overcome before aerial convection may be considered at all. All those who have had practical acquaintance with the difficulties in certain classes of population, particularly of obtaining accurate information for the three days which are indicated by the dates of their sickening as the dates of their having contracted infection, realize how impossible this often is. Here the personal equation of the observer or inquirer comes into play. The memories of such persons are often at fault, and even if their memories are of the best, because of the possibilities of mediate infection, they may not be able to indicate any possible source of infection. Moreover, among the poorer classes of the population, information may be wilfully withheld for interested reasons, as it has been proved to be; ignorance regarding attack by the disease, because of its trifling symptoms, may exist; and there are the consequent chances of accidental relationships with unrecognized cases of the disease. All these are facts which are discoverable in epidemics."

After considering all the evidence relating to recent outbreaks of smallpox, including the questions of hospital accommodation and influence, the effect of the hospital ships upon the lower Thames, isolation of cases, the quarantining of "contacts," and the vaccination and revaccination of the environing population, Professor Glaister concludes: " The conclusion at which I have arrived from this critical study of smallpox epidemics with regard to the doctrine of aerial convection is that the doctrine has not been proved, that in some of the epidemics, the conclusion as to aerial evidence is blighted by the want of distinction between the hospital as a direct and indirect source of infection of those resident outside its walls, and that in others the doctrine has been suggested from the flimsiest evidence. To my mind, as indicative of proof against the doctrine, there are the different histories and experiences of institutional populations placed within the range of aerial influence, if it existed, which cumulatively compel me to say that no such aerial dissemination seemed to have existed."

On the other hand, the chief medical officer of the Local Government Board of England in his last report,[2] while treating of the occurrence of smallpox in the districts near the hospital ships on the lower Thames, says: " The operation of these ships in this way — certainly in 1901–2, if not always on previous occasions — can only be thought of as a matter of aerial transmission of infection."

The practical importance of this question is shown by the fact that several of the smaller Massachusetts cities have found themselves inadequately provided with hospitals properly located, and having suitable accommodations for such outbreaks of smallpox as have occurred within the past three years within their limits. When, therefore, the question of location and establishment arises, the subject should be carefully considered in all its bearings.

## ETHER DAY AT THE MASSACHUSETTS HOSPITAL.

It too often happens that events of historic importance are allowed to go unnoticed until the lapse of time makes an accurate account of their enactment impossible. Numerous occasions may be recalled in proof of this statement, but it will be sufficient to mention one only, namely, the inability to obtain to-day an accurate list of the men who actually took part in the memorable event at the Massachusetts General Hospital on Oct. 16, 1846. Paintings and illustrations of this first public demonstration of surgical anesthesia are numerous, but not one of them can be vouched for as representing the exact

[2] Thirty-second Annual Report. Supplement, for 1902–3, p. xxiv, London, 1904.

scene as far as the personnel of the actors are concerned. It was with commendable foresight that members of the staff of the Massachusetts General Hospital took steps at the semi-centennial celebration of this event in 1896 to set aside Oct. 16 of each year to be commemorated as Ether Day.

This year the anniversary was fittingly observed on Monday, Oct. 17. The old amphitheatre in the dome of the hospital was arranged as nearly as possible to correspond to its appearance on Oct. 16, 1846. An audience including many ladies, members of the staff, representatives of other hospitals, house officers and nurses taxed the historic room to its fullest capacity. Dr. J. Collins Warren, Moseley Professor of Surgery at the Harvard Medical School, and visiting surgeon to the Massachusetts General Hospital, made the address.

Professor Warren recited the history of the use of the various methods of producing anesthesia from the time of Sir Humphry Davy down to the time of Long, Wells and Morton. Long's mistake in not following up his early experience, Wells' failure before the class of medical students assembled in this same room, where Morton later succeeded, were all told in a way most pleasing and instructive.

There was a certain charm in hearing this surgeon, now about to close his connection with the hospital, standing in the very place his grandfather, Dr. John C. Warren, stood on Oct. 16, 1846, rehearsing the simple story of that great victory of science over pain. It seemed as if the venerable senior himself uttered those closing words, " Gentlemen, this is no humbug."

Professor Warren then gave a most interesting account of the origin and growth of the hospital. By means of lantern slides, the old building with its Bulfinch front and with its associated workshop, the Harvard Medical School, were admirably portrayed. The contrast of the days of hospital gangrene and those of Lister's triumph; the introduction of pavilion wards, and their replacement with modern sky scrapers, all carried the audience through the various stages of medical progress during the past three quarters of a century. Continuing the illustrations, the speaker showed the admirable equipment of the modern hospital, with its complete systematic card system, its well arranged and finely equipped wards and out-patient departments, its valuable library, and lastly the new laboratory, the result of the munificent gift of one hundred thousand dollars from friends of the hospital.

The great advantage of modern methods was a revelation to many who have not been intimately associated with hospital work. A general inspection of the buildings and grounds followed the close of Dr. Warren's address.

The lesson to be learned from this observance of Ether Day is whether the more general and widely spread notice of the day would not result in great good. There is no other discovery in medicine more genuinely American, no other in which every medical school and every hospital in the country could unite with more propriety, than in that which has been a free gift to all, — the use of ether in surgical anesthesia.

## MEDICAL STANDARDS.

The daily press has been discussing at some length the action of a well-known French surgeon in charging what was regarded as an exorbitant fee under conditions which seem to controvert the best traditions of the profession. The circumstances briefly were that a French surgeon charged in advance an excessive fee for services in connection with a secret remedy, the patient being the wife of an American. We have no desire to discuss in detail the exact merits of the situation, but several matters are apparent, even from the possibly doubtful accounts which have reached us. First, there has been in the past, and it no doubt also obtains now, a distinct tendency to overcharge Americans for medical services rendered in certain foreign countries. The popular and often erroneous idea that an American must of necessity be wealthy has been taken advantage of in a way altogether detrimental to the best interests of the profession. We have no desire to maintain that such a custom has been universal, but that it exists in sporadic form cannot be questioned. Whether or not the surgeon in charge of the case to which we have alluded above was inspired by any such unworthy motive we do not know. The more questionable part of the proceeding lies in the fact that the fee was demanded and, as we understand it, paid in advance, and that the remedy to be administered was of a secret character. If these facts are true, certainly it is difficult to find justification for the action of the physician. Conceivable as it may be that at times a fee in advance is justified, the best opinion of the profession will certainly not countenance such a proceeding as a principle. It is also absolutely necessary that there should be no yielding on the part of the general profession

in the matter of publicity as applied to remedial agents. The agitation regarding the whole matter has been aroused by the entrance of a suit by the aggrieved husband against the surgeon. The case, it is said, will come before the January term of the Tribunal of the Seine, the object of the suit being recovery of the $20,000 said to have been paid for professional services which did not accomplish the results expected or promised. The results of the trial will be observed with interest by the profession everywhere. In the meantime the lapse of one man from the high standard ordinarily set should not blind the eyes of the laity to the fact that in general a standard of conduct relating to the financial relations existing between patient and physician has long been established by custom and precedent, at least in Anglo-Saxon countries, which finds no equal in other professional callings. Eventually, a certain class of Americans is likely to realize that one may go less far and fare better.

## MEDICAL NOTES.

The Assouan Cure. — We regret that Mr. Stimson's letter on the "Assouan Cure, from a Layman's Point of View" appeared in our issue of Oct. 13 instead of in the issue of Oct. 20, in conjunction with Dr. F. Gordon Morrill's paper on the same subject. The two should have been published together.

A Yellow Fever Expedition. — The Liverpool School of Tropical Medicine, according to *Science*, proposes to despatch a second yellow fever expedition to the Amazon in view of the necessity of investigating still further this malady. The late Dr. Walter Myers was selected by the school, together with Dr. Herbert Durham, to undertake an expedition to Para to investigate the disease, only a few years ago. Both members of the expedition were attacked by the malady and Dr. Myers died. The expedition will probably start at the end of the year.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon Oct. 19, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 45, scarlatina 19, typhoid fever 22, measles 5, smallpox 0.

New Building for Medfield Insane Hospital. — Work has begun on a new building for the insane hospital at Medfield. It is to be devoted to noisy and disturbed patients, and it is hoped will be sufficiently commodious to accommodate such patients for many years to come. The building will be low, two stories in height, 125 feet long and 33 feet wide at its narrowest portion. Crossing the ends are to be placed wings measuring 121 feet in length and 33 feet in width. Rooms are arranged on each side of central corridors. The second story is practically identical with the first. It is hoped that the building will be ready for occupancy in about a year.

### NEW YORK.

Lectures on Diseases of the Skin. The Governors of the New York Skin and Cancer Hospital announce that Dr. L. Duncan Bulkley will give another series, being the sixth, of clinical lectures on diseases of the skin at the hospital on Wednesday afternoons, beginning Nov. 2. To these lectures the medical profession at large is invited.

Exhibits of New York City Departments at St. Louis. — It is announced from St. Louis that seven of the New York City departments making exhibits at the World's Fair have been awarded grand prizes, the highest award within the power of the Fair Commissioners, and three other departments, gold medals. The Health, Tenement-house, and Street Cleaning Departments were among those receiving the grand prizes.

Dr. Wiegel's Misfortune. — Much sympathy is expressed for Dr. Louis Weigel, the well-known electrical expert of Rochester, N. Y., who, in consequence of disease resulting from his prolonged work with the Roentgen rays, has had to suffer the amputation of his right hand and three fingers of his left hand. The operations were done at the City Hospital, Rochester, on Oct. 11, and among the surgeons present were Drs. Roswell Park of Buffalo and William B. Coley of New York.

Deaths from Wood Alcohol. — An investigation has shown that at least eighteen deaths within two weeks have been caused by wood alcohol, in a district on the west side of the city formerly known as Stryker's Farm. The wood alcohol was used for adulterating whiskey, and the authorities have succeeded in getting possession of a little printed book giving recipes for making doctored whiskeys and other kinds of liquor. The proprietor of one saloon has been arrested, and as soon as this fact became known the popular indignation was so great that a mob gathered and wrecked his place before the police were able to interfere. An analysis by Dr. Atkinson, chemist to the Department of Health, of the contents of the stomach of several of the

victims of the Stryker's Farm whiskey, has demonstrated the presence of wood alcohol in quantities sufficient to cause death.

Opening Address, New York University. — On Sept. 29, at the opening exercises of the medical department of New York University, Chancellor MacCracken made an address, in which he deplored the lack of interest in medical education on the part of the rich men of New York. He could count on his fingers, he said, every large sum given to medicine in the city during the last twenty years. Not more than two families or two individuals had given any one of the four regular schools a large gift. By large gift, he explained, he meant at least $100,000. He then went on to say: "What do I see here at First Avenue? A medical faculty that treated without a dollar of remuneration over one hundred thousand patients last year. The wealth of this city has not yet been persuaded to give this work enough endowment to pay a quarter of the expenses. I have personally stood in the offices of several multi-millionaires during the past year to beg money for this charity, and have received the reply that times were so bad that they did not feel able to give a dollar."

Monthly Mortality. — The weekly reports of the Health Department show that during the month of September the mortality in the city represented an annual death-rate of 17.03, as against 18.63 in August and 16.13 in September, 1903. The corrected death-rate, excluding non-residents and infants under one week old, was 16.17. Among the diseases which showed a decline in fatality were the following: The weekly average of deaths from diphtheria and croup decreased from 26.75 in August to 23 in September; the weekly average of deaths from measles, from 6 to 5; from epidemic cerebro-spinal meningitis, from 20.75 to 15.75; from pulmonary tuberculosis, from 144 to 120.75; from diarrheal diseases, from 318 to 227.5; from diarrheals under two years of age, from 286 to 192.75; from Bright's disease and nephritis, from 97 to 95.75; and from organic heart diseases, from 87.75 to 65. Among the diseases which showed an increased mortality were the following: The weekly average of deaths from whooping cough increased from 3.5 to 5.5; from typhoid fever, from 19.5 to 20.5; from pneumonia, from 43.5 to 53.75; from broncho-pneumonia, from 43.75 to 52; from acute bronchitis, from 14 to 18.5; and from cancer, from 49.75 to 57.5.

## Miscellany.

### FUNERAL OF PROFESSOR FINSEN.

The funeral of the late Professor Finsen took place on September 29. The service at Frederick Church was attended by the King of Denmark and the King of Hellenes, the Crown Prince of Denmark, the Princes Waldemar, Karl, and Hans, the entire cabinet and other high dignitaries, and several hundreds of doctors and students of the Copenhagen medical schools, as well as by many patients who have undergone treatment at the Finsen Light Institute. The German Emperor was represented by Prince Henry of Prussia. Queen Alexandra, the Danish Crown Princess, and the Princesses Victoria, Maud, and Thyra were also present, occupying seats in the transept. The coffin was hidden beneath a mass of beautiful wreaths, among which were tributes from King Edward and Queen Alexandra and other members of the royal family, the German Emperor and the German Imperial Chancellor. Sir William Goschen, the British Minister in Copenhagen, handed to the widow of Professor Finsen an autograph letter from King Edward expressing his Majesty's condolence with her in her bereavement. — *British Medical Journal.*

## Correspondence.

### A CARD CATALOGUE OF ANATOMY.

Anatomical Department, Harvard Medical School,
Boston, Oct. 13, 1904.

Mr. Editor: A part of the Anatomical Research Fund, which has been subscribed by generous friends of science, has been devoted to the preparation of a card catalogue of anatomical literature. This has been prepared during the past summer under my immediate supervision. I beg to trespass on your space to announce that it is now in my room at the Harvard Medical School and is at the service of members of the profession who may have occasion to consult it.

The catalogue contains some thirty-five hundred titles arranged according to subjects. It presents some peculiarities to which it seems well to call attention that its range of usefulness may be understood. I have assumed at least a superficial knowledge on the part of the user. It does not contain the names of textbooks nor of treatises; but is devoted chiefly to papers appearing in journals and in the publications of scientific bodies. There are also the titles of some monographs and inaugural dissertations. I chose the year 1883, that in which I became professor of anatomy, as the starting point, but there are some important titles which appeared earlier.

The catalogue includes no histology and but little embryology, the latter being such as is of evident anatomical application. Subjects which have been exhaustively treated in recent monographs containing copious bibliographies, are passed over lightly in the years covered by these works, as it seemed useless to duplicate a work which is accessible in my library. There is more or less anthropology and also philosophical anatomy. The section which will probably appear the weakest is that of the central nervous system, which is due chiefly to the fact that the works in that branch are to so great an extent in the domain of minute anatomy which is not included in the plan.

It is proposed to keep the catalogue up to date by the use of the fund by which it was started. It is a pleasure to me to put it at the service of scholars.

Very truly yours,
Thomas Dwight, M.D.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, OCTOBER 8, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from: Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid Fever. | Diarrheal Diseases. |
|---|---|---|---|---|---|---|---|---|
| New York . . | 3,908,644 | 1,174 | 388 | 31.09 | 9.17 | 2.89 | 2.21 | 10.82 |
| Chicago . . . | 2,021,086 | — | — | — | — | — | — | — |
| Philadelphia | 1,407,968 | 380 | 63 | 23.15 | 8.73 | 2.63 | 1.32 | 8.16 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 176 | 41 | 28.41 | 2.27 | 2.84 | 3.41 | 6.82 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 125 | — | 32.80 | 6.40 | 7.20 | 4.00 | 9.60 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 54 | 14 | 20.37 | 5.56 | 1.85 | 1.85 | 12.96 |
| Boston . . . | 617,950 | 188 | 51 | 28.72 | 9.01 | .53 | 4.25 | 10.10 |
| Worcester . . | 136,925 | 46 | 21 | 17.39 | 10.87 | — | 2.17 | 13.04 |
| Fall River . . | 119,349 | 44 | 18 | 43.10 | 4.54 | — | 2.27 | 29.53 |
| Lowell . . . | 104,402 | 23 | 10 | 21.74 | 13.04 | 4.35 | — | 8.69 |
| Cambridge . | 100,998 | 26 | 11 | 53.84 | 11.54 | — | — | 30.77 |
| Lynn . . . . | 73,875 | 19 | 7 | 15.79 | — | — | 5.26 | — |
| Lawrence . . | 72,348 | 18 | 5 | 33.33 | 11.11 | — | 5.55 | 16.67 |
| Springfield . | 72,020 | 14 | 6 | 14.28 | — | — | — | — |
| Somerville . | 70,413 | 13 | 4 | 7.70 | 7.70 | — | — | — |
| New Bedford | 68,863 | — | — | — | — | — | — | — |
| Holyoke . . . | 50,538 | 17 | 6 | 23.53 | 11.76 | — | 5.88 | 5.88 |
| Brockton . . | 46,601 | 10 | 3 | 30.00 | — | — | — | — |
| Newton . . . | 39,310 | 6 | 2 | 83.35 | — | 16.67 | — | 16.67 |
| Haverhill . . | 39,061 | 10 | 4 | 30.00 | — | — | 10.00 | 10.00 |
| Malden . . . | 37,205 | 10 | 1 | 20.00 | 10.00 | — | 10.00 | — |
| Salem . . . . | 37,188 | 15 | 1 | — | — | — | — | — |
| Chelsea . . . | 36,499 | 10 | 8 | — | 20.00 | — | — | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 12 | 3 | 16.67 | 8.33 | 8.33 | — | 8.33 |
| Everett . . . | 30,209 | 6 | 1 | — | — | — | — | — |
| North Adams | 29,201 | 3 | 1 | — | — | — | — | — |
| Quincy . . . | 26,798 | 7 | — | 42.90 | — | 14.30 | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 3 | — | 66.67 | — | — | — | — |
| Brookline . . | 23,576 | — | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | — | — | — | — | — | — | — |
| Medford . . | 21,956 | 6 | 2 | 16.67 | — | — | — | 16.67 |
| Chicopee . . | 21,692 | 8 | 3 | 8.33 | — | — | — | 8.33 |
| Northampton | 20,314 | 6 | 1 | — | — | — | — | — |
| Beverly . . . | 15,807 | 1 | 1 | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 2 | 0 | — | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 4 | 1 | 25.00 | — | — | — | — |
| Newburyport | 14,478 | 4 | 0 | — | 25.00 | — | — | — |
| Woburn . . . | 14,315 | 1 | — | — | — | — | — | — |
| Melrose . . . | 13,819 | 2 | 1 | — | — | — | — | — |
| Westfield . . | 13,809 | 2 | — | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 2 | 1 | 50.00 | — | — | — | — |
| Revere . . . | 13,609 | 7 | 2 | — | 14.30 | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 1 | 1 | — | — | — | — | — |
| Southbridge . | 11,716 | 4 | 2 | 50.00 | 50.00 | — | — | — |
| Watertown . | 11,575 | 0 | — | — | — | — | — | — |
| Weymouth . | 11,350 | 1 | 0 | — | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 2,460; under five years of age, 684; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 697; acute lung diseases 208, consumption 289, scarlet fever 11, whooping cough 3, cerebrospinal meningitis 17, smallpox 1, erysipelas 3, puerperal fever 1, measles 4, typhoid fever 58, diarrheal diseases 246, diphtheria and croup 64.

From whooping cough, Pittsburg 2, Holyoke 1. From measles, New York 3, Boston 1. From scarlet fever, New York 6, Philadelphia 2, Baltimore 2, Boston 1. From cerebrospinal meningitis, New York 10, Pittsburg, Boston, Worcester, Somerville, and Marlborough 1 each, Southbridge 2. From erysipelas, New York 1, Boston 2. From smallpox New York 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending Sept. 24, the death-rate was 16.0. Deaths reported 4,688; acute diseases of the respiratory organs (London) 72, whooping cough 50, diphtheria 53, measles 37, smallpox 2, scarlet fever 24.

The death-rate ranged from 7.0 in Burton on Trent, to 25.3 in Handley; London 13.7, West Ham 16.5, Brighton 17.8, Plymouth 20.6, Bristol 10.9, Birmingham 16.6, Leicester 15.1, Nottingham 14.9, Liverpool 21.6, Bolton 24.6, Manchester 18.9, Salford 23.7, Halifax 11.6, Bradford 17.4, Leeds 15.3, Sheffield 18.4, Hull 18.7, Cardiff 14.8, Rhondda 19.6, Merthyr Tydfil 22.2, Handsworth 13.1, Wigan 16.6.

## METEOROLOGICAL RECORD.

For the week ending October 8, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. Daily mean. | Thermometer. Daily mean. | Thermometer. Maximum. | Thermometer. Minimum. | Relative humidity. 8.00 A.M. | Relative humidity. 8.00 P.M. | Relative humidity. Daily mean. | Direction of wind. 8.00 A.M. | Direction of wind. 8.00 P.M. | Velocity of wind. 8.00 A.M. | Velocity of wind. 8.00 P.M. | We'th'r * 8.00 A.M. | We'th'r * 8.00 P.M. | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S.. 2 | 29.52 | 54 | 62 | 47 | 64 | 46 | 55 | S W | W | 11 | 14 | F. | C. | 0 |
| M. 3 | 29.89 | 51 | 58 | 44 | 66 | 60 | 63 | W | N | 11 | 8 | C. | O. | 0 |
| T.. 4 | 30.24 | 52 | 61 | 43 | 66 | 63 | 64 | W | S | 8 | 8 | C. | C. | 0 |
| W. 5 | 30.14 | 56 | 65 | 48 | 68 | 77 | 72 | S W | S | 6 | 10 | C. | C. | 0 |
| T.. 6 | 30.14 | 50 | 60 | 40 | 84 | 48 | 66 | N W | N | 12 | 10 | O. | C. | .27 |
| F.. 7 | 30.51 | 42 | 49 | 35 | 60 | 45 | 52 | N | S | 14 | 9 | C. | C. | 0 |
| S.. 8 | 30.39 | 47 | 56 | 38 | 68 | 76 | 72 | S | S | 9 | 8 | F. | O. | T. |
| ☞ | 30.12 | | 59 | 42 | | | 63 | | | | | | | .27 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for week.

## OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING OCTOBER 5, 1904.

BANKS, C. E., surgeon. Granted extension of leave of absence for twelve days from Sept. 27. Oct. 1, 1904.

RICHARDSON, T. F., passed assistant surgeon. To proceed to Eagle Pass, Tex., for special temporary duty. Oct. 4, 1904.

TROTTER, F. E., passed assistant surgeon. Relieved from duty at Plague Laboratory, San Francisco, Cal., and temporarily assigned to exclusive duty in connection with the examination of aliens at San Francisco. Sept. 29, 1904.

LORD, C. E. D., assistant surgeon. Relieved from duty in connection with the exclusive examination of aliens at San Francisco, Cal., and directed to proceed to Ellis Island, New York, N. Y., and report to Surgeon G. W. Stoner for temporary duty. Sept. 29, 1904.

BOGGESS, J. S., assistant surgeon. Granted leave of absence for fifteen days from Oct. 16. Oct. 4, 1904.

RUCKER, W. C., assistant surgeon. Bureau letter of Sept. 12, granting Assistant Surgeon Rucker fourteen days' leave of absence from Sept. 15, amended so that said leave shall be effective Sept. 16; and Bureau telegram of Sept. 26, granting Assistant Surgeon Rucker three days' extension of leave of absence, revoked. Oct. 3, 1904.

COLLINS, G. L., assistant surgeon. Granted leave of absence for three days from Sept. 30, 1904, under paragraph 191 of the regulations.

TUTTLE, JAY, acting assistant surgeon. Granted leave of absence for four days from Sept. 19. Oct. 4, 1904.

WINN, C. K., acting assistant surgeon. Granted leave of absence for fourteen days from Sept. 25. Oct. 3, 1904.

MCDONALD, JEANETTE, medical inspectress. Granted leave of absence for three days from Sept. 25, 1904, under paragraph 210 of the regulations.

LAGRANGE, J. V., pharmacist. Granted leave of absence for seven days from Sept. 26, 1904, under paragraph 210 of the regulations.

## SOCIETY NOTICE.

BOSTON SOCIETY OF MEDICAL SCIENCES: REPORT OF CANCER COMMITTEE.—The next meeting of the Boston Society of Medical Sciences will be held at the Harvard Medical School, on Tuesday evening, Oct. 25, at 8.15 P.M. The papers to be presented will make up the Third Annual Report of the Cancer Committee of the Harvard Medical School. The profession is invited to be present.

WILLIAM H. ROBEY, JR., Secretary.

## RECENT DEATH.

FRANCIS BOOTT GREENOUGH, M.D., M.M.S.S., died in Brookline, Oct. 16, 1904, aged sixty-seven years.

## OPERATIONS: BOSTON CITY HOSPITAL.

The following operations will be done and cases shown in the amphitheater of the Boston City Hospital on Oct. 21, from 10 A.M. until 12.30 P.M.: Amputation of Thigh; Sarcoma of Maxilla; Malignant Disease of Abdomen; Ranula.

# Original Articles.

## HEMATURIA DUE TO THE BILHARZIA HEMATOBIA, WITH THE REPORT OF A CASE.*

BY RICHARD FROTHINGHAM O'NEIL, M.D.,
*Assistant Surgeon to the Genito-Urinary Department, Boston Dispensary; Assistant Surgeon to St. Elizabeth's Hospital.*

The disease forming the subject of this paper being a very uncommon one in this country, the writer thought that a short description of the etiology, pathology, literature, etc., of the condition would be of interest. The following is therefore submitted:

Bilharzia disease (or as it is variously known as bilharziosis, endemic hematuria, blood water of the Boers, and hématurie bilharzienne) is the name given to the lesions produced in the human body by an animal parasite, the distoma hematobia, or, as it is more commonly known, the Bilharzia hematobia, after its discoverer, Professor Bilharz of Cairo.

The occurrence of hematuria and urinary calculus has long been recognized in Egypt, and we have records to that effect as far back as the fifteenth century. Hematuria was also said to have been common among the French troops in Egypt during the occupation by Napoleon in 1798.[1] It was not until 1851, however, that these phenomena were properly explained, when Professor Bilharz discovered and described the parasite, he being the first to recognize its clinical importance.

The parasite is a fluke or trematoid worm with distinct sexes. The male is described as being white and cylindrical in form (Manson),[2] measuring from 11 to 15 mm. in length and 1 mm. in breadth. It has an oral and ventral sucker placed close together. The cylindrical appearance is produced by the ventral infolding of the two sides of what would otherwise be a flat body. By this infolding a gynecophoric canal is formed in which the female is received during coitus.

The female is somewhat darker and considerably longer than the male (20 mm.), the body being filiform. The anterior and posterior ends remain free while the middle section is contained in the gynecophoric canal of the male. The genital opening of the sexes face each other and are placed immediately posterior to the ventral sucker.[2]

The eggs are oval in form and about 0.16 mm. long by 0.06 mm. in breadth, although they vary somewhat in size. They have a transparent envelope or shell with a distinct spine, generally at one end; in some cases it is lateral (see cut). The ova with the lateral spines occur only rarely in the urine.† In the reported case all the ova seen had terminal spines. Within the ovum is seen the embryo; it has a distinct border of its own and at times does not seem to fill the shell completely, especially at the ends, but is surrounded by fluid. The bulk of the embryo is made up of sarcode granules, but a canal may be traced from the beak into what seems to be a rudimentary stomach with a small glandular mass on each side of it. In the more mature ones the embryo may be seen to move the cephalic end with a jerky motion; with a high power the cilia may also be seen to move. By making gentle pressure on the cover glass the shell may be broken and the embryo observed while coming out.[7] (In this manner the embryo for the accompanying cut was obtained and the process was most interesting to watch.) The shape of the embryo at rest may be said to be somewhat oval with a blunt pointed extremity which is the head. It is richly provided with cilia and is very motile when released. It changes its shape considerably when swimming, becoming elongated when in rapid motion. They soon die in urine (twenty-four hours), but may be kept alive in fresh water for a few days. The mature ova will hatch rapidly in fresh water. Dr. Perry of the Harvard Medical School endeavored to make them grow in various media but without success.

(For a more complete description of the worm and embryo the reader is referred to the special works on Entozoa, particularly a book by Braun,[6] for a description of the worm, and to a paper in the *Journal of Bacteriology and Pathology*, by Dr. G. S. Brock[4] of the Transvaal for a very minute and elaborate description of the anatomy of the embryo.) No more is known of the life history of the embryo. Sonsino[17] at one time thought he had discovered the intermediate host in a small crustacean, which statement, I believe, he afterward contradicted. By analogy it may be assumed that the embryo is taken up by some intermediate host where it undergoes a certain stage of development, later becoming encysted, and, either free or with its host, is taken into man, where it develops to maturity.

*Geographical Distribution.*[8] — The parasite is found in almost all parts of Africa. In Egypt, especially in the region of the Lower Nile, it is most common, so common, in fact, that various observers estimate that about half of the native population of that region suffer from it. Greisinger and Bilharz report finding the worm 117 times out of 363 autopsies, and Sonsino 42 times in 91 autopsies.[1] It is also endemic in the eastern part of Africa, Zanzibar,[18] the Transvaal, the Cape, the Gold Coast, Tunis, Algeria, Natal and Abyssinia. Outside of Africa cases have been reported as occurring in Mauritius, Madagascar, Cyprus, Syria, India,[10] Mecca and Penang.[3] A case is also reported from the West Indies.[3] The cases met with on the continent of Europe, in the British Isles and in the United States are probably imported ones with the possible exception of those occurring in the Middle West, which will be referred to later on.

*Etiology.* — The exact method of infection of the human species with the disease is not definitely known, as the life and development of distoma outside the body is entirely unknown. The two most probable avenues of infection are, however, first, that the embryo is carried into the

*Presented before the American Urological Society, Atlantic City, June 9, 1904.

† Duncan reports a case where ova with lateral spines were found in the urine (Clinical Society Transactions, London, Vol. 35, p. 187).

system by drinking infected water, or possibly by eating shellfish or raw vegetables; second, by infection while bathing, through the skin or natural openings of the body. Both of these theories have their supporters and various arguments in their favor. Bilharz himself favoring the first method.

The most noteworthy fact with regard to infection through drinking water is that the people of the large cities, like Cairo and Alexandria, suffer very rarely in comparison with the country people who drink water from the pools and rivers while at work. It is said that Europeans escape the disease to a large degree because they are, as a rule, very careful about their drinking water. (Sonsino, Scheube.[1])

With regard to the infection during bathing, Dr. Brock [4] says he is convinced that in the Transvaal at least many cases are infected in this way. He says in explanation of this that most cases occur in boys from six to sixteen years of age who bathe constantly in the rivers and ponds, sometimes spending the greater part of the day, in the water, while the Boer girls, who seldom bathe,[1] are rarely affected, both being exposed to an equal danger from drinking water. So common is the hematuria among the Boer boys that the more ignorant of the natives believe the loss of blood to be physiological.

Dr. Allen believes that the long prepuce of boys favors infection through the urethra. Loose (Manson) has recently expressed the opinion that the ciliated embryo enters the body directly by perforation of the skin.[11] It has been observed in Egypt that the natives who work in the fields up to their knees in water for a great part of the time are more liable to have the disease than those who do not follow agricultural pursuits. This might mean, however, that they are more exposed to the temptation of drinking bad water. It would seem that there is good foundation for the theory of infection while bathing, although it is always possible to swallow some water while so doing. In no case has a man been known to have transmitted the disease to his wife.

The period of incubation is difficult to determine; according to Brock[4] it is four months.

*Pathology.* — Although the lesions in this disease are not entirely confined to the genito-urinary tract, this system, in a large majority of cases, is the one which suffers, and it is with this tract that the pathology has mainly to deal. The adult worm is found most often in the portal system, either in the main vein or some of its tributaries, the most common being those of the urinary apparatus and the rectum. They have been found, also, in the inferior vena cava and, rarely, free in the urinary passages. They may be in large numbers, Kartulas reporting a case in which three hundred were found. (Finding them most often in the portal system would seem to favor the idea that they were taken into the body by way of the stomach. Finding them in the systemic veins as well could be explained by the anastomosis between the mesenteric and the internal iliac through the hemorrhoidal branches.[4]) The adult worm itself does not seem to cause any particular trouble, all the lesions being due to the deposit of the ova in the tissues. In whatever manner the worm gets into the circulation, at certain times they descend in pairs into the smaller branches of the aforementioned veins and the female deposits her eggs in great numbers. They finally rupture the vein, escaping into the surrounding tissue and there form the nuclei for inflammatory changes. These collections of ova and the subsequent changes which they induce were called " Bilharzial Infarctions " by Bilharz. When one of these infarcts ruptures into the urinary passages or the rectum a hemorrhage of greater or less extent occurs, which gives rise to the hematuria so characteristic of the disease, and to the finding of large numbers of the ova in the urine and feces.

Both clinically and post-mortem, the urinary bladder is found to be most often affected. Milton[9] found this organ diseased in 64% of a series of 930 cases, the lesions being principally in the sub-mucous and mucous coats. They consist in the milder cases of congested and ecchymosed patches, varying in size from one-fourth to one-half inch in diameter, covered with mucus containing many ova. (In my case these patches could be very beautifully seen with the cystoscope). They are generally on the posterior part of the bladder. As the disease advances the lesions take the form of vegetations and excrescences which become encrusted with urinary salts and must not be mistaken for calculi with the stone searcher. The capacity of the organ becomes reduced, its walls thickened and the outgrowths may fill the entire viscus; in some cases, however, the bladder is dilated. These changes taking place as well in the ureters and pelves of the kidneys, together with the formation of urinary calculi, which is very common in the disease, give rise to all manner of urinary lesions, among the more serious of which are dilated ureter, hydro- and pyo-nephrosis, cystic kidney, renal abscess and nephritis. Abscess and sinus formations are also quite common in the advanced cases. Urinary fistulæ are most commonly scrotal, perineal or in the glans, more rarely in the thigh, buttock or suprapubic regions. The seminal vesicles and the prostate are often affected. The lesions in the rectum are similar to those in the bladder, generally taking the form of excrescences.

The ova have been found in other parts of the body,‡ in the liver,[5] giving a form of cirrhosis; in the lungs, giving rise at times to hemoptysis. They are said to cause certain skin lesions, and have been found in gallstones. The female genitals are occasionally affected. The disease occurs on the labia majora in the form of excrescences; in the uterus, in the form of polypi protruding from the cervix.[9] According to Milton, disease of the uterus is not found without disease of the vulva. There is generally present a sero-sanguinous discharge containing ova.

‡ A curious case is reported by Cureton and Webb (Lancet, 1899, Vol. I, p. 156) where at a post-mortem they found the appendix enlarged and nodular; on section the nodules showed the presence of the ova. There were no symptoms, death being due to another cause.

Carcinoma and adenoma have been reported following the disease (Kartulis).

*The Blood.* — Bilharzia disease, in common with other parasitic diseases, presents some changes in the blood, the most conspicuous one being the altered proportion of eosinophiles. Coles [12] was the first to suggest this condition, and he reports a case with 20% of eosinophiles. Russel [13] follows with another case, the average of three examinations being 29%. The next case is reported by Manson [3] with 12%. Then follows a very careful study of fifty consecutive cases by Douglas and Hardy [14] of the white cells found in the blood and urine. These results are, first, that all cases seem to have a leucocytosis, and, second, that in all cases but one there was an eosinophilia, the average being 16.48%. (The highest count being 40% and the lowest 1.3%.) With regard to the urine, they found the number of ova and the amount of blood varied greatly in different cases, and on different days in the same case, that there were many leucocytes in the urinary sediment, and that the greater number of these were eosinophiles.§ (This last observation is true of the case herein reported.) Balfour [15] reports three cases with an average of 16.8%, Pool [26] a case of 9.5%, and the writer a case with 8.4%. This makes a series of fifty-eight cases, in all but one of which the eosinophiles were increased in number. The average of the eight odd cases is 16.34%, which is practically the same as the average of 16.48% for the fifty. In most of the cases the increase seemed to be at the expense of the polymorphonuclears. It would seem that this series of cases is large enough to justify the statement that eosinophilia is the rule in Bilharzia disease.

*Diagnosis and symptoms.* — The diagnosis is absolutely established by finding the ova of the parasite in the urine or feces of the patient, or in calculi or masses of tissue which have been removed. After once seen they are easy of recognition.

The most constant and characteristic symptom of the disease is hematuria. When there is a good deal of hemorrhage the urine is entirely bloody, but generally the blood is confined to the last few drops voided, being due to the rupture of some of the infarcted areas by the final contraction of the bladder. The urine, in a moderate case on being passed, is generally slightly turbid (may be blood-tinted) and contains shreds resembling those of a mild urethero-cystitis. The sediment settles rather quickly leaving a normal looking urine. In the sediment are blood, pus and the ova, together with epithelial cells and urinary crystals, mostly uric acid and calcic oxalate. The reaction is acid at first and there may be a slight trace of albumin.

In the early days of the disease, and in light cases, there is no pain, in fact many cases have no other symptom but hematuria, which may be constant, intermittent, or so slight as to be detected only by the aid of a microscope. The hematuria is almost always made worse by exercise.

§ This may also be due to the fact that the eosinophiles are found increased in various inflammations of the lower genito-urinary tract, as cystitis, prostatitis, etc. (Cabot.)

As the case progresses signs of inflammation of the urinary tract appear, the urine containing more mucus, blood and pus, and micturition becoming more frequent, itching or tickling at first, then burning, and later on painful, especially if small clots of blood or calculi have formed. Acute retention occasionally takes place from a clot or stone blocking the urethra. There may be attacks of renal colic from the same conditions in the ureters. In the more advanced stages of the disease the bladder becomes the site of vegetations and calculi are formed. Urinary fistula and abscess formation are common. The seminal vesicle and prostate are often involved, the semen containing blood and ova in the former condition. In involvement of the prostate the urinary symptoms are increased, and the gland, by rectum, may be felt to be enlarged.

The symptoms of invasion of the rectum are straining and frequency of defecation with the passage of blood accompanied by tenesmus, later prolapse of the mucous membrane and the formation of the characteristic vegetations.

As a rule death occurs from anemia or exhaustion dependent upon long continued hemorrhages and frequent attacks of pain, or as a result of some grave urinary disorder ending in uremia or septic infection.

*Prognosis.* — The disease varies in intensity in different localities, being much more severe in Egypt than in the Transvaal. In the latter location the disease is largely confined to boys from six to sixteen years old, at which age the hematuria disappears and the patient believes himself well. Careful examination will generally, however, detect the ova and the patient may, a number of years later, suffer from stone. Although a number of cases never go beyond the hematuria, still the prognosis should be guarded, the disease itself not being so fatal as the chain of complications to which it may give rise. To show how light the disease may be Milton [9] reports that in the examination of one hundred patients on the medical service in the Kasr-el-Aini Hospital, in Cairo, the ova were found in thirty-five, only two of whom complained of any symptoms. According to Brock, patients with the disease are not taken by Life Insurance companies. The life of the worm is known to be a long one, Dr. Hanford [16] reporting a case where the patient was having an occasional hematuria eight years after infection, there being no re-infection.

The treatment of the condition is unfortunately most unsatisfactory, and must of necessity be confined to maintaining the general health, and treating the symptoms and complications which arise. The deep location of the parent worm rendering any anthelmintic treatment of no value. According to more recent writers the hematuria is best met with salol and methylene blue. The latter is said to cause the death of the embryo in a short time in cover glass preparations. It is given in 4 gr. doses three times a day. If there is irritation or smarting of micturition, copaiba, santal oil or benzoic acid are of decided value. Cystogen and urotropin are useful as

urinary antiseptics. Male fern is recommended by Milton, and santonin [18] by other observers. If the hematuria is severe or cystitis is present, the bladder may be washed out with some bland solution, as boric acid, weak nitrate of silver, or possibly a solution of adrenalin chloride $\frac{1}{10,000}$ might prove of value. The solutions should be bland as the bladder is sensitive. Fistulæ and calculi are to be treated surgically. Milton advises litholapaxy for the latter when possible, as cutting operations are not particularly well borne. In the latter stage of the disease drainage of the bladder may become necessary. In the rectum, vegetations should be removed when possible. According to Milton, a solution of the chloride of zinc 1 to 40 will give relief as an application when the excrescences are too numerous for removal. The anemia is to be met with iron and the general hygiene looked after. The patient should be removed from the country to avoid re-infection.

Prophylaxis, is very much handicapped by the fact that the life history of the parasite is unknown. In infected districts, however, the drinking water supply should be above question, and if any doubt exists as to its purity the water should be boiled or filtered, and raw vegetables should be carefully washed. The urine and the feces of the patients should be rendered harmless.

*Report of case.* — J. B., twenty-four years of age, printer. Presented himself at the Urinary Clinic of the Boston Dispensary on March 2, 1904, with the following history: Personal history — One attack of gonorrhea five years ago, left testicle was then swollen. Without any reason that he could give testicle swelled again last year. For the last three years he has passed blood every day, once or twice a day, at the end of micturition, varying from a couple to a number of drops. It occurs at no particular time of day. There is no frequency or smarting or any trouble with micturition.

*Examination.* — Well developed and nourished young man, a trifle pale, nothing abnormal found except left epididymis has a tender nodule in upper end. Prostate normal. Left vesicle full, not tender. Nothing felt in renal region. Urine, very small quantity, slightly turbid with few shreds. It was not examined at this visit. Patient was given cystogen, gr. v, three times a day. To return for further examination. (Tumor of the bladder was considered the probable diagnosis.) He came back in twelve days much improved as to the frequency of the hematuria. The urine was normal looking after a moderate flocculent sediment had settled. *Examination.* — Normal color; acid; sp. gr., 1,025; albumen, slight trace; sediment: pus, blood, crystals of calcic oxalate, and a number of large oval bodies, some of which showed a jerky motion in one end. They were diagnosed as some kind of parasite, and on reading the subject up they were recognized as the ova of the Bilharzia.

On further questioning, the patient said that he had been in South Africa, in the British infantry, during the Boer war for eighteen months, and had had no trouble for a year, when one day at mess he felt a burning and itching in the perineum, and later frequency of micturition set in and he began to pass blood. He said that on several occasions he had drunk very foul water. On his next visit he was examined with a cystoscope, when the bladder showed a membranous cystitis; fragments of tissue could be seen waving from the bladder wall in the fluid (very like seaweed under water). There were also a number of small hemorrhagic areas mostly about the left ureter and posterior part of the bladder.

The day after the cystoscopy he passed more blood than usual. According to his statement he is better than he has been at any time during the trouble, sometimes seeing the blood only once a week or once in a few days. He has no other symptoms, except pain in the left epididymis (whether this is due to the same cause I cannot say, but think it not unlikely). He has had no treatment but cystogen and urotropin. Ten weeks after his first visit he passed a perfectly normal looking urine in which only a few ova could be found. He has occasional hematuria, which is made worse by exercise.

The blood examination by Dr. W. H. Smith, at 8 P.M. is:

| | |
|---|---|
| Reds, 5,212,000 | Whites, 4,400 |
| (Differential count of 500 cells) | |
| Polymorphonuclears | 45.6% |
| Lymphocytes | 45.8% |
| Eosinophiles | 8.4% |
| Mast cells | .2% |

No achromia, no variation in size, no glandular degeneration.

Three months after his first visit he sent for me early in the morning, his wife saying that he had suffered intense pain all night in the left back and loin. On reaching his house I found him completely relieved, he having passed a small, very sharp, uric acid calculus; no ova could be found as nuclei. The urine was normal.

The only reference to cases of the disease occurring in the United States, that the writer has been able to find, are briefly as follows: They are five in number, three being imported cases and two seem to have originated in this country. There is also a case reported where the condition was supposed to exist, but I do not think the diagnosis was correct.

The first case reported, by Dr. Booth of Sparta, Ill.,[19] in 1882, is that of a young woman of twenty-eight. She had difficulty in micturition and had passed blood. He reports finding in the urine ova with spines, ciliated embryos and mature worms. The description is not good. There is no satisfactory etiology given. I can find no case reported where the adult worm had been found alive in urine, and it is only with extreme rarity that it is found in the urinary passages at all. It has, however, been found alive in masses of papillomatous tissue and in fibrous tissue lining urinary fistulæ, Madden reporting six such cases.[32]

The next case is reported by Dr. B. F. Curtis [20] of New York, in 1896. He performed a suprapubic operation for a tumor of the bladder in a man of twenty-nine. The patient had served in the British Army in Egypt ten years before and had been subject to hematuria. The diagnosis in this case was made from microscopic examination of the tissue removed. The result was good.

The third case is reported first by Brooks [23] in 1897, a month later by Sondern [24] and referred to by Porter [25] in the International Clinics. The patient had lived two years in Africa. His only symptom was the characteristic hematuria.

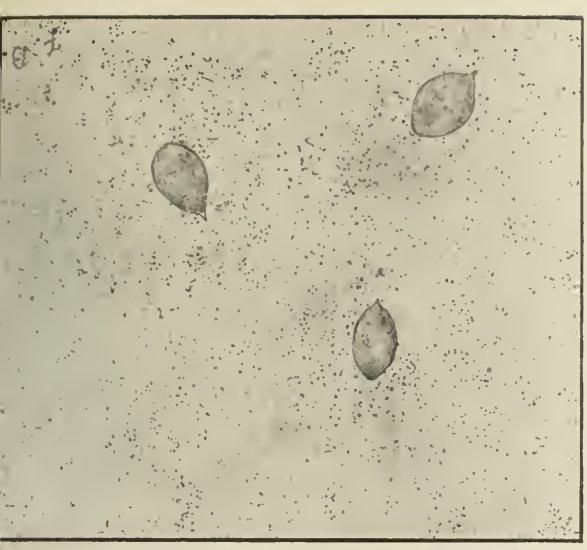


FIG. 1. (Leitz oc. 4, obj. 3.) Urinary sediment showing ova. Low power.



FIG. 3. (Zeiss oc. 6, obj. 2 mm.) Ovum. High power.



FIG. 2. (Zeiss oc. 4, obj. 8 mm.) Note size of ova compared with other elements in sediment, also terminal spines.



FIG. 4. (Leitz oc. 4, obj. 1–12.) Free swimming embryo showing cilia, also broken envelope.

The next curious case was reported in February, 1900, by Dr. Walker [21] of Evansville, Ind., his patient being a woman of twenty-eight, whose home was not far from the place where Dr. Booth's patient lived. She had suffered from severe pain in the bladder and the left side with hematuria. She also had occasional discharge of fluid from some cavity connecting with the bladder. This fluid was found to contain the ova and embryos of the parasite.

This case was again recently reported by Drs. T. N. and H. N. Rafferty of Robinson, Ill., who had her under observation from April, 1900, to September, 1901.[33] The patient was heard from not long ago and was still having the same trouble.

In June, 1900, Dr. Lewis [22] of Mt. Carmel, Ind., referred to the following case as one of Bilharzia disease: The patient is a woman thirty-two years of age. She had painful and frequent micturition for some time. The urine contained much pus and a number of bright red very motile worms about one-sixth of an inch long. Towards evening she passed large numbers of them, they sometimes coming away in clumps of twenty or thirty. The bladder was indurated and tender. Although some of the symptoms are suggestive, no mention is made of finding the ova, and the description of the worm is certainly not characteristic. The only point in the etiology is that the patient used to eat largely of some imported figs known as Turkish. The case is probably not one of Bilharzia disease.‖

The last case is reported by Dr. Pool [26] of New York, in April, 1903, and is that of a young Algerian, thirty years of age, who had visited some of the infected countries and presented the characteristic hematuria. As cases of this kind will undoubtedly occur from time to time in this country their correct diagnosis is of importance, and the writer suggests that a careful search be made for the ova of the parasite in any case suffering from hematuria, calculus or urinary fistulæ who has been a resident in or a visitor to the infected countries.

The literature of the condition is quite extensive, the writer having looked over from forty-five to fifty different articles and reports of cases, most of them naturally being in foreign publications. Besides the two articles already referred to, those interested in the subject will find good accounts of the disease in the "Diseases of Warm Countries," by Scheube [1] (which has an excellent bibliography), an article by Guillemard, in Allbutt's "System of Medicine," [27] and one by Kartulas.[28] Among the latest publications are three full lectures by Milton of Cairo, in the *Journal of Tropical Medicine*,[29] an article by Wallace in the *Scottish Medical Journal*,[30] and one by Lclean, in the *Transactions of the Medical Society of London*.[31]

The excellent drawings accompanying this article were made from fresh specimens by Miss Byrnes of the Harvard Medical School.

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‖ The Distoma heterophyes is a small red worm.

## SOME OBSERVATIONS ON THE OCCURRENCE OF BROADBENT'S SIGN.*

BY ALICE WELD TALLANT, M.D., BOSTON.

The so-called Broadbent's sign, or the systolic retraction of the lower ribs in the left back, has been given so important a place in the diagnosis of adherent pericardium that it is worth while to consider its significance and the frequency of its occurrence.

In 1895, Walter Broadbent [1] published a report of four cases diagnosed as adherent pericardium, in all of which there was "visible retraction, synchronous with the cardiac systole, of the left back in the region of the eleventh and twelfth ribs; in three, also, systolic retraction of less degree in the same region of the right back." Although he states that this sign had long been pointed out by Sir William Broadbent, he refers to it in the title of his article as "an unpublished physical sign," and I have found no reference to it before 1895.

A year later, in 1896, Dr. John F. H. Broadbent [2] published his monograph on "Adherent Pericardium." He takes up this point much more in detail, and it is with his name that the sign is associated in most of the textbooks. In his own words, "a most important sign of adherent pericardium" is "a marked systolic retraction of some of the lower ribs on the lateral or posterior aspect of the thorax," which he further describes as "a tug on the false ribs during the cardiac systole, and a sharp rebound during diastole, which can be felt as well as seen when the hand is laid flat on the chest wall at the spot." The phenomenon is due, in his opinion, to adhesions of the pericardium to the muscular parts of the diaphragm, which are dragged upward and inward with the heart's contraction, thereby

* From Dr. Richard C. Cabot's clinic at the Massachusetts General Hospital.

pulling on the points of attachment of the digitations of the diaphragm to the lower ribs and costal cartilages.

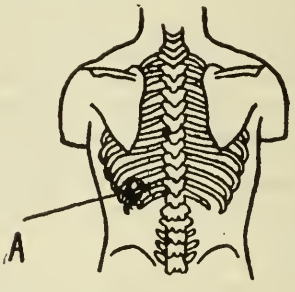
The value of this sign in the diagnosis of adherent pericardium has been quickly recognized, until now it is frequently mentioned as one of the most important signs of this condition. It is curious, however, that the different writers lay so little stress upon the pull on the ribs, and, indeed, often speak of the retraction as being noticed in the intercostal spaces, whereas John Broadbent, in his description, does not use the word "interspace," but mentions the tug on the ribs only. Butler [3] finds the systolic tug "over the eleventh and twelfth ribs posteriorly;" Tyson [4] describes it as "communicated through the adherent diaphragm to its points of attachment, especially the left side behind, between the eleventh and twelfth ribs." Cabot [5] refers to it as "a systolic retraction of the chest wall . . . in the region of the eleventh and twelfth ribs in the left back," and again, in summarizing, as "systolic retraction of the lower intercostal spaces in the left axilla and left back." Gibson [6] mentions "a drawing in of the intercostal spaces . . . in the lateral as well as posterior part of the chest, as insisted on by the younger Broadbent." Babcock,[7] who considers it a "very significant" sign, calls it a "systolic sinking or drawing inward of the tenth and eleventh interspaces below the angle of the left scapula, and occasionally of the ribs." In his recently published textbook,[8] however, he makes no mention of the pull on the ribs.

Broadbent's explanation of the cause of this retraction has been readily accepted, and is apparently a reasonable one. Under normal conditions the pericardium is closely adherent to the central tendon of the diaphragm, and only loosely connected by areolar tissue with the muscular fibres on the left side. When adhesions form between the pericardium and this latter fleshy part, the heart will pull on the diaphragm with each systole, and if it be powerful enough, the tug will be seen at those points of attachment of the diaphragm which are least fixed, namely, the false ribs and the tissues between them.

Since Broadbent's sign has been so widely accepted, it must have been seen in many cases by different observers. Few of these cases have found their way into the literature, however. Churton,[9] in 1897, reported a case of adherent pericardium in which the diagnosis (later confirmed by autopsy) was made during life by the discovery of Broadbent's sign, the eleventh rib on the left side being drawn in at each systole. Camac,[10] in 1898, also reported a single case in which the sign was present.

As Camac [10] suggests, Broadbent himself implies that the retraction is not a constant thing, when he speaks of the sign as one which "may sometimes be seen," and is most important "when found." Sir William Broadbent [11] believes that in the cases which show it, the heart is usually hypertrophied from valvular disease, and this was certainly true of all four of Walter Broadbent's cases. Swift,[12] in a series of eighteen cases of adherent pericardium in children, the diagnosis in every case confirmed by autopsy, was unable to find Broadbent's sign in a single one. This absence of the phenomenon is the more surprising, because in all the cases there was a well-marked systolic drawing in of the intercostal spaces anteriorly. Other writers [13] [14] have reported cases without mentioning Broadbent's sign, but it is impossible to say whether it may not have been present, since its absence is not noted. For example, Babcock,[7] in the paper to which reference has already been made, gives three illustrative cases of adherent pericardium, but does not speak of the presence or absence of this retraction. Still more noticeable is the fact that John Broadbent himself, in his series of cases, does not refer to the sign in any way.

While the absence of this sign in undoubted cases of adherent pericardium has thus been noted, its occurrence in other conditions has received less attention, although as long ago as 1898 Sir William Broadbent [15] is reported as stating that "similar tugging had been observed in cases of hypertrophy without adhesion." In 1900, Hoover [16] is reported as having seen a case of aortic insufficiency in which this retraction could be seen to move an entire rib. At the suggestion of Dr. Richard C. Cabot, a number of cases of various kinds have been examined in his clinic at the Massachusetts General Hospital, with reference to this point, and the results of these observations will be found tabulated below.




A = area where retraction is most easily seen and most frequently found.

Dr. Broadbent [2] states that "this phenomenon is best seen when the patient is sitting up in a good light, and the movements of the chest are carefully observed from a short distance off, first from the front and then from the lateral aspect." In my experience a tangential light brings out any movement of the chest wall more clearly. Sometimes it is more readily seen when the light comes directly from the left side, but in most cases the patient is directed to stand with his right side toward the window, turning slightly to the left, so that the light strikes diagonally across his back. In case of doubt as to the

presence of retraction at a certain spot, if a mark be made there with ink or a skin pencil, any movement in that area is more easily appreciated. The place to look for the retraction is about the tenth or eleventh intercostal space in a line with the angle of the scapula (area marked "A" in the accompanying diagram). When it is very slight the patient should be told to hold his breath, so that the respiratory movements may not obscure it.

In all 130 cases were examined. Of these 81 gave absolutely negative results, no movement of the chest wall being found during systole; in 20 there was slight retraction of an interspace, usually the eleventh, without any tug on the ribs; 25 showed marked retraction, usually with a distinct tug on one or more ribs; while in the remaining 4 an outpush of the chest wall was observed during systole. It has not seemed necessary to tabulate these four cases or those which gave negative results, but it may be noted that three of the latter were cases of aortic insufficiency, with practically no enlargement of the heart, and that there were no other cases of cardiac disease among them.

Whenever a retraction, however slight, was found, the patient was carefully examined for other important signs of adherent pericardium, namely, the retractions about the apex and epigastrium, the interference with Litten's sign on the left, and the fixation of the apex beat. The size of the heart was also noted in all such cases.

TABLE NO. I. MARKED RETRACTIONS.

| No. | Diagnosis | Age | Devel'p't and Shape of Chest | Heart | Retractions | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Apex | Epigastrium | Left back | Elsewhere | Shift of apex | Litten's sign (left) | |
| 1 | Mitral insufficiency | 53 | Prominent precordia, otherwise normal | Apex felt, 6th space, 1¼ inches outside of nipple | — | — | + | — | + | + | Retraction, 11th space, and 11th and 12th ribs; distinct tug; area size of palm of hand |
| 2 | Aortic stenosis and insufficiency; relative mitral insufficiency | 19 | Normal | Apex, 6th space, 3 inches outside of nipple line | — | — | + | + | + | + | Marked tug, lower 3 ribs, left back; slight retraction, 10th and 11th spaces right back |
| 3 | Aortic roughening and insufficiency; mitral stenosis | 24 | Normal | Apex under 7th rib, 3 inches outside of nipple line. Forcible action | — | — | + | — | + | + | Tug on tip of 12th rib and surrounding area, 2 by 1½ inches |
| 4 | Mitral stenosis and insufficiency | 19 | Normal | Apex, 7th space 4 inches outside nipple. Impulse diffuse | — | — | + | — | + | + | Marked retraction of 10th and 11th interspaces; area 3 by 2½ inches |
| 5 | Mitral stenosis and insufficiency | 29 | Normal | Apex, 6th space, 2 inches outside nipple line | + | — | + | — | + | + | Systolic retraction of interspaces anteriorly, beginning 1½ inches to left of median line and extending to anterior axillary line, 7th space. Posteriorly, retraction 11th and 12th ribs and 11th space, area 3 by 2½ inches |
| 6 | Aortic roughening and insufficiency | 48 | Normal | Apex, 6th space, 1 inch outside nipple | — | — | + | — | + | + | Retraction, 11th rib and space, area size of palm of hand |
| 7 | Aortic insufficiency | 50 | Normal | Apex, 6th space, 3 inches outside nipple line. Heart irregular, powerful, slow | + | — | + | — | + | + | Marked retraction at apex and to left of sternum, about nipple. Posteriorly, 11th and 12th ribs and 11th space; whole posterior side pulled in with systole |
| 8 | Mitral stenosis and insufficiency | 17 | Slender, rather narrow-chested | Apex, 5th space, 1 inch outside nipple | — | — | + | — | + | + | 11th and 12th ribs below angle of scapula; area size of palm of hand |
| 9 | Mitral insufficiency | 11 | Normal | Apex, 5th space, ¾ inch outside nipple | — | — | + | — | + | + | Retraction, 11th space; area somewhat larger than a dollar; well marked pull |
| 10 | Mitral stenosis and insufficiency | 25 | Barrel chest, stooping shoulders | Apex, 5th space, ¾ inch outside nipple | — | — | + | — | + | + | Marked retraction, 10th and 11th spaces, area 2½ by 2 inches |
| 11 | Phthisis | 38 | Very thin; narrow chest | No enlargement | — | — | + | — | + | + | Marked retraction of 11th rib and interspace |
| 12 | Mitral stenosis and insufficiency | 37 | Left side of chest, contracted from old pleurisy | Apex, 5th space, 1 inch outside nipple | — | — | + | — | + | — | No movement of left chest in breathing Retraction 11th space and tip of 12th rib |
| 13 | Aortic insufficiency; relative mitral insufficiency | 27 | Normal | Apex, 5th space, ½ inch outside nipple | — | — | + | — | + | + | Retraction, 11th rib and interspace; area 2½ by 2 inches |
| 14 | No disease | 41 | Normal | Normal | — | — | + | — | + | + | Retraction, 11th interspace; area nearly size of palm of hand |
| 15 | Aortic insufficiency | 38 | Normal | Apex, 5th space, ½ inch outside nipple | — | — | + | — | + | + | Distinct retraction in 11th space; area 2 inches in diameter |
| 16 | Chronic interstitial nephritis; cardiac hypertrophy | 50 | Normal | Apex, 6th space, 1 inch outside nipple | — | — | + | — | + | + | Whole posterior side of chest wall pulled with systole |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17 | Mitral stenosis and insufficiency | 27 | Normal | Apex, 6th space, 1 inch outside nipple line | — | — | + | — | + | + | | 11th and 12th ribs and 11th space, retraction over area size of palm of hand |
| 18 | Nephritis; aortic insufficiency | 47 | Normal | Not enlarged | — | — | + | — | + | + | | Marked retraction, whole side from 10th rib to 12th rib (inclusive) |
| 19 | Mitral insufficiency | 55 | Normal | Apex, 6th space, 2 inches outside nipple | — | — | + | — | + | Dim. | | 11th and 12th ribs and 11th space, marked retraction over area larger than palm of hand |
| 20 | Aortic insufficiency | 33 | Normal | Apex, 5th space, ¾ inch outside nipple | — | — | + | — | + | + | | Pull on tips of 11th and 12th ribs |
| 21 | Phthisis; esophageal stricture | 62 | Thin and flat-chested | Not enlarged | — | — | + | — | + | Slight | | Retraction 11th space, visible over area size of palm of hand |
| 22 | Gastric carcinoma | 50 | Very much emaciated | Not enlarged | — | — | + | — | + | + | | Marked retractions in 9th, 10th and 11th spaces, beneath angle of scapula |
| 23 | Deferred; patient did not return | 28 | Normal | Not enlarged | — | — | + | — | + | + | | Marked retraction over large area including 10th and 11th spaces and 11th and 12th ribs, just below angle of scapula |
| 24 | Aortic insufficiency | 38 | Normal | Apex, 5th space, ½ inch outside nipple | — | — | + | — | + | + | | Retraction over area including tips of 11th and 12th ribs, and 11th space |
| 25 | Chronic esophagitis | 59 | Thin, flat-chested | Apex, under 6th rib, 1¾ inches outside nipple | — | — | + | — | + | + | | Retraction in 11th space, well marked, visible over area, 2 inches in diameter |

TABLE NO. II. SLIGHT RETRACTIONS.

| No. | Diagnosis | Age | Devel'p't and Shape of Chest | Heart | Retractions: Apex | Epigastrium | Left back | Elsewhere | Shift of apex | Litten's sign (left) | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Aortic insufficiency | 19 | Normal | Apex, 5th space, 1 inch outside nipple | — | — | + | — | + | + | Slight retractions 10th and 11th spaces, visible over area size of dollar |
| 2 | Aortic and mitral insufficiency | 40 | Normal | Apex, 6th space, 1½ inches outside nipple | — | — | + | — | + | + | Slight, but distinct, 10th and 11th spaces, area size of a dollar |
| 3 | Functional heart | 20 | Normal | No enlargement, forcible impulse | — | — | + | — | + | + | Very slight, 11th space, size of half dollar |
| 4 | Phthisis | 33 | Thin, flat chest | Not enlarged | — | — | + | — | + | + | Very slight, 11th space |
| 5 | Phthisis | 47 | Thin | Not enlarged | — | — | + | — | + | Neither side | Fairly marked retraction, 11th space |
| 6 | Phthisis (incipient) | 29 | Thin, narrow-chested | Not enlarged | — | — | + | — | + | + | Slight retraction, 11th space, area size of a dollar, below angle of scapula |
| 7 | Bronchitis | 65 | Rather thin | Not enlarged | — | — | + | — | + | Very Slight | 11th space, in line of angle of scapula |
| 8 | Phthisis | 30 | Thin, flat chest | Not enlarged | — | — | + | — | + | + | 11th space, area size of dollar |
| 9 | Phthisis | 25 | Normal | Not enlarged | — | — | + | — | + | + | 11th space, small area |
| 10 | Lead poisoning | 41 | Normal | Not enlarged | — | — | + | — | + | + | Area size of palm of hand, below 11th rib, retraction very slight |
| 11 | Cardiac hypertrophy | 32 | Normal | Apex, 5th space, under nipple. Powerful impulse | — | — | + | — | + | + | 11th space under angle of scapula |
| 12 | Syphilis | 21 | Rather thin, otherwise normal | Not enlarged | — | — | + | — | + | + | 11th space, area 2 inches in diameter, slight retraction |
| 13 | Dyspepsia | 42 | Normal | Not enlarged | — | — | + | — | + | + | Slight in 11th space, very slight in 10th, small area size of half dollar |
| 14 | Fever; cause? | 15 | Normal | Not enlarged | — | — | + | — | + | + | Very slight, 11th space, area size of half dollar |
| 15 | Enlarged glands (tuberculous?) | 24 | Normal | Not enlarged | — | — | + | — | + | + | Very slight, 11th space |
| 16 | Lead poisoning | 34 | Normal | Not enlarged | — | — | + | — | + | + | Very slight, 11th space, area size of dollar |
| 17 | Not made | 31 | Normal | Not enlarged | — | — | + | — | + | + | Very slight, 11th space |
| 18 | Dilated stomach | 45 | Normal | Not enlarged | — | — | + | — | + | + | Very slight, 11th space |
| 19 | Phthisis (right lung) | 31 | Much emaciated, narrow chest | Not enlarged | — | — | + | — | + | + | In 11th space under angle of scapula, retraction visible over area size of a dollar |
| 20 | Aortic insufficiency and roughening | 50 | Normal | Apex, 5th space, ½ inch outside nipple | — | — | + | — | + | + | Very slight, 11th space, size of half dollar |

A further classification of these cases as to the occurrence of retractions follows:

| | MARKED RETRACTION | SLIGHT RETRACTION |
|---|---|---|
| Cardiac hypertrophy (valvular lesion, 20 cases) | 18 | 4 |
| Cardiac lesion without hypertrophy, | 1 | 0 |
| Thin individual, | 4 | 7 |
| Other cases, | 2 | 9 |
| | 25 | 20 |

From an examination of these tables it will be found that, except the three cases of slight enlargement mentioned above among the negative results, all the cases of cardiac hypertrophy showed some degree of retraction, while none of them, except Cases 5 and 7, Table I, gave any other sign of adherent pericardium. Since none of these cases came to autopsy, it is not possible absolutely to rule out this condition, yet it seems hardly probable that it would be present as a complication in so large a proportion of the cases of valvular heart disease.

The results of these observations go to show:

(1) That retractions in the left back are much more common than is generally supposed, although it is probable that they would be noted more frequently if always looked for during the routine physical examination.

(2) That systolic retraction of a marked degree, similar to and often identical with that described by Broadbent, is found in many cases of cardiac hypertrophy in which there is no other reason to suspect pericardial adhesions.

(3) That systolic retraction, more often involving the interspaces only, may be seen in the left back in thin individuals, especially if there is marked emaciation.

The reason for many of these retractions would seem to be as follows: Since the pericardium is even under normal conditions adherent to the central tendon of the diaphragm, it is conceivable that with each systole there is a slight pull on the diaphragm. Under ordinary circumstances this is not marked enough to be transmitted to the points of attachment of the diaphragm to the chest wall, but if the heart is hypertrophied or acting very vigorously, the pull may be sufficient to be visible externally, while in a thin individual even a slight movement would be more easily perceived.

In closing I wish to thank Dr. Richard C. Cabot for the interest which he has shown in this work, and for his help in verifying my observations.

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## THE MAMMA, ITS PHYSIOLOGICAL PURPOSES.*

BY THOMAS H. MANLEY, M.D., NEW YORK.

### ITS COARSE AND FINER ANATOMICAL ELEMENTS IN THEIR BEARING ON SOME OF ITS PATHOLOGICAL AFFECTIONS.

If we appreciated the treatment of the numerous pathological conditions of the female breast with a more complete knowledge of all its functions, purposes and of its complex structures, we would hesitate longer, and more frequently resort to conservative methods, rather than hastily resort to its total sacrifice by amputation in its various diseased conditions. Those large projecting, pyramidal, pectoral bodies in the adult are at once an integral part of the sexual system, besides serving an important cosmetic purpose, providing protection to the anterior wall of the thorax and supplying nutriment to the newborn. It is the only secreting organ calling for a vacuum to drain it, and discharging directly on the surface.

The description of its structures by nearly all anatomists is faulty, inadequate and misleading. Our faith in the teachings of writers on anatomy is so settled that even to question their accuracy has been regarded as a stupid effrontery. We have all been taught that the breast is a "gland with a capsule." Testut denies that it is a gland, but an aggregation of widely scattered, separate secreting lobes, each one opening on the surface of the mammella independent of the other.

The mamma has an excessive fibrous development in its parenchyma, the membrana-cribosa, without any definite organization or arrangement, stretching from the armpit to the sternum and from clavicle to blend below with the abdominal aponeurosis; but it constitutes no capsule, and is so intermingled with the panniculus-adiposus, the secreting lobes and lobules, as well as with the overlying integument, that its complete separation is impossible. The adipose tissue of the breast is of a deep yellow color; its proportion varies, but in corpulent individuals it constitutes the main volume. It lies in a deep layer over the secreting structures; fringes and corpuscles of it everywhere permeate the parenchyma. There are four sets of independent secreting glands in the mammary body. First, the sudoriporous and sebaceous, in their overlying adherent integument; second, the sebaceous or oleaginous, in the tissues of the mammella; third, diminutive tributaries in the areola; fourth, the lobular isolated lobes of the mamma. The latter drain into the galactiferous ducts, which open separately on to the surface of the mammella. The milk-ducts pursue a radiating direction as they extend inward, and break up in canaliculi in the lobules.

A critical dissection of the breast during the function of lactation will display the lactiferous ducts, varying widely in diameter and length, just as we will find some of the lobes diminutive

* Abstract of paper read at meeting of Miss. Valley Medical Association, in Cincinnati, Ohio, Oct. 14, 1904.

and others of considerable volume. The nipple is made up of white and yellow elastic tissue, galactiferous tubes having a cutaneous investment. The nipple contains no angiomatous tissue nor muscle fibre, and hence, strictly speaking, it is not an erectile organ; it is sometimes rudimentary, and often deformed through congenital or acquired conditions. The base of the nipple is guarded by a circular disc of integument of a remarkable histological composition, the areola. This, like the nipple, in its deeper layers is continuous with the fibrous felting of the mamma. The principal vascular supply to the breast is by the internal mammary artery, while its larger veins drain into the axillary trunk. The most notable feature in connection with its nerve supply is the preponderant influence on the sympathetic; no direct connection can be traced in its supply from the cerebrospinal system with that of the generative branches from below. Lymph nodes are lodged in groups at the outer, upper and inner aspect of the breast, but there is very little lymphoid tissue in the organ itself. Zappey depicts a most elaborate arborescent display of lymph vessels in the overlying integument, but several independent investigators have been unable to verify their presence by any description of injection. There can be scarcely any doubt that the importance of the lymphganglia has been greatly exaggerated in their relation to function, etc., in the mamma.

The "modern cleaning out" radical operation is based on the unproven assumption that they are the *fons et origo mali* of all serious mammary affections. In function the mamma is at once a duct and a ductless gland; *i. e.*, it has an external and an internal secretion. We have not isolated in its physiological state its internal secretion, neither have we that of the thyroid, the spleen or suprarenal bodies. In the child or the maiden, we find its elements as but shadowy and ill-defined; its acinous arrangement can be scarcely outlined. In the non-childbearing, and during the intervals of lactation, it is essentially a *ductless* gland; it discharges no secretion, but rather absorbs it, from which we must assume that the maintenance of the new-born is but one of the functions of the female mamma.

In two instances of double amputation of the breast coming under my observation in young women for cystic disease, both later married, but neither ever conceived. The complete amputation of both breasts is well known to produce most profound psychological impression, and often when but one is totally removed. The advent of nearly every variety of organic lesion here is quite invariably ushered in by depression of spirits and spells of distressing melancholy. Beatson's operation has clearly demonstrated the intimate relations between the breast and the ovaries. In monorchids, in crypt orchids, or hemorphrodism, imperfect development of the external male genitals — gynecomasia — or very large development of the mammæ, is a most conspicuous feature.

CONCLUSION.

The mamma is a highly organized and structurally a most complex organ.

Its functions are manifold. It is an essential and integral part of the generative system. Intermittent in function, like the testes, total ablation, like double castration, makes its impress on the sensorium.

Very frequently degenerative or pathological changes begin in a single isolated lobe — about twenty of which are in each breast. In all non-malignant affections, radical measures should be limited as far as possible to the affected area or lobe.

It is only in malignant disease of a progressive type and when life is imperiled that total sacrifice of the breast is justified.

Inasmuch as the functions and purposes of the axillary lymph ganglia are yet imperfectly understood, and their removal quite invariably enhances the risks of operation, involves a wide mutilation of the chest walls, and always leaves more or less impediment in shoulder action, or even at times a painful tumefied limb, it is only as an extreme and exceptional measure that their complete extirpation should be practiced.

## Clinical Department.

### PENETRATING BULLET WOUNDS OF RIGHT LUNG, LIVER AND STOMACH, SUPERFICIAL WOUND OF SCALP.

LAPAROTOMY. PURSE-STRING SUTURE OF STOMACH WOUND, AND CLOSURE OF WOUND OF LIVER BY INTERRUPTED SUTURES. RECOVERY.

BY F. S. WATSON, M.D., BOSTON.

THE patient, a man of fifty-three years of age, was brought to the relief station of the Boston City Hospital twenty minutes after having shot himself thrice with a thirty-two caliber revolver.

The three wounds inflicted by the bullets were as follows:

(1) A superficial wound a little to the right of the median line of the head and just behind the parietal eminence on the right side. The ball had passed through the scalp from right to left. This injury was unimportant.

(2) A penetrating wound of the right side of the thorax. The bullet entered between the fourth and fifth ribs between the axillary and mammary lines in a direction slightly oblique from before backwards. So far as could be judged without probing the wound, the ball had penetrated the chest wall, and probably had passed through the posterior and upper half of the middle lobe of the lung, this being conjectured from the embarrassed respiration which, though not excessive, was well marked, and the presence of percussion dullness over a considerable area of the lateral and posterior part of that lung.

(3) A penetrating wound which entered the abdomen from before backward and slightly oblique direction from left to right, just to the right of the free border of the ribs of the left side and opposite the tip of the eight.

(The patient subsequently stated that he had fired the last two shots holding the revolver in both hands around the butt and pulling the trigger with the thumb of one hand.)

At the time of entrance at the station, shock was pronounced; the patient began to react under the influence of heat and restoratives at the end of the first half hour.

When first seen by me he had rallied well. There was moderate but increasing tenderness of the abdomen not definitely localized. Moderate and gradually increasing tympanites. Liver dullness was entirely absent. Slight and increasing rigidity of the abdominal muscles. Pulse of fair strength and volume, 110, temperature normal.

*Operation.* — One hour after receipt of injuries, the abdomen was opened by a four-inch incision in the median line extending downward from the tip of the ensiform cartilage. A considerable quantity of gas escaped from the abdominal cavity through the incision. There was a good deal, but not a great quantity of blood in the posterior and lower parts of the peritoneal cavity. No stomach or bowel contents were seen to have escaped. About an inch and a half below the lower third of the front of the lesser curvature of the stomach was a penetrating bullet wound. This was at once closed by a double purse-string suture.

The posterior surface of the stomach was carefully examined but no other wound there or elsewhere in the organ could be found. The left lobe of the liver, at a point in it corresponding in position to the wound of the stomach, was perforated by the ball from above downward. Such bleeding as was taking place came from this wound from the liver. The hemorrhage was readily controlled by a couple of sutures passed through the edges of the lower orifice of the liver wound, and closing it when tied. No other intra-abdominal organ was found to be wounded, but as there was enough blood collecting in the dependent parts of the peritoneal cavity to cause some doubt as to the existence of some other injury which could not be located, counter openings were made in both loins and drains were passed through them. The anterior wound was closed except for a space to allow the passage of a gauze wick; the latter was withdrawn on the second day, and both drains in the loins on the fourth day. The patient made an uninterrupted recovery. One of the bullets was found beneath the skin of the back a month later and removed. This was presumably the one which had entered the thorax.

The points of interest to the writer in this case were :

(1) The manner in which the patient inflicted the wounds, *viz.*, that he should have had the resolution to shoot himself three times in succession in view of the serious nature of two of the wounds inflicted, but more especially of the difficulty that is involved in directing the shots in such a way as to make the wounds that were found. Had the revolver been held in the ordinary way, it would have been impossible for the patient to have made the wounds himself. He subsequently explained that he held the butt of the weapon in both hands and pulled the trigger with one of his thumbs.

(2) The fact that the bullet which entered the stomach through its anterior wall, and did not pass out of it again — there being but one wound of the stomach found upon careful examination — was never located, either at the time of operation by digital exploration of the interior of the stomach, was not seen in the movement of the bowels, or revealed by x-ray examinations subsequently.

(3) The case is another example of the success that attends early operation in such cases.

## A URETERAL CALCULUS OF UNUSUAL SIZE.*

BY JOHN BAPST BLAKE, M.D., BOSTON,
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The accompanying cuts show the actual size and something of the appearance of a ureteral calculus removed from a patient by the writer on Dec. 24, 1903. The calculus weighs 200 gr. (almost half an ounce), is 1½ by 1 by ¾ inches in its extreme measurements, and is composed of phosphates.



The history of the case is long, extending over eighteen years. It may be summarized as follows:

Mr. C., twenty-eight years of age, married, was seen in consultation with Dr. David McIntyre on Feb. 3, 1903. The family history was good; when eleven years old, the patient suffered a heat stroke. Almost immediately afterward he had severe paroxysmal pain in the back, on the left side; this pain lasted for three or four days and gradually disappeared; it recurred about twice a year until he was eighteen. The attacks sometimes kept him at home a week. In 1896 Dr. Keyes of New York removed two calculi from the pelvis of the left kidney. After the operation the patient was very sick and had a high fever. The wound closed in about eight weeks. Since his eleventh year he has had pus in the urine almost constantly. Immediately after Dr. Keyes' operation attacks of pain developed in the right kidney. In many of these painful attacks, blood appeared in the urine for a few days. Since 1896 he finished his college course and went into business. In one of the recent attacks he was seen by Dr. Arthur Cabot who advised operation on the right kidney, believing a renal calculus present. Operation was refused.

On Jan. 23, 1903, after a long ride in a crowded electric car, during which he was obliged to stand, pain began in the region of the right kidney, rapidly becoming severe and accompanied by fever and vomiting. The pain extended down towards the bladder, and he

* Read at a meeting of the Obstetrical Society of Boston, April 26, 1904.

passed some bloody urine; for three days pain persisted and on Jan. 29 began in the left kidney, becoming extremely severe and requiring morphine. He remained in bed, with irregular fever, much pus in the urine, and a varying amount of pain, until seen in consultation on Feb. 3.

*Physical Examination.* — A tall, slim man, pallid, features drawn, tongue thickly coated. Pulse regular, fair strength, 100, temperature 100.2. Heart, lungs and extremities negative. Abdomen: slight, general distention and muscular spasm; tenderness and spasm most marked in left loin, where a sense of deep resistance and almost of fluctuation was felt. No edema. Urine: pale, alkaline, 1010, very much thick ropy ill-smelling pus. Albumin $\frac{1}{4}\%+$. Sediment, pus, bladder cells and granular detritus; no tubercle bacilli found. Inoculation of guinea pigs negative. He had been having Pot. acetat, sodium bicarb. urotropin in small doses, together with bladder irrigations. The diet was exclusively liquid, and he drank large quantities of water.

He did not improve and was seen again in consultation with Drs. F. S. Watson and McIntyre. Operation recommended on left kidney for drainage; performed on Feb. 28, Dr. Watson assisting. The lumbar incision revealed a very large kidney, thin walled and containing an enormous amount of pus. No calculi were discovered nor could the ureteral opening be found. The wound was drained through the flank by a large rubber tube.

Immediately after this operation, the right kidney reacted and the temperature rose. There was tenderness and muscular spasm in the right hypochondrium and an increase of pus in the urine. These signs gradually disappeared, and during the late spring and early summer, the patient was able to be out of doors and take short drives. Drainage of the kidney was continued, the rubber tube emptying by catheter into a hard rubber flask supported by a belt worn around the patient's waist. This method was suggested by Dr. F. S. Watson and had been used on a patient of his, who has worn it without discomfort for four years, following his regular routine of active work.

Early in July, 1903, Mr. C. complained for the first time of some localized pain and tenderness two or three inches to the left and just below the umbilicus. No tumor was discovered; the pain caused an increased desire to flex the left leg, a position often voluntarily assumed by the patient at various times during several years past. This local tenderness slowly disappeared, but returned again, and after Thanksgiving, became so severe as to compel consideration of a third operation. He was moved to the Boston City Hospital on Dec. 7, and an x-ray plate was taken. This showed a shadow fully as large as an olive, at the site of the pain and tenderness, where a tumor could now be felt. It was decided that operation in his enfeebled condition would be accompanied by so much danger that it would be justifiable only when his pain and distress became unendurable, particularly as a complete cure seemed out of the question. He returned to his home on Dec. 11; the pain increased, as did the tumor and tenderness. Dr. Paul Thorndike saw him in consultation Dec. 21 and operation for the relief of suffering was advised, and performed Dec. 24, Dr. Thorndike assisting. By this time deep fluctuation had developed near the left anterior superior iliac spine; the incision was made over this point parallel to the upper part of Poupart's ligament, the object being a retroperitoneal removal of the calculus, and drainage of the accompanying pus. Tissues were matted together by the long standing inflammation, and landmarks were obliterated. It was difficult to avoid opening the peritoneum. The pus was easily evacuated, but the calculus, situated at the pelvic brim, and close to the left common iliac and vein, was reached only after persistent efforts and where it seemed as if the operation would have to be ended. The large stone appeared to have partially sloughed through the posterior ureteral wall and was in part imbedded in the psoas muscle. It was finally removed and the wound drained both with gauze and a rubber tube. It was not possible either to reach the kidney through the ureteral opening, nor the site of the calculus through the old nephrotomy wound. The patient stood the operation fairly well. He lived two weeks, without peritoneal complication, and with a diminution of the pain and muscular spasm which the calculus had caused. He died of persistent vomiting, being entirely conscious to the end. No autopsy was allowed, so that the existence of calculi in the pelvis of the right kidney remains unproven. A sound passed into the bladder did not detect a vesical calculus.

The large ureteral calculus probably developed rapidly from a small one originally formed in the pelvis of the kidney. Large as it was, it may not have completely stopped the passage of urine to the bladder, else we should have expected an atrophy of the kidney. This may have been averted by the drainage through the loin. The lack of an autopsy is much to be regretted as it leaves unsettled many important questions. There is little doubt that a series of small calculi passed at various times from this man's kidneys to his bladder; one of these lodged at the brim of the pelvis, enlarged rapidly and caused pain and spasm of the psoas muscle. The condition of the right kidney contra-indicated any operation except one of necessity. The case illustrates the necessity of early interference, and the comparative hopelessness of late operations. It is one of a comparatively small class in which a calculus in the ureter could be located by palpation.

## COMA FOLLOWING LABOR.*

BY C. V. FRIEDMAN, M.D., BOSTON.

THE case, here described, was seen in the outpatient clinic of the Boston Lying-In Hospital. For amplifications of my notes and the hospital records, I am indebted to Dr. R. L. DeNormandie who, as house physician, had charge of the patient.

Mrs. E. H., age twenty-four; ii para. First delivery in October, 1901; low forceps; normal convalescence. I saw the patient on Nov. 20, 1903. The cervix was not taken up, there were irregular uterine contractions, temperature and pulse were normal, but patient looked anemic and flabby. Pelvis generally contracted, intercristal 25 cm.; interspinal 22 cm.; external conjugate 17 cm. Head high O. D. P. The contractions continued without progressive dilatation and she was given 30 gr. of chloral in two doses on Nov. 20 and again on Nov. 21; this secured some sleep each night.

Active labor began at 2 P.M. Nov. 22 and the patient delivered herself at 2.15 A.M. Nov. 23. Two hours later the externe left her in good condition. Temperature 100.8, pulse 90. Patient had a normal tempera-

* Read at the meeting of the Obstetrical Society of Boston, April 26, 1904.

ture and pulse in the morning and evening, took nourishment well, voided urine easily and was comfortable. At about 2 A.M. Nov. 24 she had a chill followed by a period of excitability (possibly a convulsion). She then became semi-comatose, and the condition noted when I saw her later in the day was as follows:

Patient unconscious but can be aroused with difficulty, to muscular action and inarticulate utterance. Occasional spasmodic movements of eyebrows. The hands are clasped over the occiput. When moved, patient resists, using both arms and both legs equally. The face is blanched, face and body wet with profuse perspiration. No edema. Respirations regular, stertorous, 28; pulse regular, normal in volume and tension, 80; temperature 102.8° F. Eyes closed, pupils equal, moderately constricted, react to light. No strabismus. Moderate lachrymation. Marked photophobia. Heart, lungs and abdomen negative. Uterus apparently well contracted, fundus just below umbilicus, no tenderness. Lochia normal. Knee jerks slightly increased but equal; no ankle clonus; no Babinski.

By catheter, two and a half pints of clear urine, acid, high, 1020, no sugar, no albumin, urea 1.39%.

℞ Saline catharsis, ice bag to head, forced liquids. There was slow but steady improvement. At midnight patient recognized her husband and, after vigorous arousing and interrogation, complained of pain in the occipital region. Forty hours after the attack began patient was lucid when aroused but soon relapsed into a semi-comatose condition. At the end of sixty hours she approached a normal mental condition but still complained of headache and of general soreness of the limbs.

Temperature and pulse reached normal on the third day and remained normal. The urine continued normal in amount and character except for the "slightest possible trace" of albumin which appeared first about fifty hours after the attack. At about the same time marked labial herpes appeared. Careful daily examinations revealed no further physical signs. The patient was discharged well at the end of a fortnight.

When I saw the patient during the coma I was not able to make a satisfactory diagnosis. As there was no previous history of epilepsy or hysteria I considered in order of probability, chloral poisoning, cerebral injury, eclamptic coma, diabetic coma and a severe, atypical intercurrent, febrile affection.

In spite of the possibility of delayed absorption and elimination due to the puerperal state, chloral narcosis was ruled out as the patient had in all but 60 gr. of chloral in divided doses at long intervals; the symptoms did not supervene until fifty-eight hours after the last dose; nausea and vomiting were absent. The reflexes were present and the pulse was slow and full. There were no signs of meningitis or cerebral injury except the coma. The absence of sugar threw out diabetes.

Having seen at the time several cases of influenza, all severe and variously atypical, it occurred to me as a possible diagnosis, but although I could not exclude it I did not feel inclined to accept it.

Having seen several cases of eclampsia in which the urine was normal in amount and character, cases where there was but a single convulsion followed sometimes by death, more frequently by recovery; cases where there were no symptoms for one or two days after delivery, I felt inclined to consider this a case of pure eclampsia. That is, a case of eclampsia not exhibiting any of the various symptoms which are classed generally as eclamptic although they ought to be considered, perhaps, as the symptoms of distinctly secondary affections which are sequels of the eclamptic toxemia.

## Reports of Societies.

### THE AMERICAN THERAPEUTIC SOCIETY.

Fifth Annual Meeting, held at the Academy of Medicine, New York, June 2, 3 and 4, 1904.

#### First Day, June 2.

The address of welcome was made by Dr. R. W. Wilcox, chairman of the Committee of Arrangements, and responded to by Dr. D. O. Leech of Washington, D. C. Thirteen new members were elected, and Drs. Georges Nayem of Paris and Heinrich Schoeler of Berlin were elected honorary members. An obituary was read of the late Dr. Robert N. Graham of Washington by Dr. Robert Reyburn, and appropriate resolutions were adopted by the Society. The president's address was delivered by Dr. Howard N. Barker of Washington, D. C. In it he dwelt upon the growing evils of patent and proprietary medicines and the various forms of quackery so prevalent, and upon the urgent duty of the medical profession to unite in systematic efforts for their curtailment. He also devoted considerable attention to recent advances in organotherapy and in the diagnosis, prophylaxis and treatment of tuberculosis.

#### Symposium: Recent Advances in Anesthesia.

The introductory to this was read by Dr. R. W. Wilcox of New York. A paper on

##### Recent Experimental Work

contributed by Dr. Torold Sollmann of Cleveland, was read by Dr. P. Brynberg Porter.

##### General Anesthesia

was assigned to M. F. Thompson of Washington. Ether, he said, still holds highest rank as a general anesthetic. For short operations in children, chloroform is in favor. For prolonged operations in children, it is safer to substitute ether for chloroform as soon as loss of sensation occurs. For minor operations, nitrous oxide gas as administered to-day is an ideal anesthetic. The compactness of the gas as now furnished makes its use much more convenient than formerly. The gas-ether sequence is an excellent method in experienced hands, and appears likely to grow in favor. In 1902 McCardie reported on the satisfactory use of ethyl chloride in over 600 cases. He asserts that this agent possesses all the requisites of a perfect anesthetic, and that it is the safest of all anesthetics except nitrous oxide gas. Seitz records 16,000 cases with only one death, and that in a very unfavorable subject; and Soulier, 8,000 cases, with no death. Von Necken uses ethyl chloride whenever it does not seem safe to employ ether or chloroform, as in high degrees of circulatory interruption, fatty degeneration of the heart, disease of the respiratory organs, nervous shock, and enfeeblement from great loss of blood.

LOCAL ANESTHESIA.

This paper was read by Dr. E. J. Kiepe of Buffalo. Cocaine and eucaine, he said, still hold first place. While the newer agents and methods offered from time to time usually possess some advantages over our older agents, they usually develop deficiencies when given the test of practical experience, which soon relegate them to the background. Either they are decidedly toxic or too irritating, or they do not possess penetrating powers. Thus the prominent series of complex chemical substances known as acoines, while presenting almost every advantage that one might wish for, are so irritant as to be caustic when injected into subcutaneous or subconjunctival tissues, even in solutions of a strength of 1 in 1,000 of normal salt solution. Acoine associated with cocaine, in the proportion of 1 to 11, has been recommended by Darier, but this combination, while very meritorious, is considered by many as still too irritating. Other agents, as orthoform, while possessing every advantage as an anesthetic, including even an antiseptic action, are of little value on account of their insolubility in water or normal salt solution; for if a solution is effected by other means, their anesthetic properties are largely or entirely destroyed. To Réclus we are indebted for bringing to notice the fact that dilute solutions of cocaine are as efficacious as stronger ones. He was the first to advise 1% solutions, and in exceptional instances, 2%. Schleich also showed that strong solutions were not necessary, and that solutions as weak as 1 in 5,000 were anesthetic, although he was cognizant of the fact that the large amount of water used as a diluent had considerable influence in producing anesthesia of parts. Of the recent advances, probably the most notable and best substantiated is the fact that the active principle of the suprarenal gland is a potent factor in lessening hyperemia. It is also a synergist of no mean value. While adrenalin has no anesthetic properties whatever of its own, not only are the toxic effects of cocaine and eucaine markedly diminished, but the anesthetic effects of both are increased to a marked degree by it. Dr. Kiepe has observed anesthesia to last as long as twenty minutes, and others report thirty minutes and more. Local blood vessels are contracted by the direct action of the adrenalin upon their walls. They remain firmly constricted for a number of hours afterward, and thus any tendency toward congestion and consequent hemorrhage is diminished, while the pain which is always present after the anesthetic effects of cocaine or eucaine have worn off is relieved. It is well to note the fact that certain varieties of cocaine, especially tropacocaine (existing naturally in Javanese coca leaves), do not act satisfactorily when combined with adrenalin.

LOCAL ANESTHESIA BY CATAPHORESIS AND BY PRESSURE ANESTHESIA.

Dr. William J. Morton of New York read a paper on this topic. Cataphoresis, he said, implies that medicaments may, by electric pressure or voltage, be caused to penetrate the sound skin or mucous membrane, and thus exert their characteristic effects. If these medicaments have anesthetic or analgesic properties, we have then established a local anesthesia or analgesia. As the penetration of the skin may begin at either pole, we must speak of an anaphoresis; for this reason he has suggested calling the entire process electric medicamental diffusion. In his own practice he uses electro-cocaine-guaiacol local anesthesia in a great variety of minor surgical operations. The term "pressure anesthesia" was invented by Dr. Morton in 1897 to define a new method of local anesthesia presented by him at that time. This method was based on the idea that medicamental solutions, especially anesthetizing ones, might be forced into the tissues by the pressure of vapors or gases or by mechanical pressure. Pressure anesthesia has now become well nigh universal in dental practice. To a strong solution of cocaine in guaiacol is added an equal amount of ether, and when this is introduced on cotton within a tooth cavity, and the cavity is closed with a soft rubber stopping, the evaporation of the ether (and probably also the mechanical pressure of forcing in the stopping) forces the anesthetizing solution into the sensitive tissue of the tooth cavity. In the practice of pressure anesthesia in minor surgery, Dr. Morton has frequently made use of a cupping glass, a watch glass, or a test tube, in which to allow the evaporation to take place.

STERILE WATER ANESTHESIA.

Dr. S. G. Gant of New York read a paper on this subject. The method described was that which Dr. Gant first presented in a recent paper at a meeting of the Medical Association of the Greater City of New York, a report of which was published in the Journal in March last.

THE MEDICAL TREATMENT OF APPENDICITIS.

Dr. A. J. Hall of Washington read a paper on this subject, in which he argued that most cases of this disease could do better without than with surgical interference. This position was vigorously assailed by Drs. O. T. Osborne, D. O. Leech, Leonard Weber and Carl Beck, who thought that the views expressed in the paper should not go forth as the sentiments of the Society.

## Second Day, June 3.

SYMPOSIUM: THE COMBAT WITH INFECTION.

This was opened by Dr. T. E. Satterthwaite, with a paper on "Infection and Immunity." Infection, he said, may be mediate or intermediate, direct or indirect. Anthrax, typhoid, cholera and diphtheria can be transmitted through the medium of water. Diphtheria can be transmitted through the medium of milk, or by contact with the infected person. The possibility must be borne in mind, however, that the bacilli of diphtheria and typhoid may have a mycelial growth, like the fungi; even that they sometimes may possibly be jaculative saprophytes, *i. e.*, that they can develop *de novo* in suitable dead material. In some affections, like tetanus and diphtheria, the pathogenic bacteria have only a local manifestation; in others, like anthrax, they may infect the blood throughout the system. The behavior of an animal toward an infection varies according to the species, the individual and the circumstances. It should also be borne in mind that there is apt to be a wide difference between the human disease and the experimental of animals, both as to symptoms and lesions. In tetanus, however, there is a marked resemblance between the human disease and the artificial of animals. Both susceptibility and immunity are relative rather than absolute terms. Three varieties of susceptibility are recognized, — a natural, an acquired, and an inherited, — and we likewise have acquired and inherited immunity. There are two forms of acquired immunity, — the active and the passive, — and they are of great interest at the present time. Passive immunity is produced by antitoxins, and the individual inoculated with the antitoxin shares the immunity *passively* with the animal from whom the antitoxin is drawn. It is the condition produced by serum therapy, and the

antitoxin is both prophylactic and curative. Inherited immunity has been shown experimentally in anthrax and tetanus.

Passing on to the subject of mixed infection, he said that to render an animal immune there is another method beside that of neutralizing the toxin by antitoxin, namely, by the use of bacteriocides. When micro-organisms alone are used for producing immunity, the serum develops marked antibacterial powers, while it has little or no effect on the toxins elaborated. On the other hand, when the filtered cultures (toxins) are used, the serum develops both antitoxic and bacteriolytic properties. It is apparent, therefore, that the sera prepared by these two methods are not identical. These principles are recognized in the manufacture of the various specific sera, such as the antidiphtheritic serum, antiplague serum, etc. The animal body has the power to produce certain substances which will defend it against all sorts of alien cells and their products. While the nature of these substances is unknown, it has been shown that they are able to neutralize poisons, agglutinate cells, etc. They are classed as antitoxins, agglutinates, precipitates, coagulins, etc. The discovery of "clumping" or agglutination has been of the greatest value, and forms the basis of the Widal test in typhoid fever. Having mentioned the various theories of immunity which have been brought forward, Dr. Satterthwaite said that according to Ehrlich's theory, the most recent of these, if immunity had been acquired, the explanation would be as follows: The receptors circulating in the blood anchor any of the corresponding toxin molecules before they can reach the cells; and in passive immunity, the serum of the immunized individual, injected into another individual, supplies him with these receptors, thus conferring on him protection against infection. As regards natural immunity, either the cells are developing so many receptors that there are always enough in the blood to anchor any toxins or molecules and prevent them from attacking the cells, or the cells may have no receptors (processes) fit to grasp the toxin-haptophors. While Ehrlich's theory has naturally met with opposition, it would seem to be convenient for us to accept it provisionally as a good working hypothesis, which will be helpful in discovering the principles governing immunity, whatever they may be. The concluding part of the paper was devoted to latency in infective disease.

### INTERNAL ANTISEPSIS.

By Dr. J. N. Hall of Denver, Col.: The improvement in the methods of the surgeon who a few years ago assumed the responsibility for most of the deaths from sepsis, has produced no more striking result than the almost total elimination of this term from the list of the causes of death of his patients, while the physician still signs a comparatively large number of certificates bearing this opprobrious designation. Fortunately, we are encouraged by the recent attention given to this subject and by the favorable results which have attended, in a small measure at least, some of the work along this line. The more general use of the antitoxins might at first sight appear to render unnecessary a struggle for a system of internal antisepsis. Yet when we consider that, for instance, a definite croupous pneumonia may be caused by many different organisms, and that until bacteriological examination becomes more available than is now the case, we shall be unable to give the right antitoxin, even if we have it, at the very beginning of the disease. This is imperative if we look for good results; we must conclude that in this disease, as in many others, we shall long have opportunity for battle against a more or less general sepsis. The ability of septic organisms to do harm lies not so much in the few which enter the blood stream as in the capacity of these for indefinite multiplication, and an infinitely less powerful antiseptic suffices to prevent reproduction than is necessary to cause the death of the parent organism. The most important results thus far have been accomplished in the digestive tract. It is probable that the long-practiced exhibition of hydrochloric acid is really soundly based on two grounds: That it acts in part by improving nutrition through supplying a digestive ingredient lessened by the fever, thus promoting normal digestion, and in part by the prevention of the growth of organisms of fermentation in the intestine. It has been pointed out that in typhoid, chlorine tends to diminish the development of the causative bacillus, and of its toxins, in part at least, by increasing the secretion of bile. It must not be forgotten, however, that in this disease the bacilli may become established in the spleen and mesenteric glands, in the lung, or even in the meninges, and it is hardly to be expected that intestinal antiseptics will be of much service in controlling the results of such invasions.

Although we may accomplish much by the use of various bismuth compounds, naphtalin, salicylic acid, and other remedies, no generally accepted intestinal antiseptic has been brought forward. In the urinary tract we have been more successful in the use of antiseptics for combating bacterial infection, and urotropin particularly has given most satisfactory results. The effect of creosote and its congeners upon the bacilli of tuberculosis, as shown by repeated sputum examinations, is commonly believed to be a fairly definite one. Doubtless the results would be more easily noted were cases more generally placed under such treatment before the bacilli became abundant, and especially before mixed infection became a factor. These drugs act by rendering the soil unsuitable as a culture ground, and not directly as germicides. In the treatment of pulmonary tuberculosis nothing is more discouraging than the sepsis which follows the introduction of pus-producing organisms into the pulmonic lesions. Having mentioned two cases where quantities of streptococci were found in the sputum, in which the happiest effects followed the use of antistreptococcic serum, Dr. Hall expressed the opinion that whether the remedy was to receive all the credit for the improvement observed, the results obtained should lead to a study of this method of combating sepsis with the greatest hopefulness. Personally he had met with no such constant and positive effect from the use of creosotal or of sodium salicylate in pneumonia, but the excellent results obtained by Thomson and others he thought certainly justified further trial of these drugs.

### PROTECTIVE INOCULATION.

This paper was read by Dr. George F. Butler of Alma, Mich. It must be admitted, he said, that the elements of error arising from the crude transference of animal results to man still exist in the case of protective inoculations. While the microbe or protozoön found with a given disease or morbid state is regarded as the cause of that state and is cultivated to produce a serum, the anatomical and physiological differences between man and the animal are ignored, and the logical requirement of science that a given hypothesis to be accepted must not only explain all the facts, but must exclude all other explanations, is set at defiance. Brilliant as seems the line of reasoning adopted in the recent explanation of immunity by Ehrlich's side-chain theory, and valuable as some of it is as a work-

ing hypothesis, much is based on a series of hypotheses, the demolition of any one of which would impair the main theory. In the horse, diphtheria runs the same course, though of milder type, as in man, and the complications are similar, though slight; hence the reaction produced by diphtheria was found to produce an antibody, which has proved, when properly applied, particularly efficacious against diphtheria. That such an antibody could not be used by direct transference to man is shown in the tetanus produced by it in Italy and in St. Louis. This tetanus ought to have been avoided through ordinary knowledge of the horse as an intermediary host for the tetanus bacillus. Further, it would have been impossible had the ordinary tests of unit strength been applied, since the guinea pig employed therein must have been tetanized. The problem in the application of protective inoculation implies the employment of such inoculation as will destroy the toxin (the soil-element poison of the old clinicians), and at the same time create the life-giving principles constituting the antibodies at the least expense to the system. This will be best accomplished by distributing the strain generally, rather than leaving it to expend its strength on the individual cells, and this is done best by employing the specializations through which most is accomplished by the least expenditure of force. But the power of the organism to antagonize the constitutional effects of pathogenic germs, their toxins and other poisons, is directly proportionate, all other things being equal, to functional activity of the adrenal system. The problem of a protective inoculation is complicated by the factor of mixed infection, and further, the latter is complicated by the differing effects of toxins. To meet all these factors is a difficult question of great complexity, which is still further complicated by the fact, pointed out by students of comparative medicine long before Koch, that tuberculosis of cattle differs in character from that of man, this difference being much greater than that between variola and vaccinia. The problem of protective inoculation therefore implies a study of comparative medicine with the variation between man and animal taken into account. It also involves a careful study of the hygiene and prophylaxis of the animal employed, and of the human subject before, during and after inoculation. The following papers in the symposium were read by title: "Physiological Problems," by Dr. William H. Porter of New York, and "Antisepsis in Surgery," by Dr. R. T. Morris of New York.

### THE NEED OF REVISING OUR IDEAS OF STIMULATION.

Dr. E. H. Long of Buffalo read a paper on this subject, in which he proposed a classification recognizing three general classes of stimulants: (1) Agents which increase the irritability of nerve centers or the conductivity of nerve fibres, thus augmenting the potential of a function; (2) agents which determine a more rapid or more powerful discharge of energy in the activity of a function, thus converting potential into kinetic energy; (3) agents which depress the nerves or nerve centres which exercise a restraining or inhibiting influence over an organ, thus allowing greater freedom of activity in its function.

As a precise definition, believed to be sufficiently inclusive, he suggested the following: A stimulant is any agent which increases temporarily the efficiency of a function by improving the innervation or increasing the activity of an organ or by lessening the restraint to its action.

### THE TREATMENT OF CHRONIC COLITIS.

This paper was read by Dr. Jesse Shoup of Washington. He made no division of chronic colitis, but treated under the one general head mucous, membranous, follicular and ulcerative colitis, believing that these were simply different stages of the same disease. He thought that the reason why most cases of chronic colitis occur in women was because a large percentage of women are found to suffer from gastroptosis, enteroptosis and nephroptosis. He had never seen a case of the disease in which gastroptosis or enteroptosis was not present in some degree. Improperly prepared chyme entering the intestine, causing first, irritation, and later inflammation, appeared to be the cause of chronic colitis, and he thought the first thing to do was to remove the cause of the indigestion. Believing this cause to be found chiefly in the displaced organs, it was his custom always to replace them and hold them in position by a properly fitted corset made to measure. The following is a *resume* of the treatment recommended:

(1) Treat the attack of pain which precedes the passage of mucus by giving a hypodermic of morphine and atropine, and promote the thorough evacuation of the bowels by giving large doses of castor oil by the mouth and high enemata of oils or alkaline solutions. (2) A carefully selected diet to suit the individual case, after a chemical examination of the stomach contents has been made. (3) Assist digestion and allay fermentation. (4) Keep the bowels open by means of oils by the mouth, these having the double office of laxative and lubricant. (5) Apply suitable support to overcome any ptosis of the abdominal organs. (6) Local treatment by means of astringent enemata and oils, and topical application of the same when necessary. (7) See that the patient gets sufficient rest in the recumbent position and, where practicable, a change of air to mountains or seashore.

### ARTERIO-SCLEROSIS.

A paper by Dr. O. T. Osborne of New Haven, in which he suggested a theory as to why the varied acknowledged causes of arterio-sclerosis should produce the one condition. As the suprarenal glands, so far as known, furnish *par excellence* the vaso-constrictor stuff for the organism, and the thyroid the vaso-dilator stuff, he thought it reasonable to conclude that any marked increase of blood-tension must be due to a diminution of the thyroid or an increase of the suprarenal secretion, or to both. Whatever might be the primary cause of arterio-sclerosis, whether such factors as old age, nervous strain, chronic lead poisoning, gout and kidney insufficiency, or whether pus tension, he said that any treatment of the condition to be successful must aim to diminish the high blood pressure. This can be accomplished well by thyroid extract in small doses, if we believe there is evidence of diminished thyroid secretion, and it must be remembered that any small dosage of iodine or iodides will stimulate the thyroid gland to greater activity. Hence the long known value of this drug in arterio-sclerosis. He thought it possible that in the future one of the suprarenal glands might be removed, or its artery tied, in gout and arterio-sclerosis.

### ARTHRITIS DEFORMANS AND ITS TREATMENT.

A paper on this subject was read by Dr. L. Kolipinski of Washington. The indications for treatment of this extraordinary malady, the etiology of which still remains undiscovered, were summarized as follows: (1) To relieve pain; (2) correct the stiffness and rigidity of the affected joints and muscular contractures; (3) increase the muscular strength; (4) cure the anemia; (5) increase where necessary the body weight; (6) symptomatically to regulate or slow the pulse.

To fulfil these indications, three classes of agencies are necessary, and so indispensable is each that no two alone will suffice to achieve good results. They are, first, for pain, anemia, the rapid pulse, and malnutrition, arsenic; second, for stiffness, contracture and muscular atrophy, voluntary exercise; third, for weakness, anemia, loss of weight and pain, the improvement of nutrition by increasing and selecting the food supply. The principle to be impressed upon the minds of the afflicted is that rest for a limb is harmful. Rest in bed aggravates the disease by favoring immobility of the joints; daily exercise is beneficial, though for a time productive of pain and discomfort. Mechanical treatment of the active kind is best in all cases; the patient must be encouraged to help himself; passive exercise is demoralizing because it produces apathy and engenders an expectation of improvement that does not come. Local applications are of temporary value and purely anodyne. The best agent for this purpose is probably the emplastrum hydrargyri, U. S. P. The remedies for the treatment of articular rheumatism and gout are not only useless, but do harm.

SYMPOSIUM: RECENT ADVANCES IN SPECIAL THERAPEUTICS.

The different topics were in the hands of the following writers: "Ophthalmology and Otology," Dr. D. B. St. J. Roosa, New York; "Gynecology," Dr. J. T. Kelley, Jr., Washington; "Surgery," Dr. Carl Beck, New York; "Materia Medica," Dr. A. A. Stevens, Philadelphia; "Physiological Therapeutics," Dr. S. S. Cohen, Philadelphia; "Electro-Therapeutics," Dr. W. J. Morton, New York; "Orthopedics," Dr. R. A. Hibbs, New York; "Dermatology," Dr. E. B. Bronson, New York; "Laryngology and Rhinology," Dr. C. H. Knight, New York; "Genito-Urinary," Dr. James Pedersen, New York; "Pediatrics," Dr. N. P. Barnes, Washington; "Obstetrics," Dr. E. H. Grandin, New York; "Neurology," Dr. Frederick Peterson, New York.

THIRD DAY, JUNE 4.

The following officers were elected for the ensuing year: President, Dr. Oliver T. Osborne, New Haven; first vice-president, Dr. J. N. Hall, Denver; second vice-president, Dr. Carl Beck, New York; third vice-president, J. V. Shoemaker; censors, Drs. E. H. Long, Buffalo, T. E. Satterthwaite, New York, D. O. Leech, Washington; members of the Judicial Council, for the term ending 1909; Drs. T. E. Satterthwaite, New York, H. H. Barker, Washington, J. Blake White, New York; chairman of the Executive Council, Dr. R. W. Wilcox, New York. The next meeting of the Society is to be held in Philadelphia May 4, 5 and 6, 1905.

## THE OBSTETRICAL SOCIETY OF BOSTON.

MALCOLM STORER, M.D., SECRETARY.

MEETING of April 26, 1904, the President, DR. J. B. SWIFT, in the chair.

DR. J. BAPST BLAKE reported

A CASE OF URETERAL CALCULUS.[1]

DR. J. G. BLAKE: Many years ago I was called to a young man suffering from enormous distention of one of his kidneys. I had Drs. G. W. Gay and A. T. Cabot see him in consultation, and they concurred with me that his condition was not such as to warrant an operation. He died shortly afterwards, and at the autopsy it was found that the distended kidney had perforated the diaphragm and that one pleural cavity was filled with urine. The corresponding ureter was as large as a piece of garden hose, and at the point where the ureter enters the bladder it was blocked by a calculus nearly, if not quite, as large as the one the reader has shown. It was L-shaped, with the small end projecting into the bladder. In talking the matter over with Dr. Fitz he suggested that the calculus probably could have been felt by rectal examination, but that did not occur to us.

DR. D. MCINTIRE: I was present at Dr. Keyes' operation on this case. A stone was removed about a third the size of the one the reader has shown. At that time a bougie was passed down into the bladder without encountering anything. I feel that the stone Dr. Blake removed must have been present at the time of the first operation, as it seems almost too large to have grown in the short space of time between the two operations. On the morning of the day when I called Dr. Blake, the distended portion of the kidney showed a distinct cyanotic hue which had been relieved by the escape of some pus.

DR. B. TENNEY: In looking over the literature on the subject in connection with the article to which Dr. Blake has referred, I found only two cases in which the stone ruptured the wall of the ureter. One of these was a boy who had a collection of urine with pus in the left iliac region.

The other was a case referred to by Sir Spencer Wells in which a calculus ulcerated into the rectum from an abscess in the vicinity of the prostate, and which was supposed to be a ureteral calculus. There is no case on record where a ureteral calculus has ruptured into the peritoneal cavity, so far as I know.

Among the interesting problems which suggest themselves is that of the possibility of dissolving these calculi by chemical action, and occasionally such a case is reported. One such case, which provoked considerable discussion at the time, had the typical symptoms and showed an x-ray shadow which disappeared after the use of one of the modern "solvents." I have been told by the gentleman who reported the case that three years later this same kidney was operated upon and stones were removed.

It is apparently true that renal and ureteral calculi are more common in women, and vesical calculi are more often found in men. The first condition may be due to the greater frequency of bladder infection in women which may result in ascending infection of the ureters and renal pelves.

The greater frequency of stone in the male bladder has been accounted for by the difference in the length and dilatability of the two canals, the female urethra allowing fragments to escape, while the same size would remain in the male bladder and form nuclei for larger vesical stones. It seems to me that their escape from the bladder depends entirely upon the size and location of the internal meatus which does not differ in the two sexes, except as it may be distorted by prostatic deformity, and this we now know to occur even in the young male more frequently than was formerly believed.

The most interesting question is that of the formation of these stones. According to the researches of Ebbstein and Nicolaier, it appears that animals of various kinds fed on oxamine, after a time develop areas of necrosis in the epithelium of the pelvis of the kidney, and the dead cell material from these necrotic areas forms nuclei around which the urinary salts deposit. These show later as renal, ureteral or vesical calculi. Their theory is that necrosis of this epithelium, following infection, or excretion of some irritant poison,

[1] See page 463 of JOURNAL.

or the combination of the two, is an adequate and probable cause for the formation of these calculi in the human individual. Until a more plausible theory is presented this will stand, and the constant and thorough flushing of the urinary channels with pure water will remain the most successful way of preventing these interesting, but undesirable, deposits.

Dr. H. E. Marion: I recall a case in which the passage of a calculus was proved in a rather unusual manner. From a patient's symptoms I suspected the passage of a renal calculus and told the man to be on the watch for it. Some months later he experienced a sudden pain during coitus and the calculus was found in his wife's vagina.

Dr. J. B. Blake: It is greatly to be regretted that an autopsy could not have been obtained, but that was out of the question. All that was permitted was the passage of a sound into the bladder which showed that there was no calculus in it. I have no idea when the stone in the ureter first appeared. Theoretically, if a stone blocks the pelvis of the kidney, the kidney contracts, while if the ureter is only partially blocked, the kidney dilates. Here, however, the ureter may have been partially blocked for years and its final total occlusion only caused by the rapid increase in size of the stone in the last few months of the patient's life.

Dr. L. V. Friedman reported

A CASE OF COMA AFTER LABOR.[2]

Dr. J. B. Blake: As bearing on the use of forced liquids in this case under the supposition that it was possibly eclampsia I have been much interested in the conclusions of Van Noorden, who has shown that in certain cases of nephritis the ingestion of large quantities of water is practically the worst thing that can be done, as the kidney is irritated by even the passage of water. This statement from so good an authority is so contrary to the recognized methods of treatment that it deserves careful attention.

## Recent Literature.

*Food Inspection and Analysis.* By Albert E. Leach, S.B., Analyst of the Massachusetts State Board of Health. First Edition. pp. 787. 278 illustrations, including a large number of photomicrographs of genuine and adulterated articles of food. John Wiley & Sons. 1904.

This comprehensive volume is undoubtedly the best work upon food analysis and inspection yet published in English. The duties of a food analyst, as here set forth, comprise much more than is embraced in the term "analytical chemist," since there are very many articles of food wherein the fact of adulteration is determined, not so much by chemical analysis, as by the use of the compound microscope, aided by the well-developed senses of smell, taste, sight and feeling.

In the twenty years or more of work performed in the laboratories of the Massachusetts State Board of Health, about 150,000 samples have been examined, embracing every variety of food, whether liable to adulteration or not, and the results of this labor are intelligently set forth in this volume.

The following topics show the scope of the work: Food analysis and state control; the laboratory and its equipment; food, its functions, proximate components and nutritive value; general analytical methods; the microscope in food analysis; milk and milk products; flesh foods; eggs; cereals, legumes, etc.; tea, coffee and cocoa; spices; edible oils and fats; sugar and saccharine products; alcoholic beverages; vinegar; artificial food colors; food preservatives; artificial sweeteners; canned vegetables and fruit products; flavoring extracts.

In an appendix, further information is presented relative to the use of the immersion refractometer, the detection of added water in milk and the adulteration of maple sugar and syrup.

In general the author deals with the composition of food and gives such analytical processes as are most needed by the sanitary chemist, or by the student who wishes to become familiar with the proximate constituents of food materials. Brief synopses of processes of manufacture and of preparation of certain foods are given, in cases where impurities are suggested incidental to their preparation.

The photomicrographs are of three kinds: 1. Illustrations of powdered pure foods and powdered adulterants; 2. Chosen types of adulterated foods; 3. Permanently mounted sections of foods and their adulterants.

Aside from the practical value of the work, it is delightful to find in the dedication the following tribute to the character of one whose transparent virtues have left to all fellow workmen in the field of public health, a fragrant memory.

"Affectionately dedicated to the memory of
*Charles Pomeroy Worcester,*
former analyst of the Massachusetts State Board of Health, whose lovable personality and sterling integrity were a constant inspiration during many years of close companionship to the author."

*Epilepsy and its Treatment.* By William P. Spratling, M.D., Medical Superintendent of the Craig Colony for Epileptics. 8vo. pp. 522. With 30 plates and 16 illustrations in the text. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

The volume before us is based upon the writer's experience as superintendent of the Craig Colony, and contains many statistics drawn from the records of that institution, tabulated with painstaking care. Beyond these statistics, however, the work is unsatisfactory. Familiar authorities are quoted *verbatim*, and the familiar facts concerning epilipsy are once more rehearsed at length with statistics to show the relative frequency of certain conditions, but, with a single exception, we gain very little new light upon the subject, and the study of the literature of the subject has been quite superficial. Moreover, the book labors under the defect of having been written from the asylum standpoint. The importance of asylum care is unduly emphasized, and the author's views are naturally colored by statistics and experience of the worst type of cases. The physician who has to do with the large class of mild epileptics who

[2] See page 464 of Journal.

do not need asylum treatment will, therefore, often fail to find the information he needs. Furthermore, the writer apparently lacks a general knowledge of nervous diseases to aid him in elucidating that difficult problem of diagnosis between idiopathic epilepsy and other forms of convulsive disease. Drs. L. Pierce Clark and Thomas Prout have written a chapter on the pathology of epilepsy which is in striking contrast to the rest of the book. Not only are they familiar with the recent literature, but their own work, already published, is of high value and a definite advance in our knowledge of the subject. Dr. Clark also adds a chapter on the status epilepticus which is also worthy of praise.

*A Practical Treatise on Genito-Urinary and Venereal Diseases and Syphilis.* By Robert W. Taylor, A.M. M.D., Clinical Professor of Genito-Urinary Diseases at the College of Physicians and Surgeons (Columbia University), New York; Consulting Genito-Urinary Surgeon to Bellevue Hospital and to City (Charity) Hospital, New York. Third Edition. Philadelphia and New York: Lea Bros. & Co. 1904.

The third edition of this work is secure of the welcome which the previous works of its author have always received. It has been improved, as compared with the former editions, by the revision which it has undergone whereby it has in most respects been brought up to date. It is essentially practical, and presents in small compass the more important features of the special subjects composing it, in a manner which permits the student to pick them out and assimilate them readily, and which avoids the contrary qualities seen in some of the more extended works, which sometimes hide much that is good in a too great mass of detail. The custom of combining syphilis together with genito-urinary surgical diseases in one volume has always seemed to us to be objectionable, and if our opinion on this point is correct, the work is open to the criticism of having followed this plan which is, however, that which has usually been adopted by the writers on the subjects. There seems to us to be a lack of a proper sense of proportion with respect to the relative prominence given to certain of the subjects of minor importance as compared to some of those of greater interest and consequence. For example, seven pages are devoted to the consideration of varicocele, and not quite a page to cystoscopy.

Again, the whole subject of the affections of the kidney is included in eighteen pages, a page and a half to renal calculus, and the matter of kidney operations is compressed into two pages, while there are eighty-six pages given up to gonorrhea. We should be sorry to have had any of the latter omitted, but equally we should have appreciated a few additional ones addressed to some of the more important divisions of the subject. The venereal maladies are better and more fully rendered than some of the more surgical aspects of the subject. The illustrations, most of which are original, are admirable, and the arrangement and sequence of the headings and divisions is logical and excellent.

*Dudley's Gynecology.* A Treatise on the Principles and Practice of Gynecology. By E. C. Dudley, A.M., M.D., Professor of Gynecology in the Northwestern University Medical School, Chicago. New (4th) Edition. Revised and enlarged. Octavo, 771 pages, with 401 illustrations, of which 50 are in colors, and 18 full-page colored plates. Lea Brothers & Co., Phila. 1904.

This fourth edition is practically a new book because of extensive revisions and additions. The author's classification of the different diseases according to their causation and pathology, instead of the usual classification according to the organ or part in which the disease is located, is somewhat confusing to the average reader, although a search for any given topic is rendered less difficult by a good index. Its advantages are shown in the grouping together of vulvitis, vulvo-vaginitis and vaginitis and describing them as one disease, these affections being almost invariably associated in practice.

It is refreshing to note the absence of advertisements of instrument makers; for the most part instruments are figured only as they appear while in use in the various operative procedures. The headings and sub-headings are so numerous and so clearly printed that there is no excuse for the student's going astray; it is questionable, however, whether by such a free use of headings and the placing of so much of the text in columns, space has not been wasted and the bulk of the book needlessly increased.

The treatment of eczema vulvæ seems to us rather insufficient, and the amount of space devoted to pruritus vulvæ altogether too large. We regret to note that the Emmet curette forceps, as an adjunct to the curette, and also the bivalve speculum, two very useful instruments, have no place in the book. The chapter on chorio-epithelioma is neither as full nor as explicit as the importance of the disease merits, and, in the discussion of the operative treatment of chronic inversion of the uterus, there is no reference to the work of Oui and the more recent operations for the relief of this condition. In the treatment of mal-locations of the uterus, as they are styled, lateral elytrorrhaphy has been abandoned, and the author's new operation on the anterior wall of the vagina is substituted.

Illustrations are very freely used; they are mostly original and are well executed. The original plates on pages 491, 492 and 493, showing the development of the generative organs, are the most satisfactory we have seen. The portions of the book treating of plastic surgery, especially the chapters on genital fistulæ, are the work of a master in this department and merit careful study.

The author has treated the diseases of women from a medical as well as from a surgical point of view. The book is clearly and concisely written; it is brought well up to date, and repre-

sents not only Dr. Dudley's ripe experience, but also the best culled from the literature; it is altogether one of the best textbooks of gynecology in the English language.

AMERICAN EDITION OF NOTHNAGEL'S PRACTICE.

*Tuberculosis and Acute General Miliary Tuberculosis.* By DR. G. CORNET, of Berlin. Edited with additions, by WALTER B. JAMES, M.D., Professor of the Practice of Medicine in the College of Physicians and Surgeons (Columbia University), New York. Authorized translation from the German, under the editorial supervision of ALFRED STENGEL, M.D., Professor of Clinical Medicine, University of Pennsylvania. Octavo volume of 806 pages. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

This is the seventh volume to be issued in Saunders' American Edition of Nothnagel's Practice. Four more volumes are promised for early publication.

This volume appears at a time when the subject of tuberculosis is exciting unusual attention within the profession and on the part of the general public. The work is worthy of the series to which it belongs and of the names on the title-page, and that is saying much. The editor has performed his functions judiciously in bringing the book well to date, both in its arrangement and in the additions.

*A Manual of Practical Medical Electricity.* By DAWSON TURNER, B.A., M.D., F.R.C.P.E. Fourth edition, revised and enlarged. 8vo. pp. xxiv, 435. With 200 illustrations. New York: William Wood & Co. 1904.

This new edition has been thoroughly revised and contains over thirty new illustrations and about forty pages more of text. The additions have been mainly in the last section, on Röntgen rays, radium radiations, the Finsen light and high frequency currents, bringing the work fully up to date. We can merely repeat the commendation expressed of the previous edition.

*Portfolio of Dermochromes.* By PROFESSOR JACOBI. English adaptation of text by J. J. PRINGLE, M.B., F.R.C.P. Vol. II. New York: Rebman Company.

The second volume of very excellent illustrations of cutaneous affections by the process known as citochromy, the invention of Dr. Albert of Munich, has appeared, and maintains excellently the high standard set by its predecessor, which we have before noticed. The illustrations rank among the best pictorial expressions of skin diseases, and the work is to be heartily commended.

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ACCORDING to the *Journal of the American Medical Association*, a smallpox patient at the Isolation Hospital in Chicago gave birth to a boy baby October 10, and within twenty minutes of its birth the child had been vaccinated.

THE BOSTON
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## A DEFENCE OF THE APPENDIX.

WE have so often been told that the appendix is a useless organ and that its removal, far from having any deleterious effect upon the economy, serves only to remove an ever-present danger that it is with a feeling of positive satisfaction that we turn to the latest Huxley lecture on the subject of "The Function of the Cecum and the Appendix." The lecture this year was delivered by Mr. Macewen, regius professor of surgery at Glasgow, whose words on the subject should be given a most careful consideration. In general, his attitude toward the inquiry is that presumably neither the cecum nor the appendix is so useless as ordinarily maintained and that they may even be of actual value in the processes of digestion. He apparently has small sympathy with the tendency, frequently enough observed, of removing the appendix at the slightest possible cause, and even, as we believe is at times done, removing it, although healthy, when the abdomen has been opened for other purposes.

Acknowledging the fact that he may be out of fashion, Mr. Macewen still holds to the possibility that the appendix may have some utility and therefore should not be so lightly tampered with. "One would prefer," he says, "normal man as he comes into this world to the pared and mutilated animal which would be produced if the attempts for betterment which some folks propose were carried into effect. With all his alleged imperfections, normal man is a much more perfect animal than the physiologist or the surgeon can make him."

Regarding the appendix, the whole question comes down to the point as to whether or not the appendix is a wholly useless organ. To answer this question, which he sets himself, it is essential to consider the cecum and appendix together.

This he does in a most lucid manner, and finally concludes that inasmuch as man is both a carnivorous and an herbivorous animal, analogous with other animals lower in the scale, man should possess not only a stomach and small intestine but also a cecum, the cecum being of moderate size because of the varied character of his diet, and because the vegetable food consumed is usually of the more tender and nutritive varieties.

Mr. Macewen brings to his task a large series of data obtained from observations on men wherein various operations had been done upon the lower intestine, proving to his mind that the arrest of the function of the cecum resulted in disturbed digestion, showing itself in diarrhea and in a general diminution of strength. He finds also, as a result of observations of the cecum through defects in the abdominal wall, that movements analogous to peristalsis occur in this portion of this intestinal tract, and that some of these cecal movements originate in the appendix, undulatory movements running from the appendix and leading secondarily to the contraction of the cecum. Further investigations along the same general line have led to the conclusion that there is a nervous mechanism which regulates the movements of the appendix and cecum, and also controls the ileo-cecal valve, and that the exudations of the appendix and cecum may be augmented or diminished under varying circumstances. The secretions of the appendix Mr. Macewen regards as probably a valuable aid to digestion. Admitting, then, as he believes he has proved, that the cecum and appendix perform an important part in the final stages of digestion, it is not surprising that interference with the function of this part should give rise to disease. It is, therefore, the fact that, varied as the causes of appendicitis may be, most of them are closely associated with the digestive processes, as shown, for example, by Deaver's wide experience. Granting this, certain lessons as to prevention may be learned.

Mr. Macewen closes his altogether suggestive lecture by certain eminently practical remarks concerning one's mental state during digestion, the habit of rapid eating and various other ills which the hurry of modern life entails. It is urged that a free mind with the hope of enjoyment of the food, thorough mastication in order that the processes of gastric digestion may have a good beginning, and, therefore, the later digestive processes be the better carried out, should act as a prophylaxis. Mr. Macewen's final paragraph, modest in statement, but suggestive for further investigation, is as follows:

"For many years I have believed that the human cecum and appendix are of value in digestion. The facts pointing in that direction have accumulated slowly, and are not all garnered; many require still to be investigated. One would have preferred to have waited until they were gone over again, re-tested, and either verified or dropped out. But 'Art is so long' that I have ventured to present you with an unfinished picture, which I hope some of you will be able to correct and finish. What has been said is merely a contribution to the subject. In dealing with it in the future remember what Huxley says: 'Let us sit down before fact as a little child, be prepared to give up every pre-conceived notion, and to follow humbly wherever Nature may lead.'"

As we suggested at the outset, it is a relief to learn that the appendix possibly has a use and that its conservation is amply justified by physiological facts. That a great many people get along exceedingly well without the appendix is unquestioned, but that those of us who still retain the organ may continue to live with a clear conscience is a gratification.

## REPORT OF THE SURGEON-GENERAL OF THE UNITED STATES ARMY.

The report of the Surgeon-General of the Army to the Secretary of War for the year ending June 30, 1904, has just reached us. The pamphlet as usual contains a large amount of information regarding the medical service of the army, all of which no doubt is of great interest to the service itself, and much of which is likewise of interest to physicians at large.

The army medical school has apparently met with success in its training of men in the peculiar duties which now face the physician serving in the army. The last session of this school ended April 5, 1904, with a class of twenty-seven student officers, all being assistant surgeons recently appointed in the medical corps of the regular army. Certain changes in the course have been effected whereby it is believed a better estimate of the probable value of young medical men may be obtained so that as soon as they begin their duties as commissioned officers they will be proficient in an administrative capacity. It is of interest to note the fact that the contract surgeons of the army have reached the lowest number since 1898. The loss during the year was forty-seven, leaving two hundred and twenty-nine in service at the close of the fiscal year. The contract dental surgeons, to whom we have previously

alluded, are now maintained at the number of thirty, allowed by act of Congress in 1901. They are kept constantly employed.

The medical department of the army has had an exhibit at the St. Louis Fair, consisting of a field hospital with a capacity of one hundred and eight beds. The hospital wards comprise eighteen tents of the Munson pattern, and the arrangement of the various tents is such as would obtain in actual service. This exhibit has received commendation from visitors. In addition a daily exhibition drill by a detachment of the hospital corps is given in first aid to the wounded, litter drill, various means of transporting wounded, etc. These drills have proved a source of attraction to visitors to the fair. The nurse corps has been maintained at its maximum strength of one hundred nurses on active duty, and during the year upwards of three hundred graduate nurses have applied for positions on this corps. These nurses, for whom there is an increasing demand, are assigned especially to five hospitals, two in the United States and three in the Philippines. A plea is made for a more generous provision for the subsistence of this body of nurses who have proved themselves efficient and alive to the dignity of their position.

The general health of the army has steadily improved since the Spanish War, owing largely to various sanitary improvements which have been carried out in the conditions under which soldiers live. It is especially gratifying that there has been a decided diminution in illness in the Philippines and in Cuba and Porto Rico. With an average strength of 19,029 troops in the Philippine Islands, 1,074 were sent home because of illness during the year, and there were two hundred and seventy deaths among the American troops remaining on the islands. Those sent home were chiefly incapacitated through intestinal disease. Tuberculosis played a small part, and malaria also has not proved so great a menace as was expected. Interesting statistics are given of the race prevalence of disease in the Philippines. From this it appears that the Filipinos showed a higher rate of admission for disease during the year than the white troops. Malarial fever, beri-beri and smallpox were more prevalent among the Filipinos, whereas dysentery, disease of the nervous system and measles were more prevalent among the white soldiers.

The pamphlet takes up many other points of positive interest, for the discussion of which we must direct the reader's attention to the original document. The volume ends with a classification of diseases based on an official nomenclature in use since 1895 with a slight modification necessitated by advancing knowledge and changed conditions. Beginning with this year, army statistics will be based on the international classification, thereby leading to a still more satisfactory and generally useful basis of statistical comparison.

## SUPPRESSION OF QUACKERY.

The Comitia Minora (Executive Council) of the Medical Society of the County of New York has issued a statement to the public in regard to the suppression of quackery. Having referred to the publicity given by the neswpapers to the paper on "Medical Quacks," recently read by the counsel of their society before the Society of Medical Jurisprudence, it is mentioned that on one point alone does there seem to be any misapprehension. Several papers have asked why, with many thousand charlatans now practicing in New York, the County Society has succeeded in convicting only about five hundred of them in five years. It was therefore determined to make an official statement giving the reasons why the percentage of cases taken up is so small, and these reasons are presented as follows:

(1) Lack of funds. In order to make the work of the society as effective as possible, its scientific features have been curtailed for the purpose of devoting the funds in the treasury to the suppression of dangerous quacks. For the past five years every dollar available has been expended for this purpose.

(2) Inherent difficulties in the nature of prosecutions. In scarcely one case out of a hundred will the real victims of the charlatan consent to give evidence. They report their cases to the society on condition that they shall not be called as witnesses. This is to avoid the exposure, humiliation and disgrace which in many instances would follow publicity. The society is therefore obliged to procure its own evidence at great expense against the charlatans it prosecutes.

(3) Radical defects in the medical law. There is no definition as to what constitutes the practice of medicine in the state of New York, and until the legislature furnishes a satisfactory definition great uncertainty will exist. The society has repeatedly asked the legislature for such a definition, and has been as often refused.

(4) Failure of the newspapers to co-operate. The modern charlatan could not exist without

the publicity given his advertisements by the press. If the papers would refuse advertisements of drugs for a criminal purpose, of illegal lying-in establishments, of the so-called specialists for diseases of men only, and of the "consumption cure" frauds, it would not be difficult for the society, even with its present lack of funds, to rid the community of the chief offenders. These vicious advertising charlatans draw their recruits from innocent victims attracted by the advertisements unblushingly received by many New York newspapers.

## MEDICAL NOTES.

Insanity in the Philippines. — According to a recent report of the Board of Health of the Philippine Islands, the returns so far as ascertainable show that there are 4,015 insane persons in the various provinces, of whom 2,164 are males and 1,851 are females. Accommodations are needed for at least 5,000 insane patients.

The Boarding-out of the Insane in Private Families. — The Commissioners of Lunacy in New York in their recent annual report give special consideration to the boarding-out of the insane in private families. The various resolutions unanimously passed at the Congress of Alienists at Antwerp in 1902 in favor of the application of family care to its fullest extent as a recognized and valuable means of providing for a large number of the chronic, dependent insane are quoted and allusion is made to the successful working of the boarding-out system in Massachusetts. The commission accordingly recommends the passage of an act to so amend the insanity law of New York as to secure the adoption of this system in that state as a part of the general scheme of caring for the insane. The provisions of the proposed act are largely the same as those in force in Massachusetts.

Officers of Mississippi Valley Medical Association. — The following officers were elected at the thirtieth annual meeting of the Mississippi Valley Medical Association, held at Cincinnati, O., Oct. 11–13: President, Bransford Lewis, M.D., St. Louis; first vice-president, Frank Parsons Norbury, M.D., Jacksonville, Ill.; second vice-president, J. H. Carstens, M.D., Detroit, Mich.; secretary, Henry Enos Tuley, M.D., Louisville, Ky.; assistant secretary, John F. Barnhill, M.D., Indianapolis, Ind.; treasurer, S. C. Stanton, M.D., Chicago, Ill.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon Oct. 26, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 59, scarlatina 21, typhoid fever 33, measles 1, smallpox 0.

Reception for Dental Students. — The Administrative Board of the Dental School of Harvard University held an informal reception for the students of the school at the Harvard Union, Cambridge, on Saturday evening, Oct. 22. President Eliot made an address.

The Boston Society of Medical Sciences. — A meeting of the society was held at the Harvard Medical School Oct. 25. The following papers, forming the third annual report of the Cancer Committee of the Harvard Medical School, were presented: Dr. F. B. Mallory: A contribution to the classification of tumors. Dr. R. B. Greenough: On the nature of the cell inclusions of cancer. Dr. Walter C. Howe and Dr. Robert Vose: The effects of the Röntgen ray on cancer. Dr. Edward H. Nichols: Implantation of tissue and its relation to cancer.

### NEW YORK.

Medical Quacks. — At the Society of Medical Jurisprudence on Oct. 10, C. S. Andrews, counsel for the Medical Society of the County of New York, read a paper on "Medical Quacks, Their Methods and Dangers." In the course of it he commended the high-class daily newspapers which refuse to print medical advertisements, and stated that no less than fifty advertisers in one New York paper had been convicted of breaking the laws.

Vaccination in Public Schools. — The right of public schools in the state of New York to exclude from attendance pupils refusing to be vaccinated was affirmed by the Court of Appeals on Oct. 18. The appeal in the case at issue was brought by Edward C. Viermeister of Brooklyn, who declined to comply with the regulations of the New York City Board of Education and have his ten-year-old son, a pupil at School No. 12 in Brooklyn, vaccinated. The Court of Appeals upholds the constitutionality of section 200, chapter 661 of the laws of 1903, enforcing the vaccination of public school children, and approves the action of the lower courts, which decided that this statute was a legitimate exercise of police power. The appellant argued that vaccination did not prevent smallpox and that the operation practically amounted to assault.

# Obituary.

## FRANCIS BOOTT GREENOUGH, M.D.

Francis Boott Greenough was born in Boston, Dec. 24, 1837, and died in Brookline, Oct. 16, 1904, in the sixty-seventh year of his age. When a lad of seven years he was taken in a sailing packet by his parents, Mr. and Mrs. Henry Greenough, to Europe, where he remained for five years. On their return the family settled in Cambridge and the boy was sent to the high school. Mr. Epes Dixwell prepared him for college, and he graduated at Harvard in the class of 1859. The following autumn he entered the Lawrence Scientific School and studied engineering and higher mathematics under Prof. Henry Eustis. He also assisted his father in architectural work and was sent to Pisa, Italy, in 1860, to perfect himself in what was at that time intended to be his future calling. But a strong taste for medicine led him finally to abandon architecture and to enter the medical school at Pisa. Although he did not graduate at this institution, he remained there for one or two years and brought back with him to this country many interesting reminiscences of the medical practice in Italy at that period. It is interesting to recall the fact that it was still a common occurrence in Pisa to perform surgical operations without an anesthetic, and Dr. Greenough often referred to the part which as a student he used to play in holding the patient down while the knife or cautery was being used.

On his return to this country he entered the Harvard Medical School where he graduated in 1866, having also served a year as interne or, as it was then called, " house pupil," at the Massachusetts General Hospital. Near the close of the Civil War he served as acting assistant surgeon to the Portsmouth Grove Hospital and also at Elmira.

After graduation he passed the year 1866–67 in Vienna where he became one of the early American contingent which counted many names well known in medicine in Boston to-day. Among his experiences there was an opportunity to study cholera which on his arrival was causing one hundred deaths a day. A large service of the Allgemeines Krankenhaus was devoted to this disease. Although the wards were neat and orderly, there was no special attempt at isolation, and cases of smallpox and other contagious diseases were admitted freely to Oppolzer's wards at that time for the purposes of teaching.

On his way home he passed through Paris, where in company with his cousin, the late Dr. T. B. Curtis, he had an opportunity to become familiar with the most interesting features of hospital practice of the French school at that period. He began practice in Boston in 1867, and we find him enrolled as one of the physicians of the dispensary in that year. His service there was a long one, and his wide experience and excellence as a general practitioner of medicine and surgery made him a valuable member of the staff. In 1874 he was made physician to the department of diseases of the skin, where he remained in continuous service until about the year 1892. He had gradually withdrawn during this period from the practice of general medicine, though many of his old patients constantly sought his advice. He was lecturer on venereal diseases in the Harvard Medical School from 1871 to 1875; clinical instructor in the same, 1875–95. He was elected a member of the American Dermatological Society in 1878, and was president of the same in 1890–91. He was also a member of the Association of Genito-Urinary Surgeons, and a member of the Boston Dermatological Club.

He was a valuable man in all these positions, honorable, straightforward, reliable, in every word he spoke or wrote. His principal dermatological articles were on herpes progenitalis, scabies and psoriasis. He was one of the first to do away with the local cauterizations and to pave the way for the more rational treatment of the present day. He was not a voluminous writer, but he was an excellent observer and good diagnostician and gifted with enviable common sense which characterized all his writings and discussions. His opinions were, therefore, held in high repute by his colleagues.

No man of his time in college was better liked as a friend and companion than " Frank " Greenough. To a naturally frank and affectionate nature there was added a never failing politeness and charm of manner which endeared him to all with whom he came in contact. Although not an ambitious student while in college, his subsequent course in the scientific school was marked by unusual ability. Had he chosen architecture as a profession, he would have been most successful, inheriting as he did the fine artistic perceptions of his family. Indeed, to the end of his life his greatest enjoyment perhaps was in the gratification of his critical judgment in all departments of art.

He had been so situated as to be able to select the best there was in the educational facilities of the day from many quarters, and these opportunities, combined with a remarkable power of quick adaptation to the work in hand, produced a man skilled in many languages and of a versatility quite exceptional. He enjoyed to an unusual degree the gift of mechanical dexterity, and this, with a great love of scenery and of animals, led him often into the woods, not only to fish and shoot, but to study nature from an intelligent and thoughtful standpoint.

He was a most indefatigable reader and a keen judge of men, and possessed much acumen and sagacity in estimating character. All these qualities combined to make a man of most agreeable social qualities, which made him popular with both young and old of many clubs and societies, and at the same time one who was regarded by his professional colleagues as an expert of the highest standing in his chosen specialty.

A long invalidism had somewhat impaired his

faculties, but under skilled treatment he seemed for a while to be regaining strength when a pronounced diabetes brought a speedy end to his illness.

Although Dr. Greenough had dropped out of the professional and the social world for many years before his death, he has left behind him many delightful memories and many a faithful friend to mourn his loss.

## Miscellany.

### COMMISSION FOR INVESTIGATION OF ACUTE RESPIRATORY DISEASES.

The Commission for the Investigation of Acute Respiratory Diseases, in New York, for the purposes of which Dr. Darlington, president of the Board of Health, recently secured an appropriation of $10,000 from the Board of Estimate and Apportionment, met and organized at the offices of the Health Department on Oct. 18. It is composed of the following distinguished physicians, who, it is understood, render their services gratuitously: Theobald Smith of Harvard University, T. Mitchell Prudden, Edward G. Janeway and L. Emmett Holt of New York, John H. Musser of Philadelphia, William Osler and William H. Welch of the Johns Hopkins University, Baltimore, and Frank Billings of Chicago; together with Thomas Darlington, president, and Hermann M. Biggs, medical officer, of the New York Board of Health. Dr. Darlington made the statement that in New York there had been a steady increase in the death-rate from respiratory diseases since 1886. In the first six months of the present year there were 42,700 deaths in the city, of which 43% were due to respiratory diseases and 19½% to pneumonia alone. It had, therefore, become urgent that additional measures should be taken for the prevention of these diseases and that the public should be more fully instructed how to guard against them. Dr. Janeway was elected president, and Dr. Prudden, secretary of the commission. After a general discussion of the matter in hand it was decided to make a systematic study of acute respiratory diseases as they occur in New York, taking into consideration such data as the following: The character of the germ of pneumonia; the frequency of the occurrence of the germ; the virulence of the occurrence; evidences of communicability; the beneficial effects of thorough mouth disinfection; seasonal relations to the diseases and their occurrence in hospitals and kindred institutions; the geographical relations of pneumonia. Two committees were appointed, one to consider the subject from a clinical point of view, and the other to deal with its bacteriological and pathological aspects. The first consists of Drs. Janeway, Osler, Musser, Billings and Holt, and the second of Drs. Welch, Prudden and Smith.

### RECORD OF MORTALITY

For the Week ending Saturday, October 15, 1904.

| Cities. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid Fever. | Diarrheal Diseases. |
|---|---|---|---|---|---|---|---|---|
| New York . . | 3,908,644 | 1,222 | 413 | 28.97 | 11.78 | 2.13 | 2.13 | 9.08 |
| Chicago . . . | 2,021,086 | 424 | 140 | 30.89 | 8.25 | .94 | 1.65 | 11.08 |
| Philadelphia | 1,407,968 | — | — | — | — | — | — | — |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 181 | 52 | 25.97 | 7.73 | 1.10 | 3.31 | 5.52 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 108 | — | 21.29 | 11.11 | 5.55 | 4.63 | 7.41 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 58 | 15 | 22.41 | 12.06 | — | — | 6.90 |
| Boston . . . | 617,950 | 161 | 47 | 21.74 | 13.66 | 1.86 | 4.35 | 8.69 |
| Worcester . . | 136,925 | 25 | 5 | 20.00 | — | — | — | 8.00 |
| Fall River . . | 119,349 | 39 | 16 | 28.20 | 12.82 | — | — | 15.38 |
| Lowell . . . | 104,402 | 34 | 17 | 26.47 | 14.70 | 5.85 | — | 2.94 |
| Cambridge . | 100,998 | 22 | 5 | 22.72 | 9.09 | 4.54 | 4.54 | — |
| Lynn . . . . | 73,875 | 15 | 4 | 26.66 | — | 6.67 | 6.67 | — |
| Lawrence . . | 72,348 | 16 | 8 | 37.50 | 6.25 | — | — | 18.75 |
| Springfield . | 72,020 | 26 | 3 | 15.38 | — | 3.85 | 3.85 | — |
| Somerville . | 70,413 | 17 | 4 | 23.53 | 5.88 | — | — | 5.88 |
| New Bedford | 68,863 | — | — | — | — | — | — | — |
| Holyoke . . . | 50,538 | 21 | 10 | 33.33 | 14 28 | 4.76 | — | 4.76 |
| Brockton . . | 46,601 | 11 | 3 | 27.27 | — | — | 9.09 | — |
| Newton . . . | 39,310 | 7 | 3 | 14.30 | 28.60 | 14.30 | — | — |
| Haverhill . . | 39,061 | 7 | 1 | 14.30 | 14.30 | — | — | — |
| Malden . . . | 37,205 | 13 | 1 | 30.80 | 7.70 | — | — | 7.70 |
| Salem . . . . | 37,188 | 5 | 1 | 20.00 | — | — | — | — |
| Chelsea . . . | 36,499 | 6 | 2 | 50.00 | — | 50.00 | 16.67 | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 9 | 4 | 33.33 | 22.22 | — | — | 22.22 |
| Everett . . . | 30,209 | 7 | 1 | — | — | — | — | — |
| North Adams | 29,201 | 3 | 1 | 66.67 | — | 33.33 | — | 33.33 |
| Quincy . . . | 26,798 | — | — | — | — | — | — | — |
| Gloucester . | 26,121 | 9 | 3 | — | — | — | — | — |
| Waltham . . | 25,797 | 9 | 4 | — | — | — | — | — |
| Brookline . . | 23,576 | — | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | 8 | — | 25.00 | — | — | — | — |
| Medford . . | 21,956 | 3 | — | — | 33.33 | — | — | — |
| Chicopee . . | 21,692 | 2 | 0 | — | — | — | — | — |
| Northampton | 20,314 | 11 | 3 | 18.18 | — | — | — | — |
| Beverly . . . | 15,807 | 1 | 1 | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 2 | — | — | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 1 | 0 | — | — | — | — | — |
| Newburyport | 14,478 | 5 | 0 | 20.00 | 20.00 | — | — | — |
| Woburn . . . | 14,315 | 1 | — | — | — | — | — | — |
| Melrose . . . | 13,819 | 6 | — | — | 33.33 | — | — | — |
| Westfield . . | 13,809 | 7 | 1 | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 1 | 0 | — | — | — | — | — |
| Revere . . . | 13,609 | 1 | 1 | — | 100.00 | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 3 | — | 66.67 | — | — | — | — |
| Southbridge . | 11,716 | 4 | 2 | 100.00 | — | 50.00 | — | — |
| Watertown . | 11,575 | 5 | 3 | 20.00 | 20.00 | — | — | 20.00 |
| Weymouth . | 11,350 | 1 | 0 | 100.00 | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 2,517; under five years of age, 774 principal infectious diseases (smallpox, measles, scarlet fever cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 689; acute lung diseases 263, consumption 309, scarlet fever 12, whooping cough 12, cerebrospinal meningitis 18, smallpox 0, erysipelas 2, puerperal fever 7, measles 6, typhoid fever 56, diarrheal diseases 213, diphtheria and croup 53.

From whooping cough, New York 4, Chicago 6, Pittsburg 1, Providence 1. From measles, New York 6. From scarlet fever, New York 8, Chicago 1, Baltimore 2, Pittsburg 1. From cerebro-spinal meningitis, New York 13, Baltimore 1, Worcester 1, Lowell 1, Cambridge 1, Southbridge 1. From erysipelas, Chicago and Providence 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending Oct. 1, the death-rate was 15.6. Deaths reported 4,571; acute diseases of the respiratory organs (London) 85, whooping cough 45, diphtheria 72, measles 66, smallpox 1, scarlet fever 43.

The death-rate ranged from 6.4 in Hornsey to 26.5 in St. Helens; London 14.3, West Ham 12.8, Brighton 12.8, Plymouth 15.6, Bristol 13.4, Birmingham 15.1, Leicester 11.6, Nottingham 15.3, Liverpool 22.6, Bolton 19.9, Manchester 16.8, Salford 22.1, Halifax 13.6, Bradford 16.3, Leeds 16.2, Sheffield 16.6, Hull 18.9, Cardiff 14.8, Rhondda 13.2, Merthyr Tydfil 15.1, Burton on Trent 12.0, Hanley 14.7.

## METEOROLOGICAL RECORD.

For the week ending October 15, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S.. 9 | 30.22 | 54 | 58 | 51 | 85 | 90 | 88 | W | N E | 5 | 4 | O. | O. | .05 |
| M. 10 | 29.92 | 58 | 66 | 50 | 94 | 87 | 90 | E | S W | 5 | 14 | O. | F. | .02 |
| T.. 11 | 29.84 | 59 | 68 | 50 | 83 | 81 | 82 | S W | E | 14 | 20 | O. | O. | .08 |
| W. 12 | 30.32 | 44 | 50 | 38 | 82 | 92 | 87 | N E | N E | 20 | 20 | O. | R. | .84 |
| T.. 13 | 30.26 | 42 | 46 | 37 | 96 | 86 | 91 | N | N | 18 | 10 | R. | O. | .10 |
| F.. 14 | 30.12 | 48 | 57 | 38 | 77 | 67 | 72 | N W | N | 7 | 14 | C. | F. | 0 |
| S.. 15 | 30.16 | 53 | 68 | 38 | 67 | 54 | 60 | N W | N W | 20 | 10 | F. | C. | 0 |
| ☞ | 30.12 | | 59 | 43 | | | 81 | | | | | | | 1.09 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for week.

## OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING OCTOBER 12, 1904.

STONER, G. W., surgeon. Leave of absence for eight days from Sept. 19, 1904, under paragraph 189 of the regulations, amended to read seven days only.

WERTENBAKER, C. P., surgeon. Granted leave of absence for one month from date of joining station at Ellis Island, New York, N.Y. Oct. 8, 1904.

ROSENAU, M. J., passed assistant surgeon. Detailed to represent Service at meeting of the Committee on Antitoxin and Immunizing Sera of the Laboratory Section of the American Public Health Association at New York, Oct. 7 and 8. Oct. 5, 1904.

SPRAGUE, E. K., passed assistant surgeon. Granted leave of absence for seven days from Oct. 11, 1904, under paragraph 191 of the regulations.

FOSTER, M. H., passed assistant surgeon. Relieved from duty at Port Townsend, Wash., and directed to proceed to San Diego, Cal., and assume command of the service at that port, relieving temporary Acting Assistant Surgeon B. V. Franklin. Oct. 10, 1904.

ROBINSON, D. E., passed assistant surgeon. Relieved from duty at Port Townsend Quarantine, Wash., and directed to proceed to Port Townsend, and assume command of the service at that port, relieving Passed Assistant Surgeon M. H. Foster. Oct. 10, 1904.

MCCLINTIC, T. B., passed assistant surgeon. Upon being relieved at Tampico, Mexico, by Passed Assistant Surgeon Joseph Goldberger, to proceed to Washington, D. C., and report at the Bureau for further orders. Oct. 10, 1904.

GOLDBERGER, JOSEPH, passed assistant surgeon. Relieved from duty at Monterey, Mexico, and directed to proceed to Tampico, Mexico, for duty, relieving Passed Assistant Surgeon T. B. McClintic. Oct. 10, 1904.

AMESSE, J. W., assistant surgeon. To proceed to San Francisco, Cal., and report, on Oct. 31, 1904, to the chairman of board convened to determine the fitness of Assistant Surgeon Amesse for promotion to the grade of passed assistant surgeon. Oct. 10, 1904.

COLLINS, G. L., assistant surgeon. Leave of absence for three days from Sept. 30, 1904, granted Assistant Surgeon Collins, under paragraph 191 of the regulations, amended to read one day only. Oct. 6, 1904.

FRICK, JOHN, acting assistant surgeon. Relieved from duty at Brownsville, Tex., and directed to proceed to Laredo, Tex., and report to the medical officer in command for duty. Oct. 10, 1904.

JACKSON, J. M., jr., acting assistant surgeon. Granted leave of absence for thirty days from Oct. 26. Oct. 10, 1904.

LAGRANGE, J. V., pharmacist. Granted extension of leave of absence for sixteen days from Oct. 3. Oct. 6, 1904.

APPOINTMENT.

JOHN M. BELL, of Minnesota. Appointed pharmacist of the third class. Oct. 6, 1904.

BOARDS CONVENED.

Board convened to meet at the Purveying Depot, New York, N. Y., Oct. 31, 1904, for the examination of such assistant surgeons as may present themselves to determine their fitness for promotion to the grade of passed assistant surgeon. Detail for the Board: Surgeon H. W. Sawtelle, chairman; Surgeon G. W. Stoner; Passed Assistant Surgeon C. H. Lavinder, recorder.

Board convened to meet at the Plague Laboratory, San Francisco, Cal., Oct. 31, 1904, for the examination of Assistant Surgeon J. W. Amesse to determine his fitness for promotion to the grade of passed assistant surgeon. Detail for the Board: Passed Assistant Surgeon Rupert Blue, chairman; Passed Assistant Surgeon H. S. Cumming; Passed Assistant Surgeon D. H. Currie, recorder.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING OCTOBER 22, 1904.

E. A. VICKERY, assistant surgeon. Appointed assistant surgeon with rank of lieutenant junior grade, from Oct. 11, 1904.

H. W. COLE, assistant surgeon. Ordered to the Naval Museum of Hygiene and Medical School, Washington, D.C., Oct. 22.

A. M. FAUNTLEROY, passed assistant surgeon. Commissioned passed assistant surgeon with rank of lieutenant, from Sept. 28, 1904.

R. C. HOLCOMB, passed assistant surgeon. Detached from the "Mayflower" and ordered home to wait orders.

## SOCIETY NOTICES.

AMERICAN SOCIETY OF CLINICAL SURGERY.—The third annual meeting of the Society will be held in Buffalo and Cleveland, Oct. 28 and 29, 1904, under the presidency of Dr. G. E. Brewer, of New York.

SUFFOLK DISTRICT MEDICAL SOCIETY.—The stated meeting will be held at the Medical Library, No. 8, the Fenway, on Saturday, October 29, 1904, at 8.15 P.M. There will be a discussion on: The Care and Prevention of Tuberculosis. E. O. Otis, M.D., The Purposes of the Local and National Societies for the Prevention of Tuberculosis. John Winter Brannan, M.D., New York, The Duty of the Municipality for the care of Tuberculous Patients as illustrated by Recent Advances made in New York. Illustrated by the Stereopticon. Walter J. Marcley, M.D., Rutland, Superintendent at the State Sanatorium, Boston Patients who have been unfit for Rutland. Arthur K. Stone, M.D., The Geographical Distribution of Tuberculosis in Boston in 1890 and 1903. To take part in the discussion: Drs. Knight, Durgin, Grainger, Ernst, Shea, Bowditch and others. Business, The election of Nominating Committee. Supper after the meeting.

A. T. CABOT, President. L. R. G. CRANDON, Secretary.

## RECENT DEATHS.

WILLIAM CALDWELL FLOWERS, M.D., M.M.S.S., died in Cambridge, Oct. 20, 1904, aged seventy-two years.

WM. WATKYNS, M.D., died suddenly in Troy, N. Y., Oct. 19, 1904.

SAMUEL WARREN ABBOTT, M.D., M.M.S.S., died in Newton Centre, Oct. 22, 1904, aged sixty-seven years.

## OPERATIONS: BOSTON CITY HOSPITAL.

The following operations will be done and cases shown in the amphitheater of the Boston City Hospital on Oct. 28, from 10 A.M. until 12.30 P.M.: Amputation of Foot; Radical Cure of Inguinal Hernia; Cholecystotomy; Radical Cure of Inguinal Hernia.

## BOOKS AND PAMPHLETS RECEIVED.

The Medical Epitome Series. Toxicology. A Manual for Students and Practitioners. By Edwin Welles Dwight, M.D. Series edited by Victor Cox Pedersen, A.M., M.D. Philadelphia and New York: Lea Brothers & Co. 1904.

Concerning the Specificity of the Somatogenic Cytotoxins. By Richard M. Pearce, M.D. Reprint.

The Experimental Production of Liver Necroses by the Intravenous Injection of Hemagglutinins. By Richard M. Pearce, M.D. Reprint.

Cancer of the Pancreas and Glycosuria. An Histological Study in the Changes in the Islands of Langerhans. By Richard M. Pearce, M.D. Reprint.

Suprapubic Enucleation of the Prostate. By H. O. Walker, M.D. Reprint.

Association of American Medical Colleges. Minutes of the Fourteenth Annual Meeting, Held at Atlantic City, N. J., June 6, 1904.

# Original Articles.

## TREATMENT OF LATERAL CURVATURE.*

BY EDWARD H. BRADFORD, M.D., BOSTON.

A class of curvatures of this kind which come under the surgeon's careful consideration are those characterized by structural changes in the spinal column. Those without such structural changes are amenable to simple measures. The structural changes, leaving out those due to the effect of ostitis, are changes in the elasticity and length of the intervertebral ligaments and spinal muscles, and in the shape and relative positions of the vertebræ and the intervertebral cartilages, and also with the ribs connected with these vertebræ.

Considering the importance of the subject and the value of an erect figure to the working man or woman, the dangers of distortion children are exposed to at school and elsewhere, the possibility of prevention, and the need of careful supervision for years by the family physician, it might be considered strange that the subject had excited so little interest among general practitioners. The subject has not usually been presented, however, in a practical form to the general profession, nor has the importance nor interest of the subject been sufficiently urged.

Viewed as a question of what might be termed as physical mechanics, there is no problem which can surpass that presented by scoliosis in interest, and few affections yield to treatment more satisfactorily if taken in time and if the treatment is properly directed. There has, however, been a lack of simplicity in the writings on the subject, and the general practitioner has been led to regard the affection as not presenting problems of immediate urgency, and belonging to the specialist rather than to the family medical adviser. The truth, however, is that in certain cases the affection is one for the general practitioner, and in all stages and cases it is preeminently necessary for the family adviser and the specialist to act in harmony.

The object of this paper is to present the simple principles and methods of treatment for this class of affections which can be adopted by the profession without demanding the elaborate preparation or outlay not feasible for any but the specialist. It is presumed in this paper that no description of scoliosis or its nature is needed, and attention will be directly turned to the subject of treatment.

The principles of treatment for the non-inflammatory spinal curves of children are similar to what is practiced in the preparatory training of young acrobats, and to those practiced by dentists in correcting deformities of the jaw. The spinal column, being curved and stiff in certain portions, needs to be made more flexible and straightened in those parts. If a distortion has developed or is developing, it must be overcome by adequate pressure applied as constantly as is practicable, and the patient during the years of susceptibility should be shielded from such influences as will interfere with treatment or favor a relapse.

The methods to be employed in the treatment of scoliosis will vary in the rigor of application according to the severity and urgency of the case. While the curvature is not considered as a disease, but as a deformity, the corrective measures for straightening the spine consist of, first, a constantly applied stretching force, and second, an intermittent application of such force. As the latter is to be used with greater strength than the former, it may be employed as a daily exercise for a short period, and the former may be employed constantly or not, according to the amount of correction which is attempted. The simplest method of the application of a constant force is that recommended by the early practitioners, when a child was strapped to a board and made to sit or lie straight. This, though practical, lacked precision in its application to the portions of the spine to be straightened, but the same principles may be employed with greater directness, both in the vertical and horizontal position; the value of the latter position being that it is less fatiguing and can be applied with the most thorough removal of the weight of the head and upper portions of the trunk, which act as a force to determine the deformity.

It is necessary that the stretching exercises employed be applied with precision and in such a manner that they will stretch the curves and distorted ribs and not the other portions of the spine. If they are applied with care and skill, satisfactory results can be obtained in suitable cases. When, however, any alteration in the shape of the bones has taken place, the use of a stronger correcting force is necessary and should be applied as constantly as is practicable. For this purpose nothing is as efficient as the fixed plaster jacket, applied with the patient in a corrected position, or in a position as nearly corrected as is possible for the patient to endure. The feasibility of the thorough application of this method has been demonstrated in a number of cases. Surgeons, however, vary in regard to the manner of application; whether the patient should be in a recumbent position, whether suspension should be used, what form of correcting apparatus should be employed, are matters which have not yet been thoroughly decided, surgeons varying in the use of different apparatus.

The work at the Children's Hospital, in the past year, ably conducted by Drs. Lovett and Brackett, has illustrated the efficiency of the methods of treatment for this deformity and their application.

A report of their work is presented in an accompanying paper and needs no comment. A successful system of treatment possible in an institution is described. The general practitioner, while accepting the principles of treatment, will need for his own practice the simplest of arrangements.

An appliance for the application of plaster jackets in lateral curvature, which has certain advantages in portability, has been used by the

* Read before the Massachusetts Medical Society, June 7, 1904.

writer. It is eminently one which can be employed by the practitioner and can be readily made and is easily transferred. The design of this apparatus is better shown in the accompanying illustrations than by any description. It is necessary that judgment should be used in the use of corrective force, and a certain amount of skill is required in order that jackets put on will be borne by the patients. It is, of course, undesirable that the first jacket should be applied with a distressing amount of force. Windows can be cut in the plaster, allowing respiration in the portions of the spine which do not need pressure, but in any event the application of a plaster jacket, if any corrective force is used, should be only employed when it is possible to watch the patient for twenty-four hours after the application. In most jackets it is necessary that the bandage should be applied above the shoulders. It is rarely necessary to include the head, though in the most severe upper curves this would undoubtedly be advisable. Repeated applications of the jacket are necessary if much correction is expected, jackets being worn a longer or shorter time according to the amount of force which has been used in the application. A surprising amount of benefit can be obtained by this method, if persisted in for a sufficient length of time, and in young cases a complete correction is possible. The greater the amount of structural change and the older the patient, the less the amount of practical correction which can be expected.

It is manifestly impracticable to keep a patient in a fixed, immovable, plaster jacket during the whole growing period; although this would be desirable for the purpose of shaping the growth of the distorted bones; yet it would be decidedly disadvantageous for muscular development and for the general activity of the patient. It is for this reason that fixed plaster jackets should not constitute a method of treatment any longer than is absolutely necessary. They should be followed as soon as possible by removable corsets and by the use of gymnastics. Removable jackets can be made either of plaster, leather, celluloid, or of cloth reinforced by properly applied steel bands. These removable corsets should be regarded as applicable when the danger of increasing growth has passed, or when the greatest amount of correction has been obtained.

That form of removable plaster jacket which is most within the reach of the general practitioner can readily be made if a plaster jacket is removed from the patient and a cast is poured into the jacket, thus making a mound; around this a plaster jacket may be applied, reinforced by bandages which are rolled in a mixture of dextrine and plaster of Paris. A jacket made in this way requires a longer time to harden than the ordinary bandage, but is somewhat more elastic and durable. If split and arranged with lacing it will serve as an adequate jacket to a faulty position.

As the treatment of lateral curvature requires painstaking attention intelligently employed in the direction of gymnastics, in the application of correcting force, the aid of the specialist is usually of advantage; but as the affection is one to be considered during the growing years especially, careful oversight is needed for several years. This is particularly the province of the family physician, and it is essential that the best methods of treatment be brought to his attention.

DISCUSSION.

DR. E. G. BRACKETT of Boston: As it has been very clearly presented in the preceding paper, very marked advance has been made in the treatment of lateral curvature during recent years, and the practical application of certain definite principles is now pretty clearly understood; and so far as it concerns private patients it has become one of the satisfactory conditions to treat. There is a class of cases, however, with which it is a difficult problem to deal, for the reason that it is impossible to give the individual care and attention that one can give to private patients, and which is necessary for the successful treatment. I refer to the class of hospital cases, which necessarily must make up a large bulk of the cases which need treatment. The treatment must be frequently given, and must be carried over a long period of time, frequently over the years of the child's growth. It may be of interest to some to know in what way and in what measure this problem has been met in the Children's Hospital. Prior to 1890 no attempt had been made to treat separately cases of lateral curvature from other orthopedic cases presenting themselves in the Out-Patient Department. They were treated when they appeared, but with the facilities at our disposal satisfactory treatment, gymnastic or otherwise, could not be carried out. The number of cases was on the whole small. From 1886 to 1890 only 87 applied for treatment during the regular Out-Patient hours.

In 1890 an attempt was made to treat cases more systematically, by setting apart a room in the Out-Patient Department for the purpose, and by having the children come on Monday and Wednesday afternoons, and later on Saturday mornings as well. The assistance of graduates of some of the normal schools of gymnastics was secured, and exercises were given regularly by them, under supervision. Under this plan a large number of children came for treatment, and were regular in attendance. Two or three years later the cases of lateral curvature coming for treatment on Tuesday and Saturday afternoons were separated from the other cases, and were treated at first by a graduate of one of the normal schools, and later another graduate had the assistance of pupils from one of the normal schools. Later a large room was secured in the Out-Patient building, apparatus was added, and the two clinics were run separately with different sets of assistants, each under the supervision of one of the assistant surgeons.

Under this method the number of cases presenting themselves for treatment constantly increased until in 1900 over a hundred cases were on the regular attendance list.

In the spring of 1903 both clinics were united, and the present system of organization adopted with the view of obtaining a uniform system of records and treatments for all cases, and securing more frequent attendance of patients, and Monday, Tuesday and Wednesday afternoons and Saturday mornings were set aside for their regular periods of treatment. The clinic is held in the former lecture room of the Out-Patient Department, which is fitted up with a few pieces of apparatus for restoring flexibility, and although entirely inadequate to the number of cases coming is better than any combination that we have had in the past. The clinic



FIG. 1. — Resistant Lateral Curvature in a girl of fourteen before treatment by corrective plaster jackets.

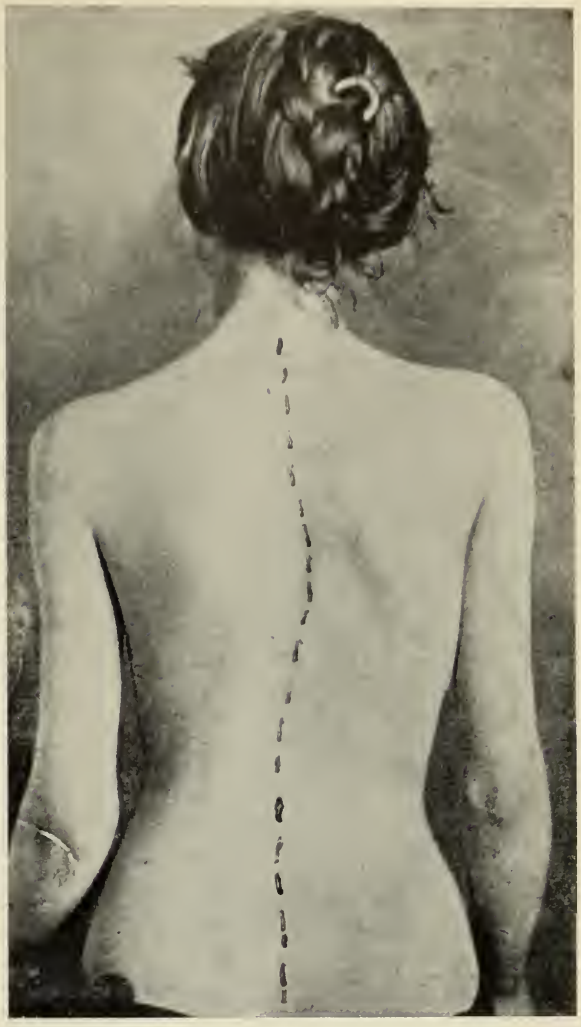


FIG. 2. — The same patient three months later after two corrective jackets.



FIG. 3. Portable arrangement for the application of corrective plaster of paris jackets.

is in charge of the two assistant surgeons of the hospital, who serve six months at a time alternately. There are two medical assistants, graduates in medicine, who assist for terms of three months each, in the instruction and care of cases and fitting of apparatus. The gymnastic work of the clinic is in charge of a graduate of experience of one of the normal schools of gymnastics, and who works under the direction of the assistant surgeon on duty. She has eight or ten assistants, women graduates of normal schools or advanced pupils in these schools, and who serve for terms of three months each and give the exercises to the children. They receive instruction from the assistant surgeons in the form of informal talks, and have instruction in measuring of cases, in keeping of records, and assist in the application of plaster jackets forcibly applied, and have an opportunity to learn the principles of photographing cases. Among the graduates who have taken the course since the first of June, 1903, are three assistant instructors of physical training in the Boston public schools and two directors of physical training in large women's colleges. The instruction given is of the simplest kind, and is intended to cover the practical aspect of lateral curvature.

The supply of patients has been far beyond our capacity, and occasionally it has been necessary to stop the admission of cases, and there are now in the more or less active treatment about one hundred cases. Each child when it first comes has its history taken, a careful physical examination, and a description of the curve is made by one of the assistant surgeons and is recorded on a card. General measurements with the antero-posterior tracing are made and recorded, and to complete the record the patient is photographed. These photographs are taken under constant conditions with the patient at a fixed distance from the camera, with the feet in the same position on an elevated pedestal, by which method one is able to have a fixed size for all photographs and relative measures taken by scale. All cases then receive a prescription for exercises, and are placed in charge of the gymnastic superintendent of the clinic. The treatment is advised according to the grade of the curve. The following grades are recognized:

(1) Slight postural cases. If the case is one of slight postural curve, the child is placed in a class coming from one to four times a week, as may be necessary. It is given exercises for half an hour daily at a fixed time. A number of types of class work have been tried and compared. It is necessary to have two separate classes exercise at different hours to accommodate the number requiring this kind of work. This class work is, of course, inferior to individual work, but there has been the alternative of either refusing these cases or treating them in this way, and as each child is given these exercises to do at home, the result of class work has been on the whole satisfactory, and many cases have shown a marked improvement. Gymnastic work at home is to be considered an essential part of the treatment. A strict discipline has to be maintained in matters of appointments. Any child missing two, without giving notice, is dropped temporarily, losing its place, and is only reinstated after an interview with the parents. This is found to have a most stimulating effect upon attendance at class. In this class of cases two means of treatment are clearly formulated: (*a*) restoration of flexibility, (*b*) sense of corrected position by muscular effort. For the restoring of flexibility, the ordinary methods of hanging by arms, head suspension, bending, etc., are used. There are two pieces of apparatus for applying pressure locally while patient is held extended, and two pieces of apparatus for applying side pressure while the patient lies prone. If patient can hold correct position from one treatment to another, apparatus is not used. If patient shows a tendency to slip back between the treatments, and at the beginning of each treatment is in a less correct position than at the end, some form of retentive apparatus is used. Patients of this grade do not exercise in class, but receive individual appointments, and have the attention of one teacher for half an hour every day from one to four times a week. Home work also forms a part of this treatment with patients whose parents are intelligent enough to carry it out.

(2) The severest cases, which are treated by forcible correction and plaster jackets, are treated by use of apparatus for exerting pressure to correct both the side deviation and rotation. Jackets are applied in succession until as much correction as seems possible has been gained. The last jacket applied is then used as a torso, which is molded to exert pressure where it is wanted, and a permanent jacket of leather made to be worn continuously by the patient, removing it only for exercising. Apart from this point, the treatment does not differ from that pursued in the medium grade of severity, namely, to increase flexibility in desired direction, and exercises to improve muscular condition.

Although in so long-continued an affection as lateral curvature it is difficult to secure the attendance of the patients for a sufficient time and the individual cooperation of the parents, on the whole the results have been satisfactory. In the cases of milder grade improvement has been the rule, and such cases have been excused from active treatment and placed wholly on home work, reporting occasionally. In cases of the medium grade, marked improvement has been made in some; others remained where they were, while others from one reason or another have increased. In the severest condition the results of the forcibly corrected jackets have been satisfactory, and much improvement secured in them. The organization of the clinic is given not because it is by any means what is desired, but because it represents a working scheme which gives fairly satisfactory results in the large number of cases treated in insufficient quarters.

## FRACTURES OF THE RADIUS IN STARTING AUTOMOBILES.

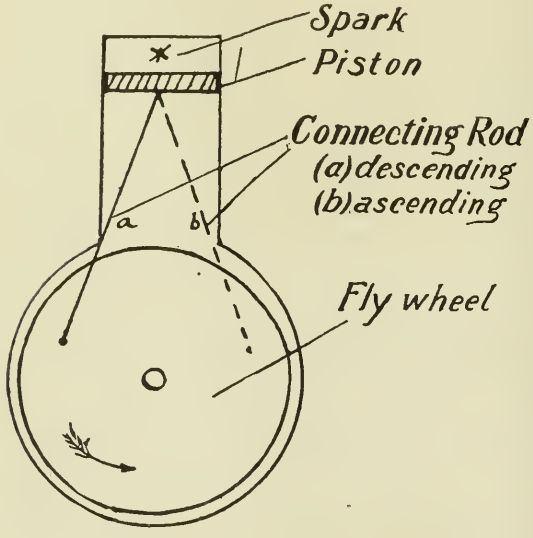
BY F. B. LUND, M.D., BOSTON.

"It hardly seems possible," to quote Lucas Championniere in a recent article on this subject,[1] "that the subject of fracture of the radius can offer us any new points for study," nevertheless there has arisen, so to speak, during recent years a fracture of the radius, which with the popularity of the automobile has become not infrequent, having certain peculiarities to distinguish it from ordinary fractures of the radius, and occurring under circumstances which permit us to form an exact idea of its mechanism.

The gasoline automobile, as is well known, depends for its power upon the explosion of a mixture of air and gasoline by an electric spark, and the motor is started by turning a handle from left to right. This handle turns, directly or by means of a chain, the fly wheel of the engine. As the handle is turned, the piston descends and sucks a charge of the explosive mixture into the cylinder; then, as the wheel continues to turn, the piston ascends and compresses the mixture in

[1] Fractures du radius dues au retour de la manivelle d'automobile. Bull. de l'Academie de Médecine, 15 mars, 1904.

the cylinder until just after the crank shaft which connects the piston with the fly wheel has passed the center, an electric spark passes between two points in the explosive chamber, explodes the mixture, drives the piston and crank shaft downward, and the engine is started. As the engine turns, the handle is automatically disengaged by a ratchet. If, however, the spark explodes prematurely, the fly wheel carrying with it the starting handle is driven with the full power of the engine instantaneously and violently in the opposite direction, twisting the hand backward with such force as to tear off the lower end of the radius. The mechanism may be illustrated by the accompanying diagram.




As the engine is put in motion by the handle, the piston has ascended to the highest point and is on the way down when the explosion takes place, *i. e.*, is in the position illustrated by the continuous line in the diagram. The explosion drives the wheel in the direction the handle is turning, *i. e.*, in that of the hands of a watch, the handle disengages itself, and the engine continues to run by virtue of the continuance of the series of compressions and explosions. But if the explosion takes place before the connecting rod has passed the vertical line, while the piston is moving up, when it is, for instance, in the position marked in the dotted line in the diagram, then the wheel and handle are driven violently in the opposite direction to which they are turning, carrying the incautious hand of the operator with it, with the not infrequent result of a fracture of the radius. If the handle be lifted rather than pushed past the compression the accident cannot take place. If the spark lever be set in the position called retarded, in which it should always be placed for starting the motor, *i. e.*, so that it explodes only after the connecting rod has passed the center, the accident cannot take place. Certain of the machines are so arranged that the plug which is put in position to complete the electric circuit cannot be inserted with the spark in the advanced position, which is a very good thing, but does not always prevent a careless operator from advancing the spark after one or two ineffectual attempts to start the motor with the spark retarded. Such an accident need never happen to an operator who is careful, never forgets what he is doing, and does not lose patience. It is Mayor McClellan of New York, I believe, who has characterized the automobile as an admirable developer of the virtue of patience. This it certainly is. In the hands of a man who treats it with ordinary care and intelligence, and when it gets out of kilter goes at it carefully and thoroughly, without haste, using the powers of eliminative diagnosis which study and experience should have given him, the automobile can almost always be made to start and keep going. It may be both a means of very great enjoyment and a help to the physician in his work. Carelessness in operating it brings great danger to others; carelessness in starting it may be dangerous to the operator himself. The sudden popularity of the automobile has brought great pressure to bear upon the shops where the machines are cared for and repaired, and after many hours of hard work under pressure, hurried perhaps by the owner who will not be kept waiting, mechanics become tired and carelessly attempt to start their machine with the spark advanced. Operators on the road also lose patience with their machines sometimes when, far from home on a dark and rainy night, they refuse to go. Under these circumstances patience and tact are more necessary than ever, and the reward of carelessness may be a fractured forearm. It is as a warning against this danger that these few remarks are introduced.

Now as to the nature of the fracture. As has been stated, it is due to a violent twisting backward of the hand at the wrist, without the impacting force which is present in the ordinary Colles' fracture. In this latter, which is due to falls upon the hand, the hand is twisted backward, and at the same time the weight of the body, carried through the forearm, splinters and impacts the fragments. The commonest seat of the ordinary Colles' fracture is about three quarters of an inch above the lower end of the radius, there is more or less splintering of the bones, and the line of fracture is an irregular one.

In the fracture from the "back kick" of the starting handle there is no impaction or splintering. The hand is violently dislocated backward, and the ligaments at the wrist simply tear off the articular surface close to the lower end of the bone, commonly just above the base of the styloid process. The line of fracture is clean and transverse, there is no impaction or splintering, and the deformity, if present, is easily reduced.

Union ordinarily takes place rapidly, the treatment is simple, and the absence of impaction or actual destruction of the posterior portions of the fragments, which is the *bete noire* in the treatment of the ordinary Colles' fracture, enables union to take place without deformity, and ordinarily without any stiffness of the wrist or fingers.



FIG. 1.



FIG. 1.



FIG. 2.



FIG. 2.



Fig. 3.



Fig. 3.



Fig. 4.



Fig. 4.

In young subjects (*vide* Case III of this paper) a separation of the epiphysis takes place instead of a fracture.

Lucas Championniere[2] calls attention to the comparative simplicity of this fracture by avulsion alone, as compared with the ordinary fracture in which avulsion is accompanied or succeeded by impaction. In speaking of the simplicity of the treatment he states that he has had marvelous (*merveilleuse*) success by immediate replacement followed by early mobilization and massage, without any retaining apparatus. The writer has not been willing in these cases to dispense with the comfort and safety obtained by immobilizing the wrist by a splint, but has, as is the best practice, mobilized the fingers from the first. Passive and active motion of the wrist has been practiced at every removal of the splint. The results have been most satisfactory, as the patients have hardly had any limitation of motion after the first three weeks.

Lucas Championniere speaks of the fracture as a " professional fracture " in the case of chauffeurs, a simple matter, rather to be expected and not much to be dreaded, as is the case with fracture of the clavicle in steeple-chase riders and bicyclists. It seems to the writer that while in horse racing and steeple-chase riding fractures of the clavicle are apt to occur, the conditions are beyond the control of the jockey, and his own carelessness is not usually to blame. In the fractures incurred in starting an automobile, however, the conditions are under the operator's control, and this accident ought never to occur except as a result of heedlessness. High-powered machines with heavy starting handles are naturally the more dangerous, but with care and patience one may lift rather than push the handle past the compression. Some of the more accurately adjusted machines may be started by completing the electrical connection after sucking a charge into the cylinder by the handle. In this method of starting, the danger is, of course, zero, and there is reason to believe that the automobile of the future will always be started in this manner. Suffice it for the present that there is always a safe way of starting if one takes pains to follow it.

Three cases of fracture of the radius in starting automobiles have come under the writer's care and were studied by radiography, with results of considerable interest to him. A brief account of the cases will perhaps bring out some of the points alluded to in the preceding text.

Case I. An experienced operator and skilled mechanic, aged thirty years, was starting a fifteen-horsepower, three-cylinder automobile. Several people were standing about watching him. He retarded the spark by pressing down a button preparatory to turning the handle. Then he stepped away for a moment to answer a question, and while he was so occupied a bystander raised the button and advanced the spark. He turned the handle from left to right, using his right hand, and bore down upon it. A " back kick " twisted his hand backward so that the deformity was excessive, the anterior lower edge of the upper fragment almost coming through the skin. The writer was called at once and saw him within a few minutes, finding the condition stated above. The deformity was reduced at once and splints roughly applied. He was then taken to a private hospital, etherized, and the fracture dressed with anterior and posterior splints. The radiographs shown in Fig. I were taken the following day. As will be readily seen, they showed that the styloid process and the articular surface of the radius had been avulsed, and that there was a vertical tear through the middle of the articular surface. Reduction had been satisfactory. The posterior splint was removed in ten days, the anterior in two and one-half weeks. Active motion of the fingers every day from the first, and every two days on removal of the splints, active motion of the wrist and fingers. In three weeks he could do light work, and in four weeks by wearing a leather wrist support could operate one of the machines having an easy control.

Case II. A gentleman, aged forty-eight, received a " back kick " from the starting handle of a seven-horsepower single cylinder motor. The handle turned with difficulty and he had taken hold with both hands. As he bent over the handle, pushing downward, the handle jumped backward, twisting his left wrist and fracturing the radius. The spark was undoubtedly advanced. The writer saw him within twenty minutes of the accident. There was no deformity or swelling, but he was prostrated by the pain and shock, and a hard and very tender bony ridge could be felt over the back of the radius about half an inch above the tip of the radial styloid. Splints were applied, he was taken at once to a private hospital and etherized. Mobility and crepitus were felt at the point mentioned, and the hand dressed as in Case I. The next day the plates shown in Fig. II were taken, showing a clean transverse fracture at a level just above that shown in Case I. The treatment was the same in every particular, except that massage was added to active motion after two weeks, as muscular atrophy from confinement was rather evident. No stiffness of the wrist or fingers resulted, and in two and one-half weeks the patient had considerable use of the hand.

Case III. A mechanic, sixteen years of age, at work in a garage at 6 P.M. after a hard day's work, trying to start a refractory machine for which the owner was waiting. The engine was a single cylinder of six-horsepower. While he turned the handle a fellow workman was manipulating the spark lever in the attempt to explode the spark at the right instant for starting. As might have been expected, a " back kick " resulted, and the pain and disability suggested the usual injury. The writer saw him about fifteen minutes after the accident, and found slight " silver fork " deformity, apparently in part due to swelling about the tendons on the front of the wrist. He was taken to a private hospital, etherized and abnormal mobility of a very small fragment of the lower end of the radius, but no crepitus, made out. The wrist was dressed as in the preceding cases, and the following day the radiographs shown in Fig. 3 were taken. The absence of crepitus was readily explained by the fact that no fracture, but a separation of the lower epiphysis of the radius, had resulted. This epiphysis, the line of which is shown in the reproduction, does not unite with the shaft till about the twentieth year. It is interesting to note that the line of the epiphysis is exactly at the level of the fracture in Case II. The radiograph in Case III also shows a vertical fracture through the epiphyseal cartilage of the ulna.

Fig. IV is the radiograph of a rather typical Colles' fracture in a patient who fell from a horse, showing irregular line of fracture and impaction. Note the somewhat higher level of the fracture.

[2] *Loc. cit.*

## THREE CASES OF THE ASSOCIATION NEUROSIS WITH REMARKS ON ITS GENESIS.

BY JOHN E. DONLEY, M.D., PROVIDENCE.

My reasons for reporting the cases I am about to record are twofold: First, they are interesting examples of the association neurosis to which attention has been directed in recent years, particularly by Dr. Morton Prince; and second, they demonstrate the results that may be expected from a rational therapeusis.

CASE I. Mr. M. gave the history of his complaint as follows: He had always enjoyed excellent health until nine months ago, having followed his occupation of machinist for years without interruption. At that time he suffered from an attack of herpes zoster which, he says, was very painful and which lasted about two weeks when the eruption gradually disappeared. The vesicles were situated upon the left side of the thorax, approximately within the skin area of the fifth thoracic segment. Although all other evidences of the trouble had vanished in due time the pain continued with considerable severity. It was situated along the vertebral column between the scapulæ, and the peculiar thing about it was that it always began about five o'clock in the morning when the patient was still in bed. It had no relation to muscular activity; in fact, if he got up and moved about for ten or fifteen minutes the pain would disappear, and when he arose before five o'clock it would not occur at all.

He was very much worried and disheartened about his condition, and said he thought he would never recover since he had tried all sorts of remedies without success. There were absolutely no objective signs of disease. The man was strong and muscular, the only abnormal characters about him being his pain and the consequent depressed mental state.

Believing that his condition was purely functional and his pain the result of a morbid association, I explained to him carefully the nature of his trouble and gave him a very positive opinion that it could be relieved. For its suggestive effect faradism was applied to the spine and he was given a bromide mixture with the assurance that it would afford him certain relief. He was directed not to get up until six o'clock the following morning, and upon reporting that afternoon he said he was much gratified since the pain although present was not so severe. The same treatment was continued for ten days, and at the end of that time his pain had disappeared completely.

CASE II. Miss G. is a young woman, twenty-three years old, of a very excitable and high-strung temperament. Although nervously unstable she enjoyed fairly good health until four years ago, when she suffered from an attack of the grippe, and from that time her nervous symptoms have been constantly in the foreground. They consist of insomnia, headache, fatigue, asthenopia, and loss of appetite. Her chief complaint, however, and that for which she sought advice, was severe nausea when she rode upon the street cars. She could travel upon a train without discomfort. Her first attack of nausea occurred two years ago when she was returning from a shore resort after having eaten a particularly indigestible meal. Since then she has been sick every time she got upon a car and because of her apprehension she had stopped riding. She says she has taken "barrels" of medicine for her stomach, but as soon as she boards a car her fear that she will be sick always occasions distressing nausea.

Evidently this was an instance of nausea arising from auto-suggestion, a very good example of the phobo-neurosis. Her fear was in effect equivalent to the suggestion, "If I ride upon the cars I shall be sick," and, therefore, upon her fulfilling the one condition, the other followed as the second element of the association. This was explained to her. She was told that her trouble was purely the result of an abnormal habit, whereby she brought on her sickness by unconscious auto-suggestion. Being very intelligent the explanation appealed to her and she entered heartily into the attempt to overcome the habit. A piece of paper was given her upon which was written the following:

"My symptoms are merely the result of a morbid association founded upon a previous illness and are simply a habit. The original illness having disappeared the association will be broken up, and my sickness will not recur."

She was to learn this by heart, to repeat it as often as possible during the day and after three days to get upon a car and ride, repeating it to herself several times during the journey. Upon her way home she came to my office and told me she had ridden five miles into the country and back again without being ill, and she further declared her intention of riding as much as she pleased since she saw how "foolish it was to be afraid of being sick."

CASE III. Mr. A., a man aged thirty years. Until one year ago he had always been a free drinker, so much so that his bouts with Bacchus had brought on an attack of alcoholism verging upon delirium tremens. He stopped drinking abruptly, upon the advice of his physician, who told him that to drink again would be fatal. This advice of the doctor was the nucleus about which he constructed a whole host of morbid fears. He was certain he had heart disease and was treated accordingly. Then he fancied his kidneys were weak, which belief he based upon the color of his urine. About the same time he became afraid to mingle in crowds and wished to be left alone. Finally he developed trouble with his stomach, and for this he came under treatment. So far as diet was concerned he had no difficulty, but if he attempted to drink a glass of beer he would feel weak and nauseated, after he had taken a few mouthfuls. The cause of this weakness and nausea, as he himself stated, was the fear that the drink would make him ill for he had been led to believe so by his family physician. Examination disclosed no physical disease of any sort, but the man was in a very sorry mental state.

It was exceedingly difficult to convince this patient that he would not develop some incurable malady of the stomach if he took an occasional glass of beer. But after three or four visits he agreed to disregard his own opinion in the matter and to do as I directed him, with the result that he can now drink several glasses of beer without inconvenience, since ultimately he came to realize the psychical origin of his trouble.

The cases of which the histories have been

briefly recorded above, represent very fair examples of the association or habit neurosis, which it would seem is not altogether uncommon when we stop to analyze carefully the origin, course and outcome of many of the symptoms presented by a series of patients.

The importance of recognizing the fundamental psychic basis in such cases is proclaimed by the fact that all three of these patients had been under constant medical care and had taken a variety of medicines without producing any noteworthy effect upon their symptoms. When, however, they were made to realize that their complaints were largely, if not wholly, mental and their attention was directed to the overcoming of the pernicious habit their improvement was rapid and altogether satisfactory.

Association or habit neuroses constitute a large class of purely functional nervous affections, in which the disagreeable features result from an atypical or not normal association of elements which in themselves are in no sense pathological. The result is a neurosis which is functional in nature, and which may be defined in the words of Dr. Prince as a disease "in which the anatomical processes are similar in kind to those which occur in health, which makes use of the natural working or functioning of the system, and is the expression of normal physiological laws, but differs from the norm in that the functioning is an undesirable or a disagreeable response to the environment (or internal stimuli) instead of a desirable or agreeable one." We may express the same idea in other words by saying that a habit neurosis is a functional perversion consisting in an acquired aptitude for a particular mode of action in which normal physiological responses are combined in disagreeable associations.

That the foregoing definitions may be more clearly understood it is necessary to consider somewhat more in detail the propositions which they contain: first, the nature of a functional disease; second, the general concept and formation of habits; third, the genesis of those particular perversions of habit which we call neuroses.

As to the first question we cannot do better than follow in substance the very lucid explanation of Dr. Prince. Although it is often said that there is no such thing as a functional disease, and that, therefore, all diseases are organic, such an assumption is based upon a complete misconception of the latter term. It is quite true that, as modern physiology teaches, the functioning of every organ is accompanied by certain molecular anabolic and katabolic changes, and indeed it is inconceivable that it should be otherwise. Every process of thought, of digestion and of muscular action implies a concomitant or antecedent chemical change in the corresponding brain, stomach or muscle. So from this point of view no vital phenomenon, whether it be of health or of disease, can occur without a basis of organic change, but this use of the term is altogether different from its application to organic disease. When we speak of organic changes we mean physical changes different *in kind* from those which subserve the organism in health. The distinction concerns the kind of change and is plainly evident when we think of the gross anatomical alterations that occur in inflammations, abscess, tabes dorsalis, progressive muscular atrophy and the other degenerative affections of the nervous system. On the other hand, it is highly improbable that in the neuroses and psychoses such as neurasthenia, hysteria and insanity, the anatomical changes are different from those which occur in health. Therefore, as Dr. Prince rightly insists, for a disease to be functional it must be a "consequence or concomitant of the same kind of physical changes which subserve the functioning of an organ in health, and be originated as a response to stimuli by the same laws which govern the functioning of the organ in health." The only difference consists, first, in the pleasurable or painful coloring of the response, and, secondly, in the type of the association.

To discuss adequately the second problem concerning the nature and formation of habits in general would be to enter into the psychology and education not only of the individual, but of the race. We can touch upon merely the broader outlines. Habit[1] as Aristotle taught, is formed gradually and is the result of a movement which is not natural or innate, but which is frequently repeated. Herein it is to be distinguished from instinct, which is both natural and innate. Habit is always an acquired character, being in contradistinction to instinct, highly individualized and having in every instance its origin in the repetition of an act. It is like nature.

Just as in nature things follow one another, so it is with acts of the mind and nervous system, and what is frequently repeated becomes a second nature. The plasticity of the nervous system is at the root of habit; and therefore we may understand how habits arise from education, whether it be physiological or pathological, the result of health or of disease. From the physiological side the process consists in the formation of functionally related groups, systems and communities of neurones the permanency of which is in direct proportion to the duration and frequency of their associative activity. Thus originates an automatic mechanism of such a nature that given one element of the association the others follow naturally and without effort. This is the explanation of those actions in which as we say "practice makes perfect;" and as examples we may mention piano-playing, juggling, talking, and writing. Maine de Biran expresses it very clearly as follows: "Every voluntary movement when frequently repeated becomes gradually easier, more rapid and more precise, whilst the effect or impression that results from the movement becomes less in the same ratio as that of the increase in the rapidity, precision and facility, and in the

[1] Historically it is interesting to note that habit has always been a theme for philosophic speculation. Plato condemns it as a thing of mere routine and so lacking in virtue. Aristotle was the first to propound a psychological theory of habit. To Epicurus we owe the first mechanical or physiological theory of habit, which was elaborated by Descartes and Malebranche, and in the hands of David Hume became the central principle of the Associationist philosophy, while later it formed an important element in the theory of evolution.

final stage of this increase the movement becomes *entirely insensible and affects consciousness only through the results in which it co-operates or the impressions with which it is associated.*" In other words the habit becomes submerged in the vast realm of the subconsciousness, where upon appropriate stimulation it manifests itself in automatic activity.

If, furthermore, we inquire why certain of the reactions to external or internal stimuli which go to form habits, are pleasurable and why certain others are painful, the answer would seem to be that such reactions are teleological.

Stimuli which produce in consciousness disagreeable accompaniments are usually harmful to the organism and therefore to be avoided, whereas stimuli which produce in consciousness pleasurable accompaniments are usually beneficial and therefore to be augmented. Thus we avoid pain, disagreeable tastes and smells, and cultivate stimuli having the opposite characters, although the former no less than the latter are normal physiological reactions to stimulation. They are, therefore, and this is important, *per se*, not pathological at all and are so only in the sense that they produce unpleasant effects or are united in disagreeable or atypical combinations, which we find to be the case in the habit neuroses.

Turning now to those affections which we classify as association or habit neuroses, and applying the principles which have been explained above, we find upon close analysis that these neuroses are simply perverse habits which have been acquired at some previous time, and which have persisted long after their original exciting cause has ceased. They are associations wherein the nervous system has been educated by one means or another to respond to normal and customary stimuli with disagreeable and unwished for effects which may be sensory or motor or both. Were these effects agreeable we should not call them neuroses.

Therefore we have arising upon a basis of suggestion or disease a habit of response which to the nervous system has become a second nature, and in which it continues so long as the association is not dissolved. The cases herewith reported exemplify this very well. In the first pain, and in the second and third nausea and weakness represented perverse habits of response, and so pure association neuroses.

And that these patients were the subjects of a habit neurosis becomes a matter of demonstration when we consider the success of the therapeutic measures employed in each case.

## Clinical Department.

### CASES ILLUSTRATIVE OF SYPHILIS OF THE NERVOUS SYSTEM.

BY S. G. WEBBER, M.D., BOSTON.

I HAVE given only abstracts of cases, trying to give a variety such as will illustrate the manifold symptoms as seen in different patients. My purpose is simply to give varied clinical illustrations without touching upon pathology in any way.

Among the symptoms dependent upon cerebral syphilis there are none which belong exclusively to that affection. It is rather by the history of the case, of its early stages and course, and by the grouping of the symptoms that a probable diagnosis can be made. There is often an irregularity in the phenomena which shows that there must be more than one focus of disease; and sometimes the symptoms have a peculiar ephemeral character, with remissions and variations.

#### HEADACHE.

The most common symptom attending syphilis of the nervous system is headache. This is the earliest in its appearance, preceding other graver symptoms and giving timely warning that subsequent danger may be avoided. Its characteristics are, great severity of the pain, either almost uninterrupted or with remissions, sometimes with intermissions. In many instances the pain is most severe during the latter part of the day, or in the night, though there are frequent exceptions to this rule. Sometimes the pain seems located in a limited region, sometimes it is spread generally over the head. It may be bilateral or confined to one side. The above peculiarities are very similar to those attending headache caused by cerebral tumor; but in syphilitic headache nausea and dizziness are generally absent.

CASE I. The first case is one of headache simply, with no other symptom. Mrs. N., aged fifty-five, had had syphilitic caries of some of the bones of the face about eight years before I saw her. For four weeks she had had pain in her head, chiefly on the right side. There was no disturbance of sensation or motion. She lay much of the time with the clothes drawn over her head. The pain was sometimes occipital, sometimes frontal. Iodide of potassium was given in increasing doses, and after five days she received forty grains three times a day. In about a month she was free from pain.

CASE II. The next case is one of hereditary syphilis. It illustrates the necessity of continuing treatment long enough and the dangers of a return of symptoms with the addition of others more serious. Mr. B., aged twenty-three, had had syphilitic iritis five years before I saw him. His upper incisor teeth were characteristic syphilitic teeth. Three months before I saw him, he had headache; he was also conscious that he was losing strength. He was not dizzy and had no nausea. He walked well with his eyes shut for a short time, then he staggered. A small dose of iodide, five grains, was sufficient to relieve the pain, at least in a measure, but after a month it became worse and the dose was increased to ten grains, three times a day. The pain left and he continued in fair health, attending to duties which required much brain work. Nearly two years later the headache returned; there was a swelling over the left eye; the left arm was at times stiff so it could not be raised to his head; if moved it pained him; at times he was dizzy, had been so for six or eight months. The right pupil was the larger; both reacted poorly to light. Knee jerk was well marked, there was no pain nor

stiffness in the legs. He was again put on iodide of potassium in larger doses, forty grains three times a day, and one-tenth grain of biniodide of mercury was added. The swelling and headache disappeared. He became so deaf he could not attend to his duties. Because of the deafness the iodide of potassium was omitted and the mercury increased; he was put to work on a farm. His hearing improved but the headache returned in about two months. An examination of his eye showed besides the iritis only a choroiditis. The iodide was resumed in doses of thirty-five grains; all the symptoms improved, hearing returned. He has not been seen for some years. This young man was brought to me by his uncle, who insisted that he should not be informed as to the nature of his affection. In this I believe the uncle was wrong.

Case III. This case is one of headache with only such other symptoms as often attend such pain. The dose needed for relief was the largest I have known to be required, three hundred and eighty grains a day. My advice to the attending physician was to increase the dose rather rapidly until some effect was obtained, and I have no doubt the drug was given judiciously.

Mr. —— had been ailing six months with headache. He had had primary sore two years previously. In August the pain became continuous, no day being free. In December it was very bad; he was so dizzy he could not trust himself to walk, staggered, less strong than usual, eyes ached. There were two exacerbations of pain in the day, one at 1 P.M., the other in the night. The pain came and went slowly. He was put on iodide of potassium and mercury. His physician wrote that the iodide had been increased in about two weeks to three hundred and eighty grains a day before he had much relief. He also took an eighth of a grain of bichloride of mercury three times a day. He improved wonderfully; the medicine was given in lessened quantity for some time. He got virtually well.

Case IV. This patient had headache early, before the secondary skin eruption. Miss K., aged twenty-three, had headache thirteen days before I saw her, which increased in severity, the pain lancinating, worse on the right, scalp very tender, tender also over the radial and median nerves. The pupils were of medium size, did not respond to light, did to accommodation. The pain was so severe it was necessary to give morphia at night. Under iodide of potassium, increased to fifty grains three times a day, the headache ceased in less than a month. Later, an eruption appeared on the face and body quite distinct from the iodide eruption, resembling syphilitic. There may be a suspicion that this was a beginning tabes. That is possible. I have no history of the patient's subsequent life.

I have seen a case of extremely severe headache, incapacitating for business, beginning before the eruption, continuing during the presence of the latter, and not yielding to treatment until the skin affection had nearly disappeared.

### CONVULSIONS.

Syphilitic infection may be the cause of convulsions closely resembling epilepsy. Such patients may have the *petit mal* as well as the *grand mal*. It is at times very difficult to determine the syphilitic origin of the attacks. If they begin after early adult years, and especially if headache has preceded, for any length of time, the convulsions, syphilis should be suspected. Such a history led me to recognize the cause in a middle-aged woman, who had been deceived fifteen years previously and seduced under false promises of marriage.

Case V. Miss D. had had for four or five years headache once in one or two weeks. She was seen in March; early in January she had had neuralgia through the right eye and temple after exposure to a draught of air. About a week later she had lumps on her head, which were tender, also a thumping in her head; the right lid drooped and was swollen, the eye was sensitive to light. The lumps remained about a week or more, were about as large as a quarter. Two weeks before I saw her she had a convulsion. While going down stairs she became dizzy, then lay down, could not collect her thoughts, jumped up to put water on her head, put her hands on her head, said, "Oh, my head!" and then dropped. Her eyes stuck out, she frothed at the mouth, worked hard, teeth were clenched, face was dark. The attack lasted about fifteen minutes. When she came to she felt tired, no headache. She received twenty then sixty grains of iodide of potassium three times a day, and a sixth of a grain of biniodide of mercury. Four days later the eyes were nearly natural, the headache soon left, there was no dizziness. She did well for a year; then her sister was sick and she was much taxed with care of her. The headache returned for a while, but yielded to renewed treatment.

Case VI. Partial spasms or monospasms, which indicate irritation of limited areas of the cortex, are among the most interesting convulsive phenomena in cases of syphilis. Partial or total paralysis sometimes follows these attacks. This paralysis may be temporary or permanent. The following case is rather remarkable in that the patient recovered notwithstanding the severity and long continuance of the convulsions. His history was not clear; it seemed probable that he had had syphilis. He had had headaches for some time, then one or two convulsive attacks at long intervals; the first, six years before I saw him, in which the head and eyes were said to have turned to the right. A short time before I saw him the spasms had become frequent. I found him unconscious, having convulsions every three minutes. They began on the left side of the face, the eyelids and mouth moving rapidly, then the head and eyes were drawn to the left; the arms were then seized with a tremor; the legs were very slightly, if at all, affected. The whole attack was of about a minute's duration. Between the attacks, as near as could be judged, the left side was paralyzed, the right not. These convulsions continued several days, they then ceased; he regained consciousness. I have no notes of the amount of medicine given, as he was seen only once in consultation. I have not been able to learn the details of his subsequent history as he moved to another town, but learned that he later died from the effects of the syphilitic poison.

Case VII. In this case maniacal excitement was one of the symptoms following convulsions. Mr. R. had had some difficulty in speaking, also severe headache. One night he had a convulsion, his head and eyes were turned strongly to the right, he frothed at the mouth, jaws were firmly closed, the right side of his face was violently convulsed, the right hand and arm described an indefinite rotatory motion, the right leg was not moved. He was unconscious during the half hour the attack lasted. When I saw him the next morning the pupils were small, responded to light, the tongue was protruded slightly to the right, there was no other paralysis. Reflexes were normal. He was unable to say a word. During the day he had

two more convulsions of shorter duration. He became delirious, and a state of maniacal excitement continued for two or three days. He slowly regained the power to talk and finally seemed to be entirely recovered. He received the iodide in doses of fifty grains and biniodide of mercury a sixth of a grain.

### PARALYSIS.

Hemiplegia, occurring suddenly as from cerebral hemorrhage, is not common as the result of syphilis. A gradually increasing paralysis of one side is more common. A unilateral weakness of one or both extremities, which continues a short time, disappears, then recurs again and again, especially if accompanied with attacks of numbness in the same parts and preceded by headache, is much more significant of a syphilitic origin. It is not uncommon to have a slight motor weakness of the limbs in cases of paralysis of the cranial nerves.

The ocular nerves are more frequently paralyzed than other cranial nerves; in many cases the paralysis is not complete, only a few of the fibers losing power, or there is only a weakness of the muscles supplied by one nerve. The facial, hypoglossal and nerves of special sense are much less frequently affected. Generally headache precedes or accompanies paralysis of cranial nerves; sometimes instead of headache there may be obstinate trifacial neuralgia.

Aphasia may be present with spasms or paralysis, or it may exist alone. After other symptoms have subsided the difficulty of speech may remain.

Case VIII. Mr. Y. was seen in October. The previous May he had had a chancre; early in July a mild secondary eruption and slight affection of the mucous membrance of the mouth and throat. These symptoms yielded readily to a mild mercurial course. Later he had headache. The day before I saw him, he had a decided partial right hemiplegia with impairment of speech. He could scarcely move the right arm. When I saw him the next day the right side of his face was partially paralyzed; there was tremor of the right hand. Motion was not impaired in arm or leg and the next day he was all right. A few days later the right side suddenly lost power for a few hours; he found it difficult to walk. He recovered entirely, his headache left. The iodide caused a slight eruption which made him very nervous. In consequence of his feeling thus the iodide was unwisely diminished too soon. In less than three weeks the headache returned and there was numbness in his right little finger. The iodide was increased to fifty-grain doses, and a seventh of a grain of biniodide was given with it, and soon all symptoms disappeared.

Case IX. Some sixteen years before I saw Mr. H. he had had syphilis and secondary symptoms later. About thirteen months before I saw him he had lost power to talk or write for about fifteen minutes, without paralysis or loss of consciousness. A slight numbness in the index and middle fingers of the left hand remained, no weakness of the right hand. Eleven months later he had headache and again lost power to articulate; he walked less steadily than usual, there was not loss of speech nor of power to write, only difficulty in articulating. He gradually regained his speech, though when he tried to talk the words ran together and he was slow in understanding questions and in answering. In writing he wrote all the letters of a word, but placed them in the wrong order. When seen his speech was again bad, he spoke slowly, deliberately, with some hesitation, waited some time before answering. The right pupil was the larger and was immovable; the right side of the face moved less than the left. No paralysis of limbs. About three months later he had convulsions which recurred with increasing frequency for two months, when he died.

Case X. Mr. F. had primary sore in July, soon after secondary eruption; in October some disturbance in sensation in right hand; one morning in November the right hand was numb, and the right leg gave him trouble. During the forenoon he lost speech; was able to go home alone. The right hemiplegia increased until he could not walk. Subsequently he gained so he could go around the house. His face was not paralyzed, tongue was protruded to the right. The next spring the right arm was contracted, deep reflexes were exaggerated on the right. He had partial aphasia; sometimes he could answer questions but not always. He was unable to give the names of objects, but recognized the correct name when it was given. He continued in this condition so long as iodide of potassium was given. When that was omitted, I believe he had a convulsion. I do not know the subsequent history.

### MYELITIS.

Syphilis of the spinal cord is less frequent than cerebral syphilis. There are no special symptoms indicating its presence as distinguishing syphilis from other lesions of the cord. Perhaps many cases of tabes reported as cured were cases of syphilitic lesion of the posterior columns. When there are other symptoms referable to the head the diagnosis may be made with some degree of certainty. Otherwise the general history of the patient must be the guide.

The prognosis in spinal syphilis is much less favorable than in cerebral syphilis.

Case XI. The following case might well have been considered one of tabes, but the rapid and complete recovery would not warrant that diagnosis. Mrs. B. was sent me by her family physician. Six or seven years previously she could scarcely read, saw double, left ptosis; recovered without treatment. About a year before I saw her she had occasionally a numb, sleepy sensation in one arm and hand. She had had trouble in walking, her legs being weak; this weakness varied from day to day. Two months later the legs felt numb and there was a sense of constriction about the waist. She had had slight shooting pains in the legs and left arm.

There was diminished sensation in the left hand and thighs; in the feet sensation was normal. Patellar tendon reflex was absent on both sides. She walked unsteadily with her eyes shut.

Her physician knew she had a specific taint. Under iodide of potassium and mercury she entirely recovered.

Case XII. This case is, perhaps, as characteristic of spinal syphilis as any case I could select. The control the iodide had over the disease in delaying its advance for more than two years is of interest, and the rapid progress which followed its discontinuance is instructive. Mr. T., aged thirty-five, said he had had three chancres, had had sore throat, but no other symptoms. Eight months before I saw him he noticed a trembling in the left leg. Within forty-eight hours the leg became heavy and lame about the ankle.

The foot felt heavy and dead; this feeling extended upwards and when it reached the knee it was like drawing a leaden leg after him. In five weeks from the first appearance of the above symptoms these sensations had extended to the thigh and the right leg began to be similarly affected. He had no numbness, no tingling nor pain in the legs, only the "dead feeling" in his feet. When both legs gave out he had a sense of constriction about the waist and around the ankles. There had been some retention of urine and twice temporary incontinence.

During the three months just previous to my seeing him, his legs were at times suddenly drawn up in bed without his knowledge; this was most common in the evening while sitting up. When this contraction was sudden, he had a sharp pain in his back. At one time he had regained partial use of his right leg, then he had a feverish attack with delirium, and afterwards his condition was worse.

There was marked diminution of sensation in the legs and lower part of the abdomen. He could draw up the right leg, but not the left. The knee jerk was somewhat exaggerated on the right, not on the left.

He received iodide of potassium in increasing doses. After two weeks, while he was taking thirty-five grain doses, he had a sensation as if hot water were running over or through both legs, and the thighs were tender to the touch; he could manage his legs better; below the knees he felt more natural and stronger; there were fewer attacks of contraction. The iodide of potassium was increased to two hundred and seventy grains a day. He slowly improved, was able to draw up both legs, could sit in a chair most of the day, but was not able to walk; could move his legs in bed. After about two years and a half, he had some bad feeling, and without medical advice left off the iodide. He became worse, had severe pains in his face. He sent for me. I found there was total paraplegia with almost total anesthesia; the left arm and left side of the face were partially paralyzed; he was blind with the left eye. He soon after died.

### NEURITIS.

Syphilis of the peripheral nerves is not common; lesion of nerves due to syphilitic tumors may not be infrequent, but primary syphilitic neuritis is not easy to recognize. I know of no special diagnostic symptom. The following case, considering all the circumstances, probably belongs to this class.

Case XIII. Mrs. P., aged twenty-eight, wife of a sea captain, was never very well; her eyes troubled her after measles; she had nervous headaches caused by using her eyes. About three months before I saw her she began to have a numbness in the right ring and little fingers, so that at last she could not dress nor feed herself; there was also pain in the hand, more along the ulnar border, not in the wrist. After using the hand in cutting out a dress, it swelled, and the pain extended to the middle of the forearm, which was contracted on the arm. Since then the pain had been severe, burning and smarting in character. There was a purplish eruption on the arms and legs which did not itch. There was tenderness over the principal nerves of the arm. Blisters were applied over the tender spots and iodide of potassium was given in increasing doses. She entirely recovered. I could not question directly as to syphilis, but the history and course of the disease renders it very probable that it was a case of syphilitic neuritis.

It will be noticed that these cases are not peculiar in their nature from those caused by other lesions of the nerve centers. There is no symptom pathognomonic of syphilis of the nerve centers. When, however, the succession and grouping of the symptoms in any case are considered, we may obtain a hint as to the nature of the process.

Many of the cases reported presented a series of attacks, the earlier being generally the less severe, headache being frequent; the later attacks sometimes very similar, but often more severe and with additional phenomena. The earlier symptoms had disappeared so entirely in some cases, as to lead to the suspicion that there had been only a temporary circulatory disturbance. Among the group of individual symptoms which are most significant of syphilis, besides headache, which has been already fully described, are paralysis of the motor muscles of the eye. Isolated paralysis of these muscles should arouse a grave suspicion of syphilis. Monospasms and localized paralyses due to cortical lesion, without previous trauma, are also symptoms which should awaken attention. Aphasia, without paralysis, if hemorrhage or embolism can be excluded, should have the same weight. Such repeated and ephemeral attacks of hemiplegia as are described in Case VIII should put the physician on his guard.

The time at which nervous symptoms appear after the primary infection is extremely variable. I find from analysis of the above cases and others not reported, two and one-half months the shortest interval; twenty-five years the longest; in the majority of cases the nervous symptoms appear within three years. I was surprised to find so many under one year.

In about half the cases there was no knowledge of the primary disease, or it seemed desirable not to inquire too closely into the patient's antecedents.

I hesitate to say much about prognosis. If headache is the only symptom, or if they are variable and intermittent, the prospect of recovery is fair. I have followed such patients for years and seen no relapse. If the symptoms point to organic change, recovery is very doubtful; but even under such conditions the progress of the disease may be arrested. Some of the cases show that it is necessary to continue the treatment, at least intermittently, many years, and that if omitted entirely there is danger of a serious aggravation.

In treating syphilis of the nervous system, it is often necessary to act with great vigor. In slight cases a moderate dose of iodide of potassium may be all that is necessary; fifteen to twenty grains three times a day, or even less, may be sufficient to relieve headache. If this proves to be so, there is no special need of resorting to large doses; but the drug should be continued some months after the pain has ceased. Where the symptoms are more serious it is dangerous to temporize. I have never regretted giving large doses; I have been sorry a few times that I

gave small doses. If there is reason to suspect lesions to nervous structure the iodide and mercury should be given at once in sufficient doses to make an impression. Ten or fifteen grains three or four times the first day, increased to twenty or twenty-five the second day, are none too large doses of the iodide of potassium. In a case where hemiplegia seemed to threaten, the patient received thirty grains during the first night, the next day twenty grains four times, the following day thirty grains four times. In a case of neuralgia, probably of syphilitic origin, I gave with benefit seventy grains the first day, and one hundred and fifty grains daily afterwards for nearly three weeks. Three hundred and eighty grains daily has been the highest dose reached in any of the cases reported. I have given much larger doses, but without benefit, and also without harm, to the patient. In some cases, small doses of five and seven grains three times a day were illy borne, causing various unpleasant symptoms; but when the dose was increased fourfold these unpleasant symptoms disappeared, and the patients improved rapidly. Several years ago I had the same experience, one hundred and twenty-five grains daily being more acceptable to the patient than forty-five grains, and in another patient sixty grains daily caused less discomfort than fifteen grains.

In a few instances the very large doses given with mercury have caused diarrhea. This may have been because too little water was given with the iodide, though I think not. A few drops of tincture opium relieved it, or it ceased on diminishing the dose. Where there has been clear evidence of syphilis other discomfort has been rare; in some doubtful cases sixty grains a day have given rise to such disturbance as to oblige a discontinuance of the drug. Many patients have gained in appetite and flesh while taking the medicine. If taken largely diluted with water, the stomach is rarely disturbed by the iodide. I have found that patients are not affected alike, some are disturbed by it taken before meals, and prefer taking the dose after meals, others prefer to take it before meals; others, when a large amount is given, like better to divide it, taking part before and part after meals.

In severe or threatening cases it is better to combine mercury with the potassic salt. Inunction is recommended by many, and I sometimes use it, but the bichloride or biniodide internally is generally preferred by patients, and I think answers the purpose well. I have occasionally combined inunction with the internal use of mercury, where I desired to make a rapid impression. I have very seldom given more than half a grain of the mercury.

Other than this specific treatment may be needed. Iron and cod oil are often of advantage. It is scarcely necessary to enumerate the other methods by which weakness and general debility may be combated.

This course of treatment must not be stopped when the symptoms have disappeared. It should be remembered that the poison is still in the system and ready to cause further trouble. I have seen several cases where too great confidence in the cure has been followed by a return of the old with the addition of new and more serious symptoms. It may not be necessary to continue the very large doses, but forty-five or sixty grains a day may be given for several weeks. If the patient can be under control, it is well occasionally to have recourse again to the iodide even if no new symptoms arise. A few cases lead me to think that when there has been organic change of the nerve centers it is safer to continue the medicine uninterruptedly

## Medical Progress.

### RECENT PROGRESS IN OPHTHALMOLOGY.

BY MYLES STANDISH, M.D., AND WILLIAM D. HALL, M.D., BOSTON.

#### LOCALIZATION OF THE MACULA LUTEA IN THE BRAIN.

LAQUER,[1] in face of a recently published monograph which locates that part of the cerebral cortex which represents the macula as being in the anterior portion of the calcarine fissure, believes from the study of a recent case that it should be considered as being in the posterior portion. About one year before his death the patient developed a bilateral hemianopsia, but retained excellent vision in a small central area. The autopsy showed the right occipital lobe to be softened in the neighborhood of the calcarine fissure, except in the most posterior portion about 18 mm. from the tip of the lobe where the cortex and medullary portion were completely intact. Much the same condition was found in a second case in which a bullet had pierced the back of the head. It is fortunate that a center is located in each hemisphere.

#### OCULAR LESIONS CAUSED BY LIGHTNING.

Gonin[2] noticed in the case of a patient who had been struck by lightning superficial opacities of the cornea, swelling of the face and ciliary injection. After a few days, an opacity appeared in the posterior part of the left lens, which afterwards cleared, at about which time opacities appeared in the anterior part of the right. Both nerves became partially atrophic, with corresponding reduction in vision. Literature shows cataracts in 19 of 22 cases; there was atrophy in 8. The atrophy of the nerve is usually unilateral, and only appears after weeks or months have elapsed. In almost all of the cases conjunctival, corneal and skin symptoms were present. Iris involvement even attained the severity of an irido-cyclitis. The motor disturbances of the third, fourth and sixth cranial nerves were temporary in character. As a result of experiments made by Hess and others, he concludes that the ocular lesions caused by direct action of electrical discharge upon the tissues of the eye differ from those which result from the effect of

[1] Virchow's Archiv., v, 175, No. 3.
[2] Annal. d'Oculist., Feb., 1904.

the light from an electric flash or spark. Usually the only symptom in common is conjunctival hyperemia and ciliary injection. The lesions resulting from electrical discharge may be ascribed to the mechanical action of the current upon the tissues as well as to the electro-chemical phenomena.

### DIABETIC LIPEMIA.

White [3] reports the recognition of fatty blood in the retinal vessels with the ophthalmoscope, and refers to cases previously mentioned. Although most frequently seen in diabetes, it has also been described as occurring in alcoholism, phosphorus poisoning, pneumonia, peritonitis and gout. Under the microscope, in addition to the fat globules, fine granules have also been noticed. The presence of fat is undoubted, as it stains with osmic acid, but the finely granular deposit shows no such change, and is probably albuminoid. Futchner found that ether only partly cleared up the turbidity of the blood, and many of the granules were not stained black by osmic acid, and therefore reasons that the turbidity is only partly due to fat, and suggests that the granules are in part albuminous. It has been also suggested that the granules are particles of fat surrounded by an albuminous envelope. In this particular case microscopical examination of the blood failed to show fat or anything that stained with osmic acid, therefore this pale, salmon-colored blood may contain only the fine granular precipitate. Analysis shows this white substance, the precipitate, to be insoluble in water and salines, but more or less so in alkalies. It seemed to be a proteid precipitated by a fatty substance, the exact nature of which the analyst was not able to determine. The fatty substance was considered to be an ester of cholesterine, rather than a true fat, with one of the higher fatty acids, or a mixture of both. The ester was extracted by alcohol and saponified by alcoholic soda, then the residue was extracted by hot chloroform. This, on evaporation, leaves cholesterine, but it was impossible to tell what acid it was originally combined with. As the turbidity may be due to the presence of fat, a precipitated proteid and a substance allied to fat, but not true fat, in varying proportions and combinations, the term "lipemia" is not strictly correct. . The color of the arteries and veins varies from a cream to a pale salmon, according as to size, and the whole retina is quite pale. Most of the recorded cases have proved fatal. The author does not, however, believe that the lipemia is the cause of the coma, because in many fatal cases of coma this condition of the blood has not been found. Whenever the lipemia improves, the fundus becomes healthy in appearance. The author's case bore no relation to diet.

### "LATTICED" OPACITIES OF THE CORNEA.

Freund [4] adds fifteen cases to the ten already reported by Biber, Haab and Dimmer. The affection is usually hereditary through several generations, begins at puberty, usually bilateral with greater involvement of one side. At first is noticed knot-like elevations at the central corneal area, which are found to be above very small, light gray spots beneath the epithelium. Magnification shows in this a meshwork of fine grayish-blue nodular lines crossing one another in an irregular manner, giving a grating ("Gitter") like appearance. Towards the periphery by transmitted light are to be seen beneath the epithelium numerous grayish lines, black in color. Vision is lowered, accompanied by sensations of dryness and dazzling. These appearances continue with varying intensity till about the fortieth year, but without actually reaching the corneal margin. It may remain stationary or there may develop inflammatory symptoms, destruction of epithelium, and corneal cicatrices. The condition seems to be due to space formation and hyaline degeneration of the cornea.

### DIAGNOSIS OF INTRAVAGINAL HEMORRHAGE OF THE OPTIC NERVE BY THE OPHTHALMOSCOPE.

J. Gonin [5] says that sudden blindness accompanied by a milky haze in the papillomacular region and empty retinal arteries do not authorize diagnosis of hemorrhage into the optic nerve or its sheath. Profuse hemorrhages on the borders of the disc or in the vitreous do not always indicate apoplexy of the sheath, and retinal hemorrhages, even if present, are not characteristic of intravaginal effusion. A slight degree of papillary stasis may be considered as a symptom of retrobulbar effusion. An extensive hemorrhage may exist in the sheath without any ophthalmoscopic findings. This condition is so frequently accompanied by fracture or cerebral hemorrhage that little is known as to the visual disturbances caused by simple, uncomplicated hematoma of the optic nerve sheath.

### ESSENTIAL INTRA-OCULAR HEMORRHAGES.

Scrini [6] applies this term to those hemorrhages which appear in young adults without apparent cause, who have no hemorrhagic taint and in whom the vessels should be normal. In frequency they occur about once in five thousand cases, and usually between the ages of twenty and thirty. The condition is usually bilateral and in the male rather than the female. The retinal and choroidal vessels in any part of the fundus may be affected by this condition, which is probably dependent upon the rupture of a vein. The etiology is obscure, but it is suggested that it may be due to a disturbed metabolism in addition to causes of congestion, such as inclined position, heat, accommodative efforts, etc. The prognosis, which is uncertain, may range between complete recovery and permanent disability. Relapses are always to be feared. These hemorrhages have no relation as to life.

[3] Lancet, Oct. 10, 1903.
[4] Wien. Klin.-therap. Wochenschrift, Feb. 28, 1904.
[5] Annal. d'Oculist., Feb., 1903.
[6] Archiv. d'Ophtal., March, 1903.

THE INFECTIOUS CONJUNCTIVITIS OF PARINAUD.

Chaillous [7] considers the affection as rare, thus far only twenty cases having been reported. He adds five of his own to a résumé of those already published. The condition was unilateral in eighteen, and adenopathy was present in all passing on to suppuration in seven. Etiology is obscure and bacteriology is negative or contradictory. Best treatment is galvanocautery or excision. The duration may be from several weeks to several months. There are seen upon the conjunctiva raspberry-colored vegetations varying in form and size, usually unilateral, at times accompanied by erosions and ulcerations. There is always preauricular and cervical gland enlargement, not always suppurative, but nevertheless painful to pressure and subjectively. Resolution is tardy. The glandular condition may outlast the conjunctival disturbance. Although it resembles tubercular conjunctivitis, differentiation may be made certain by the microscope and inoculation; in fact, this becomes practically necessary to decide. Non-induration of the conjunctival lesions, suppuration of the glands, absence of eruptions consecutive to the conjunctivitis, easily differentiate "Parinaud's disease" from syphilis.

Verhoeff and Derby [8] report a case of their own and discuss the literature relating to twenty-two other cases. The cases thus far reported have been observed only in France or America. Autumn seems to present the most favorable conditions. The duration varies from two weeks to five months. No organisms were found in the conjunctival secretion which could be considered as being specific.

Examinations of sections of polypoid vegetations were negative as regards micro-organisms in one case, and gave micrococci unconfirmed by culture in another. The casual agent in Parinaud's conjunctivitis is probably not any of the known micro-organisms and is not pyogenic. It has been suggested that it might be of animal origin, and the frequency of this disease in countries in which foot and mouth disease is especially prevalent lends some weight to this hypothesis.

ON OSSIFICATION AND CALCIFICATION OF THE EYE.

Rumschewitsch [9] states that calcareous deposits in the cornea have long been known, but have been observed in the sclera but once only. They are sometimes found in atrophy of the iris, and in the lens with or without ossification of the choroid. True bone may be found in the lens if the capsule has been ruptured. Ossification in the vitreous may follow fibrous degeneration. In cyclitic membranes it is common, but bone in the retina is always in connection with bone in the choroid.

"SIGHTSEER'S" HEADACHE.

Simeon Snell [10] describes cases which lead him to attribute this ill of modern civilization somewhat to the strain to which the lifting muscles are put to in turning the eyeball upward. One person in particular never experienced the slightest discomfort when she sat in the dress circle, but always did when she occupied a seat in the orchestra, then suffering from a severe headache. The same has been noticed in picture galleries by persons who have been looking at pictures hung above the line. Cyclists who bend over the handlebar and thus have to turn their eyes up to look ahead complain of the same trouble as do compositors and others who are obliged to continuously use their elevator muscles.

[7] Annal. d' Oculist., January, 1904.
[8] Knapp's Archiv., July, 1904.
[9] Arch. f. Augenheilk., 48, p. 113.
[10] London Hospital, 1904.

THE EFFECT OF RADIUM RAYS UPON THE VISUAL APPARATUS.

London [11] concludes as follows: Radium rays excite within the eye light perception, even when considerable distance from it, acting upon the retina from either side, or through more or less penetrable interposed obstacles. Radium and light rays, which differ from each other physically, have likewise a different physiological action upon the visual apparatus. These rays do not increase the visual power of the eye. Although neither reflected nor refracted by the ocular media, the rays are to a certain extent absorbed by them. Prolonged action may set up a keratitis, retinitis, or even phthisis bulbi. Radium rays are probably capable of acting directly upon the central visual apparatus. Bandaged eyes, after practice, can detect the source of the rays and recognize simple figures written in space. When acting upon the bariumplatino shade, the radium rays impel diffused light rays of certain wave lengths mixed with heat rays, which latter are only to a slight degree appreciable to the eye. In a dark room this light may be perceived by retinal elements spared by atrophy of the optic nerve.

PALSY OF THE EXTRA-OCULAR MUSCLES IN EXOPHTHALMIC GOITRE.

Posey,[12] in addition to the ocular symptoms so commonly met with as the cardinal signs of Graves' disease, *i. e.*, the exophthalmos and the so-called Graefe, Stellwag, Dalrymple and Möbius signs, which depend upon various incoordinations and weaknesses of certain parts of the nervous mechanism of the eye, says there is likewise to be met a palsy of the extra-ocular muscles. A review of the literature relating to this condition makes it evident that cases of this sort are not very rare, and are to be considered as forming a part of the symptom complex. On account of the uncertainty which still exists regarding Graves' disease, it does not seem to be possible to state definitely regarding the nature and seat of the lesion, though it would appear, at least in those cases where there was more or less ophthalmoplegia externa, and especially in those in which there were associated lesions in the facial, hypoglossus and glossopharyngeal nerves, that the palsy was of central origin, originating in

[11] Graefes Arch., lvii, 2.
[12] Am. Jour. Med. Sci., July, 1904.

the nerve nuclei. Considering these palsies as due to involvement of nerve nuclei is strongly suggestive of a central origin in Graves' disease; and while the exact nature of the changes in the nuclei is yet undetermined, it is probable, as these palsies are sometimes transient and as autopsies have thus far failed to reveal anything definite, that the condition may be functional, an irritation of centers by toxins, generated in the system by some perversion of the thyroid gland.

### TREATMENT OF ATROPHIC RETINÆ WITH RETINAL EXTRACT ("OPTOCINE").

Doyne, R. W.,[13] observing a temporary improvement in a retinitis pigmentosa patient who had been vomiting violently on a sea trip, thought it might be due to the increased blood supply to the head, and with this in mind, ordered amyl nitrite, recumbent position and red glasses, the latter being in his opinion less exhausting to the retina. To feed the retina, starved by diminished blood supply, he commenced giving the raw retinæ of sheep and oxen, to the number of from six to nine each day. The extract, "opticine," in his opinion seems to have all the value of the fresh retinæ. He claims improvement in retinitis pigmentosa, retinal degeneration in high myopia, choroiditis, tobacco amblyopia. Although he admits the possibility of suggestion, he is sure that there is an actual improvement in function. The author believes that the preparation has a selective action upon the rods and cones, and that it furnishes a necessary element of nutrition. In a more recent article,[14] the subject has been more carefully elaborated, and detailed reports of cases treated are included. At first, the fresh retinæ were given, with the idea of supplying the starved retinæ with a food possessing a selective action, but in the light of further investigation the markedly good results rather point to the presence of some physiological action, as in the case of the thyroid gland.

### COLLARGROL.

Darier[15] has found this silver preparation to be painless and to be of use as a 1% solution on dacriocystitis. He has used solutions varying from $\frac{1}{100}$ to $\frac{1}{1000}$ as sub-conjunctival injections, but wishes more cases before generalizing.

Leloutre[16] reports its use in the form of a 15% ointment rubbed into eyelids, axilla and front of elbows five times a day in conjunction with irrigations of bichloride of mercury in treatment of hypopion ulcers, with brilliant results.

### METHYLENE BLUE IN THE TREATMENT OF VARIOLOUS OPHTHALMIA.

Painblan and Taconnet[17] have seen during the epidemic of 1902–3, 48 affections of the eye in 935 patients who had smallpox. In addition to "borated water" lotions, a solution of the methylene blue ($\frac{1}{500}$ and subsequently $\frac{1}{300}$) was systematically instilled several times a day. All cases of conjunctivitis, not excepting those with an abundant purulent discharge, became well in a few days, and in no case of conjunctivitis in which this remedy was used from the beginning was there a corneal complication, and in those cases in which the corneal process had already started up, this treatment was very satisfactory in its results, as the infiltrations seemed to quickly clear up and further progress of the process seemed to be arrested. Absorption of already existing hypopion seemed to be hastened. Even in cases where there was a partial destruction of the cornea with hernia of the iris, it was likewise efficacious. When used after the thermocautery in cases of prolapse resulting from large ulcers, purulent destruction of the eye seemed to be avoided.

### CUPROCITRAL IN THE TREATMENT OF TRACHOMA.

Von Atlt[18] describes this remedy as a 5 to 10% mixture of citrate of copper and glycerine ointment (Austrian). It is turquoise blue, and remains stable for a year if kept in glass. It must be placed in the cul-de-sac by means of a glass rod, after which light massage is employed through the closed lids for one-half minute. At first use the 5% strength three times a day. It is to be used in the class of cases in which formerly the sulphate was used, but is not indicated in the mixed class, especially if characterized by marked lymphatic tendencies, profuse secretion, advanced corneal lesions or ciliary irritation. It is not painful, being neither irritant nor caustic, and it has the additional advantage that it may be applied with safety by the patient. The author has collected 306 cases and notes improvement in 263.

### EUMYORINE.

Goldberg[19] finds this drug nearly related to atropine, and in solutions of $\frac{1}{100}$ was preferable to a $\frac{1}{1000}$ solution of atropine, in that the mydriasis was prompter and more efficient, and disappeared by the end of the second day. It is quicker and more complete than homatropine of the same strength. So far as Goldberg's experiments went, there was nothing to show that it increased the tension or did any injury whatsoever. This drug is the nitrate of the methylammonium base of atropine, and in a 2% solution is less poisonous than atropine or hyocine.

Lindenmyer[20] describes it as a white, odorless powder, readily soluble in water and fifty times less poisonous than atropine. He uses solutions varying from 1% to 10% strength. One per cent solutions caused dilatation in from ten to twenty-five minutes, *ad maximum* in fifty minutes, and lasting twelve hours. Cycloplegia follows the mydriasis, becoming complete in two or three hours, duration depending upon the age. He considered the 1% solution as midway between atropine and homatropine. Considers it to be

[13] Brit. Med. Jour., July 25, 1903.
[14] *Ibid.*, Sept. 28, 1903.
[15] La Clin. Ophtal., April, 1903.
[16] *Ibid.*, May, 1903.
[17] Révue francaise de médecine et de chirurgie, June 20, 1904.
[18] La Clin. Ophtal., July 10, 1903.
[19] Heilkunde, No. 3, 1903.
[20] Berl. klin. Woch., Nov. 23, 1903.

indicated in irritative corneal conditions as phlyctenules and foreign bodies, but inferior to homatropine for examination as the cycloplegic effect is too protracted.

BRUCINE IN OPHTHALMOLOGY.

Skorjuchow [21] has used a preparation containing less than 0.1 strychnine. He injects in the temporal region or under the skin of the arm from 0.005 to 0.02. If the injections are made daily, he uses only 0.01, and if there are longer intervals he uses 0.02. In atrophy of the nerve he made as many as 26 injections, and in retrobulbar neuritis as many as 40 or 50. The visual field must be carefully watched, as the treatment must be interrupted on the slightest signs of retinal irritation. He claims improvement in 67 eyes out of 89 treated. In 18 no improvement was noted, and the condition became worse in 4. He believes that this drug increases the intensity of central and peripheral vision of both healthy and diseased eyes, stimulates the action of the muscles, diminishes the paresis, and dilates the vessels of the fundus. He advises its use in the various amblyopias, in acute and chronic retrobulbar neuritis of alcoholic or other origin, ordinary optic nerve atrophy, retinitis pigmentosa, and in the various forms of ocular paralysis. He claims it to be better than strychnia, inasmuch as it dilates the vessels of the fundus, thereby carrying away pathological products and also contributing to the nutrition. It is contra-indicated in all acute inflammations as, for example, retinitis.

STOVAINE, A LOCAL ANESTHETIC.

De Lapersonne [22] reports results obtained by him when using this anesthetic which Fourneau has extracted from the group of amino-alcohols. The anesthesia obtained is sufficient for the usual operations upon the conjunctiva and cornea, and even the cataract operation. It causes an exfoliation of the corneal epithelium, trivial in nature. It is inferior to cocaine in that it is more painful, and the corneal anesthesia is less complete and less lasting. Subcutaneous and subconjunctival injections of stovaine are more satisfactory than cocaine, as the anesthesia comes on within one minute and gives all the time necessary for an operation.

SUPRARENIN MURIATE.

Schnaudigel [23] states that this product is cheaper and more stable than adrenalin, and that it can be used pure or in combination with atropine, eserine, cocaine or zinc sulphate. He advises its use in diseases of the tear passages, phlyctenular conjunctivitis, spring catarrh and in operations.

BENZOATE OF LITHIUM IN THE TREATMENT OF CORNEAL MACULÆ.

Mazet, [24] believing that calcium carbonate and phosphate exist in many corneal lesions, thinks it reasonable to expect an improvement in vision if these lime salts be dissolved. Bunbacher attempted this with a 5% solution, but found it too violent for habitual use. In the benzoate he thinks he has found a valuable adjuvant, and claims good results after five years' use, especially in cases in which the usual methods had been tried faithfully without avail.

[21] Die Ophtal. klin., May 29, 1903.
[22] Annal. d'Oculist, July, 1904.
[23] Die Ophtal. klin., July 5, 1903.
[24] La Clin. Ophtal., May 25, 1903.

## Reports of Societies.

### AMERICAN PEDIATRIC SOCIETY.

SIXTEENTH ANNUAL MEETING AT DETROIT, MICH., MAY 30, 31, JUNE 1.

FIRST DAY, MAY 30, 1904.

THE President, AUGUSTUS CAILLE, M.D., in the Chair.

INTUSSUSCEPTION; CARE BY SLOUGHING OF THE INTUSSUSCEPTUM.

DR. IRVING M. SNOW, Buffalo, read this paper, reporting the case of a subacute intussusception occurring in a baby seven months old, with illness of sixteen days, with symptoms simulating ileocolitis on the sixteenth day and protrusion of a gangrenous intestine from the anus. The removal of six inches of necrotic intestine hanging outside the sphincter ani followed with recovery. Dr. Snow also gave the abstract of four similar cases. When the baby was taken to the Sisters' Hospital and placed under the care of Dr. Eugene Smith, it was clear that the child's symptoms — vomiting, diarrhea and emaciation — for the preceding sixteen days were due to an acute intussusception, and that a portion of the bowel had become gangrenous and had twice protruded from the anus. At no time had there been a complete obstruction to the fecal current, for gas and feces had been passed every day. The baby was in too poor a condition for laparotomy, and there seemed no urgent indication for operative treatment. The baby was fed and well stimulated. At a later date the bowel again protruded from the anus, and Dr. Smith pulled down the necrotic gut outside the sphincter, ligated it distal to the living tissue to avoid hemorrhage, cut below the ligature and pushed back the stump into the rectum. Six inches of intestine were removed. The ligature in no way interfered with the fecal current. Sixty days after operation the patient was in perfect health. This removal of the necrotic mass undoubtedly had the effect of shortening the illness or saving the patient's life. To delay would have invited a source of infection and auto-intoxication and irritation; to remain in the intestinal tract to produce pain, abnormal peristalsis, impaired assimilation and increasing prostration. When the microscopical examination was made, the pathologist was unable to tell whether it was large or small intestine, or whether the exterior was serosa or mucosa, because the sloughing was so great. Such a case was exceedingly rare and Dr. Snow had been able to find but four other recorded cases.

DR. C. P. PUTNAM, Boston, asked if the normal function of the intestine was retained and fecal matter and gases came through.

DR. SNOW answered that they passed every day.

DR. PUTNAM asked if this was not very rare.

DR. SNOW replied that in Henoch's case there was complete obstruction. The case he reported simulated ileocolitis, so that a differential diagnosis was

almost impossible. There was mucus and blood passing through, and a diagnosis was only made possible in his case by the protruding necrotic mass from the anus.

Dr. Cailie, New York, asked what portion of the gut protruded.

Dr. Snow replied that it was impossible to tell, but his own opinion was that it was a portion of the ileum. It was also impossible to say whether it was mucosa or serosa on the outside of the extruded mass.

AN INVESTIGATION OF THE INFLUENCE OF LABORATORY FEEDING ON 216 INFANTS WITH DISEASES OF THE GASTRO-ENTERIC TRACT, WITH SPECIAL REFERENCE TO THE WEIGHT INDEX.

Dr. Maynard Ladd, Boston, presented this communication and offered the following conclusions to a very lengthy and interesting paper: The influence of laboratory feeding was studied on 216 infants with diseases of the gastro-intestinal tract, the great majority of which were cases of fermental diarrhea and ileocolitis. The acute cases were ill on the average 17 days and the chronic cases 3.2 months before they were brought to the clinic for treatment. They were treated for lengths of time varying from one to thirty-one weeks. As an aid in comparing the influence of of the feeding upon infants of different ages and stages of development, the nutrition of each infant at the beginning and the end of treatment was judged by the estimation of its weight development. This was calculated from the *weight index*, which was simply the ratio of the weight of a given infant to the weight of the average normal infant of the same age. Judged by this standard, over 50% of the cases had a weight development of only 40 to 70% when first seen. As a result of the treatment, the series was divided into four groups.

Group I. Cases which maintained or increased their weight index while on laboratory milk, and entirely recovered from the acute gastric and intestinal symptoms for which they were brought to the clinic. This group comprised 109 cases, or 50.4%. The group as a whole gained 8% in weight index, or a maximum average gain per week of 156 gms. from the lowest weight reached during treatment.

Group II. Cases which showed a loss in weight indices and yet recovered from their acute gastric and intestinal symptoms and showed material gains in weight. This group included 58 cases, or 26.8%. The maximum gain per week from the lowest weight reached was 94 gms. This was not sufficient to maintain the weight indices, the average loss of which was 3.4%. This group received treatment on the average for only 5.9 weeks, as compared with 8.5 weeks in Group I.

Group III. Cases which for the most part recovered from the acute gastric and intestinal symptoms while under treatment, but whose weight was not materially increased. This group included 37 cases, or 17.2%. The average length of treatment was 3.7 weeks, the loss in weight index 7.2%, and the average loss in weight from the lowest point reached was 6.5 gms. per week. Eleven cases in this group were "not improved" while under treatment. Of these, 8 could not be traced and some of them may have died.

Group IV. The fatal cases. There were 12 in number, making a mortality of 5.6% in the series of 216 cases the results of which were known at the time the treatment was stopped.

All the cases in the series were sick infants, and the results are not to be compared with those obtained in the feeding of average healthy infants. The infants were fed upon appropriate modification of laboratory milk, usually beginning with very weak whey cream mixtures. This milk was administered within twelve or eighteen hours after the first visit, and was gradually increased in strength. In one half the cases there was no initial loss in weight following this method; in 87% of the cases the initial loss was less than one half pound (248 gms.).

DISTURBANCES FROM HIGH FAT IN INFANT FEEDING.

Dr. L. E. Holt, New York, read this paper. He said that observations made during the past winter had convinced him that many physicians and nurses who attempted to direct infant feeding according to the general principles of the percentage method had greatly erred in respect to the fat, with at times most serious results. This was particularly so when they selected a very rich or Jersey milk with 5% or 5.5% fat, because the average milk looked so blue and poor; they used this as they would have employed an ordinary 4% fat milk. Therefore, instead of giving in the formula a 3.5% or 4% fat, as they intended, the fat had often been 5%, 6%, or even higher. The object of the paper was to record some of the results seen when such high fats have been added. In the first cases reported the following points were noted: The baby stood the high fat so long without any disturbances; the suddenness and severity of the disturbances when they did come; the convulsions, tetany, laryngismus stridulus that appeared; the very large liver; the stools consisting of almost pure fat; the cessation of the nervous symptoms on first reduction of the fat, but their return one week later, the fat meanwhile having been put back to nearly previous strength. The points that were noted in Case II were as follows: Development of slight rickets, as shown by late dentition and cranio-tabes; the return of convulsions one week after the first ones occurred, the food meanwhile having been increased to nearly full strength, as in the first cases cited; the bowels were clinically constipated unless magnesia was given; the fat was not so high and the nervous symptoms were not so severe as in the previous case, and a loss of one pound followed the digestive symptoms. Another case was reported which showed the bad effects from high fat in vomiting cases, the development of a high degree of gastric catarrh under this treatment; the steady loss in weight, and the value of peptonizing and stomach washing. He thought the chief trouble was brought about by using rich milk of Jersey cows as though it was an ordinary milk. It was well known that gastric disturbances would follow high fat feeding. Nervous disturbances should be often treated by attention to this high fat. Chronic constipation might be present and the stools consisting almost wholly of dry and hard fat movements, and here often the mother or nurse would go on increasing the amount of fat and so make matters worse. With increasing experience, Dr. Holt said he was using less fat and higher proteids, especially in those cases where there was much derangement of digestion.

Dr. Charles G. Kerley, New York, said that he could not get the same results as Dr. Ladd, and he gave smaller amount until the fever was normal and the activity of the bowels had ceased and the stools were practically normal, *i. e.*, the blood and mucus had disappeared; then he gave a weak formula, and never over ½% fat and 4 or 5 sugar. With regard to the digestive disturbances, he thought that Dr. Ladd would have gotten better results if he had washed the stomach out more; such a procedure increased the child's appetite and also its capacity for food. This was specially valuable in the absence of vomiting. In the Infants' Asylum in New York he said they were unable to get milk containing more than 2% fat to

children under six months of age; these children were less susceptible to intestinal derangements; they thrived better in every respect on a low fat milk.

DR. ROWLAND G. FREEMAN, New York, said the most important thing in the paper was the working out of the weight index, and he asked if it would not be better to substitute for the weight index measurements of the length; if a child weighed five pounds at birth and measured seventeen inches in length, he thought the weight index should be corrected for that child; if a child of the same weight measured nineteen or twenty inches, such a child should have more than what was gained by the normal child because it was a large but an emaciated child. Regarding high fats, he said that much ignorance existed as to what was high fats and what cream was; in the books cream was ordered and mothers and nurses added cream to the milk, regardless of the fact that it might be a centrifugal cream of 40% instead of the 16% fat. The Straus milk in New York used low fat.

DR. FLOYD M. CRANDALL, New York, asked Dr. Ladd whether large babies, those weighing ten pounds, would keep up the weight index to the end of the first year. He thought that the general practitioner should have in mind what Dr. Holt said regarding constipation and the ingestion of fats; it was a very important point.

DR. J. L. MORSE, Boston, corroborated all that had been said regarding high fat. Eczema was often due to too high fat. Another sign he had not heard mentioned was the ammoniacal urine which would cease when the fats were reduced, and his explanation was that a large amount of fat took up alkalies from the intestines, and so there were less to be absorbed by the system; the alkalies elsewhere then were called upon, with the resulting changes in the urine. He believed that much ignorance was displayed by mothers and nurses in knowing the difference between top milk and top cream, and here was a chance for missionary work to be done.

DR. THOMAS M. ROTCH, Boston, believed that the study of fats should be more extensively carried out than it has been; the intelligent use of fats was to be advocated. Some babies have constipation and some have diarrhea as the result of high fat; there may be a weakening of the fat digesting properties. A baby may have a perfect fat digestion and yet become weaker and develop serious nervous symptoms. Intelligence on the part of mother and nurse was much needed in order to give the proper quantities of fat.

DR. B. K. RACHFORD, Cincinnati, asked what was the cause of the nervous conditions which developed from too high fat feeding; was it an auto-intoxication from the intestinal canal?

DR. L. E. LAFETRA, New York, thought that Dr. Ladd's study was of great value, and he hoped that he would continue his studies and report not only the children with high weights, but those with low weights. It was his experience to note that babies born prematurely, weighing 4, 5, or 6 pounds, would increase in weight more rapidly and at the end of one year would weigh three times the birth weight, whereas other children would not increase so rapidly. The normal growth of normal large and normal small babies should be considered.

With regard to the treatment of these cases of gastro-intestinal affection occurring in summer, in the Vanderbilt clinic, certain of the proprietary foods were used with benefit during the early period of the treatment and before the giving of the milk. In these cases it was necessary to keep the fats very low. As Dr. Holt pointed out, a child during the first three or four months of life has a great capacity for fat, and can take three times as much fat as proteid. Later the capacity for fat grows less, and the child can take only twice as much fat as proteid. Personally he had no difficulty in having the home modification of milk carried out with a fair amount of accuracy by teaching the mothers how to do it.

DR. CHARLES P. PUTNAM said that the required information could be easily obtained by using a Babcock tester.

DR. J. E. WINTERS, New York, said that these disturbances referred to were not due to percentages, but to too frequent feedings. Constipation was not due to the high fat so much as to the excess of food beyond what any child should take.

DR. A. JACOBI, New York, said that he had been writing and speaking on this subject for forty or fifty years, and yet he was not prepared to enlighten them regarding it. In nearly all these cases indican would be found and that denoted intoxication. It had been stated that little babies would tolerate fat and the older ones would not; that was not so, because little babies would not tolerate fat at all. It was a wonder they were not killed by it, and when they could not stand more fat, then they break down. It was not because the capacity for fat was less in babies of six or seven months old that caused their illness, but because they could not stand any more and they break down under the strain.

With regard to the constipation, the explanation was this: Insufficiency of the muscular layers. These babies were so fat, so rotund and weigh so much, but it was only fat and no muscle. Regarding the amount of fat, he believed that they would thrive on milk with a little over 2% fat.

DR. LADD, in answer to Dr. Freeman's inquiry, said that he had not taken any measurements at all, his paper referring to weights and not to lengths.

DR. HOLT said there were two kinds of cases, one in which the milk must be stopped at once for a short time, the other where it must be stopped for a long time. Quite a large number of cases required that the milk should be stopped until the acute symptoms have passed, and then the children could be again placed upon the milk. He thought it was a mistake in the summer diarrheas of children to keep them too long from milk. In the first class of cases where there may be an acute intoxication "milk poisons" produced, they must be kept off the milk until they are almost well. This was a different class of cases from where we had simply an intestinal indigestion due to dysenteric organisms.

### CONGENITAL HYPERTROPHIC STENOSIS OF THE PYLORUS IN AN INFANT, WITH REPORT OF A CASE.

DR. JOHN DORNING, New York: The child was born March 23, 1903, after a natural labor, of healthy parents. Weighed at birth 8½ pounds. The diet was breast milk exclusively. Child vomited after nursing. The mother never noticed mucus in the vomit, and the milk was always returned fluid. The baby seemed to be able to retain water. Child would frequently sleep twelve hours and never awoke more than once during the night, and seemed always to be sleepy. Never cried, but fretted after vomiting until nursed again. The bowels moved several times a day, always yellow in color and digested. The baby grew long; the face was plump and body not thin, but the arms and legs were always very emaciated. The above history was obtained from the mother.

On May 24 Dr. Dorning saw the baby and he found a pale, extremely emaciated, very weak and listless infant. The abdomen was somewhat distended, but soft, tympanitic, and not tender on pressure. A small mass could be found in the epigastric region, just to

the right of the median line. Chest examination was negative. Urine was negative. Tongue was clean. The diagnosis was made of hypertrophic stenosis of the pylorus and gastric catarrh, but, because of the low vitality of the baby, operation was not entertained. Gastric lavage and nutrient enemata were advised. He did not see the baby again until June 8, when he performed an autopsy.

The records showed that until June 7, when the child died, the stomach had been washed out, bringing up milk and mucus each time, that he was nursed from four to eight times a day, not more than ten minutes at a time, and vomited from two to eight times a day. The vomited matter usually consisted of fluid milk, but sometimes it was curdled and mixed with mucus. The bowels were variable, but there was no diarrhea. Small doses of calomel, bismuth were given at varying intervals. On the night of June 5 the abdomen became much swollen and the baby fretful. Irrigation of the bowels relieved this distention. On June 7 the baby became unconscious while nursing and died two hours later.

Autopsy was performed on June 8. The stomach was distended, the pylorus thickened and hard, and the duodenum one inch beyond the pylorus was deeply congested. The gastric mucous membrane was pale and showed no ulceration. The wall of the stomach presented a decided thickening toward the pylorus.

A report of the microscopical examination, made by Dr. John H. Larkin, here followed, the anatomical diagnosis of stenosis of pylorus from fibrous thickening of the submucosa and hyperplasia of the circular muscular coat being given.

Dr. Dorning said that in recording this case of congenital hypertrophic stenosis of the pylorus, there was added to the rapidly increasing list another unmistakable instance of this affection, verified by autopsy. There were now on record about sixty cases in all. A study of the literature led one to infer that there were either two distinct pathological conditions with similar clinical manifestations, one of which was amenable to dietetic management, and the other, unless relieved by operation, progressed to a fatal termination; or, that there were simply varying grades, or perhaps different phases of one and the same pyloric lesion. The published pathological findings would thus far favor either view.

The pathogenesis of this affection was still a matter of speculation, though it was generally conceded that it originated during intra-uterine life. The condition was thought to be simply a prenatal overdevelopment of the pyloric structures. It must be confessed that, at present, we know very little about its etiology. However, the possible existence of a syphilitic element should not be forgotten, even though the immediate history be negative.

The diagnostic symptoms of hypertrophic stenosis of the pylorus are persistent and apparently cause less vomiting, progressive wasting and a palpable pylorus. The absence of bile in the vomitus would ordinarily indicate an obstruction to be above the entrance of the common bile duct; its presence, however, would not exclude pyloric stenosis. In cases of moderate stenosis in which muscular spasm is perhaps a prominent factor, the gastric symptoms, though sometimes rather pronounced, are generally not very urgent in character, and improve and even seem to subside under dietetic treatment.

The presence of a palpable tumor in the region of the pylorus, in conjunction with the previously mentioned symptoms, established the diagnosis beyond a reasonable doubt. As it was not always possible to detect, with palpitating fingers, small masses in the upper abdominal zone, its absence did not altogether negative the diagnosis. Where the patient's condition would warrant it, an examination under anesthesia might disclose the presence of a thickened pylorus where it could not otherwise be detected.

He said that the symptoms of congenital pyloric stenosis were practically those of pyloric obstruction, and other lesions, such as atresia, polypi and adjacent neoplasms, or cicatricial tissue, occluding the duodenal extremity of the stomach, were so rare in infancy that when symptoms of pyloric obstruction were in evidence this condition should at least be strongly suspected. Every case was not necessarily immediately fatal. Some even lived to a more or less advanced age, suffering all the time more or less dyspeptic symptoms. There were thirty-one autopsies published by Maier in which stenosis of the pylorus was found. In some of these cases the clinical history dated back to childhood. Dr. Dorning said that it was impossible with our present knowledge to predict with any degree of certainty what the future of these cases will be, whether operated on or not. In cases that were intractable to dietetic treatment, operations alone seemed to offer any promise of relief, and they should not be too long delayed.

### A CURE OF CHRONIC NEPHRITIS FOLLOWING RENAL DECAPSULATION.

Dr. Augustus Caille reported the case of a girl, four and a half years old at the time of operation, who at the age of two contracted measles, and two weeks later received severe burns on back and legs. Two weeks after this there was swelling of the feet and puffiness of face and a little later, ascites. A physician diagnosed the case as one of acute nephritis, and she apparently recovered after four weeks. A month later she suffered a similar attack, also ending in apparent recovery. On the occasion of a third attack, quite severe, with suppression of urine for forty-five hours' duration, she was admitted to the Post-Graduate Hospital Nov. 13, 1900. The diagnosis was then made of subacute nephritis and she was discharged, improved, Dec. 30, 1900. On April 3, 1901, she was readmitted with all the evidences of a chronic nephritis: urine scanty and dark, containing albumin, casts and renal elements, blood and pus. The eyes were puffy and abdomen contained fluid. After a course of sweating, intestinal irrigation, diuretics and diaphretics, she returned home improved. Nine months later, Feb. 1, 1904, she again was an inmate of the babies' ward. There was general edema, enlarged heart, the apex beat being at the sixth interspace, an inch to the left of the nipple line. The second sound was accentuated.

On Feb. 19, 1902, a decapsulation of both kidneys was performed under nitrous oxide and ether anesthesia. There was found a typical chronic parenchymatous nephritis, the large white kidney, on both sides. Each kidney measured over four inches in length and was three times larger in bulk than normal. A diagnosis was made of right and left chronic parenchymatous nephritis. There was primary union of both wounds and convalescence was uneventful. Dr. Caillé then presented a table showing examinations of the urine made before the operation (8), examinations made immediately after the operation (8) and examinations made between ten and thirty days after operation (8). The comparison of these urine examinations was most interesting.

After the discharge from the hospital there was no more edema, headaches or uremia. The patient for a year past had been in perfect health and taken up her school life. The urine was practically normal and the general health was all that could be desired.

DR. CAILLE said that he had observed that nephritis following acute infectious diseases in children had a tendency to complete recovery; children who survived the acute stage, but continued to show albumin and renal elements for several months also frequently made a perfect recovery. In a certain number of cases recovery did not take place. He had recorded seven patients who developed nephritis following scarlatina, diphtheria and measles, all under his personal observation, and who subsequently died of kidney insufficiency, one at the age of five, one at six, two at ten, one at fifteen and two at the time of confinement, at twenty-one and twenty-two years of age. He said that in view of the uselessness of medication in chronic nephritis, the proposition to treat Bright's disease surgically should be met without prejudice.

From his observation in the case reported and in other cases that had come under his observation, he said he would not hesitate to advise inspection of the kidneys through lumbar incision in cases in which an acute nephritis, not secondary to cardiac lesions, did not clear up in a reasonable time, say six or eight months, and would furthermore advise splitting the capsule or decapsulating one or both organs should they appear swollen and enlarged, with the hope of preventing an acute nephritis from becoming chronic and incurable. The same procedure was indicated in acute nephritis with complete suppression of urines.

DR. KERLEY asked what the effects would be upon these children if they became victims of scarlet fever or other infectious diseases.

DR. CAILLE said he could not answer this question. The whole matter was new and very little positive definite knowledge on the subject was yet to be had. There were quite a number of cases that had been operated upon in a quiet way and not yet reported because they were waiting for results. In the case he reported, he was convinced that the benefit from the operation was a very marked one, but whether it was due to increased blood supply or to massage incident to the handling of the organ or not he could not say. He said that Dr. Edebohls was preparing a final paper on this subject of renal decapsulation, and out of 80 cases operated upon, 10 or 12 gave absolutely positive ideal cures, while 8 or 10 were practical cures. Dr. Caillé had seen the operation performed about twenty times without a mishap. He had seen better results from this operation than he had from medication in these cases.

(*To be continued.*)

## Recent Literature.

*Radiotherapy, Phototherapy and High Frequency Currents.* The Medical and Surgical Applications of Radiology in Diagnosis and Treatment. By CHARLES WARRENNE ALLEN, M.D., Professor of Dermatology in the New York Post-Graduate Medical School. Octavo, 618 pages, 131 engravings and 27 plates. Philadelphia and New York: Lea Brothers & Co., Publishers. 1904.

Allen has divided the text of his book into seven parts. He deals, in the first part, with the history and character of the Roentgen ray, explains its physics, and describes the modern methods of its production and application with especial reference to its use as a therapeutic agent. Part II consists of a short description of the more usual methods of diagnosis, to which but small space is given, as is to be expected in a work dealing almost wholly with the subject of radiotherapeutics. The third part of the book is devoted to a consideration of the application of the Roentgen ray as a therapeutic agent, and the author has made a careful collection of the reported cases, favorable or otherwise, in which the x-ray was employed in cancer, sarcoma and in many skin diseases. In his handling of the much-discussed subject of malignant disease, the author seems to possess none of the blind optimism which characterized the earlier reports of many observers, and he readily admits the apparent futility of x-ray therapy in certain classes of cases, or, for some unknown reason, in sporadic cases of a type usually presenting favorable results. At the same time he ably defends the dignified status which radiotherapy has attained in cases selected as to primary condition or extent of process. In this part of his work, the author comments extensively upon the deleterious effects of the x-ray, especially upon the operator. In the chapter on "X-Ray Burn," the importance of urging upon the operator extreme caution during every possible procedure, especially with regard to his own person, is evidently not underestimated. As to the histological changes and the effect upon active bacteria, the author discusses the various theories and opinions based on the observations of different writers. He agrees with the majority of others that the bactericidal action of the Roentgen ray is neither marked nor constant. The writer urges the importance of the tentative employment of the x-ray in therapeutics, especially with regard to exact and consistent dosage. In the chapter on the medico-legal value of the x-ray, the author emphasizes the fact of possible grave errors arising from the false interpretations of the radiograph by inexperienced or incompetent persons.

The fourth part of the book is devoted to a consideration of light treatment, which includes an exposition of the physics of light, and a description of the various forms of phototherapeutic apparatus. The subject of radio-activity is next taken up, and a collection is made of the published reports of the many experimenters with the salts of radium and other radioactive substances.

Dr. Allen ends his book with a description of the high-frequency currents of Tesla and D'Arsonval, as well as their physical properties and therapeutic possibilities. He expresses the belief that they are useful in cases where there is a condition of impaired general metabolism, although he has been called upon to employ them more extensively in affections of the skin. J. E. B.

*An Index of Symptoms as a Clew to Diagnosis.* By RALPH WINNINGTON LEFTWICH, M.D. Third Edition. New York: William Wood & & Co. 1904.

This small book, somewhat unique in design, has proved a success. This third edition contains about fifty new symptoms, and the lists of diseases have been made more complete. The book is to be recommended.

THE BOSTON
# Medical and Surgical Journal.

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## HEREDITY AND LIFE ASSURANCE.

During the past few years a marked change of attitude has been evident toward the question of heredity in its relation to disease. With the vague knowledge which our forefathers had it was easy to attribute what could not then be understood to a subtle influence for which in some inexplicable way ancestors were responsible. There is probably no more deeply rooted conception in the popular mind than that heredity is an all important factor in the production of many types of disease. This feeling still persists not only among the laity, but in considerable measure among physicians as well. That this has a very large foundation in fact we have no wish to deny, but that much which has been attributed to hereditary influence may be otherwise more simply explained is becoming each year more apparent. That our attitude toward the subject should be revised to meet all the facts of knowledge as now obtainable is not to be questioned, and an analysis of hereditary conditions is now demanded of the medical man which a few years ago would have been thought quite unnecessary. We need as never before to know as definitely as possible what may be legitimately attributed to hereditary influences and what may more probably be connected with all the acquired facts and conditions of life irrespective of the original soil.

We have before us an address by Sir William Gowers on the subject, "Insanity and Epilepsy in Relation to Life Assurance," published in the *Lancet* for Oct. 15, 1904. It will be generally acknowledged that life assurance companies have laid special stress upon the effects of heredity as popularly determined. The interpretation which they have put upon the numerous facts at their disposal has led them no doubt in this course. It has not rarely been impressed upon us that the life assurance societies frequently attach importance to circumstances which probably have but little weight as regards the expectation of life, whereas certain fundamental points in the personal examination of an applicant are overlooked. We refer especially to the examination of the nervous system wherein facts of the ancestry are apparently given much weight, whereas such fundamental signs as the condition of the knee jerks and the reaction of the pupils are overlooked. We have been, therefore, particularly interested in Dr. Gowers' conclusions regarding the question of life assurance risks in relation to certain conditions of the nervous system.

In arriving at his conclusions he has made use of statistics tabulated by Dr. Claud Muirhead, covering a series of nearly ten thousand male lives. Excluding the disease, general paralysis, which Dr. Gowers states causes far more loss to insurance offices than all other forms of mental alienation combined, he arrived at somewhat unexpected results in his analysis of other forms of insanity. In answer to the question as to whether an actually insane person may be accepted for life insurance on any terms he returns an unquestioned affirmative. In this connection he quotes an interesting case which has come under his personal observation wherein a life insurance company made a clear profit of forty-six thousand pounds in the case of a man certified as insane at the age of twenty-eight. He died at the age of eighty-eight, having spent sixty years in an asylum. The imbecility associated with this case was rather in favor of prolonged life than against it, and this must in general be the fact when one considers the extraordinary personal care which such unfortunates now receive at the hands of those in charge of them.

Speaking of family history, Dr. Gowers alludes to the tendency to regard a family history of insanity as almost on a level with that of tuberculosis in its influence on the eligibility of a life. The evidence for this supposition he considers, however, extremely small, and finds on an analysis of Dr. Muirhead's statistics that a family history of mental alienation has proved to be of no significance as regards the duration of life. His own experience is in general harmonious with this conclusion. He states that in very few cases of death from insanity met with in his insurance work has there been indication of such possibility in the family history. From this and many other facts the conclusion is adduced "that in a perfectly healthy proposer no family history of insanity is ground for regarding the life as below

the average, so far as death from this cause is concerned; that a previous attack of mental derangement, or any symptoms of present undefined mental disturbance, should preclude insurance, but that in some forms of established insanity a proposer may be accepted at a considerable extra cost without unreasonable risk."

The question of suicide in relation to life assurance is also considered in this address. Here also Dr. Gowers thinks that so far as the facts at present go the risk of suicide does not augment the risk which a neurotic family history would otherwise receive. Insane heredity he finds plays a small part in suicide. Financial causes and matters relating to the stress of life are a far more potent factor in its production. Even in the case of epilepsy, which Dr. Gowers discusses at considerable length, he thinks certain persons are insurable.

We cannot do more at this time than call attention to the main facts presented by Dr. Gowers. The weight of his opinion must undoubtedly have an influence, verified as it is by many years of experience and accurate observation. In general, we are glad to call attention to this address because, as we stated at the outset, we are continually being impressed with the false perspective prevalent, regarding the obscure diseases of the nervous system. We have no question that if all the facts could be judicially weighed it would be found by other observers as well as by Dr. Gowers that the supposed influence of heredity is far less potent for harm than is commonly believed. Even on the statistical side the matter is very difficult of proper solution, but enough knowledge has certainly accumulated to make us very conservative in our estimates of the effects upon the descendants, of various diseases of the ancestors. The life assurance companies may do much to help on the work by tabulating their statistics in the light of our newer knowledge.

## VITAL STATISTICS OF THE TWELFTH CENSUS.

BULLETIN No. 15 of the newly constituted Department of Commerce and Labor is a pamphlet from the pen of Dr. John S. Billings relating to the vital statistics of the twelfth census. In transmitting this bulletin to the public Mr. S. N. D. North, director of the Bureau of the Census, states that in no branch of the work of the twelfth census was the requirement of Congress that the volume be published on a certain date so serious an obstacle in the preparation of the report as in the field of vital statistics, owing to the practical impossibility of compiling the statistics of death on the basis of details of population, inasmuch as the time allowed was not sufficient to make the necessary computations and comparisons. The present bulletin is an effort to fill the gap brought about by the omission of much worth noting regarding the vital statistics of that census. The coöperation of Dr. John S. Billings has been obtained for this purpose, and we have, therefore, a large mass of supplementary data regarding deaths and death-rates which are of distinct value to the statistician.

Dr. Billings, in describing the vital statistics of the twelfth census, draws attention to the fact that few libraries contain documents which offer satisfactory answers to the general questions concerning vital statistics, and points out that the difficulty of obtaining detailed knowledge on various matters regarding mortality is extremely great, owing to the fact that few cities make extensive compilations of the material at hand, and that forms of tables and methods of compilation are so diverse that comparisons are practically impossible. The general statistics, furthermore, published by the Bureau of the Census cover only census years, and the fact that the main purpose of such statistics is to provide comparative data for a large number of different areas in limited space means of necessity a certain superficiality of treatment. It is clear that the factors of interest are so diverse and lead so far that they are quite impossible to bring together in a general report. It is also true that a high degree of ignorance and indifference exists regarding the general subject of vital statistics as related to national growth and development. From this it follows that no adequate legal provision even now is made in many states and cities for a proper and correct registration of births, marriages and deaths. For these various reasons Dr. Billings and the Census Bureau have regarded it as useful to supplement the report which has already appeared. It is of interest to note that no state has a complete registration of births, the nearest to it being Massachusetts, Rhode Island and Connecticut. It also appears that the only states which have a registration of deaths complete enough to make the death-rates worth calculating are Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York and Rhode Island. No southern state and no western state, with the exception of Michigan, have any satisfactory system. The

analysis of the general subject given by Dr. Billings in a brief space is worthy of the closest attention as bringing out our deficiencies and also as emphasizing the needs of the future.

The larger part of the pamphlet is filled with statistical tables considering population, deaths and death-rates at varying ages for certain cities, including the decade from 1890 to 1900. The death-rate from certain specified diseases, of which consumption, pneumonia, typhoid, diphtheria, and the affections incident to old age may be mentioned, are also considered. The pamphlet closes with certain statistical statements regarding the expectation of life in some of our larger cities and in a few states. Our final dependence in wide generalizations must ultimately be in accurate statistical reports following a uniform system. Any effort in this direction is certainly to be welcomed; Dr. Billings' discussion must be regarded in this light.

## MEDICAL NOTES.

Not Vaccinated: Unprotected. — Of the thirty cases of smallpox discovered in Chicago during the week ending Oct. 22, twenty-seven had never been vaccinated at all, and the three exceptions had never been revaccinated.

The American Journal of Urology. — A number of the members of the American Urological Association have undertaken to publish *The American Journal of Urology*, the first number of which, a very presentable pamphlet, is before us. This periodical will be issued monthly from the Grafton Press, and will be edited by Henry G. Spooner, M.D.

Deanship of Medical Department, Columbia University. — Dr. S. W. Lambert, professor of applied therapeutics in the medical department of Columbia University, has been appointed to the position of dean of that institution. Dr. Lambert becomes through this appointment an ex-officio member of the Columbia University Council, of the Board of Trustees of the Roosevelt Hospital and of the Boards of Managers of Sloane Maternity Hospital and of the Vanderbilt Clinic.

Fifteenth Annual Congress of Medicine. — We have received the second and the third numbers of the *Journal of the XVth International Congress of Medicine* — Lisbon, 1906. They contain the report of the actual affairs and the most important resolutions of the Central Committee. It is to be pointed out that a Colonial Exposition will be organized at the time of the Congress and also an inquiry regarding pellagra in Portugal, an enterprise undertaken by the section of psychiatry. In the two numbers there is a list of the subjects of official reports with the names of the authors who have accepted the work. In every section, there is also a list of recommended subjects for communications. Lastly, the *Journal* publishes the list of the national committees of the several countries where they are already constituted.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon Nov. 2, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 50, scarlatina 15, typhoid fever 18, measles 5, smallpox 0.

Free Distribution of Vaccine Lymph. — The State Board of Health has begun the distribution of vaccine virus free of charge in accordance with the act of the legislature of 1903. Circulars have been sent out stating the conditions under which the lymph is obtainable, to boards of health throughout the state as well as to the physicians, hospitals and dispensaries in Boston. The Board of Health prints certain rules and suggestions in sending out the virus.

Boston Mortality Statistics. — The number of deaths reported to the Board of Health for the week ending October 29, was 197, as against 159 the corresponding week last year, showing an increase of 38 deaths, and making the death-rate for the week 16.73. The number of cases and deaths from infectious diseases was as follows: Diphtheria, 67 cases, 5 deaths; scarlatina, 18 cases, no deaths; typhoid fever, 27 cases, 4 deaths; measles, 6 cases, no deaths; tuberculosis, 46 cases, 23 deaths; smallpox, no cases, no deaths. The deaths from pneumonia were 21, whooping cough none, heart disease 19, bronchitis 8, marasmus 7. There were 9 deaths from violent causes. The number of children who died under one year was 47; under five years, 55; persons over sixty years, 37; deaths in public institutions, 57.

A Free Dental Service at the Homes of the Sick Poor. — Dr. Eugene H. Smith, its dean, informs us that the Dental School of Harvard University has recently organized its free dental service at the homes of the sick poor so as to be of greater efficiency than heretofore. The Dental School is now prepared to send a dentist who is a graduate of the school and registered by the State

Board of Registration, to the homes of the sick poor or to hospitals for the purpose of relieving pain originating from the teeth. This service does not extend to the filling of teeth or making of plates for artificial teeth. Its object is simply the relief of pain; a more extended treatment of the teeth being postponed until the patient may have recovered, and can visit the infirmary of the school. The service here described can be obtained by telephoning the Harvard Dental School, North Grove Street, Boston, or by letter.

NEW YORK.

ANNUAL MEETING MEDICAL SOCIETY, COUNTY NEW YORK. — The ninety-ninth annual meeting of the Medical Society of the County of New York was held on October 24. The following officers were elected: President, Dr. Henry S. Stearns; vice-presidents, Drs. Floyd M. Crandall and Walter Lester Carr; secretary, Dr. John Van Doren Young; assistant secretary, Dr. Edmund P. Fowler; treasurer, Dr. Charles H. Richardson; censors, Drs. Wendell C. Phillips, H. Seymour Houghton, William H. Park, Joseph Brettauer and Egbert Le Fevre. In his report, Champe S. Andrews, counsel to the society, stated that during the past year particular attention had been paid to quacks who tried to evade the medical law on the ground that they administer no drugs. While there was at present no definition of what constitutes the practice of medicine in New York State, he said there was reason to hope that during the coming session of the legislature such a definition would be incorporated in the statutes. Of a large number of cases successfully prosecuted during the year, he cited five convictions obtained in the Court of Special Sessions for quacks who prescribed massage, electricity, water cure, etc. One of the most gratifying of these was the conviction of "Professor" Sheffield, who claimed that "natural magnetism oozed from every pore of his body." Mr. Andrews also made the recommendation that a movement should be inaugurated to secure the regulation of medical advertisements in New York State similar to that recently enacted in Michigan. In the report of the Committee on Hygiene, presented by the chairman, Dr. C. H. Richardson, it was recommended that every package of wood alcohol should be labeled "poison." The committee also called attention to the danger to the community of the formation of the drug habit from the common use of catarrh cures and other nostrums containing large quantities of cocaine.

MEETING OF MANAGERS OF THE SOCIETY OF ST. LUKE'S HOSPITAL. — The annual meeting of the board of managers of the Society of St. Luke's Hospital was held at the hospital on St. Luke's day, Oct. 18. During the year, 76,493 days of treatment were given, of which 55,746 were to non-paying patients. Two thousand nine hundred and ninety-two patients were treated in the hospital, and 31,115 in the out-patient department. It was stated that four wards in the hospital were vacant on account of an insufficient income for their support, and that the deficit of the institution was now $17,235, and rapidly increasing. Numerous gifts were announced, including $10,000 from relatives of the late Dr. Guy B. Miller, $7,500 for a bed from Mrs. Mary E. Miller and Miss Louise Easton, and $7,500 each, for beds, from Mrs. Anna Wright and Mrs. William R. Coughtry.

## Obituaries.

### SAMUEL W. ABBOTT, M.D.

DR. SAMUEL WARREN ABBOTT, Secretary of the Massachusetts Board of Health, died suddenly at his home in Newton Saturday morning, Oct. 22. He was born in Woburn, June 12, 1837. He attended the high school there and then went to Brown University at Providence where he graduated in 1858. He graduated from the Harvard Medical School in 1862. Soon after the outbreak of the Civil War he entered the navy as an assistant surgeon and served until 1864. He saw some active service in the navy, notably on the Monitor "Catskill," but his desire for still more activity led him to seek a transfer to the army. He resigned from the navy and was appointed as surgeon to the First Massachusetts Cavalry; in connection with this regiment he was actively engaged until the end of the war. He then returned to Woburn and practised his profession there from 1865 until 1869. From there he moved to Wakefield, where he continued to live until 1902, when he moved to Newton.

He was coroner of Middlesex County from 1872 to 1877, then was appointed medical examiner and served as such until 1884. He was appointed health officer of the combined Boards of Health, Lunacy and Charity in 1882, and continued his faithful and acceptable services in this position until the Board of Health was restored to its previous solidarity when he became secretary and held this position until the time of his death, twenty-two years in all.

In his earlier years as a practitioner Dr. Abbott took much interest in surgery, and in working out some questions which have later claimed from others more and more study. Smallpox and vaccination always interested him deeply; at one time he conducted a small vaccine farm in connection with his practice. He wrote much

and serviceably on these and kindred subjects. Almost the last thing he wrote was an editorial on "Smallpox Infection from Isolation Hospitals," for the issue of this JOURNAL of Oct. 20. He was an advocate of the law for supplanting the old coroners by the present system of medical examiners, and discharged the responsible duties of a medical examiner for seven years. For five years, from 1886 to 1890 inclusive, he edited the Massachusetts Registration Reports of Births, Marriages and Deaths, prepared under the direction of the secretary of the Commonwealth. His immediate predecessors in the preparation of these reports were Drs. Charles F. Folsom and George Derby. These reports, through all these and the still earlier years, were regarded as models in other states and in foreign countries.

Dr. Abbott contributed frequently to the Transactions of the American Public Health Association; valuable and important articles for Woods' Reference Handbook of the Medical Sciences; for Gould's Year Book; reports on progress in matters connected with hygiene and public health and instructive editorials on kindred subjects for this JOURNAL. The reports of the Massachusetts Board of Health through many years are a monument to his industry.

But notwithstanding all these varied interests Dr. Abbott's real passion was for statistics. He was a born statistician, minute, painstaking, accurate, tireless and honest. It will be no easy matter to fill satisfactorily the place which he occupied in the medical community and in the service of the state. He was a member of the Massachusetts Medical Society, the American Medical Association, the American Public Health Association, the American Statistical Association, the Loyal Legion, the Royal Statistical Society of Great Britain, the Société Francaise d'Hygiene.

As a man Dr. Abbott was singularly modest, simple and retiring, and commanded the respect of all who knew him. He leaves a widow, a son, and daughters.

## WILLIAM WOTKYNS SEYMOUR, M.D.

DR. WILLIAM WOTKYNS SEYMOUR, A.B., Yale '75, M.D., Harvard '78, died at his home in Troy, N. Y., Oct. 18, 1904.

After serving eighteen months as a house officer at the Boston City Hospital and spending a year in post-graduate study in England and on the Continent, he commenced the practice of medicine and surgery at his home in Troy, N. Y., making the third generation of his family to follow that profession in Troy. He held for some years the chair of midwifery and gynecology in the University of Vermont, and up to the time of his death was chief surgeon at the Samaritan Hospital, Troy.

In his younger days he was a prominent athlete, excelling in boxing and rowing.

Dr. Seymour was known principally for his work in gallstone surgery, and he was one of the first surgeons in the United States to operate successfully in this field. His translation of Kehr's classical work on "Gallstone Disease" is well known. He was a member of the American Medical Association, British Medical Association, American Association of Obstetricians and Gynecologists, of the New York State Medical Association and New York State Medical Society.

Dr. Seymour leaves a widow and two daughters.

## Correspondence.

### FOURTH PAN-AMERICAN MEDICAL CONGRESS.

NEW YORK, Oct. 25, 1904.

MR. EDITOR: The Fourth Pan-American Medical Congress, which will convene in Panama the first week in January next, bids fair to be a most delightful midwinter trip. The delegates will leave this country by the Atlantic, Pacific and Gulf coasts the last week in December. They will return by the same routes, or will make round trips.

The Public Health Association meeting will take place on the following week in Havana, and those desirous of attending both meetings can arrange to do so.

There are two routes for the physicians to take from Panama to Havana. The first is by way of Jamaica to Santiago de Cuba by boat and overland by rail to Havana. The second is by water from Panama to Vera Cruz, and from there to Havana. The former will probably be the most pleasant trip.

From Havana, the return trip can be made directly north to New York by water, or via Miami or Tampa, Florida, or New Orleans. The connections and dates of sailing are now being arranged.

The Panamanian government has appropriated $25,000 for the Scientific Session and the entertainment. The Congress will be held from the second to the sixth of January. The afternoons will be devoted to the Scientific Sessions and the mornings and evenings to trips and social functions. So far as can be learned, the program in Panama will be a reception on the first day, by President Amador of the Panama Republic, and the formal opening session of the Congress the same evening. On the second day, an excursion to the Canal in the morning, meeting of the various sections in the afternoon, and a banquet in the evening; on the third day, an excursion down the Bay to Taboga Island, where a Panama breakfast will be served, scientific sessions in the afternoon, and a ball in the evening. On the fourth day, an excursion to the U. S. Army barracks in the morning, section meetings in the afternoon and the formal closing session in the evening. On the fifth day, an excursion to the plantation of the United Fruit Company, and on the afternoon of this day, those of the "congresistas" who intend going to Cuba to attend the meeting of the Public Health Association will sail for Jamaica, while those who intend going by way of Vera Cruz, or returning home by way of New Orleans or New York, will remain until the following Tuesday.

The Secretaries of the sections of the Congress for the United States are Drs. A. H. Doty, of New York, hygiene and quarantine; Judson Daland, of Philadelphia, medicine; R. Matas, of New Orleans, general surgery; Bert Ellis, of Los Angeles, eye; Hudson Makuen, of Philadelphia, throat; Frederick Jack, of Boston, ear; C. H. Hughes, of St. Louis, nervous diseases; George Goodfellow, of San Francisco, military surgery; John Ridlon, of Chicago, orthopedic surgery; D. W. Montgomery, of San Francisco, dermatology; C. G. Kerley, of New York, pediatrics; Noble P. Barnes, of Washington, therapeutics; Walter G. Chase, of Boston, pathology.

Communications from physicians in the United States interested in these branches can be sent directly to these different secretaries. Delegates intending to attend the Congress, desirous of obtaining information concerning it, should communicate with the Secretary of the International Executive Committee in the United States.

RAMON GUITERAS, M.D.,
75 West 55th St., New York City.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, OCTOBER 22, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid Fever. | Diarrheal Diseases. |
|---|---|---|---|---|---|---|---|---|
| New York . . | 3,908,644 | 1,193 | 865 | 26.57 | 14.41 | 2.51 | 1.42 | 7.54 |
| Chicago . . . | 2,021,086 | 462 | 107 | 28.78 | 6.71 | 2.81 | 1.08 | 10.38 |
| Philadelphia | 1,407,968 | 380 | 55 | 26.31 | 10.79 | 2.89 | 2.63 | 7.36 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 160 | 32 | 27.50 | 5.62 | 1.87 | 2.50 | 5.00 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 106 | — | 27.36 | 18.87 | 2.83 | 3.77 | 10.38 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 65 | 14 | 15.38 | 18.45 | — | 1.53 | 3.07 |
| Boston . . . | 617,950 | 192 | 49 | 23.43 | 12.50 | 2.08 | 2.60 | 6.25 |
| Worcester . . | 136,925 | 32 | 12 | 9.37 | 6.25 | — | — | 6.25 |
| Fall River . . | 119,349 | 30 | 13 | 23.33 | 16.67 | — | — | 16.67 |
| Lowell . . . | 104,402 | 33 | 11 | 18.18 | 12.12 | 3.03 | 3.03 | — |
| Cambridge . | 100,998 | 30 | 8 | 10.00 | — | — | — | — |
| Lynn . . . . | 73,875 | 20 | 3 | 10.00 | — | — | — | 5.00 |
| Lawrence . . | 72,348 | 19 | 7 | 15.79 | 5.26 | — | — | 5.26 |
| Springfield . | 72,020 | 16 | 3 | 12.50 | 6.25 | — | — | — |
| Somerville . | 70,413 | 17 | 1 | 17.65 | — | — | — | — |
| New Bedford | 68,863 | 29 | 11 | 17.24 | 10 34 | 3.45 | 3.45 | — |
| Holyoke . . . | 50,538 | 20 | 6 | 15.00 | 20.00 | — | — | 5.00 |
| Brockton . . | 46,601 | 10 | 2 | 20.00 | — | — | — | — |
| Newton . . . | 39,310 | 8 | — | 12.50 | — | — | — | — |
| Haverhill . . | 39,061 | 9 | 1 | 33.33 | — | — | — | — |
| Malden . . . | 37,205 | 5 | 2 | 20.00 | — | — | — | — |
| Salem . . . . | 37,188 | 8 | 1 | 25.00 | — | — | — | — |
| Chelsea . . . | 36,499 | 11 | 2 | 27.27 | — | — | — | 18.18 |
| Fitchburg . . | 36,335 | 7 | 1 | 14.30 | 14.30 | — | — | — |
| Taunton . . . | 34,577 | 18 | — | 22.22 | 5.55 | — | — | 5.55 |
| Everett . . . | 30,209 | 5 | 3 | 40.00 | — | — | — | — |
| North Adams | 29,201 | — | — | — | — | — | — | — |
| Quincy . . . | 26,798 | 6 | — | — | 16.67 | — | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 6 | 1 | — | 16.67 | — | — | — |
| Brookline . . | 23,576 | 8 | 1 | — | — | — | — | — |
| Pittsfield . . | 22,870 | 4 | 1 | — | — | — | — | — |
| Medford . . | 21,956 | 3 | — | — | — | — | — | — |
| Chicopee . . | 21,692 | 3 | 0 | 66.67 | — | — | — | — |
| Northampton | 20,314 | 2 | 0 | — | — | — | — | — |
| Beverly . . . | 15,807 | 3 | — | 33.33 | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 4 | 0 | 25.00 | 25.00 | — | — | — |
| Adams . . . | 14,745 | 4 | 2 | 50.00 | 25.00 | 25.00 | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 0 | — | — | — | — | — | — |
| Newburyport | 14,478 | 6 | 0 | — | 16.67 | — | — | — |
| Woburn . . . | 14,315 | 2 | 1 | — | — | — | — | — |
| Melrose . . . | 13,819 | 4 | 1 | — | — | — | — | — |
| Westfield . . | 13,809 | 3 | 1 | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 4 | 0 | 50.00 | — | — | 25.00 | — |
| Revere . . . | 13,609 | 2 | — | — | 50.00 | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 4 | 3 | 25.00 | — | — | — | 25.00 |
| Southbridge . | 11,716 | 1 | 1 | 100.00 | — | 100.00 | — | — |
| Watertown . | 11,575 | 4 | 1 | — | 25.00 | — | — | — |
| Weymouth . | 11,350 | 5 | 0 | 20.00 | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 2,963; under five years of age, 1,222; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 745; acute lung diseases 338, consumption 344, scarlet fever 11, whooping cough 10, cerebrospinal meningitis 20, smallpox 3, erysipelas 5, puerperal fever 10, measles 8, typhoid fever 49, diarrheal diseases 214, diphtheria and croup 68.

From whooping cough, New York 3, Chicago 2, Pittsburg 2, Providence 1, Boston 1, Lawrence 1. From measles, New York 3, Pittsburg 3, Boston 1, Malden 1. From scarlet fever, New York 7, Chicago 2, Philadelphia 1, Pittsburg 1. From cerebrospinal meningitis, New York 18, Brockton 1, Weymouth 1. From erysipelas, New York, Chicago, Philadelphia, Providence and Clinton 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending Oct. 8, the death-rate was 15.1. Deaths reported 4,421; acute diseases of the respiratory organs (London) 85, whooping cough 39, diphtheria 66, measles 62, smallpox 4, scarlet fever 32.

The death-rate ranged from 2.6 in Hornsey to 24.4 in Salford; London 13.9, West Ham 14.3, Brighton 14.0, Plymouth 14.6, Bristol 13.4, Birmingham 16.1, Leicester 11.2, Nottingham 13.2, Liverpool 20.7, Bolton 14.2, Manchester 19.7, Oldham 17.9, Halifax 14.1, Bradford 16.1, Leeds 14.0, Sheffield 13.9, Hull 19.3, Cardiff 12.7, Rhondda 12.4, Merthyr Tydfil 16.5, St. Helen's 17.7.

## METEOROLOGICAL RECORD.

For the week ending October 22, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in Inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S. . 16 | 30.20 | 53 | 68 | 38 | 48 | 50 | 49 | W | W | 10 | 5 | C. | C. | 0 |
| M. . 17 | 30.10 | 60 | 74 | 47 | 39 | 30 | 34 | W | W | 8 | 14 | C. | C. | 0 |
| T. . 18 | 30.00 | 61 | 72 | 50 | 35 | 87 | 61 | W | N | 8 | 11 | C. | C. | T. |
| W . 19 | 30.16 | 52 | 54 | 49 | 86 | 94 | 90 | N E | N E | 8 | 6 | O. | O. | 0 |
| T. . 20 | 30.06 | 60 | 68 | 52 | 91 | 87 | 89 | E | S | 6 | 10 | O. | C. | T. |
| F. . 21 | 29.72 | 60 | 68 | 52 | 90 | 76 | 83 | S E | W | 20 | 15 | O. | O. | .63 |
| S. . 22 | 29.75 | 57 | 67 | 47 | 63 | 56 | 60 | S | S W | 8 | 12 | C. | F. | 0 |
| ☞ | 30.00 | | 67 | 48 | | | 67 | | | | | | | .63 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for week.

## SOCIETY NOTICES.

ALVARENGA PRIZE OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about one hundred and eighty dollars, will be made on July 14, 1905, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but cannot have been published, and must be received by the Secretary of the College on or before May 1, 1905. The Alvarenga Prize for 1904 was not awarded, no essay of sufficient merit, in the judgment of the committee, having been submitted in competition.

THOMAS R. NEILSON, M.D., Secretary.

BOSTON MEDICAL LIBRARY MEETINGS.—The Boston Medical Library in conjunction with the Suffolk District Branch of the Massachusetts Medical Society, will hold the following meetings during the season of 1904–5, at 8.15, at the Fenway: Nov. 16, Nephritis: Pathology, Prof. W. T. Councilman. Clinical Examination of Urine, Prof. E. S. Wood. Diagnosis, Dr. Richard C. Cabot. Nov. 30, Ptosis of the Abdominal Organs with Special Reference to the Kidney: Discussion. Dec. 7, The Humane Treatment of Malignant Disease from a Surgical Point of View, Dr. John C. Munro. Dec. 21, Nephritis: Medical Treatment, Prof. F. Pfaff. Surgical Treatment, Dr. Paul Thorndike. Prognosis, Dr. Frank Wells. Jan. 4, General Treatment of Appendicitis: Discussion. Jan. 11, Medical Charity, Dr. Geo. W. Gay. Jan. 25, A Study of Objective Methods of Diagnosis of the Stomach in a Medico-Surgical Clinic with Report of Cases, Dr. H. F. Hewes. Results of Surgical Treatment of Benign Disease of the Stomach, Dr. J. G. Mumford. Feb. 1, Results of Operative Treatment of Cancer in and about the Mouth: Discussion. Feb. 11, Physiological Economy of Nutrition, Prof. R. H. Chittenden, New Haven. Feb. 15, Recent Work on Etiology of Disease, Prof. W. T. Councilman. March 1, The Surgery of Renal and Ureteral Calculi: Discussion. March 8, The Present State of Opinion Concerning Sewer Gas and its Effects, Prof. Wm. T. Sedgwick. Nine Years' Experience in the Treatment of Diphtheria with Antitoxin at the South Department of the Boston City Hospital, Dr. John H. McCollom. March 11, Open. April 5, Cerebral and Spinal Surgery: Discussion. Notification of each meeting will be given in the BOSTON MEDICAL AND SURGICAL JOURNAL; those who wish a special notification by postal card will please notify Dr. Brigham at the Library. Light refreshments will be served at each meeting.

GEORGE W. GAY, FRED. B. LUND, ELLIOTT P. JOSLIN,
*Committee on Medical and Social Meetings.*

## RECENT DEATHS.

WM. WOTKYNS SEYMOUR, M.D., died suddenly in Troy, N. Y., Oct. 18, 1904.

JOSEPH RUTTER DRAPER, M.D., M.M.S.S., died in Westford, Oct. 30, 1904, aged forty-two years.

## OPERATIONS: BOSTON CITY HOSPITAL.

The following operations will be done and cases shown in the amphitheater of the Boston City Hospital on Nov. 4, from 10 A.M. until 12.30 P.M.: Bursitis of Knee; Carcinoma of Breast; Exploratory Laparotomy; Inguinal Hernia.

## Address.

### TUBERCULOSIS, ITS NATURE AND PREVENTION.*

BY HENRY BARTON JACOBS, M.D., BALTIMORE, MD.

In the early years of the nineteenth century, corresponding to those in which we are now living in the twentieth, there was being waged one of the most notable wars against disease and death which can be found in history. The scourge of smallpox had held its devastating sway almost unchecked through the centuries. The people, accustomed to its presence, looked upon it as inevitable, and so, silently and sadly, gave up to its demands a full tithe of victims, while more than another tithe bore uncomplainingly the ugly marks of its visitation. Jenner's discovery of vaccination at the end of the eighteenth century opened new hopes. The glad tidings spread to all countries. Benjamin Waterhouse brought the word to Boston in 1800–2, and in the years that followed, 1803–4–5, the medical profession, the world over, waged its war upon the great scourge, instructing the ignorant, showing the way, and in twenty years, or even less, smallpox as a great international plague had ceased to be.

Now much the same thing is going on in these early years of the twentieth century. The great men of the end of the last century, Villemin, Pasteur, Koch, have shown what this disease, tuberculosis or consumption, is, and they and others have shown how it may cease to be the great devastating plague of our day. It but remains for the people to learn of it, to understand it, and then to use the right means of stamping it out forever.

To this end associations are being formed everywhere to carry on the educational and relief work, and I congratulate the citizens of Newport that they are not behind in this movement. Recently a national association was formed with the object of affiliating local societies, binding them into one great organic whole, so that the problems to be attacked, the work to be done, could be approached by a solid, united body, irresistible in strength and devotion.

In a simple way and rather briefly I want to tell you: 1, What tuberculosis is; 2, How it is acquired and fostered; 3, How it can be avoided or prevented; 4, How it can be cured; 5, and lastly, What I conceive to be the duties of the citizens of Newport in regard to stamping out the disease from this community.

The subject has been so frequently discussed in the past year or two that there are few who have not heard that tuberculosis, like diphtheria and typhoid fever, is a germ disease; but to many this term conveys little. I shall try to explain in homely language what is meant. You all know that, if you were to put a loaf of cake in a damp corner of a dark cellar, it would not be many days before that cake would be covered with a fine growth of blue mold and that the cake would be more or less spoiled. Now this mold would come upon the cake because in the damp air of the cellar there were the invisible germs or seeds or spores of the mold, which can only be seen with a microscope. They settled upon the loaf and found it good soil upon which to grow, for mold like grass or flowers is a species of plant life, though very low down in the scale. No mold can grow unless there are mold seeds or germs, any more than can grass or flowers grow without seeds.

The mold in growing on the cake changed it from good cake to bad, made it sick, if you like, and if allowed to go on may even make it decay.

Now the growth of the mold is almost analogous to the growth of the germs of tuberculosis. They, too, are invisible to the naked eye but, if we catch them in a glass tube or a glass flask in which there has been placed some substance like beef juice or milk, upon which they like to grow, we see after a day or two a growth similar to a mold, not blue but white, and as this tuberculosis mold continues to grow it changes the beef juice or milk somewhat as the cake is changed. I will show you a picture of this mold growing. If now we take some of this growth, spread it out on a small piece of flat glass and put it under the microscope, we are able to see the individual germs or the seed of this tuberculosis growth or mold. They are very minute little rods which develop very rapidly indeed by lengthening and then splitting apart, each little fragment again lengthening and again breaking up. While doing this they nourish themselves upon the substance upon which they are growing and, like the mold upon the cake, they are spoiling that substance. You know molds have a preference in the substances upon which to grow. For instance, the germs of the blue mold, with which you are familiar, grow more quickly and more vigorously upon cake than upon bread perhaps. So with the germs of tuberculosis; they prefer animal substances, and especially the fluids and tissues of human beings, cows, calves, guinea pigs, etc. If then they gain admittance to the bodies of men or animals, they may grow there and change the tissues or fluids, so that the men or the animals become ill. This illness is the disease, tuberculosis, and when the tuberculosis becomes located in the lungs, it becomes consumption; without the germ there can be no disease. No matter how weak and debilitated the individual may be, he can never have tuberculosis or consumption until he takes into his body this definite specific germ, which produces by its growth the disease. You will see, then, if everybody could live in a place where there were no tuberculosis germs, nobody would ever have consumption.

Moreover, there is a farther consideration; namely, that when only a few germs get into a perfectly healthy body, the body has the means of battling with them and overcoming their growth; so that, if everybody kept his body perfectly sound and well and did not allow *many* tuberculosis germs to get in, he would stand a very favorable chance of never getting consump-

* Address before the Newport Association for the Relief and Prevention of Tuberculosis, August, 1904, illustrated with charts and lantern slide pictures.

tion. So that the great protection to every individual is in either never allowing germs to get into his body, or in so keeping his body in such health that if a few do get in they can be overcome without producing the disease.

As I have said, if the germs get into the lungs, they produce tuberculosis of the lungs, which may become consumption, for consumption is but the old and popular name for advanced tuberculosis of the lungs. If they get into the stomach and intestines, then it is tuberculosis of the intestines; if into the bones, then tuberculosis of the bones, which produces hunch-backs and the hip disease of children; if into the glands, especially the glands of the neck, then tuberculosis of the glands or scrofula; all these are due to the growth of this same germ, the germ of tuberculosis which has been named the *tubercle bacillus*.

I will speak to-night mainly of the tuberculosis of the lungs or consumption, for it is by far the most common form of tuberculosis. Indeed, a very large per cent of all our population dies every year from it. I will show you a diagrammatic picture of the lungs. You will see they are composed of air pipes, dividing and subdividing like the branches of an inverted tree, with little sacks at the tips corresponding to the leaves of the tree, where the real work of the lungs is performed, as it is in the trees. Sixteen or twenty times in every minute of our lives we expand our chests and take new air into these tubes. Whatever is in the air has a tendency to be drawn in, though if inhalation is made through the nose, some of the impurities are screened out by the intricate structure of that organ; so that breathing through the nose should always be encouraged. Indeed, one who thoroughly appreciated this fact some years ago wrote a very interesting little pamphlet, entitled " Shut your Mouth and Save your Life," [1] and there is not altogether such exaggeration in the title as might at first be supposed. Sixteen or twenty times every minute we take air into the lungs and, if we happen to be living or working in an atmosphere in which there are germs of tuberculosis afloat, they are carried to some of these little sacks and may find lodgment and grow. The tissues try to expel them or to overcome them, and so set up an active growth and hem them in, forming tiny little nodules or tubercles from which the word, tuberculosis, takes its name.

In very many instances, if the body is strong and well, the tissues do overcome the growth of the germ, and after a time the little tubercle heals and disappears, leaving only a minute scar behind. But in less favorable individuals the germ gets the upper hand, grows and multiplies. The cells of the center of the tubercle are overcome, their character is changed, somewhat in the same way that the mold changes the character of the cake. These cells die, soften and break down, and soon a small cavity exists. This increases in size and reaches the surface of the air tube. The irritation of its presence makes the patient cough, and, as he coughs, he spits out the contents of this cavity, contents which consist for the most part of germs and the broken-down tissue of the lung. Every time then that the consumptive coughs and spits he is likely to throw out a mass of these infectious germs, which have the power of producing the disease in a new individual if they are breathed in before they have lost their vitality.

Tuberculosis, therefore, is merely the growth within the body of the tubercle bacillus in great numbers, which so destroys the tissues and poisons the system by its presence and by its products that the individual becomes ill, loses weight and strength and finally, unless the growth is checked, dies.

If we were never exposed to the possibility of taking in the germ, we would never suffer the disease. The question then is, How can we limit the possibility of infection — how can we diminish the germ supply? As all the germs must come from some person or some animal already infected, if we can so arrange it that they cast off no germs which others can take, then we cut off the supply at once. The person with consumption who is careless where he spits is the greatest danger we encounter. We rarely are in danger from the fresh moist spittle, for so long as the spit is moist the germs are held and they cannot fly about in the air, but so soon as the spit dries and becomes a powder the germs are blown about by every whiff of wind and may easily be inhaled. Dried spit, then, is one of the most frequent sources from which tuberculosis is acquired. In the open air and in the sunlight this danger is not great, for after some hours' exposure to sunlight the germ loses its vitality; but within doors, away from light and pure air, the life of the germ is greatly prolonged. Thus the real danger of acquiring the disease is in being exposed, either in the work shop or house or schoolroom, to the dust which arises from the dried sputum or spit of a fellow workman or student or invalid member of the family. And as the carelessness of that infected one increases, so increases the danger of transmission; or, on the other hand, as light and fresh air are excluded, so is the danger of the germ increased. It is then among the ignorant poor, working in factories or sweat shops and living in dark, often damp, unventilated houses, that we should expect to find the greatest contagiousness; and the facts bear out completely this supposition. Nowhere is tuberculosis more transmissible, nowhere is the contagiousness greater, than among the poor and ignorant immigrants who live in the poor tenements on the East Side of New York.

I will show you a map of what is known as the Lung Block and a few pictures of the kind of houses composing this block. The more the method of acquiring the disease is studied the more convincing it becomes that tuberculosis, especially tuberculosis of the lungs, is a house disease, a house infection from the germs lodging in the dark corners. Patients afflicted, therefore, should always be careful not to cough

[1] "Shut your Mouth and Save your Life," by George Catlin, Health Publishing Co., Boston, Mass., 1890.

without holding something before the mouth, for fine sprays containing germs are thrown out during cough; and they should be careful never to expectorate except into paper or cloth which may be burned, or into some form of spittoon which may contain carbolic acid or some other substance sufficiently strong to kill the germs. I have pictures of various such spittoons.

The careful consumptive patient should be no menace whatever to his family or friends. He simply takes the proper precautions not to let his germs become scattered about where others may breathe them.

Absolute cleanliness of person and of room, as is carried out in all well-regulated santoria, not only makes living with the consumptive without danger but insures less risk from taking the disease than in any other place, for there all the germs are killed and there are none left for others to breathe.

I have already said that, if the body is kept in perfect physical condition, it has the power of resisting to a great extent the inroads of the germs; but there are all sorts of conditions which prevent the body from being kept in this perfect condition. And among these conditions which reduce the resistance of the body we may mention conditions of birth, habits, occupation.

All persons are not *born* with the same strong constitutions. Therefore, the weak are all the more likely when exposed to the disease to take it from lack of resistance. Any *habit* which impairs our vigor is also a predisposing cause to consumption, and no habit is more potent in this particular than the immoderate use of alcohol. Certain *occupations*, too, are most important factors in reducing the resistant strength of individuals. All indoor workers are more prone to the infection than out-of-door workers. Benjamin Rush, over a century ago, noted that consumption was almost unknown among the American Indians and the early settlers of this country. And the farmers and lumbermen are to-day perhaps the most immune class. Those occupations in which the workman is subjected to much irritating dust are particularly dangerous; so in general it may be said that whatever reduces the resistance of the body fosters consumption.

There are, moreover, *racial* tendencies to consumption. The negro race, of all peoples of which we know, is most prone to the disease. The relative mortality of whites and colored in Maryland show this very well. And this great increase in the susceptibility of the negro cannot alone be accounted for by conditions of ignorance and lack of hygienic laws, and can only be explained by assuming that in the evolution of the race it has not acquired the same powers of resistance or immunity to the germ of tuberculosis, that has been acquired by some of the white peoples. The Irish or Celtic race is also prone to tuberculosis. The statistics gathered by Mr. Frederick Hoffman, the actuary of the Prudential Insurance Company of New Jersey, are most interesting and somewhat alarming to the young of Irish origin. They show that this race, together with the colored, should be particularly careful neither to be exposed to the tuberculous nor to allow their good health to become impaired to such extent that their resistant powers are diminished. Of all peoples the Jews are least susceptible; though under conditions of great poverty and bad housing, conditions in which many of the poor Russian Jews are living in our cities, they too may show an unusual proneness. To what is due the remarkable racial immunity of the Jews is unknown, but may possibly be explained as due to an acquired resistance through the centuries of struggle of this race.

All measures which the individual or municipality may take to prevent the propagation of the germs and in removing predisposing or fostering causes tends to prevent the dissemination of the disease. Anti-spitting laws, notification laws, fumigation laws, laws in regard to hygienic measures, laws in regard to tenements, workshops, schoolhouses, etc., are the measures we must employ, with general education of the people in the nature of the disease, how it may be spread and how avoided and prevented. Placards may be displayed, leaflets distributed, lectures given, etc., etc.

I have said nothing about the danger of taking the disease from animals, particularly from cows, but there can be no doubt, I think, that there is danger in this direction. None of us, I am sure, is willing under our present knowledge to eat tuberculous meat or drink tuberculous milk, and the laws for the slaughter of all tuberculous cattle are wise and should be rigidly enforced. Evidence seems to point to the fact that children are particularly likely to be infected by the milk of tuberculous cows which almost invariably contains the germs of tuberculosis. The intestine of the child seems to allow these germs to penetrate its wall more readily than that of an adult, so it is most important that pure milk be supplied to the young.

A few words now about the cure of tuberculosis, and here I want to encourage hope to the greatest degree. The old idea that consumption was a hopeless disease has definitely been proven to be false. You will be surprised, if you do not already know, the very large per cent of cases when treated properly from the start that recover. The annual reports from the various sanatoria and out-of-door camps, from all over this country and Europe, substantiate entirely this statement; and the remarkable thing about these reports is that they all agree so closely, whether the sanatorium be that of Sharon, situated a few miles out of Boston at an altitude of only 200 feet above sea level, or that of Saranac in the Adirondack Mountains, 3,000 feet, or in Colorado, 7,000 feet, or again those in various parts of England, France, Germany or Switzerland; the relative proportion of the number of cases sent home well is almost identically the same.

This shows conclusively that it is not so much a question of the situation of the sanatorium, not

so much a question of altitude, as a question of method of treatment; and the methods pursued now in all well-conducted sanatoria are practically the same. So it is to the method and not to the particular climate to which credit must be given.

A brief description of this method will show you the course to be followed by every consumptive, whether treated at home or in a sanatorium. The very first move is to see that he ceases to be a danger to those who are to take care of him or to visit him. He must therefore be provided with spit cups or paper napkins into which he can always spit, whether at home or on the street. Pocket flasks have been devised which are useful, and rubber-lined pockets into which paper napkins can be put are also useful. When in the house, small hand spittoons with paper linings which can be taken out and burned are cheap and serviceable — the point is that no consumptive should ever spit into any receptacle which cannot either be burned or sterilized by carbolic acid, boiling water or some such means. In coughing the patient should be taught to hold before his mouth a paper napkin so that the minute spray from his mouth may neither be a direct menace to those about him nor an indirect one through the drying of this spray and its becoming scattered in the dust of the house. Studies in the past few years warrant the statement that the invisible spray from the mouth of the speaking or coughing consumptive is a more dangerous source of the direct transmission of the disease than has heretofore been supposed. This spray, somewhat as from the mouth of an atomizer, can be carried fully four feet, and anyone breathing the air within that distance may inhale the active germs contained in the minute particles of moisture. The bed linen, the personal linen, clothes, even the carpets and hangings of the room where the consumptive sleeps, should be capable of frequent sterilization.

The patient himself must next be considered, and the measures adopted to insure his recovery should be directed to at least three points. First, to insure to the individual the greatest amount of fresh air possible; second, to insure to the individual the greatest amount of food which can be properly digested; and third, to inaugurate such manner of life that the forces of the body shall be exhausted as little as possible, while keeping up good moral tone and good digestion.

Drugs are of no avail, but the services of the physician are indispensable; he must plan the treatment and must see that it is carried out, and herein almost alone lies the advantage of the sanatorium over the home for the treatment of consumption. Patients at home will occasionally disobey their doctors; they see friends who tell them that this or that thing would be better for them; and he is a very strong-minded person who will not, sooner or later, yield to friends' importunities, which are always offered with such good motives but which are usually so bad for the patient.

First, then, the maximum amount of fresh air; from morning till night and from night till morning in the open air, winter or summer. If the disease be advanced and there is fever, then entire rest in a reclining chair or in bed in the open air. If the disease is very early and the patient is able to work, then work must be as far as possible in the open air, and the whole night should be given up to sleep in the open air, either out of doors with the open heavens above, on a porch or in a room with all windows raised. I have pictures of patients at rest in suitable open-air pavilions which I will show you; also pictures of houses with porch or veranda for open-air sleeping. The consumptives of Newport need not go away to find these things. Nearly every house in town has at least a pleasant back yard or garden, in which on a porch or under an awning they might spend their time while coming back to health and strength.

Secondly, the patient should have the maximum amount of food which can be properly digested, and to this end it seems wise to encourage the drinking of milk and raw eggs between the regular meals and before going to bed at night. In this way patients frequently take as much as two quarts of milk and a dozen eggs a day in addition to three hearty meals.

The third consideration calls for such manner of life that the forces of the body are well preserved, and so reserved for the battle against the disease. Heavy work is undesirable; indeed, severe exercise of any kind is bad. The patient should not become fatigued, but in the early stages, when without fever, he may be allowed light work or exercise which will keep up a zest in life and aid in preserving good digestion. If there be fever, then all exercise must cease and the patient keep either to a reclining chair or to the bed, until it shall have disappeared.

No medicines are necessary in the great majority of cases. Indeed, Dr. Trudeau tells me that one of the worst features he has to contend with is, that patients come to him with their digestive powers so broken down by prolonged dosing with creosote that their stomachs never recover, and therefore their powers for fighting the disease are so crippled that they never have a fair chance. The amount of harm done by the advertised quack medicine cures cannot be estimated, for it is through the early months of the disease when there is hope of recovery that the patient trusts to these false methods, fearing perhaps to consult a physician, and so loses the chance of recovery.

Under the manner of treatment which I have so imperfectly outlined, of the very early cases sent to sanatoria or treated at home in the same way, eighty to ninety per cent recover; of the more advanced cases, thirty to fifty per cent recover; of the far advanced cases, perhaps ten per cent recover. Nothing could speak louder than do these figures for an early recognition of the disease and for immediate treatment in the proper way. The physician who holds on to a patient, encouraging him that this or that medi-

cine will cure him, not only commits an egregious error but an unpardonable sin from which there may be no reprieve.

So far, then, as the cure of consumption is concerned, the most important things are *early recognition* and *understanding of proper procedures.*

Now Newport is an ideal town for the complete subjugation of this disease. It is almost an isolated community in some respects, *i. e.*, it is surrounded by water on three sides, and upon the fourth is a wide stretch of beautifully lying, open farm lands. Its permanent population is not exceedingly dense. It is comfortably housed, well-to-do, and well educated for the most part. Moreover, it is very stable. There are no great inroads of ignorant poverty-stricken immigrants from the less civilized part of Europe, such as the large cities of the country have to contend with, a class which forms the very center of local infections, making such quarters as the Lung Block of New York possible. It has no great tenement houses, the worst breeding places of all sorts of disease. Its streets are clean, its sewerage system admirable, its climate remarkably even, the tendency to longevity much beyond that of most communities. Indeed, I have been struck by the fact that in the last report of its Board of Health there were 125 deaths of persons over sixty, or over 35% of all the deaths for the year. And of these 125 over sixty, there were 32 over eighty, nearly 10% of all deaths, which means that ten people out of every hundred born in Newport live to be over eighty. I doubt if you find a better record anywhere.

But now look at the havoc consumption played with the population in the year 1903. As I should have told you, the great majority of those dying of consumption are cut off in the vigorous years of life. Few die of this disease under fifteen and comparatively few over sixty. Now, on looking at the report of the Board of Health, there were 154 deaths in Newport of persons between five and sixty, and there were 31 deaths from consumption during the year, and seven or eight more from tuberculosis of other parts of the body. It is perhaps fair to assume that thirty of the consumptives were between five and sixty years old at the time of their death; so that one fifth of all those dying between five and sixty died of consumption. Think of it! One out of every five of the population who dies within the period of most usefulness — from the age of five to sixty — dies of consumption.

Such a condition is not worse here than it is everywhere else, but it is nevertheless startling. If it were smallpox or cholera that were so doubly decimating the population, every effort of city and state would be up in arms against it. The whole community would be aroused, and nothing else would be done until the epidemic had been checked. But this frightful death-rate from consumption goes on year after year, and we passively submit without it exciting hardly a momentary comment, and yet consumption is a preventable and a curable disease, just as surely as is smallpox. We need only be aroused to a knowledge of the methods of prevention and cure.

Ask yourselves, then, will you here in Newport any longer quietly sit by and let this useless destruction of young and valuable lives go on? That you are determined it shall not is shown by what you have already done. You have laws against spitting in public places; you have laws requiring the notification of all cases of the disease; you have powers granted your Board of Health to fumigate infected houses. You have a hospital dispensary where the poor may be treated and advice given. You now have formed a society to work in harmony with your health authorities for the relief and control of the disease. It seems to me, you are very fairly started to stamp it out from your midst. But there is yet much to be done. Let me enumerate some of the things.

First, the doctors of the town must bear the great brunt of the fight. And their prime duty is to see that no case of consumption escapes an early diagnosis. Nothing is so fatal to the success of treatment as failure of early recognition of the disease. It is in the first stages, and almost solely in the first stages, that we may expect any real hope of recovery, and so the failure on the part of any physician to make an early diagnosis militates just so much against the chances of that patient. To insure that early diagnosis the physician should feel himself called upon to bring to bear all possible means. It is by no means easy to surely say at the very first visit whether or not the patient has consumption, but, if there is the least doubt, if there is any question, resort should be made to repeated careful examinations of the sputum by expert microscopists and consultations with one's colleagues be called, so that within as short a time as possible the physician may be able definitely to say to his patient either that he has or he has not consumption. And if he has, it is far better all round to say so. The first shock to patient and friends may be very hard but the outcome is always better. The patient then understands he must not trifle with his complaint and will be likely to be all the more ready to follow suggestions for treatment.

The second great duty of the physician is in reference to the treatment. He must not encourage the belief that benefit will be gained by taking this or that prescription, a cough mixture or tonic, whether it be cod-liver oil, the hyperphosphites, or creosote. The time is too valuable to be given up to these procedures. Every day counts, and the only measures proven to be of real worth are those of which I have already spoken,— fresh air, food, rest, at home perhaps, on some farm, or better still in some sanatorium; but at any rate no delay, no trifling with drugs while the disease goes on from its incipient, hopeful stage to its advanced and less curable conditions.

The third duty of the physician is to report the case as one of tuberculosis to the health board.

You have a city law making provision for this, and it is one of the best provisions possible. No physician need have any hesitancy in doing so, no patient should object to it. The records of the Health Office are sacred and secret. In perhaps seven out of ten cases the mere notification is all that ever follows, but in the other three cases it may be wise for the board to take some action, either in relief, assistance or in fumigating the apartments after the patient shall have moved away, for no house in which a tuberculous patient has either lived or worked should go unfumigated. Nor should any new individual or family be allowed to move in until this is satisfactorily done.

Now these are among the most important duties of the physician. The duties of the citizens of Newport are not less important, though they be fewer in number. The most important of all is to see to it that the Board of Health and this society be supplied with funds by which the work can be carried on. The Board of Health needs to have in its employ a well-trained active young man, whose duty it shall be to examine for the tubercle bacillus every specimen of sputum submitted to him by any physician of the town. This young man needs a small laboratory, a microscope and a few chemical reagents. The whole thing won't cost over fifteen hundred dollars a year.

Secondly, the Board of Health needs funds for fumigating the houses of those too poor to properly have it done for themselves. No feature in the struggle against consumption is more important than that surely no second family, tenant or boarder should enter a house or a room in which has lived a consumptive, without its first having been scientifically and thoroughly fumigated.

This new society which has been organized to carry on the crusade needs generous encouragement and support. It wishes to spread knowledge of the necessity of prevention and cure by means of printed posters, leaflets, circulars; it needs to supply spit cups to those unable to buy them; it needs to employ a nurse to visit in the homes of the very poor who may be afflicted, a nurse who shall spread a knowledge of the best means of living, the best means of preventing other members of the family from catching the disease. The society needs money to supply proper food to these very poor. And farther, the society needs money with which to establish a small sanatorium upon one of the neighboring country hillsides, where young men and women, just in their very prime, who have suddenly found themselves attacked, may be sent with the great hope that a large majority of them by proper treatment may within four or six months come back to their families and to their work able to resume the duties of life, saved by this means alone from the early, sad ending of many a happy ambitious youth.

These are some of the duties of the citizens of Newport, physicians and laymen, which I would earnestly plead with you to undertake.

# Original Articles.

## THE IDEAL DOCTOR.

BY DAVID W. CHEEVER, M.D., BOSTON.

I SHALL define Altruism as "sacrificing self to others," and Egoism, as "sacrificing others to self." Although the precepts of Buddha, the maxims of Confucius, the writings of Cicero and Seneca inculcate sacrifices to friendship and brotherly love, yet it is certainly true that altruism and a wide charity date from the advent and teachings of Jesus Christ; general benevolence, the growth of hospitals, the sedulous care of cripples and weaklings, are distinctly Christian practices.

The term "Ideal Doctor" is not here limited by specialty or by general practice: it applies to all medical men.

WHAT is the best type of a doctor?

The relations between doctor and patient are so peculiar as to require a blending of altruism and egoism, of self-denial and self-assertion.

The physician must do all for the patient; he must put himself in his place; but, on the other hand, he must maintain and assert his own rights and his self-respect. He must be a gentleman; and being a gentleman he is at great disadvantage when dealing with patients of a commercial spirit. He cannot meet them in equal combat; they defeat him in practical business relations.

The doctor knows he ought to be paid for sincere and honest care of a case; the commercial patient judges by results, perhaps disputes claims, belittles services, has an absolute ignorance of the finer feelings of the physician.

The doctor puts himself in the patient's place; treats him as he would wish himself to be treated. The patient may, or may not, appreciate these services. If not, what remains for the doctor but egoism; a reasonable selfishness to protect his own interest?

Now here is the difficulty. If the relation of patient and doctor is to be wholly commercial, then the doctor may exaggerate the money value of what he does. In short, the professional spirit is sunk in a trade. Also the doctor may be *himself* commercial, and even avaricious. In this case he overcharges, exacts all he thinks the patient can pay. He evidently has not the professional spirit; he is making a trade; he is "in it for all it is worth." The results of these methods are twofold disastrous: First, on the doctor, leading to a contempt for small fees, for small cases, and for humble patients. Second, on the patient, leading to a general idea of the great cost and uncertain price of any sickness or emergency; thus driving him to quackery, to no treatment, or to gratuitous treatment in hospitals.

On the other hand, every doctor has to treat the poor for nothing. Here altruism is abused. For the vast expansion of hospitals, dispensaries and free clinics leads many to apply who could or ought to pay something to the doctor. The sliding scale of medical prices, which the varying worldly possessions of a community renders inevitable, fosters both the over-charge and the under-charge. It is thus plainly to be seen that the doctor is torn between too much sympathy, too much altruism, the fear of becoming commercial, or the danger of starving, himself.

What is the ideal doctor? He should be a gentleman above all. He should respect the rights and condone the prejudices of his patient. He should realize that it is idle to treat the body and neglect the mind. He should reflect that a sick body means a sick mind, and discount all that the sick say.

It is difficult for the healthy physician to appreciate the state of the patient's mind. Some are querulous, many are timid, many diffident and distrustful; all are tormented by phantoms of doubt and uncertainty. It is the doctor's part to reassure, to cheer, even to prevaricate, if necessary. We do not understand mental operations; we never shall. We coarsely study the mechanism and we fail to reach the motor. We can try, however; we should try; nothing does more good if we touch the right spring. The writer took one despairing, hysterical young woman out of bed, and cured her by his will power. He utterly failed in the next case. Here is where tact is as valuable to the doctor as professional knowledge.

The ideal doctor is sympathetic but not weak; he concedes, but he requires. The doctor is the confidant, adviser and friend of his patients. He knows all their secrets. He does not willingly betray them.

Pathology and not dollars should be the ideal doctor's first inquiry; caretaking, relief, his first duty. But to save himself from starvation he should have business tact.

Some people succeed, others do not; why is this? Business tact enables him to see chances; to trim to circumstances; not to oppose the inevitable; to accept defeat goodnaturedly; to please people; to oblige them. Unless the doctor cultivates egoism to a degree, he fails of success. He *must* think of himself.

He may use legitimate means of advertising; he must not hide his light. He may let it be known that he has had certain successes, or made use of original means of treatment. He must advertise to his brother doctors only, never to the public. Let others advertise him by favorable comment.

It should be a cardinal maxim of the ideal doctor to do his best always; never to shuffle, procrastinate, or half do a thing. Every case must be thoroughly treated, well digested, the best done possible. This may be difficult, but he must come as near to it as he can.

The ideal doctor is sparing of visits in a subacute or chronic case. In acute sickness, as peritonitis, pneumonia, meningitis, or in young children, he cannot go too often and he cannot go too early. Hours are days here. But in ordinary cases he can easily over-visit. There is the taint of commercialism, the abuse of the patient's means, in too frequent visits. Besides, they are destructive of diagnosis and prognosis. They weaken observation; seen too often, judgment is confused.

It is a question whether dispensary and hospital practice does not unfit the doctor for his private business. This sounds strangely, but there are two applications:

One who sees fifty Colles's fractures in a winter is better equipped for diagnosis and perhaps treatment than he who sees two cases. But, on the other hand, he who runs through a hundred cases of snap-diagnosis in a morning, gets an oversight and not an insight. It is the difference between the rustic and the cit. The former sees few objects and studies them down to the bottom; the latter tries to shut out and not see myriads of passers and a babel of sounds.

Another cardinal point for the doctor is to believe that no effort is wasted; all solid work tells in the end.

Now the ideal doctor, being kind to the poor, self-denying, overworked, has to push his egoism to the front, or he will be worn out. Self-preservation is an instinct not to be neglected. The altruistic doctor may feel that he ought to respond to every call, but can he? or ought he?

The doctor has legally a right to refuse any call; he is not obliged to go. If he is the only doctor to be had, humanity bids him go; otherwise he has a perfect right to decline.

The doctor is annoyed by bad debts, unpaid accounts. Most of them are lost; unless the patient pays willingly, he rarely pays at all. The discontented patient assumes poor treatment or an unfortunate result as a means of evading payment. Worse than this, he is easily led by bad counsel from others to bring claims and suits against the doctor. The latter must stand up against them or he loses his self-respect, and, moreover, the respect of others. On the other hand are many cases of gratitude or real effort to pay in later years which remunerate the doctor for his grievances.

Looking back on long years of practice, the doctor may fairly say that his professional life has been full of disagreeable incidents and anxieties; but, on the other hand, he has had many exquisite pleasures, the latter due to the recovery of patients from desperate sickness.

The ideal doctor looks after the interests of his brother physicians; he says no evil. Perhaps we are describing an impossible character, but we are striving for an ideal.

He who has a healthy body, he whose mouth is shut, whose heart is kind, whose intentions are sincere, who does his best, who treats his patient as himself, who looks after justice as well as mercy in his dealings, is altruistic and egoistic both, is the ideal doctor.

Does he exist?

## THE TECHNIQUE OF RESECTION OF THE CECUM.

BY CHARLES L. SCUDDER, M.D., BOSTON,
*Surgeon to the Massachusetts General Hospital.*

Mr. L., thirty-nine years old, a young adult, was suddenly seized with acute abdominal pain forty-eight hours ago. He complained of some nausea, but he did not vomit. All the first day he felt chilly. The pain, which was at first general, settled finally in the right side of the abdomen, and to-day, the second day of the illness, became very severe. The bowel moved

the first day of the illness normally. The second day of the illness the bowel did not move. He had had no attack like this before. He had never been troubled by indigestion, nor had he ever been jaundiced. He had a slight rise of temperature and pulse.

Examination found the heart and lungs normal, the abdomen slightly tympanitic and showing moderate rigidity of the right rectus abdominis. There was tenderness over McBurney's point, where there was a small mass to be felt. Rectal examination discovered nothing abnormal.

An appendectomy was done. At the time of the appendectomy there was discovered on the anterior wall of the cecum a firm mass the size of a hen's egg. This mass was entirely distinct and separate from the appendix. It was thought that the mass was either the beginning of malignant disease, a thickening due to an old ulcer of the cecum, or a chronic inflammatory process of unknown origin. Three days after the appendectomy, the patient's permission having been obtained for the major operation, a resection of the cecum, including this mass, was done, and an end-to-side anastomosis of the ileum and transverse colon made. The patient has done uninterruptedly well since the operation. One small wick of gauze was left down to the retroperitoneal tissue at the situation of the resected colon. The microscopical examination showed the mass to be due to a chronic inflammatory process. The appendix showed no pathological changes.

Certain occasions arise when it is necessary for the surgeon unexpectedly to resect the cecum without previous preparation. Every surgeon doing abdominal work should be familiar with the technique of this operation. The abdomen should be opened by that incision which will render most easily accessible the parts to be operated upon. An incision in the right linear semilunaris is satisfactory in most instances. This incision may be enlarged by an incision at right angles to it, extending into the loin. The oblique incision parallel to and above the crest of the ilium is also a convenient one. This latter is practically the continuation forward of the incision for nephrectomy.

The parts being well exposed, an incision is made through the posterior parietal peritoneum at the outer side of the cecum and ascending colon. The colon is freed from its bed until the hand passes beyond its inner border behind the peritoneum. The vessels behind the posterior parietal peritoneum — the branches of the ileocolic artery — are divided and ligated with fine silk by the use of a Cleveland needle. All mesenteric vessels to the cecum and to the ileum, so far as it is decided necessary to remove the ileum are likewise ligated. This leaves the part of the bowel to be removed entirely free. A rubber-covered clamp is placed upon the distal portion of the ascending colon. A clamp without rubber cover is placed near it upon the ascending colon. The bowel is divided between the clamps as is indicated in the drawing. Sufficient space is left upon the proximal end of the ascending colon, that is, between the clamp and the cut end, to enable a purse-string suture to be placed as indicated in the drawing. The distal divided end of the colon is closed by an over-and-over continuous Pagenstecker linen suture. This suture closes the colon and checks all bleeding from the mucous membrane. The rubber-covered clamp is then removed. The closed end of the colon is pushed within the purse-string suture, which is drawn taut and tied. Three or four interrupted mattress sutures are now placed over the dimple formed by the puckering purse-string suture. There are thus three sutures between the mucous membrane of the divided gut and the general peritoneal cavity. These are sufficient to secure absolute closure of the bowel.

The clamped cecum is now held with gauze by an assistant while two clamps are placed upon the ileum, the rubber-covered clamp being placed upon the proximal portion, the clamp without the rubber cover being placed tightly upon the portion to be removed. The ileum is divided, as shown in the drawing, obliquely, so as to preserve by a good circulation the integrity of the bowel opposite to the mesenteric attachment. A point is selected upon the ascending colon or transverse colon at which the divided ileum is anastomosed to the colon. In the instance at hand I was unable to utilize the small remaining portion of the ascending colon, as it was tightly fixed and immovable. I therefore performed an end-to-side anastomosis between the ileum and the transverse colon. After transverse division of the bowel it may be longitudinally divided opposite the mesenteric attachment, the corners thus formed rounded off. Thus is secured a larger opening and one less likely to be subsequently constricted. The portion of the transverse colon where the anastomosis was made was isolated by means of a rubber-covered clamp, thus checking hemorrhage and occluding the bowel. The suture used was the Pagenstecker linen thread, with a straight No. 6 milliner's needle. A posterior peritoneal muscular suture was first used, the colon was then opened to the width of the diameter of the ileum, then a suture placed, including all coats of the bowel, around the entire circumference of the ileum, and finally the peritoneal muscular suture was completed. A bit of omentum was fastened as a plastic over the line of suture.

The general abdominal cavity through the whole of this procedure was entirely protected by gauze. The operation was done practically extra-peritoneally. Upon the removal of the superficial layer of soiled gauze the deeper layer of unsoiled gauze still protected the abdominal cavity. The parts were washed carefully with salt solution. The clean gauze was removed from the abdomen. The abdomen was closed with the exception of one small wick to the retroperitoneal attachment of the ascending colon.

A lateral anastomosis of the side of the ileum to the side of the colon is often a convenient method of completing this operation. If there is need for speed in finishing the operation, the Murphy button may be used to advantage.

I believe that an end-to-side anastomosis may be done as securely and safely as a lateral anastomosis.

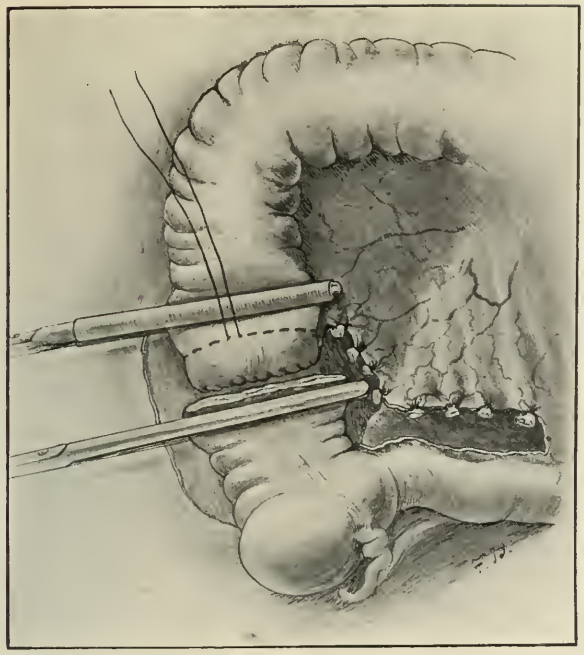


FIG. 1. — To illustrate the technique of the first part of the operation for removal of the cecum. Note peritoneal incision parallel and external to ascending colon, cecum and ascending colon freed from retroperitoneal attachment, clamps for cleanliness and hemostasis applied, continuous over and over suture to occlude distal colon, purse-string behind occluding suture, ligated vessels of colon in the freed edge of posterior parietal peritoneum, ligated vessels in the free mesentery of the ileum.

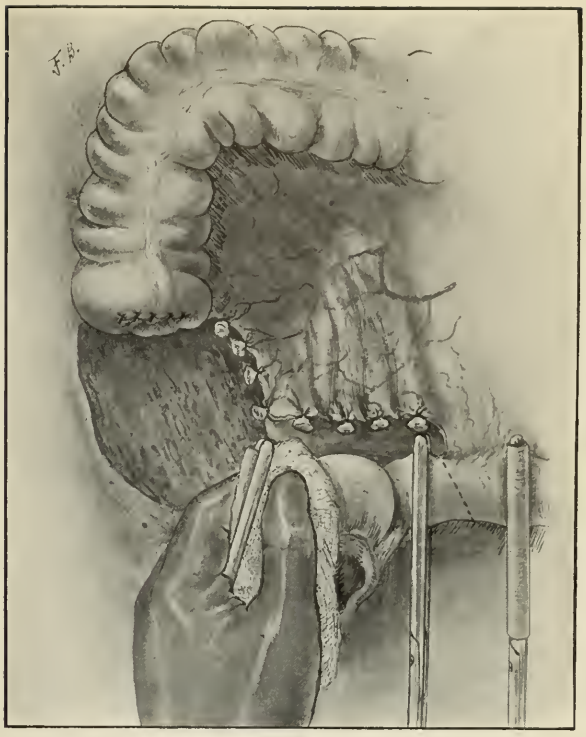


FIG. 2. — To illustrate the technique of the second part of the operation for removal of the cecum. Note the retroperitoneal bared area, the bed of the cecum and ascending colon, which have been lifted with gauze forward, clamps upon the ileum, the proper line of section shown as a dotted line. The occluded distal end of the colon has been placed within the purse-string suture and the latter has been tied, and this drawing shows a few interrupted Cushing sutures placed over the purse string to secure greater safety.

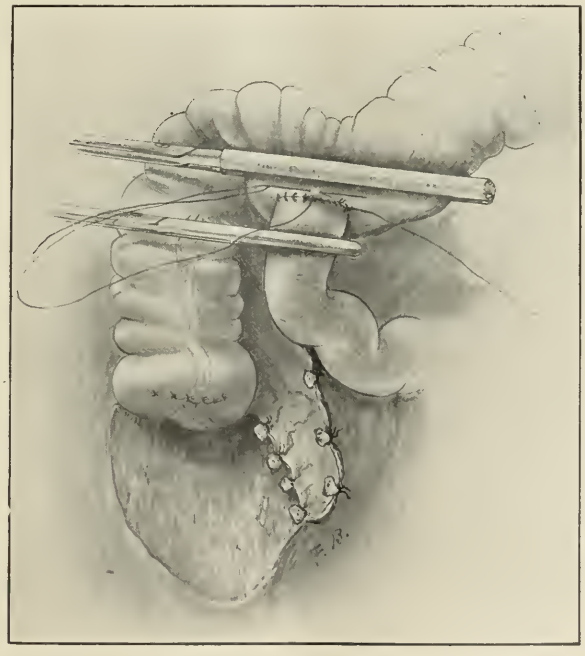


FIG. 3. — To illustrate the technique of the concluding part of the operation for removal of the cecum. Note the clamp upon the transverse colon and the one upon the ileum, the end to side anastomosis of the ileum into colon, the last half of the peritoneal Cushing suture is shown being placed. The omental graft placed about the line of suture is not shown.

# PLASTIC OPERATIONS FOR RESECTION OF THE NASAL SEPTUM AND EXCISION OF SEPTAL SPURS.

BY GEORGE H. POWERS, JR., M.D., BOSTON,
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## I. ON RESECTION OF THE NASAL SEPTUM.

As regards the etiology of deviations of the nasal septum, much has been written; it is not the purpose of this paper to discuss what part is taken by trauma or anomalous development in the production of this condition. Suffice it to say that the nasal fossæ are, in the majority of cases, asymmetrical. However, it is only the deviation producing symptoms which calls for surgical interference. It is obvious that if the nasal fossæ are wide, a considerable degree of deviation may cause little or no obstruction to respiration. The principal object of surgical intervention is to overcome the stenosis; pathological conditions in the nose and naso-pharynx, particularly in the region of the ostium tubæ, directly traceable to the deviation in many cases, may later receive attention.

For some years the Asche and Gleason operations have been practically the only measures employed for relief of this condition. The Asche operation consists in a crucial incision through the septum at the point of greatest convexity, followed by a forcible reduction of the deviation, and the subsequent wearing of a perforated hard rubber splint in the nostril for at least five weeks. The Gleason operation consists in making a U-shaped incision through the septum, the flap thus produced being forced towards the concave side, and maintained in this position either by means of a splint or gauze packing. Both of these operations are easily and rapidly performed, but the course of after-treatment is extremely long and tedious to the patient, the wearing of splints being particularly annoying.

The purpose of the resection operation (as originally described by Krieg and Bönninghaus, and since modified by many men both in this country and on the Continent) is to completely remove the offending portion of the septum, whether cartilaginous or bony, or both, preserving, however, a flap of mucous membrane and perichondrium which is intended to cover the site of the resected portion on completion of the operation. It is the integrity of this flap and its proper apposition which ensures primary union and therefore a speedy recovery.

As regards the details of the operation: After the nose has been thoroughly cleansed, the parts should be thoroughly anesthetized, preferably both sides of the septum, by the use of cocaine. A convenient method is to use a solution of Cocaine Hydrochlorate (10%) and Adrenalin Chloride (1/1000) in equal parts. It is well to gently rub the mucosa with pledgets of cotton, moistened with the solution, as by this method a more rapid anesthesia is produced than if the nose were simply packed with similar pledgets. The absorption of cocaine is less, with therefore less danger of constitutional effects, while the anesthesia produced is as complete as though the cocaine were allowed to remain in the nose for a longer space of time. It is needless to say that careful asepsis must be observed.

The incision through the mucosa may be made with a long curved bistoury, beginning behind and below the posterior limit of the deviation. A slight but firm pressure is required in making this incision, as only the soft tissues need be incised. The incision is carried from behind

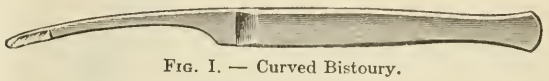


Fig. I. — Curved Bistoury.

forwards to the anterior limit of the deviation. A second incision is now made with the bistoury, beginning well up on the septum and joining the anterior end of the horizontal incision at nearly a right angle.

If the mucous membrane is not abnormally adherent, it may now be readily elevated and peeled back; if it is adherent, the operator will be amply repaid for his pains if he carefully dissects up the mucosa with a knife (the curved bistoury answering the purpose admirably), for the flap is a very important factor in regard to after-treatment and the final result. It may be added that the mucous membrane is, as a rule, adherent only in those cases in which the deviation is very far anterior. For elevating the mucosa, an instrument similar to that shown in Fig. I will be found very serviceable. The



Fig. II.

smaller end is used for this purpose, the blade being 2 cm. in length, 0.5 cm. in width, and a little less than 1 mm. in thickness, and slightly curved. This curvature allows the operator to keep the point of the instrument in close contact with the septum, thereby lessening the danger of perforating the flap during the process of elevation. When the flap is formed it may be pushed up and packed lightly in place with a pledget of cotton, in order to keep it out of harm's way during the resection.

There has been a great variety of instruments devised for the work on the cartilaginous and bony portions of the septum. A slightly modified Grünwald forceps is a very serviceable instrument, the modification consisting in having the under surface of the lower jaw of the instrument



Fig. III.

filed down at the point. By this means, after making a perpendicular incision through the cartilage, it is possible to slip the lower jaw under the cartilage more readily, the mucosa of the opposite side being by this procedure quite easily dissected away from the cartilage. The instru-

ment is equally efficient in resecting portions of the bony septum. When the operator has to deal simply with the cartilaginous septum, a sharp gouge will be found to be a more convenient instrument than any of the biting forceps. A gouge such as that shown in Fig. III has been

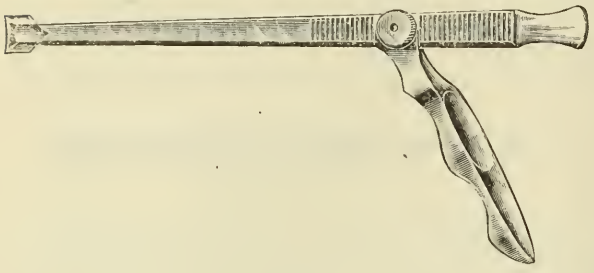


FIG. IV.

made on the lines of a chisel for use in septal operations, devised by Charles N. Spratt, M.D., of Minneapolis. With this simple instrument the cartilage may be very rapidly and accurately resected, with no previous dissection of the mucosa of the opposite side; for, while the cartilage is very readily cut with it, the reverse is true of the soft tissues. Another advantage in excising the cartilage by this method is that there are no projecting points left to be dealt with, as the gouge leaves a smooth, even surface.

When sufficient cartilage has been excised, the flap of mucosa is brought down and distributed evenly over the operative field. One of two methods to keep this flap in apposition may now be employed; it may be held in place by three or more sutures (using needles devised especially for this purpose by Leon E. White, M.D., of Boston), or a light gauze packing may be introduced, care being taken to retain the flap in position by means of a thin spatula held firmly over it. The latter method would appear to be the simpler, in that more or less packing is essential in case the flap is sutured, in order to control hemorrhage as well as to prevent the accumulation of fluid under the flap.

On completion of the operation, the portion of the septum operated upon will be seen to consist merely of two layers of mucosa, with the perichondrium. The deviated cartilage, or bone, having been removed, this septum of soft tissue will be straight, or nearly so, allowing free respiration on the previously obstructed side. The question of how much bone or cartilage is to be removed, is easily answered during the course of the resection, as it will readily be seen to what extent this must be carried in order to provide free breathing space.

The most common objection to this operation is the so-called danger of a resulting "saddle-back" deformity. As a matter of fact, the cartilaginous septum, which contains the great majority of operable deviations, enters in no wise into the support for the nasal bones; the bony septum may do so in a measure, but how many cases, notably specifics, do we see, of almost total destruction of both the bony and cartilaginous portions of the septum with "saddle-back noses"? It is an exceptional case, in any event, in which the resection of the greater portion of the bony septum is indicated. Of twenty cases operated upon during the past year, in no instance has there been the slightest tendency towards this deformity; nor, in reading over the literature on this subject, is mention made of any such untoward effect of this operation. The after-treatment will be dealt with in conjunction with the after-treatment in cases operated upon for septal spurs.

### II. ON EXCISION OF SEPTAL SPURS.

As in the resection operation, a flap is dissected up, beginning the horizontal incision behind and below the obstructing prominence. It may seem difficult to dissect up a flap of mucosa in the posterior region of the nose, but in reality it is easier than in the anterior third, since in the former location, the mucous membrane is not so subject to trauma as in the latter; for where the spur or deviation is within 1 cm. of the vestibule, it will frequently be found that the mucosa has become thin and fibrous from constant irritation by the finger in attempts to relieve the stenosis. The septal mucous membrane in the posterior two-thirds, on the other hand, is very rarely adherent, except perhaps, in those cases in which the mucosa has been the seat of an ulcerative process, as in nasal diphtheria, and will be found to peel up very readily. As before, the flap is packed away from the field of operation until the obstructing cartilage or bone has been completely removed.

The most convenient instrument for removing spurs by this method is a chisel designed especially for this purpose by Charles N. Spratt, M.D.



FIG. V.

A very useful addition to this instrument is a handle set at an angle of 120° to the shaft, for convenience in manipulation. The cartilaginous spur may be either shaved down gradually, or may be removed as a whole, or in comparatively large sections, with the aid of a mallet, care being taken not to strike the chisel with sufficient force to produce a fracture of the bony septum. Where the spur is found to consist of bone the latter method will be found more applicable. If the spur is situated near the floor of the nose, a gouge, such as that shown in Fig. IV, will be found very useful, as it is difficult to remove cartilage or bone in this location, leaving a smooth surface, by means of the chisel. When the stenosis has been completely reduced, the flap may be replaced, as in the resection operation, and held in position by sutures, or simply by light gauze packing, as the operator chooses. There does not seem to be any difficulty in keeping the flap in place by means of the packing; but this is purely a matter of preference.

The after-treatment in these cases is very simple and of short duration. It may be advisable, in case there has been but little hemor-

rhage, to allow this packing to remain only twenty-four hours, removing it gently at the end of that time in order not to disturb the flap of mucosa. The flap will usually be found sufficiently adherent in twenty-four hours to permit of this procedure, and since a gauze packing must of necessity be a source of considerable irritation to the intranasal structures, with especial reference to the lower turbinate, it is apparently indicated to remove the gauze as soon as it may safely be omitted. Secondary hemorrhage from this plastic operation has been quite rare in my experience, but two cases, and one of these a hemophiliac, having come under my observation.

After removing the packing, any secretion or blood which may have accumulated may be gently removed with cotton pledgets, and a tampon of absorbent cotton introduced into the vestibule. This tampon should be changed by the patient as often as it becomes moist. In the course of the after-treatment, it will occasionally be noticed that there is a small area left by shrinkage of the flap, and in this area small granulations may appear. A single application of solid nitrate of silver is usually sufficient to reduce these, the interval becoming rapidly covered by epithelium. Primary union occurs in a great many cases, so that complete healing of the wound takes place in from four to ten days where a perfect flap has been preserved. When a considerable amount of the flap has been lost, the course of after-treatment is proportionately prolonged.

It is true that this operation consumes more time, and is therefore more tedious to both patient and operator, than in removing spurs with the aid of the saw. But, on the other hand, the after-treatment of the plastic operation is shorter and less painful than even the most rapid result to be expected from the saw operation. The hemorrhage, both at time of operation and secondarily, is markedly less than with the latter procedure. Moreover, the time necessary for the plastic operation is not very great; in fact it will very rarely exceed forty minutes, from fifteen to thirty minutes being a fair average. The resection operation requires a somewhat greater length of time, since usually a more extensive procedure is indicated. That operation, however, should not consume more than one hour even in difficult cases; but the longer time required for the actual operation is more than compensated for by the gratifying end result, *viz.*: the rapid union.

The technique of the resection operation has been discussed and greatly improved upon in the last two years, although on somewhat different lines, by Drs. Otto T. Freer of Chicago, and Leon E. White of Boston, whose respective articles in the *Journal of the American Medical Association* and the Boston Medical and Surgical Journal are very comprehensive and instructive. I may also refer to a well written discussion on this subject by Charles N. Spratt, M.D., of Minneapolis, published in *American Medicine*. (I am indebted to Messrs. Codman and Shurtleff for kindly furnishing the accompanying illustrations.)

## Clinical Department.

### A CASE OF INTRAPERITONEAL RUPTURE OF THE BLADDER.

BY DANIEL FISKE JONES, M.D., BOSTON,
*Surgeon to Out-Patients, Massachusetts General Hospital.*

The following case of rupture of the urinary bladder is reported because of several unusual features and because of its interest to the general practitioner:

Mrs. R. M. C., aged twenty-two, was brought to the Massachusetts General Hospital at about 7 P.M., Aug. 23, 1903. Her history taken at that time is as follows:

The patient had always been well except for a miscarriage two years ago, when three months pregnant. Four days before entrance she was delivered of a healthy child at full term after a moderately hard labor. The attending physician had difficulty with an adherent placenta, but what was taken to be the whole placenta was delivered after some time, with the loss of considerable blood. The physician left the patient in the evening with the uterus well contracted, but on his return the next morning, the uterus was greatly enlarged and "the bed was soaked with blood." Another physician was called in consultation and advised curetting the uterus. This was done and some small pieces of placenta were obtained. The uterus contracted well and remained of moderate size. From the time the patient was curetted until she entered the hospital she had constant pain across the lower abdomen. No vomiting. The bowels had not moved since the day the child was born.

Physical examination showed the woman to be well developed and nourished, but very anemic. Nothing abnormal was found in the chest. The abdomen was full, with little rigidity, but with considerable tenderness on deep palpation, especially over the lower half of the abdomen. There was some shifting dullness in the flanks.

Vaginal examination showed a slight tear of the perineum; vagina very moist; os soft, admitting the tip of the finger easily. Bimanually the uterus was enlarged with a hard mass in the left horn. Tubes apparently normal. Lochia foul. Pulse 120. Temperature 98.6°. Leucocytosis 35,000.

The patient was given an enema soon after admission and a very good result obtained. I saw the patient at this time, but did not feel that it was necessary to operate.

The following morning, Aug. 24, the patient seemed very much better; her temperature was 98° and pulse 88. The pain in the abdomen continued, but was much lessened. During the day she had two small movements. The examination of the urine made on this day has been lost.

Aug. 25. The patient was comfortable except for a slight pain in the right side of the abdomen. Small movement of the bowels. Abdomen still full, but soft.

Urine: Pale, acid, 1017, a trace of albumin, no sugar. Sediment: excess of small, round cells, very many leucocytes, many blood globules, occasional large epithelial cell, occasional hyaline and finely granular cast.

Aug. 26. Abdomen somewhat distended. Small movement after calomel. Patient says she is very comfortable except when she attempts to lie on either side, at these times the pain is so severe she has to get on to her back at once. Temperature 98.2°. Pulse 105.

Urine: Pale, acid, 1014, albumin $\frac{1}{8}\%$, sugar absent. Sediment the same as found in the urine yesterday.

Because of the increase in the amount of albumin, the lower specific gravity and the appearance of the patient, it was thought at this time that the kidneys must be responsible for the patient's condition.

Aug. 27. The general condition of the patient became much worse during the night. Temperature 98.4°. Pulse 120 and very feeble.

It was quite evident that something must be done if the patient's life was to be saved, and a rapid laparotomy was decided upon.

The patient was lightly etherized and the abdomen opened by a median incision. The abdomen was found to be filled with a slightly cloudy fluid. The bladder was at once examined and found to have a vertical gaping wound in the middle of the posterior wall. This wound was about 1½ inches long, and the edges were thickened and stiffened by the reparative process so that the wound gaped wide open. The patient was put in Trendelenberg's position and two rows of chromicized catgut Lembert sutures were used to close the wound. The patient was then lowered, the abdomen hurriedly washed out with salt solution, and a gauze wick placed, running from the pelvis up over the wound in the bladder. The intestines were much congested and the peritoneum looked edematous, but there was evidence of a septic peritonitis in only one small area of the pelvis. The uterus was well contracted and of normal appearance. The patient stood the operation very badly, did not respond to stimulation of any kind afterward, and died in about four hours.

This case was most confusing throughout; her history would lead one to think of sepsis, but her appearance and symptoms made sepsis seem impossible. The albumin and casts in the urine and her appearance suggested that her kidneys might be the cause of her condition. The symptom which should have had more weight given to it, the shifting dullness in the flanks, was unfortunately given little attention. In the history obtained from the patient and her physician there was nothing whatever to indicate any injury to the bladder. During her stay in the hospital the patient urinated without difficulty and blood was never present except an occasional blood globule microscopically. On the day before the operation the patient complained of being unable to sleep on either side without abdominal pain. This symptom is very suggestive of ruptured bladder, but is a symptom of any irritating fluid in the peritoneal cavity and not pathognomonic of ruptured bladder.

We have in this case as causes of ruptured bladder: childbirth, which is a very rare cause, and the patient complained of no pain until the morning after the delivery; curettage of the uterus, which was done the morning following the delivery, seems to me an impossible cause; and rupture of an over-distended bladder which without trauma practically never takes place. We have, then, in our history no satisfactory cause for a rupture of the bladder. It will be noted, however, that pain in the abdomen began at about the time she was curetted, that is, the morning after the delivery. Several days after the death of the patient the attending physician told me that when he made his visit on the first morning he was shocked to find the uterus up to the umbilicus, and the patient very anemic. He hurriedly piled some books on to the bed, one on top of another, and threw the patient over on to them on her abdomen and held her down.

Unfortunately, this was not known until after the death of the patient, but it is my belief that it was a dilated bladder which was felt and not the uterus, and that the bladder was ruptured when the patient was thrown on to the pile of books.

For the reported cases of intraperitoneal rupture of the bladder the reader is referred to the paper by Samuel Alexander in the *Annals of Surgery* for August, 1901, page 209, and the paper by the author in the *Annals of Surgery* for 1903, page 215.

## Reports of Societies.

### AMERICAN PEDIATRIC SOCIETY.

SIXTEENTH ANNUAL MEETING AT DETROIT, MICH., MAY 30, 31, JUNE 1.

(Continued from No. 18, p. 498.)

FIRST DAY — (Continued.)

#### SOME OBSERVATIONS ON EPIDEMIC VULVO-VAGINITIS IN INFANTS AND CHILDREN.

DR. A. C. COTTON, Chicago, presented this report of an epidemic which occurred in the hospital from August, 1902, to Septemper, 1903, during which period 319 children were admitted to the hospital. The cases known to be infected amounted to 19, 1 male and 18 females, their ages varying from six months to thirteen years. The average duration of the cured cases was 116 days, the shortest period of discharge being 40 days, the longest 252 days. The first discharge was observed on Aug. 8, from the urethra of a boy two years old, who was under treatment for a rectal fistula. Seventeen days after his first operation the discharge occurred. Gonococci was next found in the vulvo-vaginal discharge in a typhoid fever patient two days after admission, and five days after the report of the first case. These two patients seemed to have given rise to the epidemic. Dr. Cotton gave the following conclusions: Every hospital for children must be protected against infection from without by well arranged detention wards, in which the newly admitted patient may be submitted to the closest scrutiny for a period of at least fourteen days to determine his freedom from acute infectious disease before admission to the general ward. A complete hospital should have ready for use properly located isolation wards to which patients may be removed upon the first appearance of suspicious symptoms of an acute infection. Gonorrhea was a most formidable disease in a children's hospital, and female infants were peculiarly susceptible to this disease. A patient in a children's hospital showing gonorrhea should be properly isolated and placed in charge of a special nurse. The interne or nurse while treating a gonorrhea patient should be relieved from other duties in the wards. The efficiency of any isolation may be questioned which did not individualize strictly, not only in regard to the treatment, care and manipulation of the patient, but also as to the use of clothing, bed linen, feeding utensils, thermometers, douche pans, etc. The same care by nurse and physician in sterilization was necessary, as would be

observed in going from a child with any acute infection to a non-infected child.

Dr. A. Jacobi, New York, said that undiapered children of two, three and four years of age carry their fingers everywhere, and by preference about the abdomen, and it would be expected that they would carry pus to the eyelids, but such was not, as a rule, the case. He said that no doubt all had seen secondary involvement of the cervix, the uterus, occasionally a nephritis, a pericarditis, etc., and it could be readily seen that a more favorable course was run in children than in adults. Dr. Francis Huber's paper on peritonitis secondary to gonorrhea was of great interest, the patient recovering. Also, he said, Dr. Northrup would recall two cases of gonorrheal arthritis occurring in one family and they got well; many cases occurring in infants and young children showed improvement or recovery.

Dr. Charles G. Kerley, New York, said that at the Babies' Hospital there were 15 or 20 cases of arthritis in two years, and it was peculiar that there was found no evident source of infection. Dr. Kimball had reported 8 cases, 7 taking place in boys, and the only possible course of infection was from a stomatitis. In the boy there were no local lesions.

Dr. Jacobi saw one case in which there was a myositis.

Dr. L. E. LaFetra said he had seen two cases of gonorrheal arthritis, one a baby three weeks old, the other a child eight months old. In the case of the baby the source of the infection appeared to come from the mother; the child had been circumcised and the mother had gonorrhea at the time the baby was born.

Dr. Isaac Abt, Chicago, had seen but two cases of vulvo-vaginitis with complications, one being an arthritis, the other a cystitis. As a rule, he found the cases yielded to treatment, 25% ichthyol in glycerine being packed in the vagina.

Dr. Augustus Caille, New York, said that some years ago the attention of the Post Graduate Hospital was called to this disease by reason of a suit against the institution. A child was admitted apparently in good health; ten days later she developed a severe specific vulvo-vaginitis. Every child now admitted to the institution was carefully examined and a swab culture made. If gonococci were found, the child was rejected. Treatment pursued by him was to swab with a nitrate of silver solution, 5 to 10% strength, then use protargol and permanganate of potassium. He never used the fountain syringe and he had seen injury result from douching.

Dr. Samuel S. Adams, Washington, D. C., said that they admitted these cases of vulvo-vaginitis in the hospitals there, for they did not feel that it was necessary to exclude such cases. He referred to a family of seven children where all within a short period of time were infected from both father and mother, and were admitted to the hospital and successfully treated in a short time. Each of these children had alternately slept in the bed with their parents and so contracted their vulvo-vaginitis.

### A CASE OF CARBOLIC ACID POISONING SIMULATING ACUTE SCARLATINAL NEPHRITIS.

Dr. Samuel S. Adams reported this case. The patient was a child of ten years, white, who had a moderately severe attack of scarlet fever without any troublesome symptoms, and who was first seen by him Feb. 3, 1904. On the 9th the child complained of intense itching, and he instructed the mother to bathe her twice daily with a solution of commercial carbolic acid and water, a teaspoonful to the quart. On the 19th she was again visited and found to be in excellent condition. Desquamation was very profuse. The itching had been allayed by the baths and there was no tingling or irritation apparently from the carbolic acid baths. On Feb. 22 the report was received that the child was bright and happy, but had passed a fair quantity of dark urine, a specimen of which was sent him. Examination of this showed albumin was present, red cells, hyaline, and granular casts, all in moderate numbers. When he saw the patient the eyes were puffy; otherwise she was in good condition. The baths were stopped. On the 24th the puffiness had disappeared. The urine gradually improved.

Dr. Adams said that having previously reported cases of carbolic acid poisoning following its use on the skin, he was satisfied from the urinalysis made that the nephritic symptoms were due to the irritation of the drug and not to the toxemic effects of the scarlatina. This opinion was confirmed by the speedy relief of the kidney irritation *pari passu* with the elimination of the carbolic acid. Such a weak solution of the acid was used, it seemed to him reasonable to attribute the toxic effects to an idiosyncrasy on the part of the patient.

### GASTRO-INTESTINAL TOXEMIA.

Dr. B. K. Rachford, Cincinnati, said that gastro-intestinal toxemia as differentiated from auto-intoxication was a systemic intoxication, produced by poisons formed in and absorbed from the gastro-intestinal canal. He said it was possible that the poisons produced by bacteria in the intestinal canal might have their origin from three different sources (1) The components of dead bacteria might furnish a certain amount of proteins as, for example, tuberculin, which is a portion of the tubercle bacillus; (2) living bacteria in the intestinal canal may and do excrete ferments or toxins, capable of producing the most profound symptoms; (3) substances produced by bacteria from the culture media are possibly important sources of intestinal intoxication. Among the poisons of this class ptomaines held the most important place.

### ACUTE INTESTINAL TOXEMIA.

This, he said, was more common in the infant and young child than in the adult, and was probably due to a number of causes, the most important of which was the great irritability and the immaturity of the child's nervous system. A small quantity of the poison absorbed may produce high fever, convulsions and other pronounced nervous symptoms which in an adult might be easily resisted. It was also true that severe albuminous fermentations capable of producing virulent toxins were more common in the child than in the adult. This was probably due to the fact that the hydrochloric acid function of the stomach was not so well developed in the young child as in the adult and, therefore, not capable of exercising the same control in preventing intestinal fermentation.

### CHRONIC INTESTINAL TOXEMIA.

It was to this form that the reader of the paper wished to call special attention because of its importance as an etiological factor in producing nervous symptoms in children and which was so often overlooked. This form might be associated with diarrhea, although constipation might exist. Constipation might exist even when the child had a movement of the bowel every day. In order to prevent hyperfermentation and increased absorption of intestinal toxins, the food material should not be allowed to be retarded, and when ejected they should have the moist form of a normal intestinal evacuation. So important was

the rôle played by chronic intestinal toxemia in the production of neurotic diseases in a child that he invariably began his treatment of nervous diseases by a careful investigation of the intestinal canal. Among the symptoms which might be produced or exaggerated by intestinal toxemia might be mentioned malnutrition, anemia, headaches, general malaise, fever, heightened reflexes, general nervous irritability, hysterical and neurasthenic symptoms, bradycardia, hyperesthesia, nervous anxiety, psychoses, etc.

Intestinal toxemia, acute or chronic, was not an uncommon complication of other diseases, such as typhoid fever, malaria, tuberculosis and chronic diseases of the gastro-intestinal tract.

The urine furnished valuable evidence of the existence of intestinal intoxication by learning of the presence of indican and the ethereal sulphates. The presence of these substances was sufficient reason for suspecting a hyperfermentation of albuminous food stuffs in the intestinal canal, and also usually meant the retardation of these food stuffs through the canal. The etiological importance of the vegetable organisms in producing intestinal toxemia should not cause one to overlook the rôle animal parasites play.

DR. A. JACOBI, New York, said that formerly the textbooks gave worms as a cause of the symptoms as described. The raw vegetables, such as are taken in Germany and Hungary, would produce just such a train of symptoms. In one of the cases reported reference was made to the nervous irritability, which was very marked, and the condition of anemia of the brain would predispose to this. Dr. Jacobi had frequently thought that a protracted anemia would cause an insufficient secretion of gastric and pancreatic juices and so interfere with normal digestion. The presence of indican in the urine added much to the ease in diagnosis. Regarding obtaining the urine from babies for diagnostic purposes, he said that nothing could be easier. In a number of cases it might be sufficient to rely upon cleanliness and apply a mass of absorbent cotton; when the urine had passed into it, then with a clean hand squeeze it out. Dr. Jacobi usually relied upon the catheter, which was easy of introduction in small children, more so than in adults, because he did not encounter so many strictures. The only difficulty encountered was in small girls, and here one must use the eyes very carefully and not miss the urethra.

DR. F. FORSCHHEIMER, Cincinnati, said that he had been interested in this subject for years, especially as many men did not believe in the existence of this condition as an etiological factor; even such men as Professor Osler did not believe in it. He referred to the publication of Bouchard on chronic auto-intoxication, and in order to prove his work he made a number of experiments, taking urines from patients suffering from various troubles, and his results had been published and did not need repetition. As a result of his investigations he found that the toxicity of the urine used by Bouchard was due to faulty methods. With proper methods, none was toxic.

When indican became so much talked about he then examined all urines in which a diagnosis of chronic intestinal auto-intoxication was made; unfortunately, indican did not show very much so far as chronic intestinal intoxication was concerned; in a very large number of cases indican was not present at all. At all events, to find indican in the urine once meant nothing at all; but if found many times after repeated examinations, then it was to be presumed that there was some abnormal condition going on in the intestinal canal causing it, *i. e.*, a change in the albumin to indol, and then the indol would be converted into indican. In the cases he had examined he found eosinophilia existed.

In children he said there was an accumulation of fecal material in peculiar-shaped places, *i. e.*, in the intestines where there were extra curvatures, as at the sigmoid, and therefore the fecal matter would be retained for some time, and this accounted for the constipation and also for the diarrhea; when fecal matter remained in one place a certain length of time diarrhea followed. But in adults the condition was different. Here the special places for the deposit of fecal matter was at various curvatures, at the sigmoid flexure, at the hepatic flexure, at the splenic flexure and at the head of the colon. Sometimes the whole of the large intestine was blocked up. He wished to lay particular stress upon the condition he had once described as chronic ulcerative stomatitis, which occurred in children quite rarely and in adults quite frequently in the form of Rigg's disease. Curiously enough in Rigg's disease he had always found uric acid, and he came to the conclusion that uric acid was due to some auto-intoxication.

DR. B. K. RACHFORD closed the discussion. In regard to the presence of indican in the urine, he said that if one kept facts clearly in mind, there would be found little difference of opinion. There were cases of auto-intoxication in which the indican did not occur in the urine because fermentation had not occurred to change the indol into indican. Again, there was a class of cases in which indican could be found in the urine and without any clinical symptoms of auto-intoxication, possibly because the child was able to resist it and filter the poison and so manage it. We knew that indol was formed in the intestinal canal by hyperfermentation and was one of the results of putrefaction. We also knew that indol was a poison and probably was associated with other poisons about which we knew nothing. It was known, too, that the presence of indican in the urine meant the presence of indol in the intestinal canal. Therefore, there was a relationship.

### CLINICAL MANIFESTATION OF ACUTE OTITIS IN CHILDREN; A STUDY OF FIFTY-ONE CASES IN PRIVATE PRACTICE.

DR. CHARLES G. KERLEY, New York, reported a few of these cases, illustrating them by a number of temperature charts.

## SECOND DAY, MAY 31, 1904.

### NERVOUS EXHAUSTION IN INFANTS.

DR. WILLIAM P. NORTHRUP, New York, reported some cases of nervous exhaustion occurring in young babies as the result of noisy surroundings and of too much petting at the hands of parents, grandparents and friends to whom the wish was to "show off" the infant. He thought the society should interest itself in teaching the lesson of quiet surroundings, and especially of allowing a certain quiet to initiate stomach digestion. He pointed to the necessity of close and constant watching and individual case studying. The coming generation should be protected from nervous exhaustion, nervous dyspepsia, sleepless nights and choreic jerkings before they cut their first teeth.

DR. AUGUSTUS CAILLE referred to the hysterical activity of the times and said that the hysterical doctor was, as a rule, a very popular man. He thought we were to blame for the conditions Dr. Northrup criticised.

DR. C. P. PUTNAM said he was always afraid of the so-called "good" nurses who are so devoted to the children. By their devotion they kept the children awake.

Dr. Samuel S. Adams said that we should beware of the nurse who puts the child to sleep, and especially the very much over-rated southern "mammies."

Dr. R. G. Freeman referred to the condition of nocturnal incontinence of urine which could be cured by taking the child away from the neurotic mother or nurse and placing the child under the care of a trained nurse. Many cases of constipation in infancy was due to the nervous environment. This could be easily remedied by placing the child in proper environment.

THE INFLUENCE OF AMERICAN PEDIATRIC SOCIETIES IN PROMOTING THE WELFARE OF AMERICAN CHILDREN.

Dr. Augustus Caille, New York, delivered the presidential address and said that the American Pediatric Society had for its object the advancement of the physiology, pathology and therapeutics of infancy and childhood. After fifteen years of prosperous existence, he thought the time had come when this society should be ready to assume broader obligations and to grapple with larger problems, to promote and shape the public understanding regarding sanitation of the child's environment and to supervise the education of the American children from a medical standpoint. He, therefore, asked permission to point out briefly some of the more important matters to which they, as a body, might direct their attention.

THE OVERHEATING OF AMERICAN HOMES AND THE FEAR OF CATCHING COLD.

This was a most fruitful source of ill health in children. The fear of breathing fresh air still held possession of the multitude as it did in former times when microbial infection was a *terra incognita*, and the comparatively few who have dared to advocate the breathing of cool, fresh air were looked upon as little short of dangerous advisers by the wiseacres of the domestic hearth. The susceptibility to cold-catching could be markedly reduced by a judicious bathing process in connection with proper alimentation. In older children a hardening process by cold douching was undoubtedly beneficial and would strengthen the child's forces and permit it to overcome inclement influences of various kinds. This susceptibility to cold-catching could not, however, be reduced in homes in which overheating of the living apartments was tolerated. One of the most dangerous methods of heating a room he believed to be the portable gas stove not connected with a flue, because the products of combustion remain in the room and vitiate the air to such an extent that those living in it suffer from general malaise and, in infants, various forms of ill-defined sickness. Overheating and faulty heating should be condemned by the medical profession at every opportunity, and fresh air treatment of the healthy and sick children should be insisted upon. In Boston the wealthy and aristocratic families were putting their babies to sleep out of doors on roofs, balconies and wide window sills.

DISINFECTION AND THE SANITARY CODE.

He said that the removal of the child to another apartment during the fumigation process theoretically and practically nullified all efforts to destroy the sources of infection and stamp out contagious diseases. The compulsory cleansing of an apartment with soap and water as practiced in Germany had more real value than fumigation with sulphur. One of the principal means of the spread of infection could be found in the cloakroom of factories and schools. The same might be said of books in schools and libraries; they are frequently soiled with the nasal discharge of the sick. Compelling children who are convalescing from diphtheria to keep indoors until all bacilli had disappeared from the throat was unreasonable because it deprives them of the tonic effects of fresh air which they required, and because the infectious nature of these bacilli found during and after convalescence had not been proven. He deprecated the taking away of children suffering from ordinary eruptive fevers and transferring them to suburban hospitals against the will of the parents. The fear that such a course would be pursued had prevented parents calling in a physician, and had kept well meaning and humane physicians from reporting cases. If the community demanded isolation of these cases, the authorities should insist upon securing proper accommodations for mother as well as child.

SCHOOL HYGIENE AND SCHOOL INSPECTION.

Under the championship of Dr. Caillé, at a public meeting of the pediatric section of the New York Academy of Medicine, daily medical inspection of the schools of the city of New York first received its first practical agitation in 1890. It was successfully inaugurated in Boston in 1894, in New York in 1897, in Philadelphia in 1898. This inspection had primarily for its object the early detection of communicable diseases, but it should embrace the hygienic guardianship of school children. Such inspection revealed unsanitary conditions in general existing in schools, day nurseries and kindergartens, and was a powerful factor in promoting the cleanliness of the scholars, and insured proper attention to existing parasites, skin lesions and obnoxious habits. Communicable diseases, mouth-breathers, backward and neurotic children, anemic children, etc., were detected and put in the way of receiving the benefits of proper treatment. It was estimated that fully 90% of the curvatures, not due to bone disease, was developed during school life by faulty positions in sitting, writing, in study and in standing. The early detection of vaginal discharges of gonorrheal origin was most important. When medical inspection was continued with rational elementary instruction in hygiene, the best chances were offered for lessening the sickness in school children, because teacher, parents, family physician and inspector coöperate.

SCHOOL FATIGUE AND BACKWARD CHILDREN.

In 1900, 16,000,000 children were enrolled in the common schools of this country. A gain in knowledge at the expense of physical health he considered a loss. The opportunity for acquiring knowledge was the same for all school children, but not all children had the same capacity. The relative endurance of the sexes varied; about one girl in twenty was obliged to give up her school life on account of ill health. The present day native American girl of the middle class was the artificial product of advanced civilization; she was a bundle of nerves encased in a fragile frame. Too much strength of development was devoted to the brain with faulty physical expansion. He believed the pediatrist should call a halt and demand for the children less brain gymnastics and more fresh air and exercise. Backward children should have separate classrooms and special care. One of the duties of the physician, the statesman and teacher was to find out the place of the enfeeblement. They have the same right to an education which would fit them for a sphere of usefulness that the blind have.

BODILY TRAINING OF PUPILS AND SCHOOL BATHS.

Inhibition, to sit still, was one of the first lessons of school life; unnatural order should be dispensed with and the children should be allowed all the physical

activity compatible with the best results. The time was coming when the playground would be as seriously considered as the schools themselves. The lesson of personal cleanliness was one of the fundamental principles of education. The shower bath was the best and most sanitary for public schools and public bathing places, and probably was of more importance to the community than public libraries.

INFANTS AND CHILDREN'S HOSPITALS.

He believed that medical opinion should discountenance the erection of large institutions in the city to be filled with chronic cases and minor ailments. They were adapted only for the acute cases. The country and seashore sanitaria and floating hospitals were not for the chronic cases. As soon as their condition permitted, the children should be sent home from the hospitals because, as the result of hospital life only, they lose color, appetite and weight. For fighting house infection in the babies' ward of the Post Graduate Hospital, the following regulations were drawn: (1) Strict cleanliness of premises and inmates; (2) thorough ventilation; (3) sufficient air space; (4) no overcrowding of wards; (5) infants not to be fed by the same hand that attends to the toilet; (6) soiled linen is to be immediately removed and disinfected; (7) feeble children are toned up by a change of air (trip to Staten Island, omnibus ride through the park and sojourn in the sunbeam playroom and roof garden).

*(To be continued.)*

## Recent Literature.

*A System of Practical Surgery.* By PROF. E. VON BERGMANN, M.D., of Berlin; PROF. P. VON BRUNS, M.D., of Tübingen, and PROF. J. VON MIKULICZ, M.D., of Breslau. Translated and edited by PROF. WILLIAM T. BULL, M.D., of New York, assisted by WALTON MARTIN, M.D., CARLTON P. FLINT, M.D., JOHN B. SOLLY, M.D., and EDWARD M. FOOT, M.D. Complete in five imperial octavo volumes. Sold by subscription only. Lea Brothers & Co., Publishers. Philadelphia and New York. 1904.

This work of five volumes comprises 4,220 pages, 1,976 engravings and 102 full page plates in color and monochrome. In regard to the original work, which is German, its character of composition corresponds to that of the best known books of modern surgery. That is, the specific portions are contributed by men noted for their skill and experience in their special lines of work; and the whole has been collected and edited by the distinguished surgeons whose names appear on the titlepage, and who are also actual contributors.

The present edition now under consideration is a translation of the second German edition, carefully revised and brought thoroughly up to date, both as regards new material and literature. The first German edition received prompt, widespread recognition and was soon translated into Spanish and Italian. In fact, it met with such demand that the earlier volumes were exhausted before the later ones were ready for issue.

Dr. Bull states in his preface that this American translation has been produced by himself and his collaborators with great fidelity and thoroughness. The latter are men of wide experience which has enabled them to add judicious references to American and English methods of practice. They have also increased the number of illustrations by collecting material from recent literature which, it is thought, will enhance the value of the text.

The work is encyclopedic in character and, as already stated, has been written by men of acknowledged authority and large clinical experience. While chiefly clinical in character there are abundant pathological data, details of original research work, and statistical facts. The second German edition is divided into four volumes. The chapters of what might be termed General Surgery, such as Inflammation, Infection, Repair of Tissue, Suppuration, Blood Pathology, Surgical Bacteriology, etc., usually introductory to this class of book, are omitted. The plan of classification is entirely regional, the customary "Continental" method, the American edition is published in five volumes, and for some reason the sequence of arrangement has been changed. For example, in the German edition, Volume IV, the final volume, describes the surgery of the extremities. In the American translation, Volume III deals with the extremities, while the concluding volume, Volume V, contains the surgery of the pelvis and genito-urinary organs. The titles of the volumes of the American edition in detail are as follows:

Vol. I. Diseases and Injuries of the Head. It is a book of 936 pages, 361 engravings, and 18 plates.

Vol. II is devoted to the Surgery of the Neck, Thorax, including the Mammary Gland, the Vertebræ and Spinal Cord, covering 820 pages and illustrated by 321 engravings and 24 plates.

Vol. III includes the Malformations, Injuries and Diseases of the Upper and Lower Extremities. 918 pages, 595 engravings and 21 plates.

Vol. IV might be entitled Surgery of the Viscera, since it describes the Malformations, Injuries and Diseases of the Esophagus, Abdominal Wall, Peritoneum, Stomach, Intestine, Liver, Biliary Passages, Spleen and Pancreas. 757 pages, 345 cuts, 16 plates.

Vol. V. Surgery of the Pelvis, Malformations, Injuries and Diseases of the Rectum, Anus, Kidney, Ureter, Bladder, Prostate, Urethra, Penis, Testes, Scrotum, Vas Deferens and Seminal Vesicles. 789 pages, 354 cuts, 23 plates.

To discuss fully so comprehensive a work would carry one too far into detail. Concisely one can say that it is an excellent presentation of the German school which in its foundation principles is everywhere based on the modern teachings of bacteriology and pathology. To fully enumerate the authors of the individual subjects would also require more space than is available for a review of this character. The list includes many men of international reputation. The thoroughly modern character of the

clinical and operative treatment described, the pathological information, the statistical data, make these volumes of great value and interest. One reviewer has been so enthusiastic as to describe the work as one which will probably remain for years the " Court of last resort " in questions of surgical theory and practice. While perhaps one is not quite ready to endorse so sweeping a statement as this, still one may fairly say that the work will well fulfil the expectation of the student of surgical science; while it furnishes a convenient and excellent means of a review of modern surgery, especially of the " Continental " school.

Perhaps if read exhaustively one notes at times a subject very concisely treated. On the other hand, some subjects are unusually complete for a work of this character, and are elaborated with great attention to detail. Taken as a whole, the " Theory and Practice " of surgery is very thoroughly presented.

The general plan of arrangement which, with few exceptions, is followed, is to subdivide each subject as follows: First, is presented the anatomical-pathological conditions of the injury or disease under consideration; next the clinical symptoms; then the diagnosis is discussed, and finally the prognosis and treatment. These subdivisions are indicated by paragraphing and heavy type headings, an arrangement which adds greatly to the reader's convenience. Each volume has its own index of subjects, the titles of each serving in part as a concise general index to the complete work.

The illustrations are abundant. They vary much in character and in quality of execution. Some are excellent reproductions of the originals; some are quite ordinary in character; some are exceptionally well chosen for illustration of the accompanying text. As a whole, they much increase the value of the work.

The work of the publisher, as regards type, quality of paper, binding, etc., excites only commendation. It is "clean cut."

If one would summarize a review of such a comprehensive book it is justifiable to write that these volumes will be found of great value both to the student and the scientific surgeon; and at the same time a trustworthy guide to the best and most recent methods of practice.

*The Value of Ureteric Meatoscopy in Obscure Diseases of the Kidney.* By E. Hurry Fenwick, F.R.C.S., Surgeon to and Lecturer on Clinical Surgery at the London Hospital. 219 pages. Illustrated. London: J. & A. Churchill. 1903.

The author of this volume presents it as a brief review of the subject of ureteric cystoscopy. He regards this method of examination as an important factor in determining the condition of a kidney; that it also shows the condition of the bladder and the opposite kidney. The rules formulated by him for ureteric cystoscopy are the result of a ten years' experience. The first part of the book contains an enumeration of some of the important points of cystoscopic technique and a description of the various conditions found with an explanation of their clinical significance. Some interesting anatomical variations are mentioned. The sections on renal hematuria, either with or without pain, are important communications, and contain descriptions of pathological conditions and the clinical symptoms resulting, which will explain many obscure cases reported in surgical literature; for example, long continued hematuria without pain, due to a circumscribed renal angioma. A description of the phenomena accompanying calculi of the kidney and ureter and urinary tuberculosis occupy the concluding chapters. The volume terminates with a discussion of the " freezing point depression " in determining renal insufficiency, and the cystoscopic findings in fifty cases of proved urinary tuberculosis with their clinical histories. The book is well illustrated, showing cystoscopic views, cuts of pathological conditions, and diagrams, with some colored plates.

To those wishing to learn something about the most recent method of studying renal disease this book is of importance and interest.

*The Suppression of Tuberculosis*, together with observations concerning phthisiogenesis in man and animals, and suggestions concerning the hygiene of cow-stables and the production of milk for infant feeding, with special reference to tuberculosis. By Prof. E. von Behring. Authorized translation by Charles Bolduan, M.D. New York: John Wiley & Sons. 1904.

The suppression of tuberculosis is a work of universal interest. A disease which is so widespread and which attacks the human race in so many ways can be successfully combated only by the coöperation of many different agencies. It is, therefore, of great importance that the origin of tuberculosis be well understood, not only by physicians, but by many outside the medical profession, such as dairy and cattle men, health officials, sanitary engineers, etc. The translator has in this volume presented to the reader in concise form von Behring's views on the origin and suppression of tuberculosis.

The principal article is translated from a lecture delivered at Cassel, Sept. 25, 1903.

*Clinical Treatises on the Pathology and Therapy of Disorders of Metabolism and Nutrition.* By Prof. Dr. Carl von Noorden, Frankfort-a.-M. Authorized American Edition. Translated under the direction of Boardman Reed, M.D. Part IV. The Acid Autointoxications. New York: E. B. Treat & Co. 1903.

We are very glad to recommend this little book as presenting in English the best account of work done on acid autointoxications, especially that variety which relates to diabetes mellitus. The book should be read both by practitioners and students to ensure an appreciation of investigations now being conducted upon this subject.

THE BOSTON
# Medical and Surgical Journal.

THURSDAY, NOVEMBER 10, 1904.

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## BLOOD CULTURES.

THE direct cultivation of bacteria from the blood is the most important aid which bacteriological science has recently put at the service of clinical medicine. The theories based on the results of this procedure or supported by them are fundamental in the modern conceptions of infectious disease, and when these results are positive they are the most conclusive factor in the establishment of a definite diagnosis.

Technically the taking of a blood culture is simple for one moderately well trained in bacteriological methods. Because of the certainty of contamination with bacteria from the skin the older method of drawing the blood into sterile wet or dry cups has been abandoned. The blood is drawn into a sterile antitoxin syringe from one of the larger veins about the elbow. The needle used is clean, new and rather fine. The rubber connection is short and heavy. The veins are moderately distended by firm pressure about the arm. These simple conditions fulfilled, the needle is easily inserted into the vein without preliminary dissection by one who has a moderate amount of dexterity. From 10 to 20 cc. of blood is taken and quickly transferred to the chosen culture medium, either solid in tubes and plates, or fluid, as the character of the case and the preference of the operator demand. To the patient the operation is no more severe than any hypodermic injection. An infection never follows and the opening in the vein is so small that there is never any leakage after the needle is withdrawn.

Through the use of this procedure it has become an accepted fact that there is always a specific general septicemia in typhoid fever and pneumonia. Infections with colon bacilli and paratyphoid bacilli have been recognized and at the same time the failure of the typhoid agglutination reaction in those cases has been accounted for. Unusual, unclassified general infection with other micro-organisms as the gonococcus, B. mucosus capsulatus, or B. aerogenes capsulatus, has been observed. The presence of a general but probably secondary streptococcic septicemia in scarlet fever and smallpox has been put beyond question.

As a diagnostic measure the blood culture gives definite rather than rapid information. The identification of the cultivated bacteria takes some time in most cases. Yet we have known of a case where in a central pneumonia the diagnosis was made from the blood before the physical signs developed. In the less usual infections this is the only certain method of diagnosis.

For the future it may be hoped that a careful comparison of the blood findings and clinical symptoms may lead to results in the rare infections. No opinion as to the value of streptococcic or pneumonococcic anti-sera can have weight unless controlled by this method. No case of unexplained fever can be legitimately described as syphilitic or idiopathic until this procedure has failed to give result.

The study of cases by blood culture is feasible in private practice near laboratories, but must always be most practicable in hospitals. In the hospital its use in the routine investigation of fever cases should be encouraged with the expectation of acquiring still more definite knowledge and of making more accurate diagnoses.

## FEWER MEDICAL STUDENTS.

SPEAKING of the diminution of medical students in New York City, *American Medicine* quotes Chancellor MacCracken of New York University as saying that both the city of New York and the state of New York have lost ground relatively in a shameful degree in their work for medical education. Statistics are adduced showing that, in spite of a very great increase of medical students in the United States as a whole, New York City has fewer to-day than twenty years ago. The reason for this is attributed to the fact that wealthy men have failed to contribute to medical education. We have recently commented on the diminution in the number of medical students at certain of our leading institutions, and have in general expressed the opinion that the decrease in numbers is due in great measure to the elevation of standard and to the consequent longer preliminary period

incident to the practice of medicine as a means of support. Although medical education may not be so well endowed as certain other branches, it is certainly true that a diminution in students, and hence in physicians, is due to much deeper and more far-reaching causes than the failure of wealthy men to give money for this purpose. As a matter of fact, large amounts of money have recently been given for objects distinctly allied to medicine, and in spite of this fact fewer students are undertaking a medical education. In the second place, it is surely not regrettable that fewer men are entering the profession, inasmuch as we may be sure that those men who do, under the increased requirements, are better equipped for their work than was the case twenty years ago. If we have finally succeeded in reducing the number of medical students through the abolition of inadequate short term courses which formerly were far too numerous, much has been accomplished toward the elevation of the medical profession at large. Mere statistics as to numbers, whether in New York City or throughout the country, cannot by any means give one an estimate of the actual work being done in medicine. There is certainly no danger that the profession will not be sufficiently manned, whereas overcrowding is a constant menace. We are interested, therefore, in the statement that New York has fewer medical students now than twenty years ago, a fact for which she is to be congratulated rather than criticised.

## MEDICAL LESSONS OF THE EASTERN WAR.

It is reported that the army general staff has decided to send surgeons of the regular army to study the operations of the field hospital service of the Russian and Japanese armies in Manchuria. We understand that but one representative is to be sent to each army, which would seem an insufficient force to learn all that this war has to teach in relation to hospital work. If the reports which have reached us from the seat of war are to be credited, it is apparent that the Japanese army, at least, has suffered far less from disease than is ordinarily the case under the unhygienic conditions of camp life. Apart from occasional rumors, we hear very little of epidemic disease, usually so fatal in time of war. The lesson to be learned, therefore, like many medical lessons at this time, is one rather of prophylaxis than of treatment after the onset of disease. It is not to be questioned that the Japanese have introduced methods of immediate care for the wounded which are unique and which will have a wide influence in the future, but their main service has been to demonstrate that disease may be prevented. This lesson has always been peculiarly difficult for those in charge of the health of armies to learn. All experience goes to show that could epidemic disease, disabling, often fatal, be eliminated, the number of deaths from wounds in action would, except in the severest engagements, be relatively insignificant. It is said that from the latter part of April until Sept. 30, 1898, three hundred and forty-five deaths in action, or from wounds, occurred in the United States army, whereas two thousand five hundred and sixty-five deaths occurred from other causes. No doubt these figures express a somewhat false proportion, but the peculiar misfortunes which overtook our army in the war with Spain have, in the past, been only too often duplicated. Certainly, the fact that any deaths occur from preventable disease must always be in a measure a reflection on the medical management of an army. Japan is undoubtedly teaching the world lessons in this matter of prophylaxis, and we may well afford to send trained observers to investigate the methods which have rendered her army practically immune to epidemic disease.

## MEDICAL NOTES.

Yellow Fever Expedition to the Amazon. — It is reported that the Liverpool School of Tropical Medicine is to send a second expedition to the Amazon. A previous expedition, sent under the auspices of this school, resulted unfortunately, in that Dr. Myers, one of the physicians in charge, died of the disease.

Visit of French Physicians to London. — One hundred and fifty French physicians recently accepted the invitation to visit London. Sir William Broadbent and others met the party at the railway station Oct. 15, and from that time until their departure, three days later, a round of medical and social functions took place, and many speeches expressive of professional fellow feeling were delivered. Much of the speech-making was in the French language.

Medical Graduates in Germany. — The following statistics given in the *British Medical Journal* as coming from Germany, are of interest in connection with the condition of medical education in that country: "Official statistics recently published show that in the twenty universities of the German Empire, the degree of Doctor of Medicine was conferred on 611 candidates in the academic year 1903–4. The

number in the previous year 730. The number of graduates in the several universities was as follows: Berlin, 26; Bonn, 36; Breslau, 24; Erlangen, 16; Freiburg, 26; Giessen, 10; Göttingen, 19; Greifswald, 37; Halle, 12; Heidelberg, 10; Jena, 17; Kiel, 50; Königsberg, 16; Leipzig, 101; Marburg, 19; Munich, 88; Rostock, 25; Strassburg, 30; Tübingen, 12; Würzburg, 30. Among the graduates were 23 foreigners, distributed as follows: Berlin, 7; Freiburg, 2; Königsberg, 1; Leipzig, 3; Marburg, 1; Munich, 4; Rostock, 1; Strassburg, 2; Wurzburg, 2. Nine of the newly-capped doctors were women, 2 of whom graduated at Bonn, 3 at Breslau, 1 at Freiburg, 2 at Halle, and 1 at Strassburg."

MEDICAL SOCIALISM. — The canton of Zürich, according to the *Medical News*, has carried the activity of the state to a remarkable length. It has decided to levy an annual poll-tax of 86 cents, to be called the Zürich Medical Tax. It will produce $100,000 a year, sufficient to maintain forty or fifty qualified doctors; and in return for paying the tax any inhabitant will be entitled to call in one of these doctors at any moment, to claim medical attendance free of charge all the year round. There is no great fear that the precedent will be followed in our own country, writes a correspondent of the *Pall Mall Gazette* of London, until the Zürich experiment has had plenty of time to be tried. The medical profession could, no doubt, be relied upon to oppose any such scheme. It is appalling to think of the burden that is likely to be thrown upon those unhappy forty or fifty Swiss doctors, if the people of Zürich are at all like our own. It is not only among rich people who have little else to do but to imagine themselves dying that panic-stricken desires for the doctor, on the occasion of the slightest ache or discomfort, are common; the domestic servant class is equally prone to this weakness. Unless the state doctors adopt a bearish repulsiveness of manner in self-defence, they will have work enough.

### BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon Nov. 9, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 53, scarlatina 14, typhoid fever 21, measles 10, smallpox 0.

### NEW YORK.

GIFT TO NASSAU HOSPITAL. — Mr. George Arents has presented $1,000 to the Nassau Hospital, Mineola, L. I., where his son, George Arents, Jr., was treated after receiving serious injuries by the overturning of his motor car during the Vanderbilt cup race on Oct. 8.

APPROPRIATIONS. — In the city's budget for the year 1905, which was finally adopted by the Board of Estimate and Apportionmant at its meeting of Nov. 1, the Department of Health receives an appropriation of $1,259,391, an increase of $150,000 over that for 1904, and Bellevue and Allied Hospitals the sum of $614,800, an increase of $15,920.

A TRIBUTE TO AN AMERICAN HOSPITAL. — Sir Felix Semon, the eminent English throat specialist, accompanied by Dr. D. Bryson Delavan, the senior attending laryngologist, and Dr. George M. Lefferts, on Oct. 4, made a visit to the New Mount Sinai Hospital, where he was received by the superintendent, Dr. Goldwater, and members of the medical staff. After inspecting the buildings and its various modern appliances, he expressed himself in the following language: " This hospital is a tremendous advance over any hospital I have seen. It is the ' acme,' I might say, of hospital perfection. It seems that such accomplishment is only possible in this country, for surely it cannot be done in Europe. You are fortunate in having enormous wealth devoted to such commendable purposes."

INSPECTION OF HEALTH DEPARTMENT BY JAPANESE IMPERIAL MEDICAL COMMISSION. — The Japanese imperial medical commission which has been making a tour of observation of the health departments of the principal cities of this country and Europe visited the New York Health Department building on Nov. 1. The commission consists of Dr. Takamine, Professor of Chemistry in the Imperial University of Tokyo, Professor Tanva of the Department of Pharmacy, and Dr. Sato, chief surgeon. Health Commissioner Darlington personally conducted the distinguished visitors about the premises and explained the workings of his department, and Dr. Sato, speaking for the commission, expressed the opinion that the local department was better than in any other city that had been visited. It was equalled in its facilities, he said, only by the health department of Hamburg, Germany, but there the sanitary authorities were so hampered by legal restrictions that they did not have the liberty of action possessed by the New York officials.

A LOW DEATH-RATE. — It is officially announced that the death-rate for the week ending Oct. 29 was the lowest for any week yet re-

corded in the history of Greater New York. With an estimated population of 3,838,024, the death-rate was 14.46, and the corrected rate, excluding non-residents and infants under one week old, 13.69. For the month of October the death-rate was 15.81, as against 17.03 in September and 16.05 in October, 1903. The corrected rate was 14.95. This, it may be noted, is the first month in which lower mortality has been registered in 1904 than in 1903. Among the diseases in which there was a diminished fatality were the following: The weekly average of deaths from whooping cough declined from 5½ in September to 2½ in October; the weekly average from epidemic cerebrospinal meningitis, from 15.75 to 12.75; from diarrheal diseases, from 227.5 to 92; from diarrheals under two years of age, from 192.75 to 84.75; and from cancer, from 57.5 to 48.75. Among the diseases which showed an increased mortality were the following: The weekly average of deaths from diphtheria and croup increased from 23 to 26.75; from scarlet fever, from 2.5 to 7.25; from typhoid fever, from 20.5 to 21.25; from pneumonia, from 53.75 to 68.5; from broncho-pneumonia, from 52 to 59; from acute bronchitis, from 18.5 to 22.5; from pulmonary tuberculosis, from 120.75 to 147.5; from Bright's disease and nephritis, from 95.75 to 98.75; and from organic heart diseases, from 65 to 87.75.

## Obituary.

### HELEN W. WEBSTER, M.D.

At the October meeting of the New England Hospital Medical Society, the following resolutions upon the death of Dr. Helen W. Webster, of New Bedford, were passed:

*Resolved*, That the New England Hospital Medical Society records with regret the death of one of its members, Dr. Helen W. Webster, of New Bedford.

An untiring worker, of genial and inspiring personality, she was a most effective pioneer in her profession. Her loss is deplored by a wide circle of her friends and colleagues.

*Resolved*, That this expression of appreciation be published in the Boston Medical and Surgical Journal, and that a copy be forwarded to her family.

Emma B. Culbertson, M.D.,
Elizabeth C. Keller, M.D.,
Clara J. Alexander, M.D.,
*Committee.*

The death of Dr. Helen W. Webster, at her home in New Bedford last July, has taken away from Massachusetts yet another of that band of pioneer women physicians who have been so prominent in the state's medical history. Dr. Webster was successful from the first in her chosen profession, in spite of the fact that she began practice when a most strong prejudice against professional women existed. Her skill and her devotion to her work, and her charming personality, however, helped her win her way on every hand, and enabled her to reach the honorable position in the medical world that she occupied at her death.

Dr. Webster, the daughter of the Rev. A. H. Worthing, was born in Boston in 1837, and received her early education at the Conference Seminary in East Greenwich, R. I. Upon leaving school she became a teacher in Fall River, but later gave up this work to study medicine at the New England Female Medical College, in Boston. She graduated from that institution just after the outbreak of the Civil War, and almost immediately entered the Hospital Service of the Federal Army. While thus engaged in Washington she met Surgeon William W. Webster, whom she married in 1868. At the close of the war she removed to Boston, where she was appointed Resident Surgeon at the Lying-In Hospital. She served there but a short time, soon returning to New Bedford, where she commenced private practice. While so engaged she was appointed Resident Physician and Professor of Anatomy and Physiology at Vassar College, and in order to prepare for this work she spent months studying in the hospitals of Paris and Dublin.

When she relinquished her professorship at Vassar, she returned again to New Bedford, where she resumed her private practice and carried it on uninterruptedly until 1893. A serious illness then forced her to give up her work, though after her recovery she resumed her practice, but was never able to do as much as formerly. She died on the 18th of July, after a brief illness.

Dr. Webster was a member of the New Bedford School Committee, the New Bedford Medical Society, the New England Hospital Medical Society, and the Dutchess County (New York) Medical Society. She was the first woman admitted to this last association.

## Miscellany.

### THE NEW BACTERIOLOGICAL LABORATORY OF THE BOSTON BOARD OF HEALTH.

The Boston Board of Health has recently moved its Bacteriological Laboratory from its old out-grown quarters in the Sudbury Building, where it has been since its establishment in 1898, to new and more spacious quarters on the top floor of the Boylston Chambers, 739 Boylston Street.

This building, which is situated about half way between Exeter and Fairfield streets is more conveniently located for the majority of physicians, and better adapted in every way for the technical side of the work.

The laboratory occupies the west wing of the

top floor of the Boylston Chambers and takes up that portion of the building formerly occupied by the chemical and biological laboratories of Simmons College.

The general office consists of a space for the public separated from the office proper by a section of wire fence and an oak counter. This counter was made to order. At its left end is a chute down which the used culture boxes, sputum outfits and the like can be dropped during office hours. Next to the chute is a lid which, lifted, shows a box containing fresh outfits. Next to the lid is a place for a block of writing paper, while at the extreme right of the counter is wrapping paper, twine, etc. A messenger sent from one of the culture stations scattered throughout the city can thus drop the used outfits down the chute, obtain fresh outfits, wrap them up, sign for the trip and depart without having taken up the time of any one connected with the laboratory.

The further and greater advantage of a chute for used outfits in place of an ordinary receptacle lies in the fact that it is impossible for messengers to make the mistake of taking out used outfits supposing them to be unused. Beneath the counter is a box to catch the outfits dropped down the chute.

At six o clock when the laboratory closes, the various outfits are sorted out (the diphtheria cultures put into an incubator, and the sputum boxes into a jar containing formaldehyde gas, in order to disinfect the outside of the bottle before further handling). A box to hold the fresh outfits and several drawers to hold the reserve stock of outfits are fitted into the back of the counter. Both the chute box and the drawers are open on the rear side so that the clerk can readily observe from his desk just how many outfits are contained therein. The rest of the general office is furnished with the modern office appurtenances. Here all the records are kept and all the reports to physicians made out. The telephone is attached to the clerk's desk and all urgent reports, especially positive results on suspected diphtheria cases, are telephoned directly to the physician.

To the rear of the general office is the private office of the technical staff. This contains, besides the desks, files, etc., the books, reprints and other classified information necessary to the intelligent carrying out of the work of the laboratory.

Next beyond the private office is the microscope room. This receives light on three sides. The bench space on the north side of the room is devoted solely to microscopic work, that on the west side to chemical work, while one bench is reserved for the work involved in the bacterial counts now being made on milk. A fourth bench is used for necessary mechanical work, such as glass blowing and the like. Two incubators are in use in this room, one for the routine incubations and one for the milk plates. The milk incubator is kept locked in accordance with legal requirements in cases of prosecution. The drawers in this room are in the form of shallow trays, are interchangeable, and when in position are shut out from the dust by a close fitting door. These cases of drawers are put under the center benches only, leaving the wall benches clear beneath. All the sinks are made of wood and are removable. The sinks drain into a common wooden trough such as is used for house gutters, this trough running to a slop sink which is trapped and vented in the ordinary way. Since the sinks are removable, they are not fixtures, and so do not require trapping, the slop sink only requiring to be trapped and vented. A special ruling was made by the authorities on this point. The great advantage of this system of drainage lies in the ease with which cotton, broken glass and other waste falling into the drains can be removed and the drains cleansed. Slop sinks and troughs are coated with asphalt paint which should be renewed annually. Other sinks and bench tops are coated with an aniline black preparation, the oxidation of the aniline taking place in the pores of the wood and making a very permanent finish which is practically acid, fire, and water proof. The incubators in this room are set upon a slab of Portland cement, thus reducing the danger from fire to a minimum. All bench tops are made of maple which is now no more expensive than hard pine. At one end of the room is a large board holding the various tools used about the laboratory. When one of these is removed for use, a painted outline giving a burnt wood effect shows that a tool is missing, and where to place it when it is returned.

To the right of the microscope room is the media room. In this room all the media used in the laboratory is made. Here also all the necessary cleansing of glassware, disinfection of the boxes, tubes, etc., from used outfits takes place. A large wooden sink standing in the middle of this room allows plenty of elbow room for those cleansing glassware, etc. Ice chests are provided in this room for the storage of media and the materials used in making it. At the further end of the room are two benches devoted exclusively to the apparatus for the sterilization of media and utensils. These benches are covered the entire length with Portland cement. Over these benches is an over-hanging hood connected with a large ventilating shaft which takes all steam and odors directly out of doors.

Leading from the microscope room and on the east of the private office is the animal room. The animal runs, cages and supports, hay and sawdust bins are all built of metal to allow for complete disinfection of the entire room. Both animal runs and cage bottoms are kept covered with sawdust and hay, which are often renewed. The animal runs are so built as to allow of complete flushing out. The lower part of the cages are so constructed that a sliding tray drawer holds all the sawdust, etc. The drawer can be removed, cleaned and put back without taking the animal from the cage. At the end of this

room nearest the window is an autopsy table. One drawer to this table holds all instruments, etc., necessary for this work, while the second one is for the card catalogue of animals inoculated. Over the table on a shelf are the solutions used. An odorless crematory connected with the ventilating shaft in the media room completes the animal room. Thus all animal work is confined to this one room.

The stock room has two doors, one leading from the animal room, the other from the main corridor of the building. Through this latter door, all supplies are brought directly into the stock room. Around the sides of the room are pine boxes, about the size of a sectional bookcase and arranged in the same manner. These boxes were used for moving glass-ware, etc., from the old to the new location and when unpacked were placed as described, upon their sides, open side facing out. By this method, a flexible system of storage is obtained, one that can be rearranged or added to at any time without the services of a carpenter. Also it is possible to see at a glance just how much stock is on hand.

*Arrangement for late cultures.* When the laboratory closes at 6 P.M., a panel in one of the corridor doors is raised, disclosing two chutes attached to an under panel, one to receive diphtheria outfits, one to receive sputum outfits and typhoid and malaria specimens. The diphtheria specimens drop directly through a trap door into an incubator, and receive, in spite of the delay in delivery, just the same treatment as cultures left earlier. The sputum and other outfits drop into a small box having a glass front. Both this box and the incubator are located at one end of the stock room. An electric light directly over the panel clearly outlines the directions and calls attention to the panel. The advantage of an arrangement like the above will be appreciated when one remembers that formerly a culture taken at 7 o clock in the evening often had to wait twenty-four to thirty-six hours before it could be reported on. By this method the report is ready the next morning. It is believed that this system is original with this laboratory.

The total cost of moving the laboratory together with the necessary gasfitting, plumbing, electric wiring and carpentering was in the neighborhood of seventeen hundred dollars. All this was done under the immediate supervision of the Public Buildings Department, so far as estimates, contracts, etc., are concerned. The plans followed were those of the director and his assistants. The lease was made and plans approved in April, 1904. The laboratory was occupied in August, without a day's interruption of the routine diagnostic or milk counting work.

During the fiscal year ending Jan. 31, 1904, 13,101 specimens were examined and diagnoses made. Of these, nearly 9,000 were for diphtheria and 3,000 for tuberculosis. A total of 72,732 examinations have been made since the laboratory was opened in 1898, besides much special work, a summary of which is given in the Annual Report for 1903.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, OCTOBER 29, 1904.

| Cities. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid Fever. | Diarrheal Diseases. |
| New York . . | 3,908,644 | 1,064 | 306 | 23.78 | 15.97 | 1.60 | 1.50 | 5.38 |
| Chicago . . . | 2,021,086 | 412 | 102 | 26.94 | 7.77 | 2.43 | 1.70 | 8.25 |
| Philadelphia | 1,407,968 | 407 | 93 | 23.09 | 13.27 | 4.42 | 1.72 | 5.16 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 182 | 42 | 22.52 | 10.99 | 2.20 | 2.75 | 2.75 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 118 | — | 20.33 | 17.79 | 3.39 | 5.08 | 4.24 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 50 | 9 | 32.00 | 4.00 | 8.00 | 2.00 | 4.00 |
| Boston . . . | 617,950 | 197 | 55 | 21.82 | 14.72 | 2.53 | 2.03 | 4.06 |
| Worcester . . | 136,925 | 35 | 12 | 11.43 | 8.57 | — | 2.86 | 2.86 |
| Fall River . . | 119,349 | 36 | 14 | 33.33 | 8.33 | 5.55 | 2.78 | 11.00 |
| Lowell . . . | 104,402 | 18 | 8 | 22.22 | 5.55 | 11.11 | — | 5.55 |
| Cambridge . | 100,998 | 30 | 7 | 9.00 | 9.00 | — | — | — |
| Lynn . . . . | 73,875 | 14 | 1 | 7.14 | — | — | — | — |
| Lawrence . . | 72,348 | 17 | 5 | 17.65 | 11.76 | — | — | — |
| Springfield . | 72,020 | 12 | 4 | 16.67 | — | 16.67 | — | — |
| Somerville . | 70,413 | 17 | 4 | 5.88 | 11.76 | — | — | — |
| New Bedford | 68,863 | 18 | 8 | 22.22 | 27.77 | — | — | 16.67 |
| Holyoke . . . | 50,538 | 16 | 4 | 18.75 | 18.75 | — | — | — |
| Brockton . . | 46,601 | 5 | 2 | 20.00 | — | — | — | — |
| Newton . . . | 39,310 | 8 | 1 | — | — | — | — | — |
| Haverhill . . | 39,061 | 9 | 4 | 22.22 | 11.11 | — | — | 11.11 |
| Malden . . . | 37,205 | 9 | 4 | — | — | — | — | — |
| Salem . . . . | 37,188 | 10 | 1 | 10.00 | — | — | — | — |
| Chelsea . . . | 36,499 | 11 | 2 | — | — | — | — | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 12 | 3 | — | 16.67 | — | — | — |
| Everett . . . | 30,209 | 8 | 3 | 25.00 | — | — | — | — |
| North Adams | 29,201 | 4 | 0 | 25.00 | 25.00 | — | — | — |
| Quincy . . . | 26,798 | 9 | 3 | 11.11 | 11.11 | — | — | — |
| Gloucester . | 26,121 | 2 | — | — | — | — | — | — |
| Waltham . . | 25,797 | 4 | — | 25.00 | — | — | — | — |
| Brookline . . | 23,576 | 4 | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | 3 | 1 | — | — | — | — | — |
| Medford . . | 21,956 | 3 | — | — | 33.33 | — | — | — |
| Chicopee . . | 21,692 | 5 | 2 | 60.00 | — | 20.00 | — | 20.00 |
| Northampton | 20,314 | 3 | 0 | — | — | — | — | — |
| Beverly . . . | 15,807 | 3 | — | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 2 | 1 | — | 50.00 | — | — | — |
| Adams . . . | 14,745 | 3 | 0 | 33.33 | — | 33.33 | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 1 | 0 | 100.00 | — | — | — | — |
| Newburyport | 14,478 | 3 | 0 | — | — | — | — | — |
| Woburn . . . | 14,315 | 2 | — | — | 50.00 | — | — | — |
| Melrose . . . | 13,819 | 1 | — | 100.00 | — | — | — | — |
| Westfield . . | 13,809 | 4 | 2 | 75.00 | — | 50.00 | 25.00 | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 5 | 0 | — | — | — | — | — |
| Revere . . . | 13,609 | 3 | 1 | 66.67 | — | 33.33 | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 2 | — | — | — | — | — | — |
| Southbridge . | 11,716 | 3 | 3 | 33.33 | — | 33.33 | — | — |
| Watertown . | 11,575 | 0 | — | — | — | — | — | — |
| Weymouth . | 11,350 | 3 | 1 | 33.33 | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 2,787; under five years of age, 708; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 641; acute lung diseases 358, consumption 321, scarlet fever 13, whooping cough 6, cerebrospinal meningitis 17, smallpox —, erysipelas 3, puerperal fever 6, measles 9, typhoid fever 49, diarrheal diseases 143, diphtheria and croup 74.

From whooping cough, New York 3, Chicago 2, Holyoke 1. From measles, New York 7, Chicago 1, Pittsburg 1. From scarlet fever, New York 8, Philadelphia 3, Baltimore 2. From cerebro-spinal meningitis, New York 10, Baltimore 2, Pittsburg, Boston, Worcester, Brockton, Weymouth, 1 each. From erysipelas, Providence 1, Boston 2.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending Oct. 15, the death-rate was 15.2. Deaths reported 4,439; acute diseases of the respiratory organs (London) 94, whooping cough 31, diphtheria 69, measles 81, smallpox 1, scarlet fever 46.

The death-rate ranged from 5.1 in Tottenham to 27.2 in Merthyr Tydfil; London 14.2, West Ham 15.2, Brighton 12.4, Plymouth 21.0, Bristol 12.6, Birmingham 14.8, Leicester 12.3, Nottingham 14.0, Liverpool 20.4, Bolton 15.1, Manchester 16.3, Oldham 16.8, Halifax 14.1, Bradford 17.0, Leeds 15.9, Sheffield 17.3, Hull 19.5, Cardiff 8.3, Rhondda 19.2, Hornsey 8.3, Salford 20.3, Wigan 13.3.

## METEOROLOGICAL RECORD.

For the week ending October 29, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in Inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S.. 23 | 30.02 | 50 | 59 | 42 | 71 | 53 | 62 | W | W | 7 | 7 | C. | O. | 0 |
| M. 24 | 30.28 | 45 | 52 | 38 | 69 | 51 | 60 | W | N. E | 12 | 4 | C. | C. | 0 |
| T.. 25 | 30.26 | 52 | 63 | 41 | 73 | 85 | 79 | S W | S W | 12 | 15 | F. | O. | 0 |
| W. 26 | 29.98 | 50 | 59 | 42 | 87 | 64 | 76 | S W | W | 6 | 20 | O. | C. | .14 |
| T.. 27 | 30.07 | 40 | 45 | 34 | 64 | 50 | 57 | W | N | 12 | 6 | C. | C. | T. |
| F.. 28 | 30.38 | 38 | 46 | 30 | 60 | 64 | 62 | N W | S | 8 | 7 | C. | C. | 0 |
| S.. 29 | 30.22 | 48 | 59 | 37 | 71 | 80 | 76 | S W | S W | 4 | 8 | O. | C. | 0 |
| ☞ | 30.17 | | 55 | 38 | | | 67 | | | | | | | .14 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for week.

## CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING NOVEMBER 5, 1904.

DR. M. E. LANDE, appointed an assistant surgeon from Oct. 26.

G. G. HART, acting assistant surgeon. Ordered to Marine Barracks, Dry Tortugas, Fla.

R. L. SUTTON, assistant surgeon. Detached from the Naval Hospital, New York, and ordered to the "Massachusetts," Nov. 28.

DRS. C. K. WINN and HUGH DE VALIN, appointed acting assistant surgeons from Oct. 28.

A. J. GEIGER, assistant surgeon. Detached from the Naval Hospital, Yokohama, Japan, and ordered home.

## SOCIETY NOTICES.

AMERICAN PUBLIC HEALTH ASSOCIATION. — The thirty-second annual meeting of the American Public Health Association will be held at Havana, Cuba, beginning Jan. 9 and continuing for five days. The final announcement will be sent out some weeks before the date of the meeting. It will give all necessary information concerning railroad rates, hotels, place of meeting, entertainments, etc.

BOSTON MEDICAL LIBRARY MEETINGS. — The Boston Medical Library in conjunction with the Suffolk District Branch of the Massachusetts Medical Society, will hold the following meetings during the season of 1904-5, at 8.15, at the Fenway: Nov. 16, Nephritis: Pathology, Prof. W. T. Councilman. Clinical Examination of Urine, Prof. E. S. Wood. Diagnosis, Dr. Richard C. Cabot. Nov. 30, Ptosis of the Abdominal Organs with Special Reference to the Kidney: Discussion. Dec. 7, The Humane Treatment of Malignant Disease from a Surgical Point of View, Dr. John C. Munro. Dec. 21, Nephritis: Medical Treatment, Prof. F. Pfaff. Surgical Treatment, Dr. Paul Thorndike. Prognosis, Dr. Frank Wells. Jan. 4, General Treatment of Appendicitis: Discussion. Jan. 11, Medical Charity, Dr. Geo. W. Gay. Jan. 25, A Study of Objective Methods of Diagnosis of the Stomach in a Medico-Surgical Clinic with Report of Cases, Dr. H. F. Hewes. Results of Surgical Treatment of Benign Disease of the Stomach, Dr. J. G. Mumford. Feb. 1, Results of Operative Treatment of Cancer in and about the Mouth: Discussion. Feb. 11, Physiological Economy of Nutrition, Prof. R. H. Chittenden, New Haven. Feb. 15, Recent Work on Etiology of Disease, Prof. W. T. Councilman. March 1, The Surgery of Renal and Ureteral Calculi: Discussion. March 8, The Present State of Opinion Concerning Sewer Gas and its Effects, Prof. Wm. T. Sedgwick. Nine Years' Experience in the Treatment of Diphtheria with Antitoxin at the South Department of the Boston City Hospital, Dr. John H. McCollom. March 11, Open. April 5, Cerebral and Spinal Surgery: Discussion. Notification of each meeting will be given in the BOSTON MEDICAL AND SURGICAL JOURNAL; those who wish a special notification by postal card will please notify Dr. Brigham at the Library. Light refreshments will be served at each meeting.

GEORGE W. GAY, FRED. B. LUND, ELLIOTT P. JOSLIN,
*Committee on Medical and Social Meetings.*

## RECENT DEATH.

MORDECAI PRICE, M.D., died in Philadelphia, probably from apoplexy, on Oct. 29, at the age of sixty years. He was a graduate of the Department of Medicine in the University of Pennsylvania in the class of 1869, and for many years has been regarded as one of the most eminent surgeons in Philadelphia, particularly in relation to gynecology and abdominal diseases.

## OPERATIONS: BOSTON CITY HOSPITAL.

The following operations will be done and cases shown in the amphitheater of the Boston City Hospital on Nov. 11, from 10 A.M. until 12.30 P.M.: Amputation of Breast; Appendectomy; Plastic Operation for Hypospadias; Appendectomy.

## BOOKS AND PAMPHLETS RECEIVED.

The Division of Surgery of the Medical School of Harvard University. Report of Research Work, 1903-1904. September, 1904. Bulletin No. III.

Twenty-third Annual Report of the State Department of Health of New York for the Year ending December 31, 1902. Also Maps, Parts I and II.

An Address delivered at the Unveiling of a Monument erected by the American Medical Association to the Memory of Benjamin Rush, in Washington, D. C., June 11, 1904. By J. C. Wilson, A.M., M.D. J. B. Lippincott Co.

Syphilis and Gonorrhea. By C. F. Marshall, M.D., Ch.B., B.Sc. Vict., F.R.C.S. Eng. New York: Rebman Co. 1904.

Blakiston's Quiz-Compends. A Compend of Medical Latin. Designed Expressly for Elementary Training of Medical Students. By W. T. St. Clair, A.M. Second Edition. Revised. Philadelphia: P. Blakiston's Son & Co. 1904.

Surgical Emergencies. The Surgery of the Abdomen. Part I. Appendicitis and Other Diseases about the Appendix. By Bayard Holmes, B.S., M.D. Illustrated. New York: D. Appleton & Co., 1904.

The Medical News Visiting-List. 1905. Philadelphia and New York: Lea Brothers & Co.

General Catalogue of Medical Books. Philadelphia: P. Blakiston's Son & Co.

Multiple Personality. An Experimental Investigation into the Nature of Human Individuality. By Boris Sidis, M.A., Ph.D. (Harvard), and Simon P. Goodhart, Ph.B. (Yale), M.D. New York: D. Appleton & Co. 1905.

The Finsen Light, X-Rays, and High Frequency Electrical Currents in Certain Diseases of the Skin. Another Year's Experience. By L. Duncan Bulkley, M.A., M.D. Reprint.

A Text-Book of Practical Therapeutics, with Especial Reference to the Application of Remedial Measures to Disease and their Employment upon a Rational Basis. By Hobart Amory Hare. M.D., B.Sc. Tenth Edition. Enlarged, Thoroughly Revised and Largely Re-written. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1904.

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# Original Articles.

## THE DIFFERENTIAL DIAGNOSIS AND TREATMENT OF THE SO-CALLED RHEUMATOID DISEASES.*

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The paper which I have to present to-night is a report of work which has been carried on during the past twelve years, chiefly at the Orthopedic Department of the Carney Hospital, with the sole purpose of increasing our knowledge of the many features presented by the so-called rheumatoid diseases. It is not the work of one man, but the work of a group of men who have been, or who are still, connected with that department.

The work was made necessary by the presentation of a large number of patients, at the very opening of that department, who were suffering with, or crippled from, diseases of the joints, commonly classed as rheumatoid or rheumatic, the intelligent treatment of which demanded more definite knowledge of the nature of the disease than then seemed to exist. The subject has been approached from the clinical, the pathological, the bacteriological and the chemical sides, and that more has not been accomplished in this time can only be explained by the chronic character of the diseases, and the need of waiting years, at times, in order for the different stages in any given case to develop.

It is possible in the time at our disposal this evening to give only a brief outline of the results of this work with the present conclusions, leaving the detailed report of the various phases of the work for other and special publication.

It was at once apparent, as soon as many patients were seen together, that there were several distinct types of disease included under this general head, which were quite constant in their clinical course and in the pathological findings, and while it is not possible to entirely disprove any connection between these types, the suggestion is certainly very strong that they represent different diseases. Usually but one type exists in the same individual, but at times more than one may be present. When this does occur the types can be recognized, and practically always they have developed at such different periods and are so unlike in their appearance that the patient even recognizes the difference. That more than one type is present in a given case is, of course, no more to be wondered at than that pneumonia and tuberculosis or any other combination of diseases should be present in the same individual.

From the large general class of rheumatoid disease five types have been separated, the essential characteristics of which are here presented.

The first: The *chronic, villous arthritis*, or "dry joint," is very common, and is not a general disease at all, but represents entirely a local process with no tendency to progression. In using the term, chronic villous arthritis, it should be remembered that a villous change may take place in any inflammatory process in which a joint is involved, and that villi may develop in tuberculosis, in the atrophic form of arthritis, in the infectious arthritis, in the hypertrophic arthritis, and, in fact, in any condition in which there is inflammation or disease of the synovial membrane. In such conditions, the villi are simply a part of the general disease, and are present in connection with many other symptoms. In the simple chronic villous arthritis there are no general symptoms, and the local lack of tone with the folds of the relaxed membranes and the villi which form if the condition is of long duration are responsible for all of the symptoms. The terms most commonly used to describe this type of disease are the dry, the relaxed, or the hyperemic joint, and the chief characteristics are the crepitation, or creaking of the joint on motion, with varying degrees of pain and tenderness on use.

The condition is most commonly seen in the knee, and is very commonly associated with, and is undoubtedly in part due to, flat foot, the weakness there having resulted in strain and weakness at the knee. The muscular tone of the thigh and calf muscles is usually impaired, and the joint membranes, as a part of this lack of tone, become relaxed and passively congested. As a result of this the membranes are thrown into folds, and the crepitation is due to the rubbing of these folds or loose portions over each other. At times, under the continued irritation, the folds become more swollen, and fringes, or villi, result. When these are present they are found most commonly near the articular surfaces, and are undoubtedly due in large part to the membrane being drawn into the articulation during motion, this resulting in greater swelling, with consequently a greater liability of a repetition of the pinching of the fold or fringe in subsequent motion. It is in this way that symptoms of catching, and at times complete locking, in the joint are to be explained.

In such a condition the joint fluid is probably rarely, if ever, less than normal, so that the joints are not dry, and if the villi are numerous, so that on motion the irritation or catching is marked, the internal trauma which results may be followed by a marked increase of the fluid, the same as would result if the trauma were received from the outside. The cause for this excess of fluid, therefore, is purely mechanical, and is not due to a general disease or to any chemical or diathetic condition. It is absorbed under compression and quiet, and reappears again if the irritation is continued.

When such a condition has been present for any considerable length of time degenerative changes take place, and tissues of a higher type are replaced by tissues of a lower. The change most commonly seen is the fatty degeneration of the villi, so that the ends of the villi as they are frequently seen are made up of distinct lipomata. At other times a considerable fold of membrane may undergo the same change, or several villi

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may join, and the so-called "lipoma arborescens" result. Covering these there is usually a mere film of membrane as the remnant of the original synovial tissue. When these lipomata are present as large masses, they are most commonly seen just above and to the outside of the articular surface of the femur, and just below the patella in the fold of membrane under the patella tendon. As villi they may be found anywhere, but always most numerously about the articulation. At times a calcareous degeneration is seen, and in the folds of the membrane, entirely removed from the normal articular cartilage and bone, small cartilaginous or bony masses are found, and it is probably in this way that many of the so-called "joint mice" develop.

The treatment of such a condition naturally consists in improving the tone of all the joint structures concerned in the action of the joint. The muscles above and below the joint should be developed, and for this purpose massage in its various forms, with stimulating bathing, is of benefit, together with any form of muscular exercise in which the joint irritation is not increased. If flat foot is present, or if there is any other definite source of strain or weakness, this should, of course, be corrected. All forms of use, such as stair climbing and hill climbing, which tend to increase the irritation, should be avoided. For the joint itself, stimulating bathing, gentle massage, "sweating" with rubber dam, electricity, hot air, etc., are all of advantage in improving the nutrition and tone of the part. During exercise, flannel bandages, the adhesive plaster strapping, or some similar form of protection is of benefit, by controlling the extremes of motion and thereby lessening the irritation and danger of the membranes catching in the articulation. If the villi or the lipomatous change is marked so that either of these conditions represent definite sources of mechanical irritation within the joint, and if after a reasonable period of bandaging and bathing the symptoms due to these features persist, they should be removed by operation. After such an operation the normal function of the joint should be expected, as the disease is not a progressive one, and as there are no destructive changes in which the bone or cartilage is involved.

The second type: The *atrophic arthritis*, or, as it was designated in the earlier papers, rheumatoid arthritis, is a progressive disease resulting in marked distortion and great crippling, with the essential pathological feature one of atrophy in which the joint membranes, the cartilage, the bones, and in the exposed joints, even the skin, all show the change. It is because of this atrophy which is such a constant factor that the term atrophic arthritis is used, and it represents an attempt to use terms for which there is some scientific reason.

The disease is characterized in the beginning by swelling of the affected joint (Fig. 1), this representing an increase in the synovial fluid, with, at the same time, an infiltration of the membranes and the periarticular structures. At this time or in the very beginning of the disease, the joint structures show signs of atrophy, and this can usually be demonstrated even thus early with the radiograph, the absence or the partial absorption of the cartilage between the bones showing clearly. As the disease progresses the atrophy becomes more marked, until it is shown by all of the structures involved in the articulation (Fig. 2), and at times the bones are so much affected that one telescopes into the other (Fig. 3), or dislocations or other deformities result. The small atrophied joint (Fig. 4), in the end result, is in marked contrast to the hypertrophic type. In the stage of swelling there may be a distinct villous change of the synovial membrane, but this disappears as the atrophy develops, unless the disease is arrested before it reaches that point.

The disease is a slowly progressive one, the extension going on gradually for many years. It may attack several joints in the beginning, or it may be entirely confined to one joint and remain as a non-articular process for several months before the signs of progression appear. The large or small joints may be the first affected, but the finger joints are almost always affected very early in the disease. In the fingers the first row of phalangeal articulations are affected before the others, forming the spindle-shaped swellings, but the last row, even though they may ultimately become ankylosed and go through all the changes of atrophy, rarely appear swollen. (Fig. 1.) Any or all of the joints may be affected as the disease progresses, and the jaw is frequently involved, resulting in difficulty in the mastication of the food and consequently interfering with the nutrition.

The etiology of the condition is not known. Some of the features strongly suggest a trophic change, as if the condition were due to some lesion of the nerve centres, but as yet there are no pathological data to support such a theory. The examination of the blood usually shows little abnormal. There may be a slight anemia, but this is not marked, the secondary anemia which is seen in the infectious arthritis not appearing in this type. The lymphatic glands are not enlarged.

The treatment is the treatment that would be suggested by the pathological condition as it is found. Anything that will improve the general tone or tend to lessen the progressive atrophy is of value. Tonics, fresh air, stimulating bathing, forced feeding, massage and all other similar measures should be encouraged. The diet should be a generous one, and meat should be an important factor, whether red or white being immaterial. In general the patient should be given as much food as can be digested. It should be borne in mind during the forced feeding that as the result of the general inaction the eliminative functions are apt to be sluggish, and for this purpose large amounts of water should be given, and possibly some mild alkali. At times the salicylates are of benefit, but if used it should be remembered that large doses depress and therefore do harm, while small doses, such as five grains once or twice daily, will give relief if the drug is to exert any



FIG. 1. — Atrophic arthritis: showing the spindle swellings of the early stage.



FIG. 2. — Atrophic arthritis: showing the general bone atrophy with the absorption of the articular cartilage between the bones.



FIG. 3. — Atrophic arthritis: showing the absorption of the cartilage with the telescoping of the bones at the metacarpo-phalangeal articulations.



FIG. 4. — Atrophic arthritis: showing the small ankylosed joints as the end result in the severe cases.




FIG. 5. — Hypertrophic arthritis: showing the Heberden's nodes.



FIG. 6. — Hypertrophic arthritis: showing the hypertrophy at the edge of the articular cartilage in the distal row of articulations.



FIG. 7. — Hypertrophic arthritis: showing the hypertrophy at the edge of the articular cartilage.



FIG. 8. — Hypertrophic arthritis: the thickening at the edge of the cartilage of the ulna explaining the limitation of motion.



FIG. 9. — Hypertrophic arthritis in the hip — or malum coxae senilis.



FIG. 10. — Hypertrophic arthritis.



FIG. 11. — Hypertrophic arthritis: showing the fusing of some of the vertebræ with the lipping of the cartilage in an intermediate joint.



FIG. 12. — Infectious arthritis.



FIG. 13. — Infectious arthritis: showing a long existing lesion in the index finger without atrophy of cartilage or bone.



FIG. 14. — Infectious arthritis: showing a process having gone on to ankylosis without atrophy or hypertrophy.



FIG. 15. — Infectious arthritis: showing the result after severe type with suppuration.



FIG. 16. — Chronic gout: the urate of soda deposits resembling the hypertrophic nodes.



FIG. 17. — Chronic gout: the bone change showing best in the index finger with the complete destruction of the last phalanx of the middle finger.



FIG. 18. — Chronic gout: showing the destruction in the shaft of the bone and also the bone adjacent to the joint — the fifth metacarpo-phalangeal.

influence. Locally, the treatment is entirely stimulating, with the encouragement of use, stimulating bathing, hot air, massage, and anything that tends to improve the nutrition or circulation of the affected part. In order to make use of the affected part more possible, light bandages, and at times splints, may be of assistance. If adhesions have formed, or if deformities have resulted, they should be overcome, and an attempt made to restore the part to as near its normal condition as possible.

The prognosis in this type of disease, if the environment can be controlled, and if the general treatment can be carried on for a sufficient length of time, is fairly good. In a considerable number of cases the disease can apparently be arrested; in many of the others, while the arrest of the disease does not seem to be possible, its virulence can be greatly modified.

The third type: The *hypertrophic arthritis*, or, as it was designated in the earlier papers, the osteo-arthritis, may be either a local or a general process, and is characterized by a thickening at the edges of the articular cartilages or at the attachment of the ligaments, forming ridges or nodes which become ossified, and interfere in varying degrees with joint motion. As the process extends, the ends of the bones forming the articulation usually become sclerosed and are much more dense than normal; and with this the central portions of the articular cartilage at the points of pressure may be absorbed, representing apparently a process analogous to the decubitus seen in other parts of the body from continued pressure. The essential feature of this type of disease is hypertrophy of the cartilage and bone. It is for this reason that the new term is used.

In the finger joints the Heberden's nodes are the type. (Fig. 5, Fig. 6.) In the knee (Fig. 7), elbow (Fig. 8), hip (Fig. 9), shoulder, or other similar joints, motions are limited by the presence of the thickened bone, and there is, as a rule, little discomfort unless the part is used enough to cause pressure upon this newly formed tissue. At times the thickening is so great as to press upon the nerves passing through or over this area, and results in severe pain. In the spine the process usually starts in the cartilage and follows the anterior lateral ligament upon one side (Fig. 10) more than the other, at times simply limiting motion by the presence of the nodes, at other times actually fusing the vertebræ together with a complete ankylosis. (Fig. 11.) With the thickening which goes on at the front of the spine, there is usually some thickening or swelling which extends around to the side, and not infrequently this presses upon the nerve roots with resulting referred pain. As the process is always more active upon one side than the other the referred pains are usually one-sided, and many of the persistent sciaticas, the intercostal neuralgias, or the brachial neuralgias are to be explained in this way.

In connection with the spinal process, the costo-vertebral articulations are frequently involved with resulting acute pain upon coughing, sneezing or sudden movements of these joints, and with frequently complete ankylosis of these articulations as the final result. This interference with the use of the upper portion of the lungs in respiration renders them more liable to tuberculosis, and consequently is an important factor in the prognosis.

In any of the joints during the active or irritative stage the synovial membranes are thickened and may undergo the villous formation. If this is so, as is true wherever the villi form, they are most numerous near the articulation, and with the swelling which results the membrane at times extends in or over the cartilage, forming a pannus, and wherever this persists for any length of time in this or in any type of joint disease, the cartilage under the pannus is more or less absorbed.

The etiology in this type of disease is not known, but cold, exposure, strains or other injuries are undoubtedly factors of importance. The examination of the blood shows no special change, nor does the analysis of the urine.

The treatment consists of fixation, or at least protection of the affected part during the active or painful stage, with the idea of preventing the irritation which would result mechanically in the use of the part. In the spine jackets or braces at times are necessary to control the movement; in the mild cases webbing or canvas belts or corsets may be sufficient. In the hip complete fixation, such as can be obtained with a plaster of Paris spica bandage, may be necessary, or flannel bandages or other milder measures may, at times, give the needed support. In the other joints the same principles are involved; in the severer cases, complete fixation; in the milder ones protection or guarding of motion. During the active stage, aside from the fixation and protection, such treatment as tends to lessen the irritation and inflammation is of advantage. The hot air, hot bathing, "sweating" with rubber and such measures undoubtedly relieve and hasten recovery. After the acute process has subsided in certain of the joints, it is possible and desirable to remove the thickened nodes in an attempt to restore the joint to its normal function. In the elbow and knee this is most often desirable. In the hip, the amount of thickening usually makes it better, if operation is to be considered, to remove the entire head of the femur, rather than to attempt to remove the individual nodes.

Internal treatment is of comparatively little importance, except as symptoms arise or as the eliminative functions need supervision.

The fourth type: The *infectious arthritis* is by far the most common, and includes most of the cases commonly spoken of as acute or chronic rheumatism and as septic arthritis, as well as many formerly spoken of as arthritis deformans.

This type of disease apparently results from the presence within the body of some infectious organism, the symptoms being due either to the presence of the organism itself within the joint, or to some toxin produced by that organism in some other part of the body. It may result from

practically any of the infectious or pus-producing organisms, and the type of the lesion or its character will naturally depend upon the special organism involved. The disease may be mild and of short duration with a complete recovery, or it may be severe with much suffering and at times fatal termination. One joint may be affected, and if so the disease in this joint may be very slight or may go on to considerable destruction of the articulation. On the other hand, many of the joints may be involved; at times all of the joints in the body, and, as when the single joint is affected, there may be severe, permanent changes, or the disease may soon be over, leaving little to show for its presence.

In this type of disease the onset is usually abrupt, at times symptoms of great acuteness resulting within a few hours. At other times the process is more insidious and gradual, some weeks being required for its development. It is, however, quite characteristic of this general class of disease, whether mild or severe, of abrupt onset or gradual development, that the joints that are affected become so at practically the same time, there being very little tendency to the progression of the disease or later involvement of the other joints, in marked contrast to the steady progression seen in the atrophic type. In the cases in which there is progression or later manifestations of the disease, the manifestations are in the nature of acute exacerbations, due undoubtedly to the liberation of a fresh supply of the toxin from the original or some other source.

With this type of disease the symptoms are those of an infection, the elevated temperature, the acceleration of the pulse, the general enlargement of the lymphatic glands and the spleen, the increase in the leucocytes in the beginning, with the secondarily developing anemia, together with the joint condition in which the swelling and appearances are of an inflammatory nature, all suggest such a theory. The severity of the symptoms naturally depend upon the severity of the infection.

At times the organism itself may be present within the joint, and whenever this is the case the symptoms are much more severe, and not infrequently marked destructive changes result. Here as with practically all of the other features, the extent of the destruction depends upon the organism present. Occasionally, in a given case, many of the joints may show the changes, suggesting a toxemia, but in some one or two joints the organism itself may be present, producing in those joints the more serious destructive changes, while the other joints in which the symptoms were those of a toxemia recover with less, or entirely without, impairment of the joint function.

The result of the infection in a given case must necessarily depend upon the organism from which the infectious element is absorbed. Any organism may apparently cause such changes, and undoubtedly there are many others yet to be discovered which are responsible for the symptoms in certain cases. If due to the typhoid bacillus, the joint process may consist simply of a toxemia with a slight increase of temperature, with a serous exudate into the joint, and with recovery in a short time leaving no permanent change in the joint function. The same organism may, on the other hand, be present in the joint in pure culture causing severe destructive changes, resulting in deformity showing in the spine as a well-marked kyphos.

That which is true of the typhoid bacillus is true also of the other organisms. The pneumococcus, the streptococcus, the staphylococcus, the gonococcus, the influenza bacillus, the dysenteric bacillus, etc., may all produce a toxemia with joint changes which would be in keeping with such a condition, or they may be present in a given joint in pure culture, producing more serious lesions. The pneumococcus and the streptococcus, as is true with the typhoid bacillus, may cause marked destructive changes of the bones as well as of the soft parts. The gonococcus, on the other hand, rarely leads to bone changes, but is associated with much thickening of the capsule and interference with joint function. It is possible that a similar condition may result from the tubercle bacillus, but it seems more probable in the tubercular cases that the joint symptoms suggesting "rheumatism" are due to toxins which result from some of the other organisms which are almost always present with the tubercle bacillus (the so-called mixed infection) in the last stage of tuberculosis, the stage when the so-called rheumatic symptoms are most seen. It is also possible, and indeed probable, in the light of recent reports, that organisms have been found or will be found which will explain some of the cases which, up to the present time, have been shown to be undoubtedly infectious, but in which the definite organism was not known.

In infectious arthritis, the pathological process is a local inflammation; the joint is swollen; the capsule, if the inflammation has lasted for any length of time, is thickened, giving the spindle-shaped swellings in any exposed joints (Fig. 12), but with practically no change in the bone or cartilage (Figs. 13 and 14), unless the process is of the destructive nature, in which case the mere extent of the destruction would make the recognition of the condition easy, or unless with the swelling of the membranes a pannus has formed extending in over the edge of the cartilage, in which case the cartilage under the pannus may be absorbed. The bones are of normal density; the cartilage is present and of normal thickness, and although the joints may be ankylosed, the ankylosis is due to the adhesions which have resulted as a part of the inflammation. (Fig. 14.)

In case there are the more destructive changes, in the repair there may be new bone formed about the joint and true ankylosis result, but the appearances are entirely different from the atrophic or rheumatoid arthritis, and also the hypertrophic or osteo-arthritis, with which, because of the marked thickening, the condition in this stage would be most apt to be confounded. In infectious arthritis the new formation of bone is similar

in every way to the new formation of bone which follows a septic ostitis or periostitis. It is not a thickening of bone at the edge of the cartilage, but thickening or growth of bone at the point of infection wherever present, with complete ankylosis in the severe cases (Fig. 15.)

The blood in infectious arthritis in the beginning and during the active stage shows an increase in the leucocytes with usually a high percentage of hemoglobin. As the disease progresses and the acute symptoms subside the increase of the leucocytes gradually disappears, and the percentage of hemoglobin becomes less, so that in the later stages of the disease a secondary anemia is almost invariably present.

The lymphatic glands are almost always somewhat enlarged in the beginning of the process, and this enlargement remains until the toxemia has been overcome, when it gradually and entirely subsides.

The urine is not peculiar unless the infectious process be quite profound, in which case the characteristics are simply those of a septicemia, and what is true of the kidneys is true also of the other organs.

The treatment of infectious arthritis must be considered in two parts, that which pertains to the general condition and that which is required for the local process. It is of the first importance to keep up the general health as much as possible, and for this purpose all the details of general care should be observed, as they would be carried out in a case of septicemia. In the very beginning, if the disease be acute, with much fever, naturally the diet should be restricted, but after this period has passed it should be wholesome and generous, with the idea of increasing the general strength and nutrition as much as possible. In the mild cases, with good general care, recovery may take place entirely without the aid of drugs, but if drugs are to be used tonics and reconstructives are indicated. In the early stages in many of the cases salicylic acid or some of its compounds will be of distinct help to relieve pain, but in case this drug is to be used it should be borne in mind that in many of the cases it affords no relief whatever, and also, if it is to be of help, that the improvement will be noticed within a short time. It should also be borne in mind that although it relieves pain it is a distinct depressant, disturbing both the action of the heart and the digestion, and if continued for any considerable length of time is distinctly harmful. For this reason, in case salicylic acid is to be used it should not be continued for more than a few days, after which in the majority of cases it is possible to entirely dispense with it, using instead some of the simple alkalies. At the same time the use of large quantities of water internally is of advantage as it is undoubtedly essential that the eliminative functions, both from the kidneys and the bowels, should be kept as near the normal standard as possible. Aside from this, the medication should be planned with reference to the infection, and tonics and reconstructives should be used freely with fresh air, stimulating bathing, and any such measures as improve the body tone.

For the local treatment in the active stage there is comparatively little to be done other than to protect the affected joint, and by means of hot applications, either moist or dry, liniments and such remedies, to relieve the discomfort as much as possible. If the process be acute, fixation will undoubtedly give relief, and this can be accomplished by the application of some form of splint, or a pillow folded about the leg and held with straps. At times complete fixation is necessary, in which case the plaster of Paris bandage is the most satisfactory. In arranging the position of the joint during this active period, the danger of contractures or dislocations should be borne in mind, and after the inflammation has passed, in case any stiffness or impairment of use remains, passive motion, manipulation and massage should be used in order to restore the joint to its normal function as soon as possible. In case the joint lesion represents a toxemia the recovery is rapid, so that within a week or two the acute symptoms have passed and motion should be encouraged. If the infection prove to be of the more serious type in which the organism itself is present in the joint, more radical measures are frequently indicated. The infiltration of the capsule seen in this more severe type of the disease and which is responsible for the impairment of motion in many of the cases, particularly those due to the gonorrheal infection, does not take place to any marked degree until after the first three or four weeks. Up to that time the infection and swelling are confined largely to the joint itself. For this reason, if the improvement is not marked at the end of the first three or four weeks, in case only one or two of the joints are involved, they should be opened and thoroughly washed out. The same principle holds in the cases of this nature in which many joints are involved, but as in these cases the virulence of the process is less severe, measures as radical as incision are rarely necessary. In some cases, especially those due to the presence of the pneumococcus or the streptococcus, the symptoms may develop so rapidly and indicate so definitely an active septic process in the joint that there can be no question but that the joint should be opened at once and thoroughly drained, it being frequently possible in this way to prevent the marked destructive changes which otherwise would take place.

In many of the cases of infectious arthritis and even those which are quite mild, after the acute swelling and sensitiveness has passed, instead of the joint returning to its normal size and function some swelling persists and the joint remains sensitive, weak and uncertain for an indefinite period. This condition is due to the villous arthritis or to the fact that in certain cases the fibrin in the synovial fluid is precipitated, and after the swelling goes down these masses of fibrin remain and act within the joint as foreign bodies, producing irritation and symptoms exactly as would any other foreign body. Both of these conditions should be definitely recognized, and removed if necessary.

If, as is not infrequent, the patients are seen

for the first time after the acute symptoms have passed and after the thickening of the capsule has resulted, and the contractures or the other undesirable features have taken place, an effort should be made to overcome them; and every possible effort made to restore the joint to as nearly as possible its normal condition.

The fifth type: *Chronic gout* is less understood than the other types because much less common, and no attempt is made in designating it to use more than a descriptive term, the pathology being too little understood. In the few cases studied the essential characteristics are the same, the chief ones being deposits of the urate of soda in the soft structures about the joints, with some bone absorption adjacent to the deposits.

The disease is usually slowly progressive with periods of acute exacerbation, the intervals between the attacks varying greatly; and during these intervals the progression of the disease ceases. With each exacerbation the symptoms may reappear in the part previously affected, or may appear in some new region. The disease seems to be entirely different from the more common conditions known as acute gout, in which the process is much more acute, the great toe joint being the part commonly affected and with no permanent changes resulting. The deposits when present may resemble or suggest the nodes seen in the hypertrophic form (Fig. 16); but instead of being attached to the bone and being firm to pressure they are soft and can be moved about in the soft structures entirely without connection with the bone. After the deposits have become of considerable size they soften down and discharge, much as a tubercular abscess is formed, and the discharge from these openings, which looks like tubercular pus, is made up entirely of the urate of soda. While this deposit is forming or is being discharged from the various sinuses, the elimination of the urea by the kidneys is naturally decreased in amount.

Of the bone changes the lesion is a local one, but considerable portions of a given bone may be affected, so that in the fingers or toes almost an entire phalanx may be destroyed. The process involves only a small portion of the bone at a time, gradually extending into the rest of the shaft, and when first seen the destroyed portion appears sharply defined (Fig. 17), as if punched out, looking not unlike the appearance of the bone in the syphilitic dactylitis.

The shaft of the bone or the ends may be the portion first affected, but if the end of one bone is affected the end of the adjacent bone is also usually affected, resulting in the destruction of the articulation. (Fig. 18.) In this latter condition the appearance in the radiograph suggests at first glance the atrophied and disintegrated bone of the atrophic type, but on close inspection the difference should be apparent. It is not a simple atrophy, the bone being thin with the preservation in large part of the outline, but is a destruction or disintegration of the bone, so that there is none there to preserve the outline.

When seen in the shaft of the bone, the process may start in one side, or work in from both sides, and in either manner the whole of the affected shaft may be destroyed. (Fig. 17.) The disintegrated bone is thrown off through the sinuses which are always present where such a process is going on, from which in the beginning the pure urate of soda was discharged.

In the repair of such a condition after the acute attack is over the deposits cease to form, and the joints or bones which have been affected, while always imperfect, yet, nevertheless, do soon recover and are of much greater use for function than one would suppose.

The etiology of these cases is not known, and comparatively little is known in regard to the treatment. It represents a type which apparently must be recognized, but about which much work must be performed before the cases can be treated intelligently. Rest in bed during the active part of the attack is desirable, and the quiet with any form of local warmth to the affected part relieves the pain. "Sweating" with rubber tissue or flannel seems to be particularly helpful. The diet should consist largely of liquids and soft solids during the acute stage, with forced feeding after the attack is over. All during the acute stage large amounts of water should be taken to correct the scanty flow of urine, which is always a feature at this time, and at regular intervals thereafter the amount of the urine should be watched, as before the onset of an acute attack the quantity is diminished and can be corrected by increasing the amount of liquid ingested. The diet should in general be a nutritious one, and if the eliminative functions are kept at the proper standard there is no reason why meat or other nitrogenous foods should not be used.

For drugs, colchium or the salicylates seem to be the most valuable to cut short the attack, after which tonics are indicated.

## ARTHRITIS DEFORMANS.*

BY E. H. BRADFORD, M.D., BOSTON.

THE need of a thorough investigation of the chronic non-tubercular affections of the joints has for a long time been evident. The confusion in the literature of the subject is in itself a sufficient evidence of this. It is, however, a question in the present state of our knowledge whether a generally accepted terminology is possible. As the subject is looked at from different points of view and as the pathology as yet is not understood, an agreement in opinion among observers has not yet been reached.

Although in the past year a number of cases, nearly a hundred, have been under careful observation by the staff at the Long Island Hospital in Boston, great difficulty was encountered in classifying the cases observed, sharply, in the subdivisions of atrophic and hypertrophic. The cases were typical ones; many of them, before taking refuge in the Long Island Hospital, had

*Read at the annual meeting of the Suffolk District Medical Society, April 30, 1904.

drifted from one institution to another and had undergone various methods of treatment with varying benefit. Some had apparently gone through different stages in their gradual downward course. In a few, post-mortem examinations were thoroughly made by Dr. McGrath, Dr. Nichols and Dr. Richardson; in some, all of the joints being examined, showing various stages of progress; several in both macroscopical and microscopical studies were made.

A full report of the results of these observations will be made later by Dr. E. H. Nichols and Dr. F. A. Richardson. From the cases seen it appears that although there are several variations in the symptomatology yet the general type is a clearly recognizable one, especially among the old, the variations being perhaps due to varying resistance of certain tissues or the differing strength of the exciting cause. The changes affect the fibrous tissue about the joint, *viz.*, capsule, ligaments. In some instances these are limited to a a fibrous degeneration; later, ossification takes place with the formation of exostoses or enlargements of the bone. Effusion, thickening of periarticular tissues, atrophy, the development of fibrous growths of the synovial membrane, ulceration of the cartilage, either from degeneration or from pressure, eburnation of bone, are all observed. In some cases the existence of a virus, either as a contributory or exciting cause, *viz.*, gonococcus, was known; and in many, a toxin as yet unknown seemed probable. In most of the cases the patient appeared to be suffering from the effects of a systemic disturbance attacking different parts of the body, though to a greater degree in some than in others. An analogy to what occurs in arterio-sclerosis suggests itself, and the probability that the affection in question may be an auto-infection from defective metabolism, developing a fibrous degeneration of the cartilages, capsule and periarticular tissues, which develop at a later stage bone elements, bone structure, bone thickening and deformity, and in the earlier stages merely a loss of elasticity in the tissues involved, with slight alterations in the structure of the bones.

Under this explanation various causes may be supposed to excite in different systems similar results, but for successful treatment the existence of the faulty metabolism will have to be recognized.

In terminology the introduction of confusing terms is, of course, to be avoided. The terms "rheumatoid" and "chronic rheumatism" though strongly intrenched by usage are open to criticism as suggesting a kinship with acute articular rheumatism. The term "arthritis deformans," introduced by the great generalizer Virchow, has the advantage of being clinically descriptive of a process which, if unarrested, always deforms. This does not assume a pathological basis as yet undetermined, and does not prevent necessary subdivisions as the type of ossification or of fibrous alteration takes place.

The affection is remarkably chronic, is subject, like arterio-sclerosis, to arrest or amelioration of symptoms, and it is difficult to be certain as to the permanent benefit of treatment except in cases watched for years; but it is clear that cases can be helped for a time at least, and in all probability in some instances permanently, by appropriate treatment.

It is to be confidently expected that the investigations of Dr. Goldthwait and his associates will be fruitful of great benefit in the future as they have been in the past.

## CHRONIC JOINT DISEASE.*

BY HENRY JACKSON, M.D., BOSTON.

In recent years advance has been made in two directions in our study of chronic joint diseases, first in nomenclature in that we are now inclined to drop the word rheumatism. We have long known that the chronic joint diseases under discussion to-night were not intimately related to acute rheumatic fever with involvement of many joints, yet the name "rheumatism" has been retained in speaking of the various chronic processes.

As to the adoption of definite names for the various forms of disease in the joints, chronic in nature, I am not so sure that we can as yet with any degree of certainty be too dogmatic.

In many cases it is difficult, perhaps impossible, even by x-ray examination, to determine the exact pathological condition in a given case. In fact the investigations of Dr. Nichols prove that several essentially different pathological processes may be the cause of chronic joint diseases that present identical, clinical conditions.

For the present at least I should favor the retention of the old name "arthritis deformans," as it is a term suggestive of a marked clinical feature, whereas osteo-arthritis is descriptive of a pathological condition, and may easily lead to confusion with another and probably entirely different process, osteitis deformans.

Rheumatoid arthritis is harmless as it merely suggests a disease similar to but different from rheumatism.

I think we must still leave a place in our nomenclature for "chronic rheumatism." There are cases of long continued joint disease that are acute or subacute in onset, yet last sufficiently long to deserve the name of chronic rheumatism. I say this with full knowledge of the fact that the chronic forms of disease under discussion to-night are liable to acute or subacute exacerbations with fever, hence may closely simulate acute polyarticular rheumatism.

The first type of the class spoken of by Dr. Goldthwait, chronic villous arthritis, may be extremely difficult to differentiate from chronic joint disease which has followed a slight and apparently harmless accident. As for instance the long cases of joint disturbance which follow a slight twist of the knee in playing tennis or skating. I suppose the pathological condition to be practically identical in chronic villous arthritis,

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and the cases here spoken of which follow an injury.

The cases of infectious arthritis present a large and very important class. It is my experience that in this class of cases we find the most intense pain, and unfortunately have no specific as salicylate of soda to relieve our patient. I think I have never seen more acute pain than in severe cases of gonorrheal and acute syphilitic joint disease. There is one class of joint disease acute in its course in which there appears to be doubt as to the etiology, namely, acute joint disease secondary to acute follicular tonsillitis. Is this acute rheumatism or is it an infection dependent upon some septic process as in the joint disease of scarlet fever? The clinical course and the fact that salicylates often relieve the pain suggest to me that this form may be properly spoken of as rheumatism in the strict sense of the word.

In hospital practice it is not uncommon to see a very perplexing form of severe joint disease that baffles us as to etiology and treatment,—usually monarticular, joint much swollen, boggy, intense pain, no proof of gonorrhea, no pus on aspiration, lasts weeks and often longer. This form is evidently septic, but the etiology obscure. X-ray has not shown the involvement of the bony tissues. Fixation is always necessary and baking has at times seemed to me to be of much value.

The second great advance has been in treatment in two directions. First, the great help obtained by properly applied fixation, a treatment that we as physicians owe to the great interest taken in chronic joint disease by the orthopedic surgeon. By this means the pain is relieved; by this treatment serious deformity may be avoided.

Secondly, we know that we must fight the disease as a chronic, depressing, debilitating process similar to tuberculosis. The most nourishing food that can be assimilated must be given in large quantities. The supposed danger of roast beef may be relegated to the fancies of the past.

In closing I would again say that I feel that in our modern knowledge as to chronic arthritis we must not forget that chronic rheumatism may exist, that is, a general systemic disease with its local manifestation in the joints.

## CHRONIC JOINT DISEASE AT THE MASSACHUSETTS GENERAL HOSPITAL.*

BY H. F. VICKERY, M.D., BOSTON.

CASES of chronic trouble in the joints show a growing tendency to apply directly to surgeons rather than physicians, and this is true of hospital as well as private practice. I share in and am glad to express the gratitude which has already been voiced this evening by others, for the great additions to our knowledge of rheumatoid disease contributed by Dr. Goldthwait and the other gentlemen working with him.

With the assistance of one of the medical house officers, Dr. Cleaveland Floyd, I have prepared a list of the diagnoses of joint trouble in medical cases admitted to the Massachusetts General Hospital from 1870 to June 1, 1903. It is interesting to notice the increasing precision in diagnosis in later years.

From 1877 to 1899 inclusive the joint troubles admitted were distributed as follows:

| | |
|---|---|
| Rheumatism, | 900 cases |
| Gonorrheal arthritis, | 16 |
| Gout, | 24 |
| Rheumatic gout, | 3 |
| Tabes dorsalis with Charcot joint, | 1 |
| A total of | 944 cases |

From 1893 to 1903 inclusive there were recorded

| | | |
|---|---|---|
| Rheumatism, acute, | 591 | cases |
| Rheumatism, sub-acute, | 193 | |
| Rheumatism, chronic, | 87 | |
| Total, | 871 | |
| Gonorrheal arthritis, | 86 | |
| Gout, | 9 | |
| Chronic rheumatic arthritis and arthritis deformans, | 40 | |
| Intervertebral rheumatism, | 1 | (1894) |
| Peri-arthritis, | 1 | (1903) |
| Acute arthritis, | 7 | |
| Osteo-arthritis of spine, | 15 | (1902 & 1903) |
| Osteo-arthritis of hip, | 1 | (1902) |
| Osteo-arthritis of knee and ankle, | 1 | (1902) |
| Spondylitis typhosa, | 1 | (1903) |

At least two other cases of this last trouble to my knowledge developed after entrance.

Thus in the last eleven years 1,033 cases of joint trouble were admitted on the medical side, and adding the cases previously referred to, the grand total is 1,977. Among all these we find but 33 cases of gout diagnosticated, a much smaller proportion than seems to occur in Baltimore.

In the classification given to-night the term chronic rheumatism has been dropped, and no speaker this evening as yet has referred to it. This doubtless comes from a conviction which is rapidly gaining ground that a chronic form of disease, essentially similar to acute polyarticular rheumatism, is of extremely rare occurrence, although without question some patients are afflicted with repeated and closely consecutive attacks of the acute disease, with more or less incomplete recovery therefrom.

Dr. Goldthwait assigns a more favorable prognosis to the atropic than to the hypertropic form of arthritis deformans. This agrees with the long-established clinical fact that cases of Heberden's nodes, affecting as they do the terminal phalanges, are more apt to have a mild course than are those cases in which the proximal phalanges are first involved with spindle-shaped swelling.

Dr. E. H. Bradford has suggested that in some instances of chronic joint trouble there may be a double infection. *A priori* this would seem to be perfectly possible, and I believe that I have seen cases of acute polyarticular rheumatism combined with gonorrhea and with gout, respectively.

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One practical point of great importance in treatment relates to the cases of arthritis deformans with an acute onset. We should be on the alert to recognize these, and if any case does not yield quite promptly to the ordinary treatment for polyarticular rheumatism we should without delay adopt the supportive and tonic measures appropriate to the chronic disease. By this means it may be possible to cut short its course, and I myself have seen an incipient arthritis deformans in middle-aged men apparently cured by rest, outdoor life and travel.

In conclusion, it may be worth while to mention that cases of infectious arthritis have occurred in connection with gonorrhea, scarlet fever, influenza, pneumonia, dysentery, smallpox, syphilis, tuberculosis, erysipelas, spinal meningitis, glanders and septico-pyemia; and joint trouble is seen with such spinal diseases as tabes and syringomyelia; also with hemophilia; and no less than 82 cases of joint trouble have been reported associated with psoriasis.

## RHEUMATOID DISEASE IN CHILDREN.*

BY JOHN LOVETT MORSE, A.M., M.D., BOSTON,

*Instructor in Pediatrics, Harvard Medical School; Assistant Physician at the Children's Hospital and at the Infants' Hospital, Boston.*

The same or even greater confusion prevails in the terminology of the so-called rheumatoid diseases in childhood as there does in that of the same conditions in adult life. The literature of the subject is comparatively scanty and most confusing. What is apparently the same condition is described under many different names, and several different conditions are often described under the same name. In many instances, moreover, it is impossible from the descriptions given to get even a reasonable idea of what conditions are meant. None of the previous classifications of these diseases seems as satisfactory as that presented by Dr. Goldthwait to-night. It is simpler and more definite than the others and should in children, as in adults, do much to clarify the confused ideas on this subject and to bring some order out of the present chaos.

While all the forms of rheumatoid disease which occur in adults are also met in children they are unquestionably much less common in them than in adults. This is especially true of the atrophic and hypertrophic forms, both of which are extremely rare. For example, Koplik, in 1895, was able to collect but 18 cases, and Moncorvo, in 1901, but 48 cases of the hypertrophic form from the literature. Both writers undoubtedly, moreover, included many cases of the other forms in their series.

A form of rheumatoid disease, supposedly peculiar to childhood, was first described by Still in 1896, and has since borne the name of Still's disease. Little has been added by later writers to Still's original description which was based on about 20 cases and three autopsies. He concluded that there was a "peculiar disease, occurring in children, and beginning before the second dentition, which was characterized clinically by elastic, fusiform enlargement of joints without bony change, and also by enlargement of glands and spleen," and described it as follows: The onset, while sometimes acute with pyrexia and chills, is usually insidious, beginning with stiffness in one or more joints, which slowly become enlarged, other joints subsequently becoming affected. The joints earliest affected are those of the hands, wrists and cervical spine, the ankles, elbows, fingers and other joints being subsequently involved. The affection of the joints is symmetrical. The enlargement looks and feels more like a general thickening of the tissues around the bones than a bony enlargement, and is correspondingly smooth and fusiform without bony irregularity. There is no osteophytic growth even after years. There is never bony grating. There is no tenderness or redness except in very acute cases. Pain is absent as a rule, except on motion, when it may be present. There is always limitation of motion. There is no tendency to suppuration or bony anchylosis. The muscles which move the diseased joints show early and marked wasting without change in the electrical reactions. The most distinctive feature is the enlargement of the glands, which is general but affects primarily and chiefly those related to the affected joints. The glands are separate, hard, not tender, and show no tendency to break down. Their size varies with the acuteness of the symptoms in the joints. Enlargement of the spleen is almost always present, the amount of enlargement varying directly with that of the glands and the acuteness of the joint symptoms. There is generally a moderate diminution in the number of red corpuscles, often associated with a disproportionate diminution in the amount of hemoglobin. The temperature presents two types. One shows periods of pyrexia, lasting only a few days, and followed by longer intervals of apyrexia; the other, more or less continuous, slight pyrexia. The pyrexial attacks are not usually associated with any clinically demonstrable exacerbation of the joint trouble. The urine shows nothing important. Slight exophthalmos is sometimes present. The heart shows no evidence of valvular disease, although adherent pericardium has been found several times at autopsy. The course is slow. Improvement may take place for a time under treatment or spontaneously. The disease soon progresses again, however, until a condition of general joint disease is reached which seems to be permanently stationary. It is not fatal, the few recorded deaths having been due to complications. Pathologically, the joints show marked thickening of the capsule and of the connective tissues just outside it. There is also thickening and vascularization of the synovial membrane. Fibrous adhesions are sometimes present. The cartilages may show pitting at their margins from the pressure of little processes of the thickened synovial membrane, but are otherwise healthy. There are no bony changes. The enlarged glands appear normal on section or

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sometimes show ecchymoses in their substance. The spleen is firm and of normal appearance.

Later observers have added little to the clinical picture of the disease. Examinations of the blood have almost always shown a diminution in the number of red cells with a disproportionate diminution in the percentage of hemoglobin. They have also usually shown a slight increase in the number of white corpuscles, this increase being greatest in the polynuclear cells. Microscopic examination of the spleen has shown hyperplasia of the lymphatic tissue of the Malpighian corpuscles. Excised glands have shown simple hyperplasia.

It is very evident that this description fits most accurately certain forms of the condition described by Dr. Goldthwait as infectious arthritis. The condition of the joints is identical with that found in infectious arthritis. Moreover, x-ray photographs of typical cases of Still's disease show no bony changes. The anemic condition of the blood is the same as that seen in infectious arthritis after the acute stage is passed. The leucocytosis is evidence of a mild toxemia. The enlargement of the glands is also characteristic of infectious arthritis. Splenic tumor is not usually seen in adults with infectious arthritis. Its more frequent occurrence in children is propably to be explained by the greater reaction of the spleen to toxemia at this age. There can be but little doubt, therefore, that Still's disease is merely a somewhat peculiar form of infectious arthritis. This being so, there is no justification for setting these cases apart and giving them a special name. They should be considered merely as cases of infectious arthritis, and the name, Still's disease, should be dropped from our nomenclature.

The treatment of these cases of infectious arthritis in children is, of course, essentially the same as that of the same condition in adults. The salicylates and other so-called " rheumatic " remedies cannot be expected to do any good, and may by their depressing action do much harm. The prognosis is certainly better than that given by Still, and, taking into consideration the great reparative power of children, should be better than in similar conditions in adult life.

Nothing at all definite is known as to the bacteriology of that form of infectious arthritis of children commonly known as Still's disease. Edsall, however, has recently reported a case corresponding clinically to this type which he considers to have been caused by the tubercle bacillus. He thinks that there is a strong probability that Still's disease may, in a considerable proportion of instances, be of a tuberculous nature, and compares it to Sternberg's type of chronic lymphatic tuberculosis. His arguments are most suggestive but not entirely convincing. The proof of tuberculosis in his own case, moreover, is not conclusive. It is probable that this type of infectious arthritis is not due to any single organism, but that like other forms of infectious arthritis it may be caused by many different bacteria, among which the tubercle bacillus may possibly be included.

## TYPES OF RHEUMATOID DISEASE. *

BY C. F. PAINTER, M.D., BOSTON.

THE recent Tuberculosis Congress in Baltimore is said to have been one of the most stimulating events which has ever occurred in the medical history of this country. The promoters of it are already contemplating a similar one on typhoid fever. The reasons which made this congress so valuable to medical men and to the general community do not, of course, obtain in rheumatoid disease to the same extent, chiefly because rheumatoid is not a disease communicable from one to another, and therefore education of the populace regarding its prevention and treatment is not so essential. The medical community is, however, very much in need of being stirred up to the recognition of its various types; to a study of their clinical course and pathological changes, and to a more rational treatment, based upon knowledge obtained from such studies.

The principal difficulty which has stood in the way of progress in our knowledge of these diseases in the past I conceive to be the failure to subject pathological investigation to careful clinical scrutiny on the one hand, or to check clinical inferences by pathological findings on the other. A perusal of the writings of authors in the middle period of the last century shows how careful they were in their clinical observations. So far as that is concerned, nothing has been added in recent years to augment our knowledge. With the advance in the understanding of pathological changes the desire to fit clinical "symptom groups " to the pictures of diseased conditions as revealed, grossly and microscopically, in joints affected with some one or other of the rheumatoid diseases increased.

The clinician's observations were better than the pathologist's, as is evidenced by the fact that practically nothing has been added or subtracted from the original clinical descriptions, whereas there are a great number of differing pathological descriptions for which there is no corresponding clinical symptom-complex. The confusing nomenclature is partly the fault of the clinician and partly of the pathologist, but principally of the former.

The pathologist has had different stages of one or the other of the three principal types of rheumatoid disease submitted to him for study, and has found changes of a similar sort in the three types. If he could have studied simultaneously the pathological changes in the tissues of each of the types from time to time as they were developing, he would, I am sure, have found that his pathological symptom-complex not only agreed for the same class of case and for similar stages of the same class, but would have coincided in most instances with the clinical symptom-complex to which it appropriately belonged.

The amenability of the group of cases designated "acute articular rheumatism " to the influence of the alkalies or salicylates has also been a stumbling block in the way of progress,

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for any joint or group of joints that showed simply a tendency to swell has been termed "rheumatic," without reference to any other clinical evidence, and if the joints failed to get better under ordinary doses of salicylic acid, they were not regarded as non-rheumatic, as they ought to have been, on the reasoning which would class them among the rheumatisms, but as peculiarly intractable cases, and heroic doses of salicylates were given, thereby often doing much harm.

I, therefore, believe that so far as we have data to work with it is more valuable to rely upon a careful study of the clinical course and physical signs, coupled with the pathological evidence obtained from good x-rays, than upon any purely pathological classification, whether it be gross or microscopical or both. I know that it seems trite to say this, but the fact remains that at the present time practically all the treatment rheumatoid patients get at the hands of most practitioners is based on a faulty conception of the clinical pathology of the disease, and in the last analysis treatment should be based on our knowledge of morbid anatomy.

We must recognize the evidences of inflammatory changes due to the presence of organisms or their toxins in the joints, but we must also recognize that there are probably chemico-physiological changes going on in the body which have nothing to do with direct septic intoxication, local or general, of however mild a character; that some of these metabolic changes do resemble in certain ways true inflammatory processes, but that careful clinical observation will generally distinguish them from each other, even in their purely local manifestations; if not, a broader view of the case will usually enable one to properly classify it.

In conclusion, I wish very briefly to show, as far as seems to me justifiable from our present knowledge of clinical pathology, how the external appearances of these so-called rheumatoid joints correspond to their internal appearances. The atrophic joint externally is swollen in a spindle-shaped manner, as a rule; is abnormally white in color, or, at times, though rarely, venously congested; shows oftentimes a constriction immediately at the line of the joint; is sometimes quite tense and apparently fluctuates; is oftentimes more or less deformed, and this deformity is usually a luxation or hyperextension, is sometimes covered with clammy perspiration and the skin is shiny and parchment-like. Inside the joint the swelling is in the synovial capsule of the type known as villous arthritis, with oftentimes various metaplasias; there is rarely any excess of fluid; the cartilage is thinned throughout uniformly or has become eroded in spots; has lost its glossiness, and is sometimes striated; the bone beneath is also atrophic, but not of the ordinary type of osteo-porosis seen in disuse or as the result of tuberculosis.

In hypertrophic arthritis viewed from the outside the joint is most swollen at the line of juncture between the bones or just to one or the other side; if there is general swelling of the joint it is due to fluid; very rarely to a local villous arthritis about some isolated spur; there is not apt to be any change in the color of the skin or any congestion; clammy perspiration is not common; if other deformity than the swelling occur it is generally a lateral deformity. (In this description as in the previous one of atrophic arthritis I am taking the finger joint as typical of all.) Inside there is often an excess of fluid, very little villous arthritis, and when there is it is usually the result of internal traumatism; irregular bony spurs or osteophytes are seen about the line of the joint, often overlapping it. The bone itself is not atrophic, but is unusually dense, even though function may long have been impaired.

The cartilage is increased in thickness, and is of its usual appearance and is not eroded, except from decubitus, due to impairment of motion within the joint.

The infectious joint from the outside is much congested, more spindle-shaped than the atrophic type, without its constriction at the joint line; there are not commonly other deformities than the swellings; there is sometimes clammy sweating; in the early stage they are often tender, red and angry in appearance. Inside, the fibrous, as well as the synovial, capsule is infiltrated. Adhesions form easily in the joint, and fibrous ankylosis is more common than in the other types; the membrane is much congested, but the villi are smaller, shorter and more vascular than in atrophic arthritis; sometimes there is considerable fluid and in it are apt to be fibrinous clots; the membrane is often edematous. Pannous formation along the cartilage is common; the cartilage appears fairly normal, does not tend to thin or erode and is not striated. Sometimes in severe infections it does become eroded; the bone beneath is not notably altered except in severe infections.

These in general correspond to the clinical pictures of three types which careful observation will easily pick out in the majority of instances. The types shade into each other in some cases, but for the general run of cases this will be found to fit very well.

## Clinical Department.

### CONCERNING ACETANILID.

BY F. C. CLARK, M.D., PROVIDENCE, R. I.

It may seem somewhat of a platitude to remark that acetanilid is a valuable medicament. Its importance, however, cannot be accurately determined unless by a careful selection and examination of cases which have not been treated in a routine and perfunctory manner.

The administration of acetanilid is either internal or external, according to the objects desired to be attained. And first, of its internal employment. It matters little, here, whether it be given in powder, in pillular or in liquid form, so that its full effects may be secured as expeditiously as possible. And at this point it may

not be inopportune to remark, that the necessity of largely diluting their medicines with water before taking, cannot be impressed too much upon patients; or, which is much the same, drinking a draft of water immediately afterward. In this way absorption of the remedy is more greatly facilitated by well-known chemico-physiological laws; and this fact is no less true with regard to the medicament under discussion. Its internal administration may be accomplished in one of several ways: it may be dusted on the tongue and followed by a drink of water; mixed with cane or milk sugar and then tossed down with a glass of water; or, still better, dissolved in a small quantity of very hot water, adding sufficient cold water before drinking. If given in pills, capsules, "konceals," wafers, etc., such administration may be advantageously succeeded by a glassful of water or of wine or other liquor if preferred. The addition of sugar to acetanilid somewhat removes its sharp taste. Again, it is used in conjunction with many other drugs.

There are certain dangers in the use of acetanilid which are more or less emphasized in the reports upon this remedy, though no more than usually attend the administration of a large number of these coal-tar products and synthetized compounds. This fact only goes to show how carefully every new remedy must be employed, especially in the case of new patients whose constitutions or idiosyncrasies are not as yet understood. Like all valuable remedies, when newly introduced, acetanilid has been much abused, or the necessary precautions in its administration not duly observed. Again, its value has been greatly overrated, and its dangers made proportionate to that high estimate. All the factors which enter into its successful administration should be carefully considered before it is given. The dangers in this connection will naturally decrease according as these factors are taken into consideration.

As the chief untoward effects of acetanilid are upon the heart and circulation, some counteractive to such depressing influence should of course be added to the remedy. This simple precaution is easily taken. For this purpose, some form of camphor is as good an arterial stimulant as any, mixed at once with the medicine, or taken afterwards. For those persons who have an antipathy to this drug, rarely the case however, some form of liquor may be substituted, such as wine, whiskey, brandy, etc. The smell of the camphor may be somewhat obviated by using capsules; unless the camphor "rises," its unpleasantness will not be experienced.

Bicarbonate of soda seems to be a favorite constituent of all the proprietary remedies of which acetanilid or antipyrine (virtually the same thing) forms the active principle, and which go under the name of "headache powders." The fact is notorious that danger lurks in these preparations to a lamentable extent. Hence the soda is clearly not a corrective of the dangers of acetanilid. Neither is acetanilid an antifermentative, as some would have it. In my own case I have not found it capable of stopping acidity of the stomach without the addition of soda-bicarb.; it seemed to aggravate rather than to allay the fermentation. Hence this would imply that soda-bicarb. is a good adjunct to acetanilid whenever an antacid is indicated. However, being itself an antiseptic, it may possess some power here in allaying fermentation as one would naturally suppose; but, unfortunately, I have not thus far succeeded in finding it so.

As an internal remedy, acetanilid is fourfold in its action, *viz.*: anodyne, antipyretic, sudorific and, perhaps, slightly soporific.

I. Though acetanilid is capable of assuaging pain, it will not remove all pain, that is, every kind of pain, no matter what the cause; it will never take the place of the other well-established anodynes. Nor will it cure every sort of headache, notwithstanding the fact of its being the active ingredient of the much-vaunted "headache powders." For headaches of the persistent type, under the name of sick, nervous, "bilious," periodic or megrim, acetanilid, when combined with soda-bicarb. and caffeine (Acetan. 3 to 5 gr., Cit. Caff. 1 gr., Sod. Bi., 5 to 10 gr. Misc.) secures many excellent results. But it must be remembered that caffeine will oftentimes accomplish the same results when given alone; so does guarana (the old paullinia sorbilis) with which, under the latter name, I have succeeded in removing the wretched headache from which an old lady had been a sufferer for a period of thirty or forty years. This was at the time when paullinia was first imported into this country, under that appellation, from France, and in the form of powders, of 12½ gr. each, and twelve powders in a box, I think. Two or three powders, given at intervals of half an hour, would generally relieve the pain. Bromide potas., or bromide sod. has accomplished like benefit; so too much credit ought not to be given to acetanilid for cures equally attainable by other remedies. What will answer well in one case may not in another: even a change of diet may secure the end desired.

In spasm of the stomach, known as gastralgia, and in acute attacks of indigestion, a combination of 3 gr. of acetanilid and 5 gr. of bicarb. of soda has both succeeded and also failed.

II. Acetanilid also reduces the temperature; and, III, it excites the perspiration. As these two effects of this medicament are concomitant, they will be discussed together. Except, in a few instances, in its latter capacity it is the equal here of the time-honored "Dover's powder," once regarded as the sheet anchor of the pharmacopeia. In incipient coryzas, and in certain bronchial affections and in pharyngitis (all labelled "colds" by the laity) the effects of acetanilid are sometimes wonderful. In the hot stage, attended by a difficulty of breathing through the nose or by a feeling of tightness in the chest, by shivering, soreness of the flesh and by a general malaise (all of which symptoms may be the precursors of some serious affection or merely of a simple cold in the head) acetanilid, given in small and repeated doses, relieves always and may ward off the

threatened attack. The dose in this case should be from 3 to 5 gr. repeated every two or three hours. The moment perspiration is established the danger line is passed.

Another method of "breaking up a cold," as it is termed, is to administer from 5 to 6 gr. of acetanilid at bedtime, followed by a hot foot-bath and a draft of hot lemonade or of hot whiskey and water and the like. In this respect, I think that this remedy is superior to the much-lauded quinine and many times as beneficial as Dover's powder, without its disagreeable taste and after effects. As a reactionary agent acetanilid possesses great powers, provided its depressing tendencies are counteracted.

In influenza its value is considerable in establishing a reaction through its sudorific powers. For this purpose it may be administered in doses of from 5 to 10 gr., according to age and other considerations, every two or three hours, until full perspiration is established. This dosage should not be carried, however, beyond the fourth time. There is usually obtained a profuse perspiration after the third or fourth dose. Should no perspiration occur after the fourth dose, it is a safer practice to discontinue the remedy for a while and, when resumed, to be repeated at longer intervals. But great care should be exercised and it should not be persisted in for too long a time in large doses. Sometimes it fails; and some other medical agent has to be employed.

IV. As to its soothing, or soporific properties, acetanilid is of some service. In the first stage of a "cold," its employment produces a well-pronounced quietness; a feeling of ease and comfort at once supervenes; a reaction soon sets in; and many of the bad symptoms lessen or totally disappear. Some of these beneficial effects may be due, however, to its other virtues. These effects I know from actual experience, though in a far less marked degree than what are obtained from either opium or its alkaloid, morphine. Perhaps this is one of the effects of the remedy which makes it so great a favorite among persons who are troubled with "bad nerves." But physicians are not always responsible for the abuse of a drug. Acetanilid has not been misused more than many other medicaments. Unfortunate results will follow the administration of a remedy, even on the exercise of a due amount of skill. I have employed it in a great number of cases, both internally and externally, and thus far without any unfavorable result; of course the necessary precautions have always been taken. The employment of acetanilid as an internal remedy, will, in the course of time, find its limitations.

External Employment. As an outward application acetanilid acts both aseptically and antiseptically. It may also subserve the purpose of an anodyne, but it does not possess that property to that degree as resorcin. In these instances it is clearly employed as a dry dressing. It is indicated in all discharging surfaces, open wounds, ulcers, granulations and, especially, in operations in minor surgery, and may be advantageously used in every case requiring a dry dressing.

Suppurating and ulcerative surfaces are first washed with peroxide of hydrogen, then the part is sprinkled with acetanilid (pulv.) covered with a strip of absorbent cotton or of ordinary lint that has been previously smeared with vaseline, then the whole bandaged if necessary. If the surface, which is to be treated, is large, precaution must be taken not to make a too lavish use of the acetanilid. It may be said here, that it is the equal of iodiform as an aseptic, without having its disagreeable qualities. Sometimes I have given the outside of the lint or absorbent cotton a thin dusting of powdered acetanilid in addition to the former application.

In the treatment of open wounds and of the minor operations, the procedure is somewhat as follows: The injured part is first cleansed and carbolized, the loose ends adjusted, sutured or strapped, or both, then carbolized, and acetanilid dusted over the whole. A bandage may be now loosely applied. After removing whatever sutures there may be, the wound is to be treated as before. After the second dressing little or no subsequent treatment is usually necessary, unless for the readjustment of parts where the tissues have been much torn. Extensive lacerations by machinery of thumbs and fingers, even when the bones are split and necessarily require whole or partial removal, under this method have admirably healed and with hardly an exception, without the formation of any pus.

In the treatment of ulcers of the leg, generally of the varicose variety, the use of acetanilid has, in my hands, surpassed every other application adopted in my former hospital practice. At that time the common procedure consisted in poulticing, cauterizing, the application of the perfunctory iodiform, ointments of various kinds, astringent washes and mainly strapping. The method was long and tedious and somewhat expensive in private practice.

I have in mind two cases which will illustrate the new method.

Case. I. M. W., female, single, eighty-four years of age. She had been troubled for years with varicose veins of both legs, an occasional eczema and an ulcer or two on one or both legs. The old form of treatment, though always effectual, was very slow; and the painfulness of the ulcer did not abate much until such treatment was well advanced. The present ulcer had been of some months' standing, was very painful and irritable, and constituted a typical chronic, irritable, indolent ulcer. She never was able to wear either an elastic stocking or rubber bandage on account of the exceeding irritation which each would produce; consequently, the only palliative treatment of her varicose veins was by means of linen bandages, and then not put on too snugly.

The ulcer was first thoroughly cleansed with a 4% solution of peroxide of hydrogen, next acetanilid was dusted over the sore, a strip of absorbent cotton, smeared with vaseline, applied and the leg not too snugly bandaged. As much rest as could be obtained was enjoined.

After two or three such treatments the pain and tenderness of the ulcer disappeared, a healthy action was established, and in a period not exceeding four weeks, the ulcer was practically healed. The patient

then left town, from whom I subsequently learned that the ulcer had entirely gone. From that time to the present writing (a period of over three years) it has never returned.

CASE II. M. N., female, widow, mother of six living children. Her occupation, that of washerwoman, obliges her to be much upon her feet. She was troubled with eczema of one leg (which was easily cured), with varicose veins of the legs, and with a small, irritable ulcer, of about two years' standing, near the ankle of the right leg. The ulcer was treated in the same manner as in the first case under consideration; and in two or three treatments the ulcer healed. She was advised to wear a linen or cotton bandage in the place of the ordinary elastic one, on account of its causing so much irritation to the leg. I kept her under observation for nearly a year during which time there was no reappearance of either eczema or of the ulcer.

## Medical Progress.

### REPORT ON PHYSIOLOGICAL CHEMISTRY.

BY J. BERGEN OGDEN, M.D., BOSTON.

#### ACID SECRETION BY THE KIDNEYS.

CUSHNY [1] who has made a study of this subject has found that the reaction of the urine varies within strict limits in diuresis; it is never alkaline to phenolphthalein nor acid to methyl orange, and thus corresponds approximately to the interval in reaction between mono- and di-sodic phosphate. The intravenous injection of most saline diuretics is followed by a marked fall in the percentage acidity, partly because the phosphates are present in only small amount, and partly because the absorption in the tubules is deficient. Phosphates injected intravenously give an acid reaction to the urine which is especially marked when the diuresis is partially prevented by increasing the absorption in the tubules. This is explained by the hydrolytic dissociation of the phosphates of the glomerular fluid which permits of the absorption of the cation along with the hydroxyl or carbonate anions; these are capable of permeating the epithelium, while the phosphate anion fails to penetrate it so freely and remains in the tubules along with the hydrogen cations replacing the original ones.

The essential features in the secretion of acid urine are (1) the presence of salts in the glomerular fluid which are capable of extensive hydrolysis, and (2) insufficient absorption in the renal tubules.

#### LIPASE IN THE URINE.

Hewlett,[2] in his work on the occurrence of lipase in the urine as a result of experimental pancreatic disease, has evolved the following method for the qualitative and quantitative determination of lipase in the urine:

*Method:* "Five cubic centimeters of urine are placed in each of three flasks. The urine in the second flask is then boiled. To the urine in the third flask are added three drops of a 1% solution of phenolphthalein and $\frac{N}{10}$NaOH solution is allowed to run in from a burette until a pink color appears. The amount of NaOH is read off and a like amount is added to the first and second flasks. To each of these two flasks, the first of unboiled urine, the second of boiled urine, is then added $\frac{2.5}{10}$ cc. of ethyl butyrate and $\frac{1}{10}$ cc. of toluene, and they are placed in a thermostat at 39° C. for about twenty-four hours. The toluene is added to prevent the growth of bacteria. At the end of this time each flask is taken out and sufficient $\frac{N}{10}$HCl is added to more than neutralize the alkali previously added by $\frac{5}{10}$ cc. Each specimen is then shaken in a separating funnel with 50 cc. of redistilled ether, and the ether is separated. After adding three drops of a 1% solution of phenolphthalein to 25 cc. of pure alcohol, the latter is brought to the neutral point. The ether extract from the separating funnel is now added to the neutralized alcohol and its acidity is determined by titrating with $\frac{N}{20}$KOH solution. Any decided difference between the acidity of the ethereal extracts of the boiled and the unboiled urine is due to the butyric acid formed by the cleavage of the ethyl butyrate, and when the difference in acidity is at all great, the odor of butyric acid can be easily recognized. This method of determining lipase is simple and is sufficiently accurate for the amounts of lipase which occur in the urine under certain pathological conditions."

From the author's extensive research he draws the following conclusions: (1) It is possible to show the presence of lipase in the urine and to roughly estimate the quantity present. (2) Very little, if any, lipase is present in normal urine. (3) Lipase appears in the urine after a variety of insults to the pancreas of the dog. (4) It was found in greatest quantity as a result of experimental acute hemorrhagic pancreatitis. (5) It was also found over a period of from three to five days after obstruction of the pancreatic duct. (6) It is probable that severe pancreatic trauma may cause the appearance of lipase in the urine. (7) The above are some of the conditions in which fat necroses are most apt to occur in human pancreatic disease.

#### THE BLOOD AND URINE IN ECLAMPSIA.

Zangemeister [3] has made a comprehensive research of the blood and urine in eclampsia. He determined the alkalinity of the blood, the amount of chlorides, concentration of the serum, and the freezing point; and in the urine, the proportion of constituents, and the "chloride quotient," — the relation between the chlorides and the total salt molecule. He found that the blood contained an abnormally high percentage of globulin evidently due to loss of plasma. The "chloride quotient," which was found to average normally 40%, in eclampsia was found to be as low as 20%. This phenomenon he considers probably the result of an interference with the circulation through the kidneys, manifestly due to contractions of the blood vessels in the kidneys causing anemia of these organs; furthermore, that these contractions are synchronous with the labor contractions

[1] Journal of Physiology, vol. xxxi, nos. 3 and 4.
[2] Journal of Medical Research, vol. xi, 1904.
[3] Zeitschr. f. Geburts. u. Gynækologie, vol. i, no. 3, 1904.

of the uterus. He also argues that the anemia of the kidneys, which checks the elimination of water and salts through them, is a very potent factor in causing eclamptic convulsions in many instances. This conception of eclampsia does not however, exclude the action of toxins as a cause.

### CHOLINE: A NEW METHOD OF TESTING FOR ITS PRESENCE IN THE BLOOD AND CEREBRO-SPINAL FLUID.

Allen [4] has published a new method for the detection of choline which he considers an improvement over the older platino-chloride method.

Ten to 20 cc. of freshly drawn blood are mixed with 4 to 6 times its volume of 96% alcohol, allowed to stand for two hours, filtered, and the filtrate evaporated to dryness at 30° to 40° C. The residue is extracted with 3 cc. of 99.6% absolute alcohol, filtered, and the filtrate again evaporated to dryness. A third extraction with 1.5 cc. absolute alcohol having been made and the filtrate evaporated to dryness as before, 0.8 cc. of distilled water are added, the whole well mixed and transferred to a small dialyzer and dialyzed for twenty-four hours into 4 cc. distilled water. The resulting clear aqueous fluid is then evaporated to dryness in a small porcelain capsule, and to the residue one drop (0.1 cc.) of distilled water is added and shaken round in the capsule. An approximately saturated solution of iodine in 30% alcohol is then carefully added, drop by drop; the addition of 5 to 10 drops of the iodine solution results in the production of a reddish brown precipitate or coloration if choline is present; this color, however, quickly disappears on standing or on the addition of an excess of the test solution.

Reactions were not obtained in the blood of healthy people, but did occur in the blood of cases of general paralysis with convulsions, acute diphtheritic paralysis, cerebral syphilis, and in a case where a number of nerves had been severed high up in the axilla.

### THE END-PRODUCTS OF THE SELF-DIGESTION OF ANIMAL ORGANS.

Levene [5] has investigated the autolysis of different organs in the hope of throwing some light upon the metabolic processes in life, since he believes that autolysis is similar to the processes going on in metabolism. In this investigation the products of the autolysis of the pancreas and liver were studied. Alanin, aminovalerianic acid, leucine, pyrrolidine carbonic acid, glutaminic acid, phenylalinin, uracil and thymine were obtained from the autolysis of the pancreas. From the liver he obtained glycocol, leucine, aminovalerianic acid, alanine, phenylalanine, tyrosine, asparaginic acid, glutaminic acid, thymine, uracil and lycine. For the separation of these bodies, the methods of Fischer were used.

### ON THE SELF-DIGESTION OF NUCLEOPROTEIDS.

Jones [6] has found that the self-digestion of nucleoproteid of the thymus gland yields xanthine, a small amount of hypoxanthine and uracil, but neither guanine, adenine, nor thymine, although the last three are formed by the action of mineral acids upon thymus nucleic acid. Xanthine and a small quantity of hypoxanthine are formed as a result of the self-digestion of suprarenal gland. The spleen when subjected to autolysis yields guanine as well as in the hydrolysis of nucleic acid. On the other hand, hypoxanthine is found in the autolysis while one might expect to find adenine; uracil is formed instead of thymine and cytosine which appear in the hydrolysis of nucleic acid.

### THE CHEMISTRY OF BACILLUS COLI COMMUNIS.

Leach [7] took pure colon cultures obtained from feces and grew them on agar in a large tank. After seven to fourteen days the growth was removed, freed from agar, extracted first with alcohol and then with ether, dried and pulverized. This material was treated with 1% $H_2SO_4$ and filtered. The extract was poured into alcohol, and then purified by solution in alcohol. After drying at 100° C. for long periods, a dry powder was obtained which was very hygroscopic. Determinations on the ash showed that 5.3% of the substance was phosphorus. Sulphur was present to the extent of 9.22%. Nitrogen determinations gave 6.49%. This acid cleavage product dissolved in water, giving an opalescent solution acid to litmus. The solution became clear and transparent on the addition of a trace of alkali. It gave a very faint biuret reaction and a good xanthoproteic reaction. In this article the presence of the hexone bases — histidine, arginine, and lysine — in bacterial cells has been indicated. The methods used were modifications of those of Kossel and Kutscher.

### EXPERIMENTS ON THE PRECURSORS OF URINARY INDICAN.

The experiments of Underhill [8] tend to show that the presence of indican in the urine owes its origin to the activity of bacteria in the intestines. Since tryptophan has been regarded as a precursor of indol, substances containing no tryptophan group, notably gelatine, were fed to dogs for the purpose of determining whether indican would be found increased in the urine. The results show that, under these circumstances, the urine contained a marked decrease of indican.

### THE USE OF FORMALDEHYDE AS A PRESERVATIVE IN URINE.

Kenney [9] who has conducted a series of experiments on the use of formaldehyde in the urine as a preservative concludes that formaldehyde as an artificial ingredient of the urine is very apt to lead to deceptive results in the analysis of the urine by (1) making the urine appear albuminous when it is free from albumin, and (2) not giving a typical reaction when albumin is present. The so-called "Iatrona test" for albumin by the use

[4] Journal of Physiology, xxxi, no. 5.
[5] Ztschr. f. Physiol. Ch., xli, 393–404.
[6] Ztschr. f. Physiol. Chem., xlii, 35–55.
[7] J. Am. Med. Assn., April 16, 1904.
[8] Am. Journal of Physiology, x, 21.
[9] N. Y. Med. Journ., lxxix, 403–405.

of a solution of formaldehyde should, therefore, never be used. Furthermore, it should be borne in mind that a perfectly normal urine may give a positive reaction for albumin by either the nitric acid test or by the heat and nitric acid test when the urine contains formaldehyde.

THE CEREBRO-SPINAL FLUID IN HYDROCEPHALUS.

Coriat [10] obtained about 1000 cc. of the fluid from a congenital hydrocephalic imbecile and found that it was clear, straw-colored, and did not coagulate spontaneously. It had a faintly acid reaction, sp. gr. 1,012, and contained lutein as the coloring matter. Pyrocatechin, cholesterin and choline were absent, while the presence of fat, urea, serum globulin only, and a reducing substance, probably dextrose, were demonstrated. The inorganic constituents consisted of phosphorus, potassium and sodium; also traces of calcium and magnesium. Iron was absent. The presence of a diastatic ferment was also found.

THE PRODUCTS OF GLYCOLYSIS IN BLOOD AND OTHER ANIMAL FLUIDS.

Austin [11] has made a thorough investigation of this subject and his results are interesting. Normal blood of almost all animals when freed fresh from its albumins shows a reducing body which is unquestionably largely made up of dextrose. When, however, the blood is allowed to stand for some time, even when kept free from bacterial decomposition by antiseptics (thymol), this reducing body disappears, and only a substance which is able to hold copper in solution in an alkaline medium is found, but no reduction takes place. The author directed his efforts to finding out what became of the sugar thus destroyed, and to determining whether the products of glycolysis of the blood might be glycuronic acid, saccharic acid, oxalic acid, or carbonic acid. He finds that there is evidence that paired glycuronic acid exists in ox blood and in human serum, but no evidence that dextrose is converted into that substance by any glycolytic ferment existing in the blood. Where this change takes place, if it does, we do not know. He has also demonstrated that the large amount of dextrose failing to reappear in these experiments is not converted into carbonic or oxalic acids.

## Reports of Societies.

### AMERICAN PEDIATRIC SOCIETY.

SIXTEENTH ANNUAL MEETING AT DETROIT, MICH., MAY 30, 31, JUNE 1.

(Continued from No. 19, p. 520.)

SECOND DAY — (Continued.)

EDUCATIONAL FEATURES IN PEDIATRICS.

UNDERGRADUATE teaching might be carried out by means of didactic lectures and bedside instruction; post-graduate teaching should be systematized on a strictly clinical basis; and physical diagnosis, laboratory work and dietotherapy and hydrotherapy made a prominent feature in the course of pediatrics. In giving clinical instruction in pediatrics, Dr. Caillé during the past fifteen years had adopted the following plan: The first forty minutes of the clinic are devoted to a more or less rapid demonstration of ten or fifteen sick children who were placed on tables accessible to the matriculates, the balance of the hour being taken up by a discussion of the principles of treatment of important groups of disease, or a demonstration given of stomach washing, bowel irrigation, spinal puncture, intubation, tracheotomy and other subjects.

In conclusion, Dr. Caillé thought it would be feasible that the annual transactions should contain a running record of the world's progress in pediatrics by presenting at each meeting a critical review of it during the year under the following headings: (1) Home, School and Hospital Hygiene and Prophylaxis; (2) Teaching Methods in Pediatrics; (3) Diagnosis: Bacteriological, Chemical and Regional; (4) General Therapeutics, including Nutrition, Diet, Hydrotherapy, Phototherapy, Electrotherapy; (5) Surgical Therapeutics; Orthopedics and Mechanotherapy. At each annual meeting the council should designate the members who would be expected to furnish a critical review of progress for the next annual meeting, thus giving them a year's time in which to collect material.

ANALYSIS OF ONE HUNDRED AND EIGHTEEN CASES OF LOBAR PNEUMONIA IN INFANCY.

DR. J. L. MORSE, Boston, read this paper and gave the following summary: Lobar pneumonia is more common and occurs relatively more frequently in comparison with broncho-pneumonia in infancy than is generally supposed. The analysis of these cases shows the following points: The onset was less stormy than is generally supposed. It was often ushered in by vomiting, but rarely by a convulsion. It usually began with fever and cough, which were often accompanied by apathy or drowsiness. Movement of the *alæ nasi* was not a constant symptom. A whole lobe was more often involved than a part. The left lower lobe was the one most frequently involved. The right upper and right lower lobe came next in frequency. The portion of the lungs involved was relatively the same in the fatal cases as in those which recovered. As a rule, the area involved was larger in the fatal cases. The average duration of the fever in the cases that recovered was about eight days, being nearly the same in both years. The course was more often short in the first year, however, than in the second. The average duration of the fever in the uncomplicated cases that were fatal was 12.8 days; that is, the duration of the fever was longer in the fatal cases than in those that recovered. The highest temperature was usually between 103 F. and 106 F., the number of cases being nearly the same for each degree. The temperature fell by crisis in 68.8%. Crisis was less common in the first than in the second year. Collapse during the crisis was very unusual. Pseudo-crises were not very common, but irregularities and remissions in the temperature were not at all unusual. The mortality was lowest when the temperature did not rise above 103 F., and highest in those cases in which it went over 106 F. The degree of fever between 103 F. and 106 F. had no apparent effect on the mortality. A high temperature was no more fatal in the second year than in the first year. The usual pulse rate was between 150 and 170. No case died in which the pulse was not over 140. The rate of the pulse, when it was above 140, had little or no apparent effect on the mortality. The usual respiratory rate was between 55

[10] Am. Journ. Physiology, x, 111–115.
[11] Am. Journ. of Med. Sciences, May, 1904.

and 80. No case died in which the respirations were below 55. The rate of the respiration, when above 55, had no apparent effect on the mortality. The mortality, excluding the cases in which death was due to empyema, was nearly 23%. It was almost twice as great in the first as in the second years, being 32% and 18% respectively. Otitis media was the most common complication, occurring in 18%. Empyema was the next most frequent, occurring in about 8%.

*Prognosis.* — The following statements regarding prognosis seemed justified: The prognosis of lobar pneumonia in infancy varied decidedly with the age of the patient, and to a certain extent with the amount of lung involved. The prognosis was good when the temperature was not over 103° F. It was serious when it was above 106° F. Variations between these points made little or no difference in the prognosis. The prognosis was good when the pulse was not over 140 or the respirations over 55. The amount of the increase above these limits was of little importance

Dr. Charles G. Kerley said he was surprised at the variations of pulse and respirations as they occurred in healthy normal children.

Dr. F. S. Churchill said that he had no doubt but that lobar pneumonia existed more often in children than was generally supposed, and he believed this was due to the fact of careless examinations. He related the instance of a baby two months old who contracted a pneumonia, and the culture showed the pneumococcus and the smear the bacillus of influenza; the child recovered from this attack. Six weeks later another lobar pneumonia developed in exactly the same spot and in the course of ten or twelve days the child died. The culture here showed the pneumococcus, but no influenza bacillus was found. It was interesting that with the combined infection the attack was trivial. The combination of these two in an adult was usually fatal. Regarding the treatment, the giving of the depressing antipyretics in infants was far more dangerous than in adults. Sponge baths were better borne than tubbing.

Dr. L. E. Holt said that while in Paris last summer it was interesting to hear the diagnosis made of lobar pneumonia "intralobar pleurisy." These cases cleared up so often by absorption. It was amusing to note the prejudice shown there against certain methods of diagnosis. In a series of sixteen cases, Dr. Holt had found the left lower lobe affected alone. With regard to prognosis, it seemed to him that where but one lobe was involved it was rarely fatal, no matter where the temperature and pulse and respirations went, provided the child was in fairly good condition previous to the onset of the disease. He believed that too much importance was attached to the rapidity of the pulse; it was the quality and not the rapidity of the pulse that was so important. He could recall a case with a temperature of 107.7° F. that got well. The antipyretic treatment of pneumonia he confessed was a failure. The element of rest should not be forgotten.

Dr. Samuel S. Adams believed that the mortality quoted was altogether too great, for it did not accord at all with what his experience had been. Ten per cent. was about his mortality in private practice. He had long since abandoned the baths except in extreme cases. If a patient had a temperature of 108.6, he would advise clearing out the bowels and placing the child in the tub; in such a case he found that two hours afterwards the temperature had dropped to 104, but the lung was solid from base to apex and the child was moribund.

Dr. W. P. Northrup prophesied that two years from now these cases of pneumonia would be treated by placing the patient near a window where he could get much cool, fresh, wholesome air, which would not only act as a stimulant, but as an antipyretic.

Dr. J. L. Morse said that the pulse and respirations were taken when the children were asleep or quiet and by rectum. The point he wished to bring out particularly in his paper was that there was no particular cause for alarm if there was a rapid pulse and respirations. Most of the cases he reported were sent into the hospital as though suffering from some abdominal lesion. He believed in letting these patients alone, giving them all the rest possible, fresh air, bowels open, etc. If the nervous symptoms were very marked, then treat the temperature. Personally he never gave the coal-tar preparations in pneumonia. Regarding the application of cold, his experience led him to believe that children bore tubbing and sponge bathing badly. He wished to bring out in his paper the fact that lobar pneumonia in infants was a more serious disease than generally supposed.

### THE ACUTE PYELITIS OF INFANCY.

Dr. Rowland G. Freeman, New York, said that any disease which could pass unrecognized while under intelligent observation for several weeks, on account of the absence of local symptoms pointing to the location of the disease, deserved to be called frequently to the attention of the profession in order that the characteristics of its manifestations may become familiar and subsequent cases not be overlooked. The acute pyelitis of infancy was a disease of this sort. Its rarity was sufficiently emphasized by the small number of cases reported. The etiology of most of the cases recorded was very indefinite, a very large proportion of them occurring in female children. Infection from the genito-urinary tract seemed probable, while the organism associated with most of them, the bacilli coli communis, pointed to an infection from the alimentary tract, as did the fact that many of these cases followed intestinal disorders. The clinical manifestations gave no evidence that the pelvis of the kidney was the source of the trouble. These patients usually had abnormal movements from the bowels associated with a high temperature of irregular type with marked remissions and followed by a rapid elevation, which in some cases was accompanied by chills. The procuring of a specimen of urine from a baby involved some difficulty for those unaccustomed to work with these patients, so that this method of diagnosis was apt to be neglected. On this account he believed that many of the recorded cases had been allowed to progress for long periods of time before curative treatment had been adopted. This was very unfortunate, because curative treatment was simple and safe, the neutralization of the urine. A case was then reported which seemed of interest since it occurred in a male child; questioning the mother revealed the fact that the infant showed some evidences of urethral irritation at the beginning of the attack, which attack was preceded by two or three weeks of slight digestive disturbance as indicated by abnormal stools. The child continued sick for three weeks with an irregular temperature, which toward the end of this period remained constantly very high, and was associated with such nervous symptoms as twitchings and stiffness of the back of the neck. As soon as remedial treatment was instituted, on the twenty-second day of the disease, the temperature steadily declined until it reached normal, on the twenty-ninth day. The child had steadily gained in weight and became perfectly healthy. A detailed history of this case with the results of the blood examination here followed.

Dr. Morse thought that the frequency with which this condition was met depended upon how frequently

we examine the urine. In Boston for several years an examination of the babies' urines had become a routine practice, and he had never gone on service in the hospital but what there were from two to four cases of acute pyelitis in the wards. Diagnosis was rather difficult, even though the urine be carefully examined; babies may have an acid urine and a great deal of pus, but nothing else, and it was hard to tell whether the pus came from the kidney or the bladder. In cases where he found squamous cells he supposed the trouble was in the bladder; when he found spindle and caudate cells, then he believed the kidney to be the seat of the trouble, either a pyelitis or a pyelonephritis. Nearly all such cases he thought to be due to the colon bacillus, but this was a new subject and the field was open for further investigation. In two cases that he had seen the presence of tubercle bacilli in the urine opened up another new field for him. In these cases there was tuberculosis of the kidneys, but no tuberculosis elsewhere. He had found no difficulty in obtaining urine from babies for examination.

DR. ISAAC A. ABT said that some years ago he had speculated regarding the cause of this infection, and in a large number of cases, twenty-six or more, the infection appeared to come from some part of the bowel, particularly a follicular enteritis. He then wondered if the colon bacillus could go through the loose cellular tissue of the pelvis. It seemed to him there must be some more direct mode of infection, either through the vascular system or the lymphatic system. He reported an instance of acute pyelitis in which the Shiga bacillus was found in the urine, and this again opened up a new field for investigation.

DR. THOMAS M. ROTCH spoke of the great difficulty of discovering the tubercle bacilli. In the cases that he had seen he had found the disease to be exceedingly latent and the tubercle bacilli would not have been found if repeated examinations had not been made.

DR. JOHN DORNING thought that the society could not too strongly emphasize the importance of urine examinations in children's diseases. Years ago Dr. Jacobi presented a small catheter (No. 5) in two sections, and one of these he carried in his pocket for years and usually demonstrated its use at the clinic. An instrument maker in New York made four or five hundred of them and sold all; so that they are now scattered all over the country. The diagnosis of acute pyelitis in children he had found to be rather difficult on account of the vague symptoms. When there was frequency in urination and distress at the neck of the bladder, he then looked for this condition. He believed one should always suspect a tuberculous condition in cases of pyelitis. The condition was a very latent one and often even the microscopical examination did not aid in making the diagnosis, and even the inoculation of guinea pigs may not aid. In giving urotropin he said that it was better to give it with benzoate of soda if the urine is alkaline. By so doing, very large doses could be given without irritating effects.

DR. FLOYD M. CRANDALL asked regarding the possibility of increased susceptibility to kidney trouble in later years after children have suffered attacks of acute pyelitis.

DR. L. E. HOLT said he had had patients under observation, one for ten years, the other for nine years, and they were absolutely well and the attacks they had were very severe.

DR. A. JACOBI said that a more lasting impression was made on medical men if certain things were hammered and hammered again into them, and one of the things that should be frequently hammered was that when you have a doubtful case and a diagnosis had not been made, *examine the urine*, and often you will be rewarded by finding an acute pyelitis present. Do not neglect the examination of the urine. If there was pus and bladder epithelia in the urine, he said it was reasonable to suppose at least part of this came from the bladder; but if there were present in the urine renal epithelia and now and then small granular casts, and possibly later some blood and pus, that would indicate a pyelitis. In cases of pyelonephritis one got more kidney elements than in cases of simple pyelitis. He had frequently been called to see cases of protracted fever that had been unfortunately diagnosed as malaria, and found a case of nephritis or pyelitis. It was not sufficiently hammered into the heads of medical men that nephritis was a frequent disease in young infants; the urine should more often be examined. There was one remedy he was very fond of and that was gallic (not *tannic*) acid in large doses; it was an agent well tolerated. He referred to a case of a child three or four years old whose urine was full of uric acid, it falling down in amorphous masses; when he gave urotropin it fell down in crystals. He preferred to use gallic acid and in fairly large doses. Regarding tuberculosis, he had not seen many cases, and it was exceedingly difficult to find the tubercle bacilli in the urine. He believed that those cases, the result of bacterial infection, would get well; but if they were the result of calculus, then the prognosis was graver.

DR. R. G. FREEMAN said that at the Foundling Asylum in New York the urines of children were examined regularly. No difficulty was experienced in obtaining samples of urine from babies. Regarding the possibility of the Shiga bacillus being present, the case reported did not appear like Shiga cases at all; there was no blood or loose movements. His impression was that if the case recovered slowly and then relapses did not occur. Urotropin had been used before citrate of potassium in this case.

### ACUTE MYOCARDIAL INSUFFICIENCY IN SOME INFECTIONS IN CHILDREN.

DR. F. FORSCHHEIMER said the importance of this subject lay in the fact that a large number of these acute myocardial insufficiencies developed in connection with the infections in childhood, and beyond the possibility of a fatal termination from this acute condition, there remained another which was far-reaching for the future of the individual who survived. In some of these cases the myocardial changes were so marked that permanent damage was done to the heart which might only manifest itself when an extraordinary call was made upon the functional activity of the heart. As it was a fact now accepted by all that, in every case of peri- and endocarditis the myocardium was more or less involved, it could be seen how great the number of cases became in which it was possible that acute myocardial insufficiency might develop. The development of symptoms of acute myocardial insufficiency depended upon the amount of damage done to the myocardium. At first there is noticed a diminution in heart force and arythmia; then followed dilatation of the left heart, then of the right heart, with relative insufficiencies of their valves; so soon as the right heart was seriously affected, then followed marked enlargement of the liver. The latter he had seen descend to the level of the umbilicus. The signs and symptoms varied in different diseases, but, upon the whole, there was weakness, irregularity of the pulse and heart impulse, tachycardia or bradycardia, a broadening of the heart dullness and bruits heard most commonly over the apex, the mitral and the tricuspid area, but frequently also over the base. To this class

belonged the two cases referred to in his contribution to Jacobi's "Festschrift." Diphtheria, of all the acute infections, most frequently produced myocardial insufficiency, and was most common during the end of second and third weeks. Too much stress could not be laid upon the fact that pure myocarditis was not the only cause that produced heart death in diphtheria, for there were at least two other processes that complicated it. The first was the effect of the diphtheria toxin upon the cerebral vaso-motor centres causing a dilatation of the blood vessels and, therefore, the blood was not properly propelled. The result was the heart simply "bled itself" into the splanchnic area and, after a time, very little blood flowed into the right heart. The second method of complicating the clinical course was an infection of the vagus. It had been thoroughly established that, in diphtheria, the vagus was frequently affected and it had been established that in a large number of infectious diseases there was arythmia. Diphtheria arythmia was due to disturbance of the vagus.

Next to diphtheria, his experience with myocardial insufficiency had been with septicemia of influenza. All the cases he had seen had been accompanied by more or less cardiac change, and the worst case in children that had come under his observation and which recovered, he reported in detail.

*Treatment.* — For uncomplicated myocardial insufficiency the first principle was absolute rest. The digitalis group of drugs might be used, their efficacy depending upon the amount of myocardium affected. Predisposing causes should be controlled. According to the severity of the case, stimulants will be demanded. Convalescence should be carefully guarded, and for the purpose of strengthening the myocardium mechanical means were invaluable. Laxatives that acted too violently should be avoided. Strychnia might be used for its general tonic effects; except in toxic doses it had no effect upon the heart nor upon the vaso-motors. Nitroglycerine should never be used unless there be angina attacks. His own method which had been productive of good in two cases was as follows: Hypodermic injections of adrenalin; the effects are transitory and, therefore, the dose must be repeated every two hours. Saline transfusions were used in the beginning in order to keep up the heart's contractions. Ice-bags were put upon the abdomen, stimulating the splanchnic reflex. In one child he was able to bring down the pulse from 140 to 60 by the use of these alone. After the most violent symptoms have passed over, then caffein and soda salicylate are given every two hours, alternating with the adrenalin, which was gradually dropped.

Dr. Thomas M. Rotch said that all got cases of acute dilatation of the heart which lasted but a short time, and these cases should be treated with absolute rest as advocated. He thought the great importance of the paper just read was in drawing attention to certain points which the general practitioner did not, as a rule, recognize.

Dr. A. Jacobi said that only during the last twenty or twenty-five years had much attention been paid to the myocardium, and only during the last ten or twelve years had the profession awakened to the necessity of studying the myocardium and its diseases more. Now we knew that we have could a pericarditis, an endocarditis and a myocarditis at one and the same time; autopsies showed this to be true. It was Engelman of Boston and others that had shown the importance of the heart muscle removed from the influence of the nervous system, and since then more or less attention had been paid to it and its changes. There were two forms of myocarditis, — the simple parenchymatous degeneration and the real interstitial inflammation. Now and then one came in contact with an old cicatricial condition more or less extensive. The parenchymatous degeneration showed itself in different ways. Some years ago a Chicago doctor stated that this degeneration went as far as fragmentation, but that was a mistake; he mistook post-mortem for ante-mortem changes. Fragmentation no longer appeared in the textbooks. There might be a parenchymatous change, the result of bacteria or toxins, which was spoken of as inflammation, a myocarditis. Such changes could be seen in every infectious disease. In pneumonia we knew the particular danger was not so much during the acute stage, but when the crisis came; then all at once the temperature fell, the pulse fell and became irregular, sometimes collapse and death. Toxins must have developed in the course of the disease, which gave rise to the particular symptoms that were heart symptoms.

Dr. Jacobi said that Dr. Forschheimer was correct when he stated that myocarditis, which chiefly affected the right heart, would be accompanied by liver swelling. With this swelling of the liver there might be edema of the hands, feet and face. The swelling of the liver meant in the beginning of the disease a myocarditis and not an endocarditis. We know that endocarditis may exist for a long time, months and even years, before we note swelling of the liver. In myocarditis we might find no enlargement whatever. He said it was quite characteristic to find a moderately enlarged heart in cases where heart symptoms had existed for years. Often myocarditis was localized more about the mitral than the aortic valve, and that might account for an incorrect diagnosis being made. If a murmur existed for a long time, whether local or disseminated, with no increase in the size of the heart, that meant a myocarditis; there were far more cases of myocarditis without enlargement of the heart than with.

In a few years from now he believed the question of toxins or bacteria would possibly be different. Only lately Vaughan and Ehrlich had made interesting observations. Vaughan believed that the poison of diphtheria was not one poison, but at least two; he attributed the paralysis from diphtheria to a different poison from what gives rise to the earlier symptoms.

With regard to treatment, there was nothing he avoided or disliked more in acute myocarditis than digitalis, which not only caused contractions of the heart, but also the arteries. The labor placed upon the heart after fair doses of digitalis he considered to be too great. The same applied to strychnine. He relied more upon cold applications to the heart, such as ice-bags for a short time, and opiates, especially codeine. He also liked the iodides. Absolute rest was to be enforced, especially rest in bed.

Dr. F. Forschheimer said the object of his paper was to attempt to establish some form of treatment in myocardial insufficiency, in both the acute and chronic cases. He presented two clinical pictures, one a myocardial insufficiency due to a pure and simple myocarditis, the other as a complication. In treating myocarditis he said he never would think of using digitalis, but would insist upon rest and particularly rest in bed.

## Third Day — Wednesday, June 1.

### Asthma in Infants and Children, with an Analysis of Forty-three Cases.

Dr. L. E. La Fetra read this paper, stating that, during the past two years, 43 cases of spasmodic or bronchial asthma had come to his notice occurring in

infants and children under twelve years of age. During the past twenty months there were 4,360 new patients in the Children's Department of the Vanderbilt Clinic, and among these it was noted that there was an average of 25 cases of bronchitis, not including any form of pneumonia, to one case of asthma.

*Age of incidence.* — Eleven cases occurred during the first year of life (8 males and 3 females). Eight cases occurred during the second year of life (6 males and 2 females). Nine cases occurred from two to five years (8 males and 1 female). Fifteen cases occurred from five to twelve years (10 males and 5 females).

*Race.* — The nationality of the patient was given as follows: United States, 16; German, 8; Swedish, 2; Dutch, 1; Irish, 6; United States (colored), 2; Hebrew, 9. It seemed to him remarkable that no Italians and only two negroes were in this list, because one would expect rickets to be an important predisposing factor, as it was in the case of spasmodic croup and bronchitis.

*Length of time the asthma had persisted.* — At the time the patients came under treatment, the disease had existed less than three months in 9 cases, from three to six months in 5 cases, from six to twelve months in 4 cases, from one to three years in 9 cases, from three to six years in 5 cases, and over six years in 3 cases.

*Family history.* — This was asthmatic or rheumatic, tuberculous or neurotic in many cases, but the answers were not reliable enough to be suitable for statistical purposes.

*Abnormalities of development.* — These were marked in several cases, especially where the symptoms began at birth or during the first year of life. There was pulmonary atelectasis in 2 cases, an enlarged thymus gland in 2 cases, pigeon breast in 1 case, and 2 of the children were prematurely born and 1 was of the Mongolian type of idocy.

*Previous personal history.* — Twenty had previously suffered from bronchitis; 7 had had broncho-pneumonia. Altogether, 27 out of 43 patients had had some pulmonary inflammation preceding the attack of asthma. Rickets was present in 8 cases. One patient had suffered from chorea.

*Cause of the attack.* — In 14 bronchitis, in 1 broncho-pneumonia, in 2 pneumonia, and 1 in each of the following: Gastric indigestion, a drive against a cold wind, a fall, and an attack of malaria.

*Frequency and severity of the attacks.* — In 8 cases they occurred daily or with no stated intermissions; in the others the periods varied from two weeks to "every winter" or "every summer." The attacks were worse by day in only 2 cases. Three cases only were distinctly worse during the hot weather.

*Complications.* — Emphysema was associated with asthma in 6 boys and 4 girls; 5 of these had the square or barrel chest. Emphysema with bronchitis was present in 2 girls and 3 boys, and only 1 of these had a barrel chest.

*Abnormalities of the naso-pharynx.* — These were associated as follows: Congenitally high-arched palate (without adenoids) in 1 case, deflected septum in 2 cases, adenoids and enlarged tonsils in 20 cases. Nearly one half of these cases suffered from adenoid growths, and this was quite a significant fact.

*Symptomatology.* — During the attacks there was the same wheezing, whistling, breathing and dyspnea, all the accessory muscles of respiration being called into action. The patients were usually relieved by sitting up or by raising the shoulders and supporting the elbows. Cyanosis might be present. In the younger children there was the sinking in of the suprasternal and supraclavicular notches and at the insertion of the diaphragm into the ribs; while in the older children the whole chest moved upwards with even less expansion. Towards the end of the paroxysm the chest might become barrel-shaped, but after the attack the chest became normal in outline. A bronchial fremitus was present in most cases. The percussion note was somewhat dull early, but toward the end of the attack it might become hyper-resonant. Dry squeaking or whistling, musical or sonorous rales, during both respiratory acts were noted in uncomplicated cases. The inspiratory sounds were louder, while the expiratory sounds were more prolonged. The chest sounds could be heard at a distance of twenty or thirty feet. Very little air entered the chest. Short and dry cough was present, but became looser toward the end of the attacks. Older children expectorated somewhat. Spirals or crystals had not been looked for. Spontaneously, or after sedatives, the respirations became less and less noisy and rapid. The sibilant rales were replaced by large sonorous and mucous rales, and soon only a few large, moist rales and sonorous breathing remained. The temperature rarely went above the normal. The leucocytes were usually increased. A differential count showed a constant and usually marked increase in the number of eosinophiles. The differential count of leucocytes he considered to be of diagnostic as well as prognostic value.

*Diagnosis.* — He said that if it was kept in mind that asthma did occur in infants and children, there would be encountered few difficulties in making a diagnosis. The presence of an increased number of eosinophiles, together with speedy recovery and with recurrences, would confirm the diagnosis.

*Pathogenesis.* — The peculiar type of breathing was induced by a narrowing of the lumen of the bronchial tubes, but the cause of this had been productive of much discussion. At present there were two theories worthy of consideration: (1) Asthma was due to a spasmodic contraction of the bronchial muscles, *i. e.*, spasm of the smooth muscle fibres of the smaller and medium sized bronchial tubes. (2) Narrowing of the lumen of the bronchial tubes was due to vaso-motor tumefaction or paresis, a sort of angioneuritic edema or urticaria of the bronchial mucous membrane. This theory was supported not only by experimental evidence, but by analogy and by the clinical results of certain forms of treatment.

*Etiology.* — These patients had a peculiar susceptibility to irritations of the upper air passages and to reflexes physiologically connected with the pneumogastric and probably with the sympathetic nerves. There was an abnormal response to normal stimuli; it was an exaggeration of the activity of the normal protective reflex. The condition might be asthmatic by reason of asthmatic, gouty and neurotic inheritance, or from previous attacks of pulmonary inflammations, or the susceptibility may be strictly a local one, from naso-pharyngeal adenoids, polypi, elongated uvula, etc. It was difficult to discover the exciting cause of the attacks in children.

*Treatment.* — A careful study of the patient's history and physical signs will suggest in almost all cases the rational and successful line of treatment. Predisposing and exciting causes should be removed. The attacks are to be treated on the basis of their pathogenesis. The general condition should be toned up by hygienic and dietetic measures. Bronchitis, adenoids, naso-pharyngitis, etc., were all predisposing factors and should demand attention. The prevention of taking cold involved the whole hygiene of the child and should be attended to by the daily sponge bathing, exercise in open air, proper ventilation of the nursery,

day and night, etc. Adenoids and enlarged tonsils should be removed. In his series of cases, eight gave evidences of the value of this, although in others there were no signs of improvement. Hypertrophic rhinitis, polypi, deflected septa, etc., should receive due attention. The toilet of the nose, as suggested by Jacobi, should be practiced. The treatment of the patient's general condition should be considered and attempts to tone up the respiratory mucous membrane should be made. In cases of long standing and for subacute cases, he believed that nothing took the place of iodide of potassium.

In infants when the attack closely resembles capillary bronchitis, steam inhaled after being impregnated with creosote was very satisfactory in relaxing the spasm. In older children stramonium paper, nitrite papers, alone or in combination, were of value. As soon as the infant could swallow, tartar emetic and ipecac should be given, along with some nitroglycerine; this he believed to be particularly efficacious when the attack resembled a bronchitis of the finer tubes. Another plan he had adopted with success had been the giving of atropin until the face flushed. The susceptibility to this flushing varied in infants. If the attack was accompanied by gastric indigestion the stomach should be at once emptied, preferably by syrup of ipecac. In long standing cases and in older children the old emphysema mixture gave good results in his hands, *i. e.*, the mixture containing morphine sulphate, belladonna and spirits of ether comp.

On the theory that the attack was due to vaso-motor paresis, vaso-constrictors should be given. The suprarenal extract solution and the adrenalin chloride solution for instillation he had used with marked benefit in some cases. The outlook for asthmatic patients was good inversely in proportion to the length of time the symptoms had existed and the frequency of the attacks. Altogether the prognosis was favorable if the cases could be put upon a proper treatment before emphysema and the barrel chest have developed.

(*To be continued.*)

## Recent Literature.

*Functional Diagnosis of Kidney Disease with Especial Reference to Renal Surgery.* By Dr. Leopold Casper, Privat Docent, and Dr. Paul Frederick Richter, Asst. der III Med. Klinik. Berlin. Translated by Dr. Robert C. Bryan, Asst. Prof. Genito-Urinary Diseases, University Medical College, Richmond, Va., and Dr. Henry L. Sanford, Resident Surgeon, Lakeside Hospital, Cleveland. P. Blakiston's Son & Co. Philadelphia. 1903.

This book of 233 pages is a translation from a German publication intended to illustrate the utilization of data obtained by the more recent methods of renal examination for the purposes of diagnosis of pathological conditions of the kidney. The conclusions of the authors are based on the materials collected during a period of several years of observation, and experimental investigation. In their preface to the American translation they claim that they have repeatedly been able to demonstrate during the two years which have elapsed since the publication of the German edition that their system of diagnosis is " built on a sound and fruitful basis " and that the important facts have been confirmed on all sides. In general they aim to estimate the total amount of work done by the kidneys; whether it is sufficient or not for the body; and finally to decide how much of this work each kidney does.

The methods of examination are described, such as inspection, percussion, palpation, actionography, cystoscopy, urethral catheterization, and operative inspection and are briefly discussed, but without contributing information of unusual practical value. The section is an argument to demonstrate the fact that it would be of great value to a surgeon if he had some means at hand by which he could know positively the existence, or the condition, of the other kidney when he planned a serious operation on its mate, a fact concerning which there is no difference of opinion.

The main part of the book is devoted to a discussion of the means at hand of investigating the functional condition of the kidneys by a study of their excretory products. Among other things the authors consider the methods depending on the elimination of substances introduced artificially into the system as a measure of renal excretion, the toxicity of the urine, molecular blood concentration, the phloridizin method and the " methylene blue " test. Sixty pages are devoted to the enumeration of their experimental investigations. Their conclusions are summarized in the final pages which is the most interesting and practical part of the volume.

The book as a whole will probably be read by only a limited class, *viz.*, those especially interested in the laboratory side of the question discussed. The work of the writers is apparently well done and represents a great deal of labor in the collection of the data presented.

*A Textbook of Histology,* including Microscopic Technic. By A. A. Bohm and M. von Davidoff. Edited, with extensive additions to both text and illustrations by G. Carl Huber. Second edition, 528 pages, with 377 illustrations. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

A *Textbook of Histology.* By Frederick R. Bailey. 481 pages, profusely illustrated. New York: William Wood & Co. 1904.

*Dunham's Normal Histology.* A textbook on Normal Histology for the use of Students and Practitioners of Medicine. By Edward K. Dunham. New (3d) edition, octavo, 334 pages, with 260 illustrations. Philadelphia and New York: Lea Brothers & Co. 1904.

The three manuals, which we are to review, correspond to the progress of the science of histology as a practical subject of medical instruction in this country. They are all of them greatly superior to any textbooks which we had a few years ago and they all can be recommended as meritorious of their kind. They represent in various degrees of thoroughness the recent progress of histology, and show, by the care which the publishers have taken with regard to the get-up

of the volumes, the recognition of the demands of the science for adequate, well-printed illustrations.

Of the three volumes before us, the first place undoubtedly belongs to the second edition of Professor Huber's textbook, which is an exceedingly meritorious publication. By using more care the mechanical appearance of the book has been greatly improved, and the illustrations, which in the first American edition were somewhat coarsely printed, now appear in very much clearer impressions, greatly to the advantage of the student. Throughout it shows the editor's care. Many new figures have been added, the text has been extended by some forty pages, and a very large number of recent discoveries have received attention. It may in short be said at once of this textbook that it is of a very high character and should be most cordially recommended, for the authors are masters of the subject, can speak with authority, and have taken pains to render their descriptions clear, instructive and interesting.

Quite so high an opinion cannot be expressed concerning the other two volumes, for Dr. Dunham and Dr. Bailey seem to have been contented to rely in considerable part upon various of the larger textbooks of anatomy and histology, and to occupy themselves only to a limited extent with recent original investigations. Both volumes contain a considerable number of original illustrations, those in Dr. Bailey's book being perhaps in larger proportions than in Dr. Dunham's. They are both considerably shorter; Dr. Dunham's very much shorter, as regards the length of the text, than the volume prepared by Professor Huber. In view of the inequality of the value of these three manuals, it seems unnecessary to enter here upon detailed criticisms, which could only serve to point out various inaccuracies in the several publications without aiding in the formation of an opinion as to their relative merits and usefulness. For it is clear that the volume first on our list is much more valuable than the other two.

*A Textbook of the Diseases of the Nose and Throat.* By D. BRADEN KYLE, M.D., Professor of Laryngology and Rhinology, Jefferson Medical College, Philadelphia; Consulting Laryngologist, Rhinologist and Otologist, St. Agnes' Hospital. Third edition. Philadelphia, New York and London: W. B. Saunders & Co. 1904.

This is the third edition of the work which was reviewed in the JOURNAL of April 5, 1900. The only addition of value is the author's fuller description of his method of correction of deviation of the septum by V-shaped excisions. A little has been added insisting on the importance of an understanding of the chemistry of the saliva, and recommending its careful study, but without giving any practical details on the subject. The author believes that hay fever, for instance, may be proved to be a disturbance of proper chemical balance, but he omits the work of Dunbar in this direction. A few pages on epidemic influenza have been added, and a good description of keratosis, also a short description of the injection of paraffin for the correction of deformities.

Pathology throughout the book is elaborated to an extent which suggests the result of hard work, not entirely devoid of enthusiasm and imagination. This is at times a source of confusion to the reader and detracts from the clearness which is valuable in a general textbook. An improvement toward easier reference has been made in this edition by printing each subject at the top of the page on which it appears.

*The Medical Epitome Series.* Toxicology. By EDWIN WELLES DWIGHT, M.D., Instructor in Legal Medicine, Harvard University. Series edited by VICTOR COX PEDERSEN, A.M., M.D., Instructor in Surgery and Anesthetist and Instructor in Anesthesia at the New York Polyclinic Medical School and Hospital, etc. 12mo volume, 298 pages. Philadelphia: Lea Brothers & Co.

This work is a brief compendium of the facts in connection with toxicology. It is intended more especially for the use of students and not as an exhaustive treatise. The subjects considered are irritant poisons, specific metallic, vegetable and animal irritants, poisonous foods, cerebral, spinal and cerebrospinal neurotics, depressants, asthenics and ptomaines. Under the appropriate headings the various drugs and chemicals which may produce poisoning are considered. For example, under metallic poisons we find arsenious acid, its properties, symptoms of poisoning, poisonous dose, fatal period, treatment of poisoning, post-mortem appearances, tests and illustrative cases of poisoning by arsenious acid. The book is well written and will undoubtedly be found valuable to students and to those who do not desire a comprehensive treatise on the subject of toxicology. J. B. O.

*Saunders' Question Compends: Essentials of Chemistry, Organic and Inorganic.* Containing also questions on Medical Physics, Chemical Philosophy, Medical Processes, Toxicology, etc. By LAWRENCE WOLFF, M.D., formerly Demonstrator of Chemistry at the Jefferson Medical College, Philadelphia. Sixth edition, thoroughly revised. By A. FERREE WITMER, Ph.G., formerly Assistant Demonstrator in Physiology at the University of Pennsylvania. 12mo volume of 225 pages, fully illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

The fact that this little book has reached its sixth edition is evidence of its usefulness and popularity. The recent discoveries in physics and inorganic chemistry have rendered it necessary to make extensive additions to almost every part of the work. The portions on organotherapy and the substituted ammonias have been revised and extended. For a question compend the book is unusually good.

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## THE MEDICAL AND DENTAL PROFESSIONS.

We have previously urged the desirability of a closer union of the medical and dental professions and an increased sympathy in each other's aims. However we may argue the matter, it is clear that the teeth and the mouth cavity are an integral and essentially important part of the organism which should receive the consideration on the part of the physician which other organs receive. That this is not the fact is clearly apparent. Medical students know absolutely nothing of technical dentistry, and little of the significance and far-reaching importance of caries of the teeth.

So far as we are aware, the modern, highly-developed medical school offers no course, optional or otherwise, on the subject of the teeth in relation to health from the dentist's point of view. The inevitable consequence of this is that, while yet a student and later as a practitioner, the medical man remains in ignorance of the profound significance of the conditions in the teeth, jaws and mouth cavity in the production of diseases which come wholly within his province. This is an anomalous state of affairs which undoubtedly should be corrected, and may be corrected with a small expenditure of time and energy. It is naturally not to be maintained that the medical student should become acquainted with the technique of dental operations, but simply that he should know the teeth as well as he knows other bony structures, and should also be competent to form a fairly shrewd opinion regarding diseases to which the teeth are subject.

A striking case, illustrative of the tendency to which we refer, has recently come to our notice. A patient in perfect health to all appearance had passed through the hands of several physicians, one of whom diagnosticated her difficulty as neurasthenia, another as a threatened apoplexy with alarming prognosis. The symptoms in the case were referable to the face, although not of the ordinary character of a trifacial neuralgia. The cause, as finally discovered after the patient had suffered much anxiety of mind and physical discomfort, was deep-seated disease of the roots of two teeth, which, when discovered and treated, led to immediate relief. Such mistakes on the part of physicians are reprehensible, particularly since they might easily be avoided. The fact is, the ordinary physician too rarely examines the teeth carefully; the mouth may be investigated, tongue and tonsils and the teeth superficially, but any attempt to discover a deep-seated source of irritation, so far as our experience goes, is neglected even by those physicians who pride themselves on thoroughness in physical examination.

Our attention has been called anew to the matter by an admirable, succinct paper in a recent number of the *Lancet* by R. Denison Pedley of London. Mr. Pedley arraigns the medical profession for its carelessness in this matter, and points out the very great advantage to the diagnostician and practicing physician which a knowledge of dentistry implies. In describing the condition in London, he says that in most of the hospitals where medical students are trained, one or two dental surgeons are appointed, but the subject is optional and in general neglected. In this country we believe that our hospitals do not even provide this possibility of instruction. He points further to the fact that in certain examinations required for medical practice, not once in ten years has a single question been asked upon dental caries. When confronted with the deficiency, the ordinary answer is that the medical student is already overburdened, an argument clearly which cannot apply, any more than the omission of technical training in the examination of the heart or lungs, if it be shown that dental disease is a common source of clinical symptoms.

Ten years ago the British Dental Association published statistics showing that 85% of the school children in the United Kingdom have defective teeth. Unfortunately, these conditions are neglected, with the natural consequence that much damage is done, not only to the teeth, but also to the general health in many cases, before the children finally fall into the hands of competent dentists. It is urged, and we think with much reason, that in final examinations the student should at least expect the possibility of a question

on the causation, effect and treatment of dental caries. So far as the medical profession is concerned, the question is not one of personal treatment but rather of early recognition of the significance of dental disease on the health, development and physical condition of children. No doubt public opinion has been aroused during the last few years as never before, but much still remains to be done toward a closer relationship between the physician and the dentist. Every physician should at least be prepared to refer intelligently his patients to a dentist when circumstances warrant. That this is not now the fact is illustrated by the case reported above. We are of the opinion that a prescribed course on the relation of the teeth to general nutrition and to physical conditions in general should be provided in every well-equipped medical school to the end of drawing attention to what must be recognized as a factor of importance in the production of certain disorders with which every medical student should be acquainted.

## A GREAT SANITARIAN.

JAMES B. RUSSELL, B.A., M.D., LL.D.

IN the death of Dr. Russell at Edinburgh, Oct. 22 last, the world has lost the last of that famous group of great men who have made modern sanitary science what it is to-day, and who so justly earned the gratitude of mankind for their splendid work as pioneers in improving the conditions of living and mitigating the ravages of death and disease, to which they had devoted essentially their whole lives. Chadwick, Farr, Lindley, Rawlinson, Sutherland and Simon had already found their well-earned rest.

After graduating at the high school and the university in Glasgow, Dr. Russell became for a year the assistant of Lord Kelvin, to whom he always said that he owed his scientific ardor and methods. He then spent three years in the medical school, and thereafter immediately became resident physician to the fever wards of the Glasgow Royal Infirmary, where typhus fever was then rife.

Sir Edwin Chadwick had said of Glasgow, in his epoch-making report, "It might admit of dispute, but on the whole it appeared to us that both the structural arrangements and the conditions of the population of Glasgow was the worst of any we had seen in any part of Great Britain," and Dr. Sutherland of the General Board of Health had emphasized that opinion seven years later by saying, "All sanitary evils exist there in perfection." Dr. Russell found his opportunity and began his reforms on the principle which he adopted for his life, "Firstly, by making up his mind that a thing was possible; secondly, by making up his mind that it should be done; and thirdly, by resolute pegging away at the doing."

Sir W. T. Gairdner was made the first medical officer of health of Glasgow in 1863, and he at once selected Dr. Russell as his right-hand man in placing him at the head of the new fever hospital. After nine years of brilliant service there, Gairdner resigned his office and Russell was his master's logical successor. For a little more than a quarter of a century he held the position with unrivalled distinction, and then became the chief medical officer of the Local Government Board of Scotland, a position which he might have had earlier, except that he wished to finish certain improvements and reforms where he was. It was a great grief to him to give up his home and its associations on the Clyde and the streets and wynds and closes of the old Scotch city that he loved so well, and so many of which he had transformed from pestilence breeders to comfortable living places, but he felt called by the larger duties.

Dr. Russell was an indefatigable worker and a voluminous writer. He was the first editor of the *Glasgow Medical Journal* after its resuscitation in 1868. To his clear, concise, direct and forcible use of the Scotch vernacular he owed his great power of convincing his municipal boards and his most conservative opponents in his reforms, a feat which one should have once seen and heard to fully appreciate. To an upright character and a charming personality he added the methods of the man of science and the fervor of the enthusiast for humanity.

In his "History of Sanitation in Glasgow" he says, "The first ten of these forty years (1855–1895) represent the period of awakening and groping for an instrument and a method; the remaining thirty, the period of resolute endeavor working through a developing organization and becoming year by year more precise in direction, so that every ten years represents a stage in administrative progress." While his influence has been widespread in other countries as well as in Great Britain, his monument is his beloved city.

## AN EXTENSION OF MEDICAL CHARITY.

WE learn from the *Medical Record* that the regents of the University of Michigan have ruled that the medical faculty of that university must give gratuitous medical and surgical treatment

to everybody applying, whether rich or poor. It is not to be wondered at that a local medical society has passed resolutions protesting against such a ruling on the ground that physicians are thereby deprived of their rights, and that such a measure is detrimental to the best interests of the medical profession.

The question of the gratuitous treatment of patients at hospital clinics is notoriously one of the most difficult with which the management of institutions has to deal. If the report before us is correct, the University of Michigan has taken the bull by the horns and accepted the fact that a line is practically impossible to draw, and that for the good of the clinic, rich or poor should alike be served. We have no intention at this time to discuss in detail the correctness or the incorrectness of this standpoint. From the point of view of the teaching staff much may be said in favor of admitting for treatment the case valuable for instruction, whatever his social status may be. On the other hand, we have a large measure of sympathy for the great majority of physicians who stand outside the pale of the university and whose support is dependent upon their practices. We are, on the whole, strongly of the conviction that a limitation of the number of patients admitted to free treatment will conduce to the greatest good of the greatest number, rather than the policy which disregards wholly the social condition. In the long run, both the community and the profession will be the gainers by restrictive measures. We regret, therefore, this action on the part of the University of Michigan, although the motives which may have brought it about are unknown to us.

## MEDICAL NOTES.

The Proctor Fund for the Study of Chronic Diseases. — Attention is called in the advertising columns to this unique and promising endowment. The late Ellen Osborne Proctor bequeathed fifty thousand dollars to the corporation of Harvard College for the purpose of promoting the study of chronic diseases. The income is now available, and is to be devoted to the care in hospitals of suitable cases and to investigations into the nature and treatment of chronic affections.

The committee in charge already has recommended appropriations for the study of metabolism in infants and in osteo-malacia and for an inquiry into the diagnostic value of the abnormal metabolism of fats. Investigations are in progress relating to arterio-sclerosis, arthritis deformans, gastric dilatation and cystinuria. A study of the determination of phosphorus and sulphur in the food, urine and feces, also, is in contemplation.

The terms of the bequest are sufficiently liberal to enable suitable investigations to be made without cost to the patient or physician, and there should be no lack of applicants for the use of this considerable fund designed to serve so humane a purpose as the prevention, cure or relief of chronic suffering.

Medal for Hospital Plans. — It is reported that Dr. A. J. Ochsner and M. J. Sturn, both of Chicago, have been awarded a gold medal by the St. Louis Exposition for plans illustrating hospital construction. Various plans were exhibited of a wholly original sort.

Comparison of Racial Median Ages between Blacks and Whites. — The median age of negroes, according to the *Medical Record*, is 19.4 years; that is, half the negroes in the United States are below that age. The median age is four years below that of the whites (23.4 years), a difference closely connected with the high birth-rate and high death-rate of the negroes.

A Memorial for Dr. Osler. — It has been repeatedly reported that plans are being laid for the erection in Baltimore of a building to be used as a library as a tribute to Dr. Osler, to be known as the Osler Memorial Building. The idea originated shortly after his acceptance of the regius professorship of medicine at Oxford. The plans are still chaotic; many suggestions have been made, and the desire to still further honor Dr. Osler appears widespread and enthusiastic. The use of the term memorial, in connection with such a building, is rather more suggestive than appropriate.

The Russian Censorship. — We quote from the *British Medical Journal* the following story of Russian censorship:

"The following story affords a striking illustration of the methods and results of the Russian Censorship. Vassili Yaruishkin, a brilliant graduate of Moscow University, recently died there in poverty at the age of fifty. Twenty-three years ago he wrote a work on physiology, embodying a number of discoveries which were considered by his scientific friends to be of great importance. The manuscript went to the censor in 1883. It never came back. Again and again the author applied for permission to print, and for the return of his manuscript. He accumu-

lated a drawer-full of formal replies, stating that the matter would receive attention. Soured and disappointed he never undertook other work. On the morning of the funeral a packet of manuscript arrived at the house where he died, with the stereotyped approval of the censor expressed in a formal note."

PANAMA, JAN. 2–6, PAN-AMERICAN CONGRESS. — Dr. Rudolph Matas, secretary of Section of General Surgery for the United States, asks those who wish to contribute papers to send titles to him at 2255 St. Charles Avenue, New Orleans. He also announces that the United Fruit Company's agents are offering as a special inducement to American "Congresistas" a reduction of the regular fare for the round trip from New Orleans to the Isthmus to $50, that is, $25 each way. The steamers leave New Orleans every Friday; the last steamer to leave New Orleans in time for the opening of the Congress will sail on Dec. 30, 1904, at 11 A.M. It takes about four and one-half days to reach Colon and seven days on the return trip on account of a stop-over at Port Limon, where ample opportunity is given to tourists to visit San Jose, "the beautiful capital of Costa Rica — 'the Paris of central America' — where the most picturesque tropical scenery can be seen at this season, under the most favorable conditions."

## BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon Nov. 16, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 53, scarlatina 24, typhoid fever 19, measles 17, smallpox 0.

FIRE AT NEW HAMPSHIRE HOME FOR FEEBLE MINDED. — Fire broke out Nov. 14 at the new dormitory at the State Home for Feeble Minded Children at Laconia, N. H., which resulted in its destruction. Through the excellent system which had been established by the superintendent and through the efficiency of the matron and instructors the sixty-seven inmates were rescued. Not much regret is expressed at the loss of the building, which will amount to about $20,000, insured for a little over $6,000. It is probable that a more commodious building will be erected in its place.

## NEW YORK.

HOSPITAL FOR TUBERCULOSIS. — At a meeting of the board of trustees of the New York State Soldiers' Home, at Bath, held Nov. 10, the expenditure of $30,000 was authorized for the erection on the grounds of a hospital for tuberculosis patients.

A CENTENARIAN. — Martin McMahan of Ballston Spa, N. Y., died suddenly on Nov. 7, at the reputed age of 104 years. He had enjoyed remarkably vigorous health up to the last, and was anticipating voting at the presidential election.

BEQUESTS. — By the will of Mrs. Sarah B. King, just admitted to probate, a large amount is left to charities. Among the institutions named are the Mount Sinai Hospital, which receives $10,000, and the Montefiore Home and Hospital for Chronic Invalids, which receives $5,000.

AIR OF THE SUBWAY. — Since the opening of the new subway to the public there has arisen some question as to the purity of the air in the tunnel, and with a view to determining the exact condition, the Board of Health has appointed Prof. Charles F. Chandler of Columbia University as consulting sanitary engineer to make a thorough investigation and report upon the matter.

THE PLACE OF RESEARCH IN THE UNIVERSITY MEDICAL SCHOOL. — The Harvard Medical Society of New York City wishes to announce that Prof. Theobald Smith of Harvard University will deliver an address upon "The Place of Research in the University Medical School" in Hoosack Hall, New York Academy of Medicine, Nov. 26, at 8.30 P. M. Members of the medical profession are cordially invited to attend.

HONORARY DEGREES AT COLUMBIA UNIVERSITY. — At the commemoration of the one hundred and fiftieth anniversary of Columbia University on Oct. 31, the following physicians were honored with the degree of Doctor of Laws: Drs. Francis Delafield, E. G. Janeway, Wm. M. Polk, John G. Curtis, Wm. H. Welch, Walter B. James and A. J. McCosh. The following received the honorary degree of Doctor of Science: Drs. Wm. Halsted, M. A. Starr, Geo. S. Huntington, and E. J. Lederle. After the presentation of the degrees, President Butler announced the founding of several new chairs in the University in memory of men who had contributed to the early growth of the institution. Among these were the following: The Bard Professorship of the Practice of Medicine (in honor of Samuel Bard, Professor of the Practice of Physic in the King's College medical

school, 1767–76) to which Dr. Walter B. James was appointed; the Mitchell Professorship of Chemistry (in honor of Samuel Mitchell, Professor of Chemistry, 1792–1818) to which Charles F. Chandler, Ph.D., was appointed; and the Torrey Professorship of Botany (in honor of the late Prof. John Torrey) to which L. M. Underwood was appointed.

One Hundred and Fiftieth Anniversary of King's College. — In commemoration of the one hundred and fiftieth anniversary of the founding of King's College in 1754, which has just been celebrated with appropriate ceremonies, the Macmillan Company has published for the Columbia University Press, a history of Columbia University, a volume of five hundred pages, with fifty full-page illustrations. It was prepared under the direction of an editorial committee consisting of Professors Brander Matthews, H. Thurston Peck and Munroe Smith, together with two prominent graduates not members of the faculty, and consists of five books. Book III is devoted to the professional schools; the chapter on the College of Physicians and Surgeons was written by Prof. Frederic S. Lee.

Physical Culture Department at Barnard College. — A new building, with very complete equipment, has been erected at a cost of over $400,000 for the physical culture departments of Barnard College and Teachers' College connected with Columbia University. Among its principal features are a great gymnasium hall, on the upper floor, equipped at an expense of $50,000, and a commodious swimming pool in the basement, surrounded by shower baths and dressing rooms. The building is the gift of Mrs. Frederick Ferris Thompson, one of the trustees of Teachers' College, and is designed as a memorial of her deceased husband. One of the main purposes of the new department of physical education, of which this building will be the home, is the training of teachers of physical culture, and the courses of instruction, under the direction of Prof. Thomas D. Wood of Teacher's College, will be open to the students of Barnard College and the women students of Teacher's College.

## Miscellany.

### INTERNATIONAL SOCIETY OF SURGERY.

The first Congress of the International Society of Surgery will take place in Brussels in September, 1905, under the presidency of Prof. Theodor Kocher of Berne.

The congress will consist of members of the society only, and will be exclusively devoted to the discussion of subjects announced on the programme.

Programme: 1. "The Value of an Examination of the Blood in Surgery." Reporters: Drs. Keen of Philadelphia; Sonnenburg, Berlin; Ortiz de la Torre, Madrid; Depage, Brussels. 2. "Treatment of Prostatic Hypertrophy." Reporters: Reginald Harrison, London; Ruvsing, Copenhagen; Von Rydygier, Lemberg. 3. "Surgical Interference in Non-Cancerous Affections of the Stomach." Reporters: Mayo Robson, London; Von Eiselsberg, Vienna; Mattoli, Ascoli Piceno; Manprofit, Angers; Rotgans, Amsterdam; Jonnesco, Bucharest. 4. "Treatment of Joint Tuberculosis." Reporters: Bier, Bonn, Broca, Paris; Bradford, Boston; Codivilla; Boulogne; Willems, Ghent. 5. "Treatment of Peritonitis." Reporters: Lennander, Upsala; Friedrich, Leipzig; Lejars, Paris; McCosh, New York; Krogius, Helsingfors; De Isla, Madrid. 6. "Diagnosis of Surgical Diseases of the Kidneys." Reporters: Albarran, Paris; Kimmell, Hamburg; Giordans, Venice; Lambotte, Brussels.

All communications relating to this Congress should be addressed to Dr. Ch. Willems, 6 Place St. Michel, Ghent.

### HOSPITAL OF FRENCH BENEVOLENT SOCIETY.

The new hospital of the French Benevolent Society in West 34th Street, near 10th Avenue, was formally opened on Nov. 12. M. Jusserand, the French ambassador, presided at the exercises, and addresses were made by him, by Carl V. Fornes, president of the board of aldermen, and by M. Maillard, president of the French Benevolent Society. This is the third hospital of the name, the first having been in West 31st Street, and the second, occupied up to the present time, in 34th Street, near Eighth Avenue. The cornerstone of the new building was laid on Nov. 18, 1902, by M. Jules Cambon, ex-ambassador from France. It is seven stories in height, with a facade of red brick and limestone. It is thoroughly equipped with modern appliances, and will accommodate 150 patients. There are six wards and thirty rooms for private patients, in addition to a dispensary department. The total cost was $400,000. Of this amount $225,000 has been paid, leaving a mortgage of $175,000. The French government contributed 100,000 francs towards the new hospital, and also some valuable Gobelin tapestries, the sale of which realized a considerable sum. In the evening a dinner was given to Ambassador Jusserand at Sherry's, in honor of the opening of the hospital, and on this occasion M. Gourd, president of the French Chamber of Commerce, presented on behalf of that body a cheque for $500 as a contribution to the building fund.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, NOVEMBER 5, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid Fever. | Diarrheal Diseases. |
| New York . . | 3,908,644 | 1,234 | 330 | 20.98 | 16.45 | .24 | 1.54 | 4.54 |
| Chicago . . . | 2,021,086 | 420 | 111 | 23.57 | 11.67 | 2.85 | 1.42 | 5.00 |
| Philadelphia | 1,407,968 | 386 | 108 | 19.94 | 13.47 | 2.85 | .88 | 6.21 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 208 | 54 | 18.27 | 9.13 | .96 | 2.40 | 2.40 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 124 | — | 20.16 | 13.52 | — | 8.06 | 3.22 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 86 | 24 | 18.60 | 10.47 | 1.16 | — | 9.30 |
| Boston . . . | 617,950 | 176 | 41 | 18.18 | 15.34 | 1.70 | 3.41 | 1.70 |
| Worcester . . | 136,925 | 48 | 12 | 4.16 | 12.50 | — | — | 2.08 |
| Fall River . . | 119,349 | 28 | 11 | 32.14 | 10.71 | 3.57 | — | 17.85 |
| Lowell . . . | 104,402 | 27 | 8 | 14.81 | 18.51 | 3.70 | — | — |
| Cambridge . | 100,998 | 21 | 8 | 23.81 | 19.04 | — | — | 9.52 |
| Lynn . . . . | 73,875 | 14 | 7 | — | — | — | — | — |
| Lawrence . . | 72,348 | 25 | 12 | 12.00 | 8.00 | — | — | 8.00 |
| Springfield . | 72,020 | — | — | — | — | — | — | — |
| Somerville . | 70,413 | 20 | 4 | — | 10.00 | — | — | — |
| New Bedford | 68,863 | 24 | 11 | 25.00 | 16.67 | — | — | 12.50 |
| Holyoke . . . | 50,538 | 11 | 4 | 18.18 | — | — | — | 9.09 |
| Brockton . . | 46,601 | 9 | 2 | 22.22 | 11.11 | — | 11.11 | — |
| Newton . . . | 39,310 | 3 | 3 | 66.67 | — | — | — | 66.67 |
| Haverhill . . | 39,061 | 12 | 4 | 8.33 | 16.67 | — | — | — |
| Malden . . . | 37,205 | 6 | 3 | 16.67 | 16.67 | — | — | — |
| Salem . . . . | 37,188 | 10 | 1 | 10.00 | — | — | — | — |
| Chelsea . . . | 36,499 | 18 | 6 | 22.22 | 11.11 | 5.55 | — | 5 55 |
| Fitchburg . . | 36,335 | 8 | 1 | — | 12.50 | — | — | — |
| Taunton . . . | 34,577 | 10 | 1 | 20.00 | 30.00 | — | — | 10.00 |
| Everett . . . | 30,209 | 12 | 2 | — | — | — | — | — |
| North Adams | 29,201 | 5 | 2 | — | — | — | — | — |
| Quincy . . . | 26,798 | 7 | 2 | 28.60 | 14.30 | 14.30 | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 6 | — | 16.67 | 16.67 | — | — | — |
| Brookline . . | 23,576 | 1 | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | 5 | 1 | 60.00 | — | — | 20.00 | — |
| Medford . . | 21,956 | 2 | — | — | — | — | — | — |
| Chicopee . . | 21,692 | 3 | 1 | — | — | — | — | — |
| Northampton | 20,314 | 3 | 0 | — | — | — | — | — |
| Beverly . . | 15,807 | 2 | 1 | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 3 | 1 | — | 33.33 | — | — | — |
| Adams . . . | 14,745 | 2 | 1 | 50.00 | — | 50.00 | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 1 | 0 | — | — | — | — | — |
| Newburyport | 14,478 | 5 | 0 | — | 20.00 | — | — | — |
| Woburn . . . | 14,315 | 3 | 1 | — | 33.33 | — | — | — |
| Melrose . . . | 13,819 | 6 | 1 | — | 33.33 | — | — | — |
| Westfield . . | 13,809 | 2 | — | 50.00 | — | 50.00 | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 2 | 0 | — | — | — | — | — |
| Revere . . . | 13,609 | 1 | 1 | — | — | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 1 | 1 | — | — | — | — | — |
| Southbridge . | 11,716 | 6 | 1 | 66.67 | 50.00 | — | — | — |
| Watertown . | 11,575 | 5 | 2 | 40.00 | — | — | — | 20.00 |
| Weymouth . | 11,350 | 2 | 0 | — | — | — | — | — |
| Plymouth . . | 11,139 | 3 | — | — | — | — | — | — |

Deaths reported, 3,016; under five years of age, 784; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 604; acute lung diseases 421, consumption 310, scarlet fever 16, whooping cough 9, cerebrospinal meningitis 9, smallpox 2, erysipelas 4, puerperal fever 11, measles 11, typhoid fever 51, diarrheal diseases 140, diphtheria and croup 41.

From whooping cough, New York 5, Chicago 3, Philadelphia 1. From measles, New York 5, Chicago 2, Pittsburg 3, Haverhill 1. From scarlet fever, New York 9, Chicago 1, Philadelphia 2, Baltimore 2, Pittsburg 1, Boston 1. From cerebrospinal meningitis, New York 5, Baltimore 1, Pittsburg 1, Worcester 1, Southbridge 1. From erysipelas, New York 3, Philadelphia 1. From smallpox, Chicago 2.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending Oct. 22, the death-rate was 15.9. Deaths reported 4,661; acute diseases of the respiratory organs (London) 127, whooping cough 42, diphtheria 75, measles 127, smallpox 5, scarlet fever 30.

The death-rate ranged from 7.1 in Hornsey to 23.7 in Hanley; London 16.6, West Ham 15.4, Brighton 14.9, Plymouth 11.0, Bristol 14.3, Birmingham 18.7, Leicester 14.0, Nottingham 14.9, Birkenhead 18.2, Liverpool 22.4, Wigan 8.3, Bolton 17.5, Manchester 17.3, Salford 23.2, Halifax 15.0, Bradford 13.9, Leeds 14.5, Sheffield 15.2, Hull 19.7, Newcastle-on-Tyne 19.4, Cardiff 8.9, Rhondda 14.9, Tottenham 11.1, Merthyr Tydfil 13.6.

## METEOROLOGICAL RECORD.

For the week ending November 5, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S.. 30 | 30.26 | 38 | 46 | 31 | 52 | 49 | 50 | N | N | 16 | 10 | C. | C. | 0 |
| M. 31 | 30.28 | 37 | 47 | 27 | 56 | 35 | 46 | N | W | 9 | 3 | O. | C. | 0 |
| T.. 1 | 30.20 | 46 | 53 | 38 | 41 | 63 | 52 | W | N | 9 | 14 | O. | C. | 0 |
| W. 2 | 30.42 | 40 | 46 | 33 | 64 | 69 | 66 | N W | S | 5 | 8 | C. | C. | 0 |
| T.. 3 | 30.11 | 48 | 56 | 41 | 73 | 81 | 77 | S | S W | 11 | 12 | O. | C. | 0 |
| F.. 4 | 29.92 | 50 | 55 | 44 | 84 | 74 | 79 | W | E | 9 | 10 | C. | O. | 0 |
| S.. 5 | 29.73 | 38 | 44 | 31 | 71 | 65 | 68 | N | N | 15 | 10 | O. | C. | 0 |
| ☞ | 30.13 | | 50 | 35 | | | 63 | | | | | | | .0 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for week.

## CHANGES IN THE MEDICAL CORPS OF THE NAVY FOR THE WEEK ENDING NOVEMBER 12, 1904.

D. O. LEWIS, medical inspector. Detached from the "New York" and ordered to the "Chicago."

F. M. FURLONG, passed assistant surgeon. Detached from the "Chicago" and ordered to the "New York."

E. M. BROWN, assistant surgeon. Detached from the "New York" and ordered to the "Chicago."

## SOCIETY NOTICE.

THE FOURTH ANNUAL MEETING OF THE NATIONAL ASSOCIATION FOR THE STUDY OF EPILEPSY. — The fourth annual meeting of the National Association for the Study of Epilepsy, etc., will be held in the Medical Library, The Fenway, Boston, on Nov. 22 next. The first session at 2.30 P.M.; evening session, 8 P.M. The Association invites all persons interested in the welfare of epileptics and in charity work generally, to attend this meeting.

Among the papers to be read are the following: 1. Presidential Address: William N. Bullard, M.D., of Boston. 2. The State's Relation to the Epileptic; Owen Copp, M.D., Executive Officer of the Massachusetts Board of Insanity, Boston. 3. The Prognosis of Epilepsy: William Alden Turner, M.D., of London, England. 4. The Influence of Puberty and Adolescence in the Etiology of Epilepsy: William P. Spratling, M.D., of Sonyea, N. Y. 5. Certain Aspects of the Differential Diagnosis between Hysteria and Epilepsy: Drs. J. J. Putnam and G. A. Waterman, of Boston. 6. Some Observations on the Treatment of Epilepsy: Daniel M. Brower, M.D., of Chicago, Ill. 7. Spectrum Analysis of the Blood in Epilepsy: J. W. Wherry, M.D., of Clarinda, Iowa. 8. Syphilitic Epilepsy: Abner Post, M.D., of Boston. 9. (*a*) Observations on Blood Pressure in the Epileptic. (*b*) Lantern Slide Illustrations of Cases, and of the Massachusetts Hospital for Epileptics: Dr. Everett Flood, of Palmer, Mass. 10. Ten Cases on Special Treatment: Drs. A. O. Morton and R. A. Greene, of Palmer, Mass. 11. Lumbar Puncture in Status Epilepticus: Dr. A. O. Morton. 12. Senile Epilepsy: G. Kirby Collier, M.D., of Sonyea, N. Y.

The objects of the Association are: 1. To promote the general welfare of sufferers from epilepsy. 2. To stimulate the study of the causes and the methods of cure of this disease. 3. To advocate the care of epileptics in institutions where they may (*a*) Receive a common school education; (*b*) Acquire trades; (*c*) Be treated by the best medical skill for their malady. 4. To assist the various States in America in making proper provisions for epileptics.

DR. WM. N. BULLARD, Boston, *President.*
DR. WM. P. SPRATLING, Sonyea, N. Y.,
*Secretary and Treasurer.*

## RECENT DEATH.

JAMES JOSEPH HEALY, M.D., M.M.S.S., died in Newburyport, Nov. 11, 1904, aged fifty-five years.

## OPERATIONS: BOSTON CITY HOSPITAL.

The following operations will be done and cases shown in the amphitheater of the Boston City Hospital on Nov. 18, from 10 A.M. until 12.30 P.M.: Laparotomy; Wiring Tibia; Ventral Herniotomy; Resection of Tibia; Empyema.

## Address.

# THE IDEAL OF ACCURACY IN CLINICAL WORK: ITS IMPORTANCE, ITS LIMITATIONS.

BY RICHARD C. CABOT, M.D., BOSTON.

### I.

When the history of clinical medicine comes to be written I think that the most striking characteristics of this half century will be regarded as, 1. The use of exact methods in diagnosis; 2. The use of instruments of precision; 3. The keeping of full and accurate records. We cannot be too thankful that it is so. I see three ways in which these tendencies have begun to accomplish the cleaning up of the dark places of our professional life.

(*a*) In the first place they have done a great deal to sweep out all such refuse as the concepts of the various *diatheses*. The "lithemic" diathesis; the "gouty" diathesis; the "rheumatic" diathesis, and similar traditions which cannot bear the tests of criticism and disappear when the search light of exact methods is applied to them. We have to thank these modern tendencies for the gradual disappearance from our vocubulary of sentences about "*bilious*" conditions, which now survive chiefly in the vocabulary of our patients, who always seem to know so much more about them than we do. So it is with the "*congestions*" of the brain, of the lungs, of the liver, of which we used to say so much and knew so little. So it is with many of the *anemias* diagnosed purely on the most deceptive evidence, facial color, and with many of the multitudinous affections classed as "*rheumatism*." These remnants of "traditional medicine" it has been the inestimable service of modern scientific methods to sweep out of our path; and I think we may say that the replacement of traditional medicine by scientific medicine is something we cannot seek too eagerly or be too grateful for, as fast and as far as it succeeds.

(*b*) A second inestimable service rendered by the tendencies which I am now describing has been to build up in us habits of mind that are instinctively antagonistic to habits of lying. It is not at first sight obvious how the use of instruments of precision and the insistence on precise methods in their use favors the establishment of truthfulness as a corner stone of our dealings with each other and with our patients. But although this is not obvious, I am convinced that it is true. Anyone who records his cases and makes his observations in an inaccurate or slovenly way, finds his mind filled with a kind of haze. To clear away this haze when he comes to state his results, it is almost inevitable that he should fall into the habit of drawing upon sources other than reality for his materials and for his terms. If, on the other hand, a man has made his analyses, his measurements, and his clinical records accurately and thoroughly, he learns to *lean upon fact* and to have confidence that whatever is true will turn out to work well. Thus he gets out of the habit of improvising, modifying or embellishing his statements to suit traditional or preconceived ideas.

An enthusiastic advocate of manual training in the public schools once said in my hearing that a boy who had had a thorough course in sloyd work would never tell a lie. In this obviously exaggerated statement there is, I think, this much of truth: such a boy will find it much *harder* in the future to lie. The habit of taking our bearings straight from reality, a habit which wood work or any other form of manual training produces, makes us almost helplessly dependent on data observed for every step of our thinking and of our plans. It is as if an actor should get into the habit of being prompted continually from behind the scenes so that he never spoke his lines by rote or found the need of improvising them. The habit of improvising an embellishment cannot be acquired without practice, and the incessant use of scientific methods soon gets us fatally out of practice in the use of lies.

Quite without conscious intention or pious effort, therefore, I believe that our modern methods of medical work are steadily driving out habits of mind that make prevarication and lies of all shades possible.

(*c*) By sharpening the lines between what we know and what we do not know, between what we have achieved and what we have still to achieve, scientific methods of work make true progress possible. For it is only by knowing just where we are and just where our lacks are situated that we become capable of progress.

### II.

I think I must have made it clear that the tendencies which I have been describing are the very breath of life. We feel stifled and mouldy in the atmosphere of traditional medicine; we see clearly that the current of scientific medicine has made us all what we are. But we do not always see so clearly that we must *direct* that current; ceaseless vigilance on the part of the old-fashioned faculties of common sense is nowhere more in need than in the guidance and regulation of the gigantic and beneficent tendencies now at work in medicine. We are told that it is not so much the gun as the man behind the gun that makes the success of the American and Japanese navies. So in the use of instruments of precision, the brain behind the instrument, the man behind the microscope, is the achieving force. Now, obvious as this seems when stated in cold print, it is not by any means so obvious as to be always acted upon. There is a tendency which one can hardly recognize until he has felt its poignant force in his own person to get carried away by one's own methods until the methods come to replace the active brain that ought to be using them. I see in others and feel in myself the danger that we may substitute the routine use of some excellent method, say of history-taking or of physical examination, for the free play of the active, acquiring mind, the

mind capable of being surprised and of seeing what it does not expect to see. Conventionality, literalism and formalism are dangers just as formidable in medicine as they are in religion, perhaps more formidable because we are not so much upon the lookout for them, and because they creep in in so insidious and stealthy a way.

From a slightly different point of view I may describe the tendency just referred to as one of the Protean shapes assumed by our aboriginal laziness. Paradoxical though it seems, I have no doubt that the scientific method is at times nothing more than a disguise assumed by our ineradicable laziness. I know no form of labor which the average man shuns more instinctively and more constantly than the labor of thinking or of fresh observation. But the doctor is human and capable of temptation all the more readily when the tempter assumes the subtle and baffling guise of the " scientific method." I know a doctor who never forgets his stethescope, his blood counter or his percussion hammer when he starts on his rounds in the morning, yet not infrequently he is so absent-minded as to leave at home one all-important instrument — his brain.

I suppose it is impossible for us to over-estimate the debt which we owe to Germany in the field of scientific medicine. For years we have been fed with the results of German industry and ingenuity until it has become habitual for us to stretch out our necks in that direction like fledglings in the nest. But we have also acquired the habit (and here is my point) of *bolting our food*, of gulping down in true American fashion the pabulum furnished us by our Teutonic brethren, forgetting that assimilation is a necessary prerequisite for nutrition. Now this habit of bolting down, unmodified, the nutritious gifts of our Teutonic brethren has given us several forms of scientific indigestion. One of these mental dyspepsias results in the idea that absolute accuracy should be sought for at all times and in all places. Now absolute accuracy is an ideal, not simply unobtainable but self-contradictory, as I think I can show you by a few examples. It is, of course, a commonplace that accuracy is always relative, — relative in the first place to the limitations of the instruments which we employ. " Accurate within the limits of error of the instrument employed " is the most that we can ever say of our observations, and that these instruments have limits of *error*, and very wide ones, is not always sufficiently realized. Neither is it realized that our accuracy is relative, not only to the limitations of the instrument employed, but also and chiefly to our *purpose*. What is accurate enough for one purpose is not accurate for a second and is too accurate for a third. I think it is safe to say that no physician in active practice can make physical examinations which are accurate even up to his own standard of possible accuracy. Such an examination would consume half a day, at least, and even then many points would be left uninvestigated because they seemed relatively unimportant. I think it is well for us to realize that this is always the case, and that in consequence it is always our duty to *direct our accuracy*, like a search light, where it can do most good. We must be inaccurate somewhere. The wise physician is he who knows well how to decide, where and when to be accurate, where and when to get along without accuracy.

Ludicrous examples confront us now and then, of misplaced accuracy, of misdirected exactness. A physician of my acquaintance was consulted not long ago by a lady for the relief of dyspepsia. The doctor made a careful estimation of the size, position, motility and secretive activity of her stomach, analysed the gastric juices by careful quantitative methods, examined the urine, and rendered a report containing quantitative measurements of the different solids as well as the ordinary chemical and microscopical tests, counted the red and white corpuscles, measured the hemoglobin, made a differential count of the leucocytes, and examined minutely the condition of the thoracic and abdominal organs. From the indications obtained by these examinations he prescribed for the patient with great care, but as it turned out, without success, for the patient's nausea and other gastric symptoms continued unrelieved. Some months later it was learned that she was pregnant.

Now what I want to bring out by this example is this, the fact that although the pregnancy could not have been discovered at the time the doctor saw his patient by any method of physical examination, yet it might have been discovered, or at any rate strongly suspected, had he directed as much energy and accuracy into the taking of his history as he put upon the physical examination. He used plenty of accuracy but he used it in the wrong place. He was too accurate, that is, uselessly accurate in some respects and correspondingly inaccurate in other and more important respects. Now the *relative importance* of the different aspects of a case is something not to be learned by becoming expert in any or all of the known methods of investigating disease. It is and must remain the work of common sense.

Let me enumerate briefly a few other examples of what I regard as misdirected accuracy, or perhaps I had better say disproportionate accuracy: 1. The estimation of the urinary solids by quantitative methods is usually a pure waste of time, not because it does not tell us anything, but what it tells us is altogether unimportant for the diagnosis, prognosis and treatment of disease. The information that it gives us is information that we cannot make any use of; inferences drawn from it may be misleading and actually harmful. Take, for example, the quantitative estimation of urea, a solid which I suppose we measure more frequently than any other of the urinary constituents, under the quite mistaken impression that we are securing thereby knowledge of the secretory power of the kidney. Now we all know, if we stop and think of it, that the output of urea represents not merely the functional power of the kidney but the resultant of a complicated group of forces. The urea output depends not merely on the power of the kidney but upon the

amount and kind of nutrition furnished the patient and upon the success of his organs in dealing effectively with what is given him. To interpret an urea estimate we need a knowledge of the patient's total nitrogenous metabolism. In most cases in which I have known measurements of urea to be recorded there has been no accurate knowledge of the food taken into the body and no possibility of allowing for the modifications produced by such symptoms as vomiting, diarrhea, sleeplessness, confinement in bed and psychological disturbances; yet in measuring urea we are measuring something dependent upon all of these influences as well as upon the functional power of the kidney. It would be hardly more absurd if we attempted to measure the efficiency of a street transit system by the number of patrons deposited every night at the theaters. It is true that this figure would depend in part upon the efficiency of the transportation system, but to neglect altogether such factors as the degree of attraction of the plays running at any given time at the different theaters, the clemency or inclemency of the weather, and the state of the public purse, would be no more absurd than the attempt to measure the functional power of the kidney by the estimation of the urea alone.

It is quite true that if we had a definite and accurate knowledge of the patient's metabolism we could learn a good deal from the output of urea, but in the vast majority of cases it is not possible for us to get any such knowledge of his metabolism, and without it our urea estimations appear to me a pure waste of time. It may be said that we may gain from them, at any rate, a rough estimate of the functional power of the kidney after making allowances for all the sources of error above alluded to. In a measure this is true but it is also true that we can gain the same information without taking the time to estimate the urea at all, simply by measuring the twenty-four-hour amount of urine and the specific gravity. From these two simple facts we can glean all the information that is afforded us by urea estimations except in the very rare cases where it is possible for us to spend the time necessary to study his total metabolism.

A similar mistake in the distribution of our efforts at accuracy occurs in many of the quantitative estimations of hydrochloric acid in gastric contents which give us the appearance of great scientific force without the fact. Again and again I have known physicians to estimate most carefully the percentages of free or combined hydrochloric acid and of the acid salts, while they had neglected to get even an approximate idea of the two most important facts about the stomach in disease: namely, its size and its motor power. The measurement of the gross total of residue in the fasting stomach and of the size of the organ after distention with air or water, give us facts of far greater value than the more accurate quantitative estimations of acid which occupy the foreground in most accounts of the stomach functions. With Conge red paper an estimate accurate enough for most clinical purposes can be obtained in a few minutes; and the time thus saved can be put into more accurate work in other directions.

In blood examinations far too much time is spent in making counts of red corpuscles. Not in more than one case in twenty-five in my own practice do I find it necessary to make such estimation. If the hemoglobin is normal and if there are no other obvious evidences of anemia in the general examination of the patient or in the examination of the stained film-specimen of blood, there is no need for consuming the time and energy necessary for a red count. The essential parts of blood examination in the vast majority of cases are the total count of white corpuscles and the examination of the stained film. This is the direction in which we want to put our accuracy.

I think it is unnecessary further to multiply examples. Anyone can think of similar cases as soon as his attention is turned to the matter.

I wish now to turn to quite a different aspect of my subject, yet one which is a branch of the same difficulty; I mean our failure to direct the current of the scientific tendencies of our time. It is a common, but I believe a very fallacious, belief among physicians, that "laboratory work" is a term as wide as "accurate work," and that clinical work must needs be comparatively inaccurate. Let us glance for a moment at the derivative meaning of these words. The laboratory is simply a place for work. The word means nothing more. Clinical means simply at the bedside. Now, my contention is that for most of us the best place for work is at the bedside. That is the place where the most essential information can be acquired, both for the benefit of science and for the benefit of the patient. There is no more pernicious fallacy extant than that which supposes that there is a necessary division between the "laboratory man" and the "clinical man" or between the "laboratory work" and "clinical work." This is a distinction which Dr. Deaver of Philadelphia has done much to harden. He is never tired of insisting that the point of view of the clinician in diagnosis is superior to that of the laboratory worker. But why in Heaven's name should we have to choose either one? Why should not each one of us make himself master of all the facts necessary for the diagnosis of his case, both the facts obtained by what we ordinarily call the clinical examination of the patient and those obtained with the help of the microscope and of chemical reagents? If one had to choose (for example, in the diagnosis of appendicitis) between knowing only the facts obtained by microscopical and chemical analysis, and knowing only the facts obtainable at the bedside without the help of these agencies, why, I suppose any of us would choose the bedside as the better standpoint for observation. But my point is that we never ought to be forced into making any such choice. Not either one without the other, but both. That is what we want. No one is so foolish as to depend wholly upon a single method of examination in diagnosis, whether that

method be either a measuring of temperature, which we ordinarily call a "clinical fact," or the counting of leucocytes which we ordinarily call a "laboratory fact." All such facts are of value only when considered in connection with all other available evidence. They are like single letters of the alphabet which in their isolation are almost meaningless, yet when grouped into words may be most significant. A diagnosis in most cases should rest upon a group of data which together spell out a word.

The harm done by the attempt to separate our examination of the patient's functions into two sharply differentiated portions and to assign one portion to the individual known as the laboratory man and the other portion to some one called a "clinician," — the harm, I say, done by this attempt consists in part in a loss of essential facts in the transfer from one man to another. For such data are not readily transferable like coin without loss of value. Few can interpret the results of blood examination, or urinary examination, unless they are constantly making such examinations themselves. Indeed the attempt so to interpret them is almost as hopeless as the attempt to convey satisfactorily to another what one feels in palpation of the abdomen. Laboratory facts are *personal* facts as much as the results of palpation, and they are almost as difficult to convey to a second person. Moreover, our interpretation of the crude data obtained by our senses is apt to be a very faulty one if we attempt, as a so-called laboratory man often has to do, to make this interpretation wholly uninfluenced by the clinical aspects of the case. Those best trained in microscopical and chemical analysis are coming more and more to feel unwilling to hand over to another man any hard and fast conclusions based upon the isolated facts in his position. More and more we are finding that the men who examine scrapings or fragments of a tumor want to see the case in the wards and get possession of all the facts ascertainable, just as the clinician is more and more unwilling to accept a report from the laboratory without seeing the specimens himself.

Dr. Welch has pointed out in a most timely way, in a recent discussion in the Johns Hopkins Hospital Bulletin, how unwise it is to attempt to construct clinical histories from post-mortem evidence. But the evidence obtainable by what we still insist calling the "laboratory man" is usually as one-sided as the post-mortem evidence just alluded to. It needs to be filled out and corrected by facts obtainable only at the bedside.

Summing up what I have said, it seems to me, (1) that we need to direct the great current of scientific medicine, first by observing a due proportion in the amount of time and the degree of accuracy assigned to the different portions of our examination of a patient, and (2) that we want to rub out as fast and as far as possible the distinction between laboratory diagnosis and clinical diagnosis.

# Original Articles.

## METATARSO-TARSAL VALGUS OR HUMPED FOOT AND ITS RELATION TO BOOTS.*

BY E. H. BRADFORD, M.D., BOSTON.

IT is claimed with probable truth that American shoes are the best in the world. American feet, however, are being deformed to a lamentable degree by foot wear. Foot deformities may be said to be prevalent because of the excellence and cheapness of manufactured boots. The intelligence and energy which have been concentrated in the manufacture of shoes have attracted a large amount of capital in the development of shoe factories. The market is a large one and the interests of capital demand large sales to compensate for financial outlay. The result is that great energy is devoted not only to the excellence of

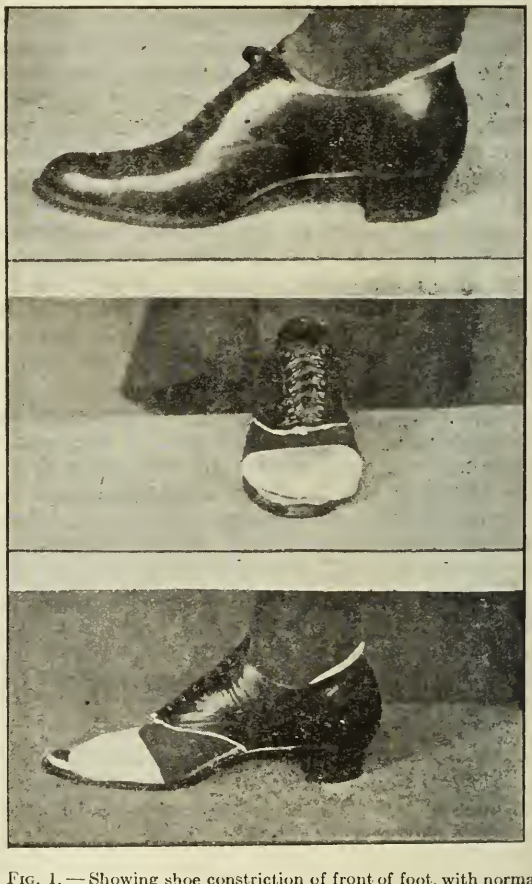


FIG. 1. — Showing shoe constriction of front of foot, with normal foot in shoe before and after removal of upper.

the output but to the development of a selling style. But as there is a profound ignorance as to the normal shape and functions of the foot, sales of boots depend to a great extent on fashion, and fashion has always prompted the wearing of foot wear which cramps the foot. Deformities of the foot from shoes are possible from the fact that the human foot is capable of a great deal of compression if compression is exerted without causing much pain. Although sensitive in cer-

* Read at a meeting of the Boston Society for Medical Improvement, April 11, 1904.

tain parts, in others the foot is tolerant of a great deal of alteration by pressure. Shoes, therefore, which avoid pressing in certain directions may exert a great deal of pressure in the others. It is also true that the foot as an implement of locomotion is capable of a variety of functions, and portions of it are used in standing which are less used in active gait; that portions of the foot used in running or active walking are not needed in the ordinary heel and toe gait over even surfaces and can be compressed without serious inconvenience. The foot of the ploughboy needs a different play of muscles from those used in the ball room. It is for this reason that boot compression is possible among classes who live in cities without the need of physical activity, that would not be possible among those requiring agility in their daily life. Slight deformity can take place with slight discomfort, provided individuals do not lead active lives. So true is this that foot deformity will be found to be extremely common.

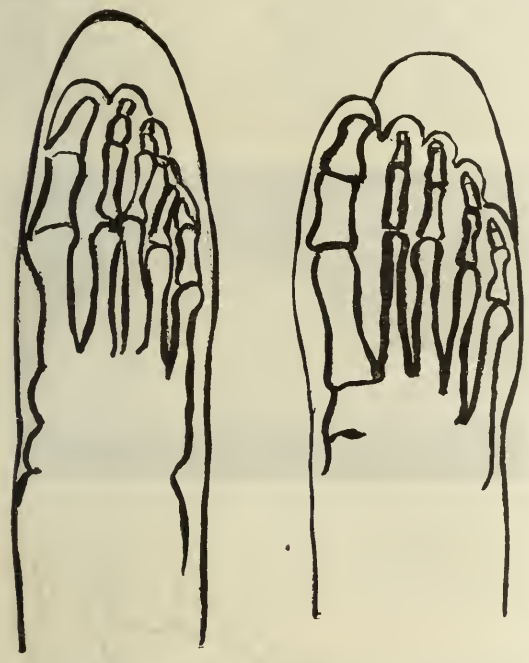


Fig. 2. — Tracing of skiagram of foot in shoe before and after removal of upper.

It is easy to exaggerate the importance of shoe deformities. The fact that they are to be found to a greater or less degree in all whose occupations do not prevent cramping of the foot by foot wear is sufficient evidence that severe injury rarely follows. But it is easier to minimize the resulting evils. If people adapt themselves to their limitations there is no suffering. Presumably the foot-bound ladies in China find a fair share of enjoyment in life, but certainly they are handicapped in their pursuit of happiness. This is to a degree true of all whose feet are weakened or distorted. The unnecessary cramping of the feet of children which is so prevalent must, therefore, be looked upon as little less than criminal. How common this is can be seen whenever new shoes are stretched, pushed or pounded on young children's feet. No pain and but little discomfort results owing to the flexibility of the child's foot, but the resulting enfeeblement of the foot, though not seen by the shoe dealer or even the parent, is developed in the later lessened activity of the man. The old age of a multitude of men and women is crippled by the neglect in early childhood of the precaution to provide shoes which give free activity to the foot and leg muscles. That the marching activity of the average citizen has been hampered by the lack of strength of their feet is illustrated by a well-known historical fact. It may be remembered that the untrained militia of Massachusetts marched from the center of the state to Boston, fully equipped, at the rate of thirty miles a day during the alarm of the attack by the French fleet in the French and English War. The marching record of the embattled farmers before Concord and Bunker Hill is not known, but it is safe to suppose that it was decidedly above what could be shown by the present militia companies, rarely equal to a ten-mile march. This opinion will be confirmed if a Labor Day parade is watched with the marked evidence of the foot enfeeblement of our mechanics and working classes. Living as we do in times of peace and when walking is not needed for activity, the deprivation in usefulness from enfeebled feet is reduced to the lowest possible limit. But the comfort of old age is dependent more on the daily walk than on the bicycle or automobile, and anything which impairs the ability for that enjoyment may be regarded as an evil, none the less that it is avoidable.

Shoe deformities result from the pressure of a boot crowded backward upon the standing or walking foot. The boot when the foot is used must find resistance somewhere and it exerts pressure according to its shape. The boot, stretched by constant use, loses its original shape and its least elastic parts exert the chief pressure. The most common deformities are caused by crowding the toes together as the shoe is always made narrower than the natural spread of the foot. This crowding results most injuriously upon the great toe which is pushed toward the middle of the foot and frequently partially dislocated. The boot is then pressed backward upon the foot, and meeting the resistance of the head of the first metatarsal develops by irritating irregular bony enlargements as well as thickening and irritation of the skin. This does not necessarily result from a short or a tight boot. It will result also from a loose boot which is narrower than the width of the toes. This deformity is naturally less liable to occur in heel walkers or leisurely people who use the front of the foot but little, but in persons of activity it constitutes the most crippling foot deformity. The injurious effect of the shoe is increased by the custom of a stiffened toe cap which prevents the stretching of the leather and acts as a clamp holding the toes together when they would naturally spread in walking. The less resistant portion of the boot stretches

with use, " falls away from the foot," to use the boot fitters' term, and the foot bound by the toe cap at the toes becomes distorted. The muscles governing the movements of the toes are weakened and the weight-bearing function of the front of the foot is impaired, a greater part of the strain falling upon the middle portion of the foot. As this weight from anatomical reasons does not fall directly over the middle line of the standing foot but slightly to the inner side, there is a tendency

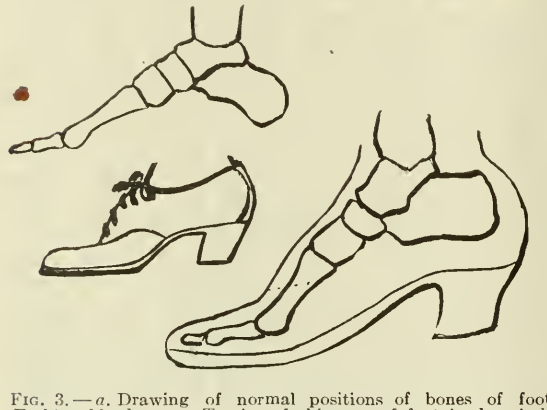


FIG. 3.—*a*. Drawing of normal positions of bones of foot. *b*. Fashionable shoe. *c*. Tracing of skiagram of foot in shoe, indicating cramping and downward pressure on the first metatarsal.

for the ankle to drop to the inside. This tendency is checked in barefooted people by the spreading inward of the great toe and its metatarsal which acts as a prop. This pressure to the inside stretches the inner arch of the boot which yields in spite of all efforts to prevent this by the use of stiffening. The binding together of the toes, the weakening of the foot muscles and the impairment of the natural functions of the foot result in weak foot, or splay foot. This is increased by the exaggerated toeing out attitude which is assumed not only as a custom but also as a natural result from the crowding position of the toes. The individual not having the natural spread of the foot for his base of support enlarges this base by standing in a toeing-out attitude, and in the propulsion of the body in walking uses the inner side of the boot instead of the claw action of the toes which is employed by the strong footed.

It is clear that if deformities of the feet are developed by shoes there will be a variation of these deformities according to the fashion of shoes. This corresponds to what is found if the evidence obtained from antique sculpture can be trusted. Even sandal wearing people develop slight deformities of the toes, but where more elaborate shoe covering is worn the deformities vary. This is seen in the difference between the shape of the feet as is shown in Egyptian art, in Greek statues and in the statues and pictures of the Renaissance. If, again, these are compared with the feet seen in modern French sculpture a variation of deformities will also be found. Of late years, as the fashions of shoes have changed, a variety of deformities is also seen. The chief deformity seen ten or fifteen years ago were deformities of the toes and weak and flat foot. The extreme outtoe is less common now than formerly among persons buying fashionable shoes, owing to the use of less pointed shoes, straighter on the inner edge than formerly worn. Of late years, however, owing to the change in the shape of the lasts, boots are worn with the long and narrow shank and a high instep and flat waist, and different symptoms are often complained of; slight pains in the front of the foot, with tenderness and aching after walking or standing. This pain is localized more particularly on the inner and under side of the first metatarsal, but may involve the other metatarsals. On removing the shoe and stocking a certain amount of redness is frequently seen over the head of the first metatarsal, or a little behind it. The symptoms are relieved by the removal of the shoe. These symptoms are seen more frequently in ladies and less frequently in men, although in heavy men obliged to stand or walk a great deal and wearing unsuitable shoes the symptoms are severe. They are often seen in strong and athletic people who otherwise take excellent care of the feet. The examination of the accompanying x-rays and photographs illustrate clearly the nature and cause of this affection.

These may or may not accompany those attending Morton's affection or the flattening of

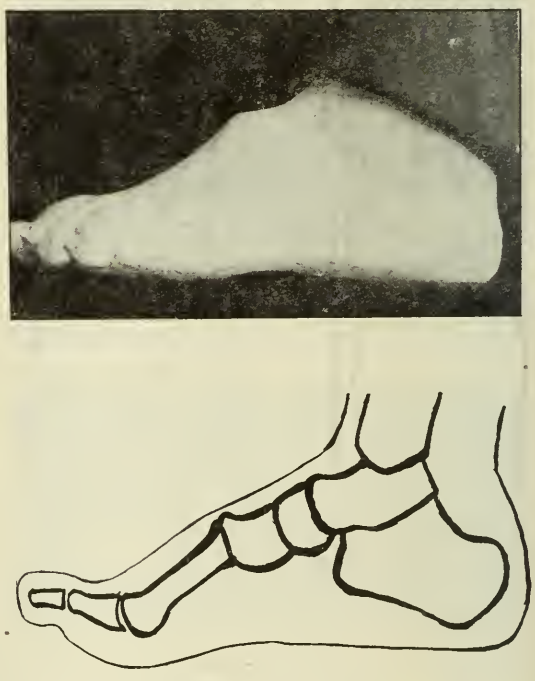


FIG. 4.—*a*. Photograph of humped foot. *b*. Tracing of skiagram of humped foot with irritation exostosis of the metatarso-cuneiform articulation.

the transverse arch which results from pressing down the heads of the smaller metatarsal, causing callosities in the middle of the front of the foot.

The cause of this affection of the foot would appear to be the shape of the boot resulting from the attempt on the part of the manufacturer to prevent the ugly spreading of shoes when worn. The last is shaped low in front and the upper is cut snugly and stitched with an inelastic oblique

seam which exerts close fitting pressure on the whole of the front of the foot. The result is that the shoe keeps its shape well but the movement of the front of the foot, especially the first metatarsal, is severely hampered. The narrow toe cap limits the play of the toes; and the long and narrow shank, the high curve cut out of the inner side of the last, and the oblique seam prevent any inward play of the first metatarsal, the front of the foot being held as if by a snugly encircling band. The result is that the first metatarsal and the ball of the great toe being hampered in its function, more weight comes upon the second, third and fourth metatarsals than is desirable. Callosities, faulty strains and altered nerve pressure or anterior metatarsalgia result. Another condition results which can be described as metatarso-tarsal valgus. It is characterized by a depression of the first metatarsal with an inward movement of the foot at the metatarso cuneiform articulation. In precise term the deformity would be the awkward term metatarso tarso cavo valgus, affecting chiefly the first metatarsal. It may popularly be called "humped foot." As boots are cut so that there is not only no spread at the toes but also none at the metatarsals, the ligamentous strain in locomotion is not felt at the metatarso phalangeal articulation, nor can the whole foot swing to the inside at the midtarsal articulation (the cross joint of the foot), making a splay foot. The strain comes at the metatarso tarsal articulation. If a heel is worn the boot gives a slope to the foot and causes a backward pressure on the sliding foot causing a cavus, analogous to that seen in the foot of a Chinese lady. Irritation may follow, and exostoses result.

The remedy of the present prevalence of shoe deformities can be readily prescribed, but it is not easily applied, there being a human weakness which prompts the buyer to purchase small and injurious boots and shoes. As an illustration of the extent of the prejudice against the use of loose shoes may be cited the fact that it will be found almost impossible to introduce the use of moccasins, the best of foot wear devised, in female gymnastic classes.

The remedy must come by educating the public demand as has been accomplished in an improvement in the shape of corsets and the more general use of less harmful waists. This is the result largely of the increasing athletic activity of women and partly by a better knowledge of the human figure. When working people realize the extent to which their feet are injured by shoes, then will be an increasing demand for less harmful foot wear. A certain amount has already been gained. There is a great improvement in men's walking boots and in men's boots in general. A number of infants' shoes are not injurious, and sandals and moccasins are more used than formerly. The athletic girl is not unwilling to wear boys' boots.

It should be the custom for all people who pay attention to their foot wear to furnish themselves with working and with dress boots, and to relieve the foot from all pressure when at leisure, wearing moccasins or Turkish slippers. The working shoes of women should be like those of men, giving freer play to the foot. Children should wear moccasins, sandals and loose, light boots and shoes.

## THE PAIN OF OSTEO-ARTHRITIS OF THE SPINE: ITS BEARING ON THE DIAGNOSIS OF URINARY DISEASE.*

BY ARTHUR L. CHUTE, M.D., BOSTON, MASS.

About three years ago my attention was first called to the bearing which osteo-arthritis of the spine may have in the diagnosis of urinary disease. In my attempts to find a definite cause for obscure pain, which was supposed to depend upon hypochondriasis or neurasthenia, I examined with great care all urinary patients who complained of pain for which there was no evident cause. In some of these patients the only abnormality that I could find was a stiff lumbar spine, treatment of which gave relief to the pain in a certain number of cases. A continued study of this subject has convinced me that this pain of osteo-arthritis of the spine is an element which must be taken into consideration in the diagnosis of a certain number of cases which present themselves to men interested in urinary disease. I present my observations in the hope that this subject may receive a more extended investigation by the members of this association.

The whole subject of osteo-arthritis is relatively new; the possibility of its giving rise to pain which may be confused with that of urinary disease has, so far as I know, never been recognized. In using the term "osteo-arthritis" of the spine I do not pretend to distinguish between osteo-arthritis, rheumatoid-arthritis, and arthritis deformans, if indeed these are separate diseases, nor do I mean to express any preference for one name over another. I apply the term "osteo-arthritis" of the spine to those chronic, non-tuberculous processes which are characterized clinically by more or less stiff or immobile spines, usually presenting considerable spasm of the back muscles and often accompanied by local or referred pain. Cases presenting similar clinical pictures have shown anatomically inflammation of the vertebral articulations, while very advanced or long-standing cases have shown ankylosis of the vertebral articulations, as well as lipping or fusion of the vertebral bodies; this last due in part to a bony infiltration of the anterior common ligament.

While osteo-arthritis may attack any part of the spine, our interest is limited to that involving the lumbar and sacral regions; regions which are often the seat of pain due to disease of the genito-urinary organs and which are also the points of origin of the lumbar and sacral plexuses.

The osteo-arthritis cases I have observed have presented two sorts of pain, either of which may, under certain conditions, cause confusion in uri-

* Read at the Third Annual Meeting of the American Urological Association, Atlantic City, June 8, 1904.

nary diagnosis. The first type is that in which the pain is local, referred to the spine or vaguely to the back in the lumbar or sacral regions. This pain is for the most part a dull ache and is to be attributed to the sensitive vertebral articulations. It may possibly sometimes depend upon the bony infiltration of the anterior common ligament.

The second sort of pain is that referred to the distribution of certain of the nerves arising from the lumbar or sacral plexuses. Observers are, I think, not agreed as to its cause. It seems probable that in some instances this pain is due to the presence of an inflammatory exudate about the spinal articular processes, which exudate exerts pressure on the nerve roots as they pass out between the laminæ. This explanation suffices for the pain in the nerves arising from the lumbar plexus. It is not, however, a perfectly satisfactory explanation for the pain in the nerves which arises from the sacral plexus, and the sciatic and pudic arising from this plexus are two of the nerves very frequently involved. It is possible that the pain, even in the nerves which arise from the sacral plexus, may have its origin in the lumbar region and be referred along the fibres of the lumbo-sacral cord which unites the lumbar and sacral plexuses. The fact that motion of the lumbar spine sometimes has an influence on the local as well as the referred sacral pain would point to the probability of this.

As stated above, the local pain is referred to the back in the region of the lumbar vertebræ or the sacrum, and may, under some conditions, be confounded with the pain of movable kidney, prostatitis, or vesiculitis.

The referred pain occurs, for the most part, in the distribution of the ilio-hypogastric, ilio-inguinal, genito-crural, or pudic nerves, that is, in the iliac-fossa, groin, suprapubic region, perineum, scrotum or penis. When the pain is of this referred type it is usual to see with the pain in the genitals, or genital region, a certain amount of pain in the thighs, usually referred to the distribution of the branches which arise from the lumbar plexus, sometimes, however, to the distribution of those arising from the sacral. Due to the fact that the osteo-arthritic process is usually more advanced on one side of the spine than on the other, it is usual to have the referred pain either confined to one side, or at least more marked on one side than on the other. This pain is seldom of the girdle type, which is so frequently seen in the tuberculous disease of the spine. This referred pain of osteo-arthritis may be limited to a quite sharply defined area and persist for a considerable period. I do not remember ever seeing any tenderness in the area in which the pain was located.

As regards the frequency of the different sorts of pain, the local pain in the lumbar region is the commonest. Next in frequency comes the pain referred along the nerves arising from the lumbar plexus and felt in the groins, hypogastrium, etc. Pain in the sacrum and referred through the branches of the pudic to the penis and perineum is the least common.

I will take no more time in the consideration of osteo-arthritis of the spine in general, but will give abstracts from the clinical histories of a few cases which illustrate the bearing that its pain may have on the diagnosis of urinary disease. This list does not include all the cases of this sort that I have seen, but I think it does illustrate the general types.

CASE I. A man of fifty, seen in the fall of 1903. He had always led an active, hygienic life, and never had any venereal or urinary trouble. More than two years before he began to have pain in the lumbar and sacral regions. This pain also ran down the backs of his thighs. There were various opinions as to the nature of his trouble and various sorts of treatment were recommended and carried out, only one of which is of interest to us. For a period of nearly two years he was given massage of his vesicles and prostate by a very competent genito-urinary surgeon. This treatment was given partly on the score of diminished sexual vigor, but principally in the belief that the pain from which he suffered was of vesicle origin. There was no relief on either score. When seen by me late in 1903 his pain was such as to partially incapacitate him for business. He presented a straight, rigid spine with practically no motion in either flexion or lateral bending. There was a good deal of spasm of the back muscles, and the patient to reach anything from the floor let himself down as a child with spinal caries does. This man was referred to an orthopedist who applied a leather jacket. The patient told me recently that he had had no pain since his jacket was applied.

In this case the local pain in the lumbar and sacral regions, as well as the referred pain in the thighs and the lessened sexual vigor, had been wrongly attributed to disease of the vesicles. The pain was due to a severe grade of osteo-arthritis of the spine; the lessened sexual vigor to age or ill health, or a combination of both. Immobilization of the spine gave immediate relief from the pain.

CASE II. A woman of forty-three who had previously been under my care because of an irritable bladder caused by a small fibroid in the anterior uterine wall. During the past winter, while in the South, she suffered from a good deal of pain in the back and right lumbar region. This pain was dull and made worse by standing or walking. There was no history of Dietl's crises. On her return abdominal examination showed a freely movable kidney right which was neither tender nor enlarged. Examination of her pelvic organs gave nothing to account for her pain. Her back showed a stiff lumbar spine, with deficient motion in flexion and lateral bending, accompanied by considerable spasm of the back muscles. Her back was strapped with strips of adhesive plaster in such a way as to give it partial immobilization, and she was given sodium phosphate. The strapping, which was renewed once or twice, was worn for some weeks. There was quite prompt relief and later complete disappearance of her pain, of which there has been no return up to the present time.

This patient had a very slight osteo-arthritis with local pain, which disappeared under partial immobilization of her spine. The movable kidney had nothing to do with this pain. While this is not a marked instance, I think it illustrates a most important class, the great frequency with which a more or less movable kidney is found in the routine examination of patients, especially of women, and the unsatisfactory symptomatic cures in many operated cases, suggest strongly the probability that the pain ascribed to movable kidneys is often due to other causes. I believe the com-

bination presented by this case offers a probable explanation for certain of the cases in which the symptomatic cure is unsatisfactory. It would not come into consideration in the cases that have definite renal crises.

Case III. A man forty-eight years old, who had gonorrhea in February, 1902, which left him with a chronic infection of his prostate and vesicles. Six months after his infection, and while he still had a certain amount of chronic prostatitis, he began to have pain in his glans penis and groins, also some in his testes. The urethra took a full-sized sound. His urine, which showed no abnormality on chemical examination, was clear but for one or two mucous shreds. Examination of his bladder with a stone searcher and cystoscope was negative. It was supposed that his pain was dependent on the chronic prostatitis and he was treated for this. As his prostate cleared up there was no improvement in his pain, which was increased if anything. After his prostatitis had been treated for some time without relief to his pain, his back was examined and showed a stiff lumbar spine with deficient lateral bending. He was referred for orthopedic treatment and wore a jacket for a short time with marked relief. Then he refused to wear his jacket and his pain returned. When last seen, nearly a year after removal of his jacket he showed practically no abnormality of his urinary organs but he still had his osteo-arthritis and complained of pain as before, though it was less than formerly. In this patient the pain was for some time supposed to depend upon a chronic prostatitis.

Case IV. A man of thirty-five who had contracted gonorrhea eight months before, and who first came under treatment for a chronic urethritis. He had a narrowing of his bulbous urethra (to 23 F.) which together with his urethral discharge cleared up under the use of sounds and irrigations. Some two months later he reappeared with pain low down in his spine and also in his perineum and urethra. His urine contained no shreds; examination showed no lesion of his urinary or sexual organs. He did, however, show a spine which was abnormally stiff in the lumbar region, with some spasm of the spinal muscles. He was referred for orthopedic treatment, which in this case was strapping of his lumbar region with strips of adhesive plaster. Under this treatment, which was combined with doses of sodium phosphate, his pain disappeared, He was heard from within a short time, about six months after the beginning of treatment. When his back is strapped and his spine is partially immobilized, he does not have pain. When the strapping loosens and does not give support, there is return of the pain, though as the process itself progresses toward recovery the pain is less. This case illustrates pain of osteo-arthritic origin which was first supposed to be neurasthenic. Cases of this type are common.

Case V. is of interest in connection with these other cases. It is not, however, a case of osteo-arthritis, but one in which referred pain was due to a gonorrheal arthritis of the spine. The patient was a man twenty-one years old, whose gonorrheal infection had taken place two and a half years before. In the third week of the attack he had an infection of one knee which kept him in bed three or four weeks. Soon after he got up he was taken with severe pain in his back which confined him to bed for six months, during which time he lost forty-five pounds. When seen he had been suffering for seven months from occasional sharp stabbing pains in his perineum and from dull pain referred to the lumbar region. He had been treated with sounds and irrigations but without relief. His urine was clear with a single filmy shred; his urethra took a 28 F. sound easily. His spine, from high in the dorsal region, was very stiff, there being only a very little motion in either flexion or lateral bending. In this case the ribs were involved and his breathing was almost wholly abdominal. He had worn a leather jacket for nearly two years, but this he had so outgrown that it gave him little support. He was advised to wear a support which would hold his spine better. This he did, making a brace himself and getting an orthopedist to help him fit it. He was seen six months later, when he reported that the improved fixation had done away with his perineal pain entirely and had helped the pain in his back. The apparatus he was wearing did not, however, give his spine the immobilization it needed. I think it probable that a better fitting apparatus might have still further decreased his pain.

I have very recently seen another case, suggestive of trouble similar to that in the above reported cases. The patient was a man of sixty, who showed no lesion of his genito-urinary organs, but who had had pain referred to his scrotum for two years. He had been treated at first by regular practitioners, latterly by irregulars. The diagnosis had usually been varicocele, though he presented no enlarged veins, even on standing. Treatment had had no influence on his pain. This man presented a perfectly rigid lumbar spine. In the orthopedic clinic, to which he was referred, they considered his pain as probably of osteo-arthritic origin. He wore a plaster jacket for a few days but not long enough to demonstrate whether or not it would help his pain. I do not consider that in this case the pain is demonstrated as being of osteo-arthritic origin; it is, however, suggestive.

The element of osteo-arthritis need be considered in its relation to the diagnosis of urinary disease only in patients who have pain. This pain is usually not sharp but a dull ache. It is for the most part worse on standing, walking, or when fatigued.

The patients who present themselves with pain of this sort have, as a rule, suffered from previous attacks of urethritis or other urinary disease. They present themselves believing that the pain must in some way be due to their former trouble. When on examination a stricture, a prostatitis or some pathological condition is found, the pain is supposed to depend wholly on this. When no definite pathological condition can be demonstrated the pain is likely to be considered neuralgic or neurasthenic.

Because of the location of the pain in the renal region or general region of the genitals, persons who have never had any urinary trouble occasionally present themselves, and in such persons the pain is usually considered purely neurasthenic.

As regards the diagnosis, where the pain is purely that due to osteo-arthritis there should be no great difficulty in recognizing it, whether it is of the local or of the referred type. The lack of any objective signs of urinary disease, together with dull pain which is persistent and attended with a stiff spine, should suffice for its recognition.

The stiffness of the spine may vary within wide limits. It may be of the absolutely rigid type with obliteration of the lumbar curve, in which case the patient to get anything from the floor flexes his knees and hips and lets himself

down after the manner of a child with spinal caries, or the stiffness may be so slight as to be indicated by only a slight deficiency in forward or lateral bending. In persons following laborious occupations it is difficult to estimate the normal from the pathological stiffness; this will frequently have to be done by the orthopedist accustomed to deal with this problem. In marked cases the patient sometimes complains that he is not able to turn in bed without pain, or to get out of bed without first turning on his face and backing off.

A point which helps to distinguish this pain from that of sexual neurasthenia is the fact that the patients do not, as a rule, complain of abnormal sensory phenomena, such as heat or coldness, or tickling of the parts, or of sexual symptoms, such as irregularities in erections and emissions. When the pain is purely of this type I have seen no disturbance of micturition. The complaint is solely that of dull pain, which, because of its location, is supposed to be of urinary origin.

It is in the cases where this pain is associated with some slight pathological condition or slight abnormality of the genital or urinary organs that the probability of overlooking it is greatest, and where, when it is recognized, there is the greatest difficulty in determining the relative importance of the various elements which enter into the case. In some instances the therapeutic test of immobilizing the lumbar spine may be necessary in order to arrive at a definite determination of the importance of the different factors.

Treatment: In the mildest cases improved hygiene and phosphate of soda may be all that is required. In the great majority of cases, however, something is required which will give some support to the spine or even partially or wholly immobilize it. The treatment of any but the mildest cases falls more into the domain of the orthopedist than that of the genito-urinary surgeon. In some of the cases I have seen, strapping the back with strips of adhesive plaster, put on in such a way as to support and partially immobilize it, has been sufficient. In some a wide heavy canvas belt has relieved the pain, while in others a plaster or leather jacket has been required. The duration of treatment may vary from a few weeks in the milder cases, to many months in the severer ones.

In conclusion I would point out the importance of bearing in mind the possible explanation that osteo-arthritis may afford for some instances of pain, which at first sight would seem to be of urinary origin, but for which one finds no adequate cause. Also the explanation this condition may offer in other cases for the persistence of pain after the disappearance of the urinary lesion on which the pain was supposed to depend. I would call particular attention to the importance of recognizing such conditions as existed in Case II, in which there was present with lumbar pain due to osteo-arthritis, a movable right kidney. I think it possible that the combination of a more than normally movable kidney and an osteo-arthritis may be much more common than has been recognized, and that this combination may account for some of the disappointing results following nephrorrhaphy. Certainly the possibility of this combination should always be borne in mind in considering the question of operation in cases in which there is no history of Dietl's crises.

## Clinical Department.

### REPORT OF A CASE OF PRIMARY CARCINOMA OF THE APPENDIX.

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Two excellent articles upon this subject appearing in the Annals of Surgery for 1903, pages 549 and 891, the first by A. W. Elting and the second by Alexis V. Moscheowitz, give references, pathological reports, etc., with all the reported cases up to the latter part of 1903. The reader is therefore referred to these articles for further details.

The patient whose case is to be reported here was a trained nurse, twenty-six years old. Her family history is excellent. She has always been well, but is rather a nervous person. She had four attacks of what she called colic, the first one twelve years ago, and the last one in January, 1904. These attacks of colic, in which the pain was all over the abdomen, but worse in the right side, only lasted for six or twelve hours, when she would be as well as ever, except after the last one when her side remained sore for a day or two.

On Feb. 15, 1904, she had an attack of headache, backache and vomiting, with pain in the abdomen which radiated from the right side, but which was not so severe as during the previous attacks. Her temperature was 102°. On the fourth day of this attack she was much better but her right side remained lame and sore for a week. Two weeks later the soreness came on again and remained in the right side until she was operated upon April 9, 1904. Physical examination showed a well developed and nourished woman but rather anemic. There was some tenderness in the right side but no definite mass could be felt.

At the operation the appendix was found to be two and one half inches long and dilated to about the size of the base of the little finger. It was not adherent, but the peritoneum was edematous and soft in appearance as if covered with villosities. The appendix looked as though it was distended with fluid. Just at the base of the appendix was a thickened area about the size of a pea, which seemed to be blocking the lumen. To tie off the appendix it was necessary to tie at the thickened area, a small portion of which was cut off with the appendix. On opening the appendix it was found to be filled with a cloudy mucous, its walls were thickened and changed by a chronic inflammatory process. The thickening at the base looked like cicatricial tissue and was limited to the appendix itself. The stump of the appendix was buried with silk sutures, after which the abdominal wound was closed.

When Dr. Simmons report was received, preparation was made for a second operation, which was done two weeks after the primary one. An oval section of the cecum two and one-half inches in length by one and

one-half inches in width with the stump of the appendix as a center, was excised. This opening was closed by two rows of Lembert sutures of silk. A chain of small glands beneath the cecum was then excised, and the abdominal wound closed.

The patient made an uninterrupted recovery, and at the present time is in excellent condition.

The pathological report by Dr. Channing C. Simmons follows.

PATHOLOGICAL EXAMINATION.

*Appendix.* — The appendix was 6 cm. long and of uniform diameter but firm and somewhat thickened. The peritoneal surface was roughened, slightly injected, and adherent to the mesentery, which extended to the tip of the organ, by fine fibrous adhesions. On section the walls were somewhat thickened, more so at the tip than at the base. For 1 cm. at the base the coats were not as clearly marked as in other parts of the organ and the tissues were firm and of a whitish color. No tumor or anatomical tubercle could be distinguished. In gross the mucosa was without ulceration and appeared normal.

*Microscopic examination.* — The specimen was hardened in formalin, and the sections stained with hemotoxylon and eosin, and by Van Gieson's method.

Examination of a section from the base showed the walls somewhat thickened. The longitudinal muscular layer appeared nearly normal, the main thickening occurring in the circular layer, which was partly replaced by loose fibrous tissue, and in the submucosa which showed extensive round cell infiltration. The mucosa was in some places normal while in others it was partly necrotic and infiltrated with leucocytes. A lymph follicle in some of the sections extended one half way around the lumen. In the submucosa and extending through both muscular layers were several small solid masses of atypical epithelial cells. The clumps of cells were, as a rule, far apart but in one section several nests in the submucosa were in close apposition. The areas were larger and more numerous in the submucosa than in the muscular coats, and in several places in the latter the cells were arranged in columns as if occupying the position of a lymph space. The cells were small, closely packed together, with round or somewhat oval nuclei and deeply staining protoplasm which, however, did not have sharply marked outlines. A few mitotic figures could be found on careful search. There was in no place any tendency to gland formation. The growth had no definite borders and was not associated with the mucosa, in no place reaching the lumen of the gut but rather occupying the deeper layer of the submucosa.

Examination of sections from other portions of the appendix showed some small round cell infiltration of the submucosa and considerable lymph adenoid tissue. There was no evidence of any new growth and the sections were not remarkable.

*Cecum.* — The specimen consisted of a disc-shaped piece of tissue from the head of the cecum, 6 cm. in diameter. Eccentrically placed on the peritoneal surface was a line of silk sutures which, on being separated, showed the stump of the appendix. Around this the peritoneum was slightly injected and showed a fine line of subperitoneal hemorrhage 2 cm. long running towards the edge of the specimen and probably representing the attachment of the mesentery. On section through the base of the appendix the walls were slightly thickened and inflamed but there was no evidence of any new growth. Elsewhere the gut appeared normal.

*Microscopical examination* of a section through the base of the appendix and the cecum showed the walls somewhat edematous, infiltrated with small round cells and containing many dilated vessels. The tie used in securing the base of the appendix could easily be distinguished and was infiltrated with granulation tissue in which were large numbers of foreign body giant cells. There was in no section any evidence of a new growth.

Sections from other portions of the cecum showed nothing remarkable.

Microscopic examination of three lymph nodes removed from the subcecal region, showed hyperplastic lymphadenoid tissue.

*Diagnosis.* — Carcinoma of the appendix of rather a scirrhus type. Chronic appendicitis.

## Medical Progress.

### REPORT ON MENTAL DISEASES.

BY HENRY R. STEDMAN, M.D., BROOKLINE, MASS.

HALLUCINATIONS.

According to White,[1] the common feature of the definitions of hallucinations given by Griesinger, Tuke, Von Krafft-Ebing and Kellogg is the essential part of Esquirol's distinction, *viz.:* that the hallucination is centrally originated, that it is an idea of memory image, intensified and projected outward, *i. e.*, become a sensation. This theory he considers is founded upon a complete misconception of the mental state in hallucination, and of the nature of the sensation. It is absolutely impossible for a centrally aroused idea to be mistaken for a sensation. The most characteristic feature of a sensory impression, in fact the very feature which stamps it as such, is the feeling of objectivity, of externality that goes with it, and no centrally aroused idea can acquire in any way this feeling. In other words, an idea of a sound cannot by any possible increase in intensity actually become a sound. To account for this feeling of externality and projection outward of the hallucination, and also for certain cases where the sense organ itself appears to be involved, an addition to the above-described theory has been evolved, whereby it is assumed that the sensory channel becomes the seat of a centrifugal nerve current, originating in the higher ideational cortical centers, and following thence to the sensorium, and from there on downward in many cases to the sense organ, where the conditions present indicated a local disturbance therein.

It is a sufficient criticism of this theory of centrifugal conduction to say that it is founded upon a purely gratuitous assumption. No adequate proof has ever been offered that a sensory nerve can conduct in other than a centripetal direction.

No one thus far has seemed to consider the sense organ itself worthy of much attention. It is true that here and there an investigator has called attention to the condition of the sense organ in hallucinations, particularly Schlager, before mentioned, and Hoppe. There does not, however, seem to be any unanimity of opinion as to the origin of hallucinations among investi-

[1] Jour. Nerv. and Ment. Dis., Nov., 1904, vol. xxxi, no. 2.

gators, but, on the other hand, a generally prevailing tendency to accept Esquirol's distinction.

With a view of determining just what relation, if any, exists between the state of the end organs and the condition of hallucination the writer has made a systematic study of these organs in hallucinated patients. He favors Sidis' theory which is based upon the assumption that perceptions of any sort, whether of external objects or hallucinations, must have a peripheral, a sensory origin to account for the feeling of externality, objectively, that has been alluded to.

What happens in normal perception is that the sensorium is excited primarily by the particular form of sensory stimulus, brought in by the acting sense organ, and, secondarily, by the irradiation of this stimulus into adjacent sensory fields. The percept receives its specific sensory quality — visual, auditory — from the nature of the primary focal sensory stimulus, and is made complete by the added secondary elements. Now, all that we have to conceive to explain the phenomena of false perception is the shunting of the main current of the sensory stimulus into the adjacent sensory fields, thereby arousing the secondary sensory elements to undue intensity, so that they occupy the sensorium on an equal footing, or, perhaps, to the exclusion of the primary elements.

He gives ten cases which illustrate how the phenomena as ordinarily experienced can graduate into a true hallucination. In all of them, lesions or other irritative conditions of an end organ, *viz.:* enlarged tonsils, naso-pharyngeal catarrh, floating bodies in the vitreous, otitis media, etc., were discovered, showing that the origin of the false perception was due to a pathological process. This much is necessary to stamp the experiences with the feeling of subjectivity — of having risen in the environment. The specific elaboration of this scenery material into perception of voices (for example) is what is attributable to the central nervous organs.

The cases cited lead naturally to four conclusions. First: Hallucinations are false perceptions. To have a false perception there must be something to perceive, and that something is in the environment and can only enter as a factor into the mental life through the intermediation of sensations. Ideas cannot be perceived.

Second: Hallucinations are secondary sensations either arising in the same sensory field, in which case they might be described as illusions in the sense of Esquirol, or arising in other sensory fields, in which case their secondary character is quite clear.

Third: The mental state in illusions and hallucinations is identical.

Fourth: Given the sensory elements the falseness in their perceptions is due to central derangement.

It is necessary, however, in order that the particular sensory stimulus receive the specific interpretation that stamps it as an hallucination that there be a certain state of "preparedness" on the part of the mind. The mind of the patient with tinnitus aurium who hears a voice is especially attuned to respond in that particular way. Naturally then, the paranoiac, harassed by all manner of suspicions, trusting no one, feeling that all are leagued together to accomplish his ruin, suffering from almost continuous entotic sounds, should sooner or later begin to single out from this constant jumble of buzzing, humming and ringing, the voices of his enemies.

It is not necessary that a peripheral process be pathological in order to account for an hallucination, as witness the dream hallucination and the hypnotic hallucination, but it is hardly conceivable that the auditory hallucinations of a paranoiac which are practically constantly present, unless the patient's attention be distracted, could be produced by other than a constant irritant, which, of course, would necessarily be pathological in origin. The necessity of a most careful and painstaking examination of all hallucinated cases is apparent, especially when we remember the multitudinous possibilities of arousing secondary sensations in other sensory fields. With all these possibilities in mind the author would be loath to accept other than a peripheral explanation of any hallucinated case.

Bechterew [2] has made an extensive survey of the literature bearing on the subject of hallucinatory insanity following affections of the ear, as well as a careful clinical study of patients in whom affections of one or other of the senses appear to have been the starting-point of insanity. This is especially the case with diseases of the ear. Subjective sounds pass into definite illusions ending in insanity with hallucinations and delusions. In these cases, it is assumed that there was a predisposition to mental derangement. In the beginning the patient interprets the sounds into voices, which are generally unpleasant. They reproach, insult or threaten him. He is terrified or excited. Then begins a struggle between the sane understanding and the suggestive illusions. Sometimes one or more of the senses are involved; sometimes the sounds or voices are confined to one ear. If the voices or spectra overpower his reasoning faculties, he begins to answer the appearances or act as if they were real. Then there will be times in which he doubts the reality of these illusions. If his mental powers are unstable he ends by assuming that they come from something without, acts upon this belief and allows his fancy to construct a whole set of hallucinations and delusions. Insanity of this kind is sometimes obstinate. The intensity and the renewal of the delusions is favored by each exacerbation of the disease of the sensory organ affected. Indulgence in drink may increase the liveliness of the sensory illusions. The patient's recovery is often dependent upon the cessation of the original irritation. Enduring insanity may be due to a chronic affection of the middle ear, which might escape attention if inquiry were not directed toward the state of that organ. He reports four striking cases.

[2] Monats. f. Psychiat. u. Neurol., Sept., 1903.

KATATONIC DEMENTIA.

Mouratoff [3] discusses the question whether katatony is a morbid entity, or whether it is a clinical symptomo-complex, which enters into the most varied psychic troubles. In estimating the general results of different authors and of his own personal observations, he is led to believe that there exists in the course of katatony a certain definite variation of symptoms, with constancy of one cardinal symptom and with a constant terminal issue. It is another question whether we may regard katatony as an independent nosologic group, or as a clinic form, which enters into another more vast group of maladies. As yet we are unable to give a definite response to this question. We must say that we ought to act with prudence in laying down in psychiatry new independent nosologic groups, seeing the variance of commentaries upon clinic data, and seeing the indetermination of the nosology and etiology of psychic maladies. Outside of a quite moderate number of toxic forms, parainfectious and degenerative, we, in other cases, recognize only clinical complexes, determined and with determined course. In this point of view katatony is a morbid entity. The beginning, so to speak, of the nosological determination of katatony has already been given by Kahlbaum himself, who associates it with " hebephrenia," that is to say, with degenerative psychoses in adolescents, passing into dementia. Later, Kraepelin and Schüle associate, in a manner still more decided, katatony with the group of psychic degeneracies. In fine, it is very probable that this lesion, in its turn, basing itself upon its clinic type, may enter into a vast group of psychic degeneracies and present among them a morbid form, the clinical limits of which, recognized for the first time by Kahlbaum, ought to be submitted to a study and a development more detailed.

Bruce [4] considers that, 1. Katatonia is an acute toxic disease with a definite onset and course, in which the symptoms vary according to the resistive power of the patient, but in which the following diagnostic symptoms are never absent: A prodromal period of gradual onset, which leads into the period of acute onset, with aural hallucinations, mental confusion, paroxysms of excitement, impulsive actions, katatonic spasm of the muscles, a hyperleucocytosis which at the termination of the acute stage indicates a virulent toxemia. In the second stage a condition of stupor with muscular resistiveness to passive movement.

2. That even at the onset of the disease there is in about 70% of the cases an agglutinin in the blood-serum which appears to be a specific agglutinin to a short streptococcus which was isolated from the blood of an acute case of katatonia.

3. That by infecting rabbits through the alimentary tract or blood-stream with this streptococcus a condition of malaise with irregular temperature, increased skin reflexes and mental hebetude is induced. This disease tends to terminate naturally in healthy rabbits in about six weeks, and a condition of immunity is established to this organism.

4. The treatment by an antiserum obtained from a goat has given no beneficial results.

5. The active immunization of patients in the stuporose state produced no curative effect.

6. The active immunization in the acute onset of the disease, tried so far in one case only, produced undoubted benefit, but how this beneficial effect is brought about cannot be explained by any theory at present held with regard to the production of immunity.

[3] Arch. de Neur., vol. xvii, 1904, no. 97. Jan. Journ. Nerv. and Ment. Dis., 1904, vol. xxxi, no. 11.

[4] Journ. of Ment. Sc., vol. xlix, no. 207, 1903.

PROGNOSIS OF GENERAL PARESIS.

Gaupp [5] discusses the question as to whether the prognosis in dementia paralytics is always unfavorable. It is first necessary to determine whether complete and permanent remissions ever occur. Mendel is quoted to the effect that 80% of his cases died before the end of the fourth year, 66% of the remaining during the second, and 50% of the total number succumbed during paretic seizures, while the statistics of Linstow and Van Husen indicated that from 70% to 75% of their patients afflicted with this malady did not live three years. In 175 cases at the Heidelberg clinic, 67 represented the chronic dementing form, and the average duration of life of this type was two and a half years, while 65 were examples of the expansive or classical type of the disease. Among the former, 15% had not died at the end of six years, and 7% of the second group lived more than five years. The writer is exceedingly skeptical about the existence of cases of true paresis which are reported to have lived fifteen or twenty years. After referring to the comparatively long duration of the disease where syphilitic infection is marked as compared with the cases in which it is not, he discusses the affirmation of Mendel to the effect that the character of the disease is changing; an opinion that Gaupp affirms cannot in the light of present facts be substantiated. He also quotes to the same effect, from the work of Fürstner, Angiolella and Van Husen. The remissions occurring in the hypochrondriacal depressed forms are less frequent than those in the classical type. The gravity of the prognosis as regards an early termination of the disease is distinctly worse when the speech disturbances of specific paretic symptoms become marked. The juvenile and senile forms are said to be irregular and of longer duration than the other types of the disease. Charcot is quoted to the effect that tabetic symptoms may complicate those of paresis in one of three ways. That most commonly reported is that the lesions in the posterior columns and cortex begin about the same time. The cases of tabo-paresis in which the cord lesion develops at a much earlier period than

[5] Deut. med. Wochn., 1904, nos. 4 and 5. Jour. Nerv. and Med. Dis., 1904, vol. xxxi, no. 9.

do those in the cortex are shown to present considerable clinical variations such as well-preserved memory and attention with less general disturbances in intellect as compared with the other types of the disease. The contention made by Wernicke and others that syphilis is always the cause of general paresis is disputed, as well as the reports of cures by Schüle, Schafer, Svetlin, Tuczek, Holban and others. He thinks that it is not improbable that many of the so-called recoveries are cases of manic-depressive insanity, alcoholism, katatonia, or hysterical degeneracy and not true paresis. One of the most interesting points discussed in the paper is whether during the remissions there may be a complete disappearance of physical and mental symptoms. It is probable that the majority of observers have been too dogmatic in declaring that the physical symptoms, such as diminished light reflexes, absence of knee jerk and marked speech disturbance, never completely disappear. Not only do these symptoms occasionally subside, but even well-marked mental aberration may show remarkable remissions or even completely pass away. The point is emphasized that if such remissions do occur it does not follow that there has been a synchronous disappearance of the changes in the central nervous system. The case reported by Alzheimer is referred to, in which there was a complete remission of all symptoms, but when the patient died of an intercurrent trouble, distinctive lesions of paresis were found to be present in the central nervous system. A disappearance of all the somatic symptoms without a marked improvement in the mental never occurs, and in this feature the malady differs essentially from cases of alcoholic dementia. Not more than 10% of all the cases have true remissions and only 1% an intermission. The length of these reported improvements varies between a few weeks and several years. The remissions are much more apt to occur in the cases where the onset is acute provided the patient lives through this period, than in the cases where the disease in the initial period presents a more chronic and insidious form. The most frequent remissions are found in the acute, expansive, circulary and katatonic forms; less commonly in the depressed and chronic dementing type. The fact that certain cases show an improvement in the symptoms after an acute febrile process due to infection, gangrene of the lung, small pox, scarlet fever, etc., is referred to, but attention is also called to the important fact that a great number of paretics suffer from infections, such as cystitis, pneumonia, without showing any improvement in their condition. In conclusion, he affirms that the so-called cases of paresis which are apparently stationary for years are not examples of this disease, but are to be grouped as instances of diffuse cerebral syphilis, alcoholic dementia, traumatic dementia, arterio-sclerotic disease, dementia precox. Dementia paralytica is a progressive disease. The large group of so-called atypical or pseudo-paretics needs to be more carefully investigated.

### MANIC-DEPRESSIVE INSANITY.

By manic-depressive insanity Thompson[6] understands any case of functional psychosis where depression and exaltation are confused in an attack of a certain duration, which repeats itself several times during the life of the patient. Between the attacks there is a period during which the symptoms disappear more or less completely. Kræpelin, while recognizing a simple melancholia at the age of involution, regards both mania and melancholia occurring in young persons as episodic only, and a phase of manic-depressive insanity. With regard to mania the author agrees with him, but does not doubt the existence of a simple periodic melancholia (though rare) and gives the history of a case to prove it. Does a case showing a phase of excitement followed by one of depression, or vice versa, belong always to manic-depressive insanity, or may such a manifestation occur only once in a patient's lifetime and merit the name of idiopathic double form insanity? Kræpelin thinks it always a phase of manic-depressive insanity, though the interval between attacks may extend over a number of years. The author disagrees with this conclusion, and gives sketches of two cases, one of which has remained well for four, the other for nine, years after a single attack. To the question if it is possible to differentiate a case of manic-depressive insanity from dementia precox during the first attack, he replies, Not always. To assist in such differentiation he gives the characteristics of the stupor of manic-depressive insanity on the one hand, and of katatonia on the other. He states that in the first, conception, course of thought and orientation are affected, while in katatonia, the moral reaction, facility of acting and coherence of phrases are disordered.

### SOCIAL CAUSES OF ALCOHOLISM.

Sullivan's[7] investigation on alcoholism leads him to the following conclusions:

1. In considering the social causes of intemperance, which are by far the most important, it is necessary to distinguish two opposed types of drinking, *viz.:* the drinking that goes with conditions of relative luxury, and finds its most frequent expression in ordinary convivial drinking, and the drinking that goes with conditions of relative misery, of which bad industrial circumstances are the most considerable factor.

2. Convivial drinking may and often does lead to drunkenness, but, at least in its pure form, does not tend very much to chronic alcoholism. Industrial drinking on the other hand, while leading also, though less immediately, to drunkenness, tends rapidly and fatally to chronic intoxication.

3. From a statistical point of view, therefore, while chronic alcoholism always implies the existence of drunkenness, drunkenness by no means implies the existence of chronic alcoholism. In England this divergence between the two phe-

[6] Jour. de Neur., vol. ix, 1904, no. 2. Jour. Nerv. and Ment. Dis., 1904, vol. xxxi, no. 11.
[7] Jour. of Ment. Sc., vol. l, no. 210, 1904.

nomena is best seen in the prosperous mining districts, which by reason of their prosperity are at once more drunken, but less alcoholic, than any other part of the country.

4. The graver social evils that are in any important degree caused by alcohol are related to the chronic intoxication, and are, therefore, mainly due to industrial drinking.

5. While educational, religious, and similar influences can control the excesses of convivial drinking, they have but little action on industrial alcoholism, which can only be checked by raising the standard of living, and, in a minor degree, by such methods as restricting the facilities for obtaining alcohol during work hours, providing hygienic substitutes, and so forth.

### CRIMINAL TYPES.

Speranza [8] in this paper endeavors to apply Sergi's theory of the survival of the weakest to the born criminal, and to explain thereby the persistence of the criminal type. He sets out with the fact of common observation that the physically weak often outlive the physically strong, for "while the latter struggle, the former submit." From his very conception the individual is at war with numberless forces that tend to destroy him. Complete adaptation to the environments means health. But there is also an imperfect adaptation which gives us a surviving weakling, such as the neurasthenic. "It is not only those that offer the greatest resistance to the change of environment that survive, but also some few of those who offer the least resistance." Passing from physical to moral and social phenomena, the same rule applies. The parasite and criminal degenerate are not the fittest, yet they survive. They survive not by reason of their strength, but because they submit to what are to them abnormal conditions. It is because of such imperfect adaptation that the criminal is apt to break the rules of the body social. Heredity alone cannot explain the vitality of the socially unfittest. The impulse of nature would, if anything, tend toward health. And the procreation of degenerate children defeats itself. How, then, do we account for the persistence of the criminal type? Social conditions will not explain it, as improvement in such social conditions does not seem to decrease but only to modify. The author finds the cause in the adherence to unscientific penologic principles, and to mistaken altruism. He insists on the necessity of a more scientific classification between merely bad or mistaken men and criminal men. The test of the latter is the "lack of response to reformative influences," and it matters little whether the offence is great or small, its reputation is the test of criminality. Criminals of this class are comparatively few; the largest number of those classed as criminals are not such. The true altruism is to help the latter; the wrong altruism is to help the former as part of the same large deserving class.

[8] Am. Law Reg., March, 1904. Jour. Nerv. and Ment. Dis., 1904, vol. xxxi, no. 11.

### HEREDITY IN NEUROPATHOLOGY.

Under this head Strohmayer [9] considers the difficulties of the study of heredity, and warns against falling into the *post hoc propter hoc* argument. He concludes that what is needed is: 1. Psychiatric study of the ancestral tree, which takes into consideration the mental condition of all the direct ascendants through a number of generations. 2. Only a small, little-fluctuating community seems suited to this method of research. 3. As sources of information the admission books of the asylum, the church register, the directory, and last but not least, the case book of the family physician, should all be utilized.

### THE CONSIDERATION OF THE EPILEPTIC BY THE COURTS.

On this question Chapin [10] is of opinion that as a general rule most epileptics show some mental failure, such as loss of memory, irritability, a tendency to become suspicious, ugly, revengeful, are easily aroused to passionate outbreaks, and are emotional, and often the moral and religious sides are intensified, as the disease and age advance.

2. That these changes become more marked during the interval between convulsions as those intervals diminish.

3. That in every medico-legal inquiry in any alleged or suspected case of epilepsy it is essential to establish the existence of a paroxysm, or paroxysms, beyond a reasonable doubt by actual observation, and not by hypothesis alone.

4. That in a trial of a criminal where epilepsy is interposed as a defense, if mental or moral degeneration has actually taken place, and when the occurrence of epileptic convulsions has been shown to exist, the defendant is then entitled to acquittal and disposed of as provided in such cases.

5. If a person has committed a criminal act and has had epileptiform seizures in infancy; or at some period has had an epileptic convulsion and the criminal act was not committed near to or succeeding a seizure and no mental failure can be shown, then the most the defendant can expect is conviction with a recommendation to mercy, if the charge is proven.

6. That the convulsion is not the actual disease but is an outward manifestation of a complex physical and psychical state due to some disease, vicious habits, traumatism, or the result of degeneration following an unfortunate inheritance, and when it has been once established and recurs, even at prolonged intervals, it is the rule of experience that mental and moral degeneracy occurs and progresses gradually.

### EXHIBITIONISTS BEFORE THE LAW.

Burgl [11] as advisor to the court has had occasion within four years to examine twenty-five persons accused of exposing their genital organs in public. He thinks that in the great majority of cases this

[9] All. Zeit. für Psych., vol. lxi, 1904, no. 3. Jour. Nerv. and Ment. Dis., 1904, vol. xxxi, no. 11.

[10] Alb. Med. Ann., Feb., 1904.

[11] All. Zeuit. für Psych., lx, 1903, 1 and 2. Jour. Nerv. and Ment. Dis. 1903, vol. xxx, no. 7.

act is a manifestation of mental disorder. Each case should be considered under the following heads: (1) It may be the result of mental weakness. (2) Uncontrollable impulse. (3) An imperative conception, "*Zwangshandlung.*" (4) An accidental occurrence. (5) Carelessness, or (6) The voluntary act of a mentally normal individual.

Under (1) he includes both congenital and acquired mental weakness. In these cases the act may be due to lack of ethical feeling, and of inhibitory contra-conceptions. It is observed in imbeciles of various grades, in paralytic and senile dementia, in epileptic delirium, after trauma, and in the pathological reaction to alcohol common in epileptics and neurotic subjects.

(2) The cases due to uncontrollable impulse may result from sudden vivid hallucinations or delusions, and sometimes coming on from time to time appear to be a manifestation of periodical insanity ("periodical sexual psychopathy").

(3) The cases in which the act is the result of imperative conceptions, he separates from those due to impulse. The presence of an imperative conception alone does not necessarily make the patient legally irresponsible, but it may be accompanied by an effort of such intensity as to cause an obnubilation of consciousness, in which case self-control is lost and mental irresponsibility may ensue.

(4) Exhibition may occur accidentally through forgetfulness about adjusting their clothing upon the part of weak-minded or mentally confused individuals.

(5) Especially in old and feeble-minded persons there may be such carelessness as urinating or adjusting a truss in the street.

(6) Lastly, exhibition may be deliberately practised, generally under great sexual excitement, by mentally normal individuals, usually upon meeting one of the opposite sex in a lonely place. In each case an inquiry into all the circumstances of the case attending the misdeed should be made, and if possible the statement of the patient in his own language should be secured. By so doing the physician will often be able to detect gaps in the memory which indicate the presence at the time of some disturbance of consciousness (epilepsy?).

Each case should be judged upon its merits. A history of repeated exhibitions, especially in a very public place before numerous witnesses, points almost unerringly to mental aberration.

## Reports of Societies.

### BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

Meeting of April 11, 1904.

Dr. E. H. Bradford read a paper on

METATARSO-TARSAL VALGUS, OR HUMPED FOOT, IN ITS RELATION TO BOOTS.*

DISCUSSION.

Dr. R. W. Lovett: Dr. Bradford has gone into the subject so thoroughly, that it remains only to call attention to perhaps one or two matters of individual experience. Of course, we all labor under the same difficulties in providing people with proper shoes. If a cast is made of the foot and a last made from the cast and shoes made from it, it is a very expensive procedure. The other way is to do the best we can in fitting the people with ready made or so-called custom made shoes. I have had some experience during the last few years in trying to provide proper shoes for the nurses of one of our large hospitals, and during that time I have seen six hundred nurses, and tried to provide them with better shoes than they would probably have had without supervision. My experience has not been wholly satisfactory, as I have not been able to provide them with a proper shoe. I think the shoes worn are better on the average than they were eight or nine years ago, but they are not what we want yet. It seems to me that the problem is not only to give a good shape, but a shoe that will give proper support to the muscles. Of course we know that wearing slippers continually is likely to cause trouble. I think also that a shoe with too stiff shank is likely to lead to trouble. A thoroughly good shoe should have not only the proper shape but the proper amount of support and resistance in sole and leather.

The most common practical difficulty met in fitting the nurses is the binding of the vamp seam over the front of the top of the foot. This pulls down on the arch at the end of each step and tends to break down the arch. It is almost impossible to get a ready or custom made shoe on the present styles of last that will not do this.

Finally, shoes seem to have a certain individuality. Two pairs may be made on the same last and one pair will be perfectly comfortable while the other pair cannot be worn.

Dr. E. G. Brackett: One of the most encouraging signs at present is that the necessity of urging the proper shoes is almost a thing of the past. We have no longer the task of insisting that patients should choose the proper footwear, but rather to instruct them as to what this proper footwear is. In the attempts to find proper shoes, and at the same time to satisfy time-bound conventionalities, a great deal of stress has been laid on the straight inside line, and the idea seems to be firmly rooted that this straight inside line, no matter how obtained, is the chief essential. This inside straight line of the shoe may be fallacious, and is so when it is obtained at the expense of other lines of the foot. It must be remembered that the lines which connect the bearing surface of the foot are straight rather than curved. The bearing parts of the foot are the heel and the heads of the metatarsals, and the lines connecting these points make practically a triangle, the inside of which can be drawn from inside of heel to about through the second toe, making what can be called a midline of the foot. This line is parallel to the inside border of the foot. The lines of the shoe should correspond to these lines of the foot. If these lines of the shoe are straight and the inside line of the shoe is parallel to this straight inside line then they coincide with those of the shoe, which may then have its natural bearing. If, on the other hand, a straight inside line is obtained by throwing in the fore part of the shoe, until the retreating line of the pointed toe coincides with the line of the back of the shoe it makes a practical fallacy, for such an inside straight line is made by a curved midline of the shoe, in which case the foot will not assume its natural position, but cuts across the shortest distance between its bearing points. We then have the problem of making two ends of a straight line parallel to the two ends of a curved line, which results practically in the pushing to the outside of the great toe.

* See p. 560 of Journal.

Dr. John Dane: I would like to speak a few words about the heel. The high heel does considerable damage in crippling the foot. For instance, even a comparatively low heel causes the foot to pitch forward, and when the heel is made higher and higher still, as we see them, the toes in order to accommodate this pitching downward of the foot, must be bent upwards in order to get the necessary grip on the ground. Of course, that means over stretching of the flexor muscles and a crippling of the whole front of the foot. A foot that has worn that sort of a shoe for a few years is not only disabled for grasping the ground, by the front part, but it cannot bring the heel down owing to a shortening of the tendo-achilles. In order to bring the heel down you must be able to stretch the tendo-achilles.

Another trouble comes from the fact that an improper shoe often causes great pain to a foot that is already malformed from wearing badly shaped shoes. The patients are right when they come back and tell us that they are more comfortable in the shoe with a narrow pointed toe and a high heel, for by crumpling the weakened toes together, such a shoe gives a feeling of strength to the fore part: and by relieving the strain of overstretching the shortened tendo-achilles, it relieves pain in the heel and calf. The ballet dancer wears the worst type of shoe of this kind— the high, pointed, unstable heel and the narrow, pointed toe. Such a shoe cripples the foot at both ends.

Dr. E. H. Bradford: In answer to remarks made by certain shoe manufacturers present, Dr. Bradford said: The evening shoe is the one a man puts on when he is on parade. Something like evening dress. That is the reason for evening or conventional shoes. We have to accept them. It is the dictate of fashion, and living as we do in artificial society we have to accept it.

Now the working shoe is the shoe we wear when we are at work. Now, of course, that is the shoe we must test constantly. Now just what line to draw between convention and what commerce obliges us to accept, and what we can stand, is difficult to say. The manufacturer and the dealer have given us much useful information, but I was in hopes they would say why shoes are manufactured and sold that are so obviously unsuited for comfort and health. There must be something in the structure of shoes that causes trouble — why the counter is made the way it is.

What Mr. Small has said is very interesting. He has lived a good deal among bare-footed people, but he tackles a very difficult subject when he speaks of the physiology of gait. I am not so sure he is right about the cuboid section. I had the privilege once of being in a village of bare-footed people. It is very difficult to tell if the cuboid section strikes. We see where the heel strikes and the toe, but very difficult to see where the cuboid strikes. If Mr. Small will go over to Cambridge and look at the oldest foot-print there he will see that the cuboidal section does not strike.

Sometime I hope there will be something of a meeting where Labor and Capital will meet — Capitol being represented by the Shoe Manufacturer, and Labor by the Physician.

Then I was very much interested in what Mr. Richardson said about selling shoes. Of course, we know the shoe dealer is not to blame. We all know that very often people do not want to wear a sensible shoe.

I would like to suggest that the Chair appoint a committee of physicians who are interested in this matter to draft what they consider the requisites for the proper shoe for working people — the rules when completed to be submitted to some committee of shoe dealers, in order that something may be done for the public. As it is now, shoe manufacturers and dealers must be very much annoyed. We doctors do not know how to make shoes. The efforts of John Brisben Walker, editor of *The Cosmopolitan*, who is at present getting up articles on what constitutes the proper shoe, are interesting. He has asked women, he has asked generals in the army, and gymnasium instructors, but he has not asked the Boston Society of Medical Improvement.

## AMERICAN PEDIATRIC SOCIETY.

Sixteenth Annual Meeting at Detroit, Mich., May 30, 31, June 1.

(Concluded from No. 20, p. 549.)

### Third Day — (Continued).

DYSPNEA: CENTRAL, PERIPHERAL, OBSTRUCTIVE. CASES.

Dr. W. P. Northrup said that every intubationist was interested in the different varieties of dyspnea, and he wished to call attention to some unusual types. The first type was dyspnea of peripheral origin, neuritis presumably diphtheritic, and paralysis of the diaphragm. The second type was dyspnea of central origin, infectious transverse myelitis and paralysis of the thoracic muscles of respiration. The third type was obstructive and not of the naso-pharynx, nor yet of the larynx, but due to accidental presence of air in the thorax, probably due to faulty exploration by needle.

Dr. Charles G. Jennings said that he had reported a very interesting case at the Boston meeting of the society; the case was one of auto-intoxication with clinical manifestations appearing first as attacks of coma; the clinical picture soon changed and instead of the condition manifesting itself as coma, asthma set in. Once, in order to facilitate exploration of the nasal chambers, adrenalin was given, which induced a severe attack of asthma. During the past two winters the attacks have been relieved by heroin.

Dr. L. E. Holt said that these attacks in children of six or eight years of age were very pitiable and the only thing to be depended upon was a change of climate. He had always believed that if a child was not relieved of the asthmatic attacks before the age of ten or twelve, he would become an habitual sufferer. Such climates could not always be found. He advocated improving the general nutrition of these patients by giving iron and cod liver oil, particularly during the winter and spring, and keeping them as much in the open air as possible. These attacks were very likely to follow whooping cough or measles. He did not believe the general practitioner or the specialist took these cases seriously enough; they should insist upon the parents doing all that was possible while they were small and before the habit became fixed.

Dr. Floyd M. Crandall said that they all knew how hopeless and how serious these cases were when they had gained any headway and, therefore, if anything was to be done for them it should be done early and particularly after measles. The third type of cases referred to by Dr. Northrup brought to mind a case that was being aspirated by means of the needle, bottle and pump; air was pumped into the chest and the child was in a very serious condition.

Dr. Isaac A. Abt spoke of the dangers of aspirating the chest when done by the unskilled. He had frequently noticed hospital internes poke the needle between the ribs, etc., and they were taught that no harm could be done if only the needle was clean.

Dr. Augustus Caille had seen pneumothorax occur twice after puncture of the chest, and it was due to too extensive lateral excursions with the needle.

With regard to asthma, he recalled the time he was the guest of Dr. Dunbar of Hamburg and he was shown an interesting experiment. The doctor was a hay-fever sufferer. He took the pollen poison in solution and instilled the eyes of both his own and Dr. Caillé's. It did not affect the latter, but in a few minutes Dr. Dunbar's became blood red. He then took the antitoxin (pollantin) and introduced it into the eye, and within half an hour all evidence of vaso-motor disturbance had disappeared.

DR. W. P. NORTHRUP, New York, said that the people should not be permitted to talk about "outgrowing" asthma.

ACUTE LEUKEMIA, WITH REPORT OF A CASE.

DR. F. S. CHURCHILL, Chicago, read this paper. He said that nothing seemed to have a predisposing cause, unless possibly tonsilitis, and the changes here might be the result rather than the cause. No age was exempt. The onset might be sudden, but often was insidious. The general course of the disease in children was practically the same as in adults. The spleen was enlarged in all cases and it was not an infrequent phenomenon to see a diminution in the size of the spleen just prior to death. The duration of the cases was from four and a half days to five months, although in some cases it seemed impossible to say just when the disease began. The duration of the disease seemed to depend upon its kind. The chief interest centered in the blood examination. There was a diminution in the erythrocytes and in the hemoglobin. The number of leucocytes varied from 6,000 to 810,000. A falling white count showed approaching death. Age had no effect upon the total white count. The polymorphonuclears were reduced to a remarkable degree; myelocytes were extremely rare. The tendency was for the blood to turn to the fetal type. In twenty-nine cases there was but one in which hemorrhages occurred. Leukemia presented a picture of a turning upside down of the blood count. The differential count was the only way in which to make an accurate diagnosis. The effect of intercurrent diseases seemed almost always to show a fall in the leucocytes, as shown by Dock. The results of autopsy threw but little light upon the problem. The bone marrow only might be involved, but it was always involved. The authorities claimed that no case of leukemia existed without involvement of the bone marrow, and therefore, all cases were myelogenous in type. Bacterial examination was of no value; no specific organisms caused the affection. Any organisms that were found were simply invaders and possibly entered by way of the tonsils. He referred to Nicoll's classification into three groups, *viz.*, toxic, infectious and neoplastic or cancerous. The true nature of leukemia was unknown and the treatment was of no avail. X-ray had been tried without success in the belief that the disease might be malignant in nature. In such an obscure and fatal disease he believed that any treatment was justifiable and the sera injections seemed to offer the greatest hope of cure. The disease was probably more common than generally supposed. Prior to 1898, only 7 cases had been recorded; since that date 22 had been recorded. Experimental inoculation with leukemic blood he believed was warrantable and directly into the bone marrow.

PRIMARY SARCOMA OF THE LIVER.

DR. L. EMMETT HOLT reported an instance of adenosarcoma of the liver occurring in an infant who was admitted to the hospital two weeks before death. The family history was negative. The patient was a full term baby, breast fed, and was always considered to be healthy until two months before it came under observation. Then appeared what was supposed to be symptoms referable to some gastric and intestinal trouble. The child lost weight and, on account of this, advice was sought. Examination revealed a rather poorly nourished child, and on the right side of the abdomen a large tumor could be felt, which extended beyond the umbilicus and down into the pelvis, filling the entire half of the abdomen. The surface of the tumor was smooth and the outlines distinct. It was soft to the touch. Examination of other organs was negative. The temperature ran between 100 and 102. The supposition that it might be an abscess of the liver led to a puncture of that organ and the withdrawal of a bloody fluid, fatty droplets, liver cells, but no pus. The hemoglobin was 55% and there were 17,000 leucocytes, but no differential count was made. The surgeon who was called thought that an incision was indicated, and under cocaine anesthesia this was done. The finger passed into a mass of broken down material. The microscopical examination did not reveal pus. Drainage tube was inserted and the wound dressed. Two weeks after the patient died of exhaustion. Twelve hours after the autopsy was made and the liver measured 19 cm. long and 21 cm. wide and weighed 735 gms. It was of light brown color. There was a round bulging mass which projected 2 cm. above the liver surface. The fluctuating tumor was due to necrosis. There was no peritonitis or thickening to be noted. There was a pericarditis, a bronchopneumonia, but no metastases were found. The anatomical diagnosis was neoplasm, fibrinous bronchitis, atelectasis. The microscopical examination showed adenoma with sarcomatous degeneration in the center. Only two other such cases had been reported in children. Primary sarcoma of the liver was not so very frequent and all that were reported were of the round-celled variety, but there was a large number of secondary sarcomas reported. The presence of a distinct capsule around the neoplasm seemed to argue in favor of the adenoma being the original process to which the sarcoma was added at a later date.

Officers elected: President, Dr. Charles G. Jennings, Detroit; first vice-president, Dr. Charles G. Kerley, New York; second vice-president, Dr. J. Park West, Bellaire, Ohio; secretary, Dr. Samuel S. Adams, Washington; treasurer, Dr. J. Park West, Bellaire; recorder and editor, Dr. L. E. La Fetra, New York.

## Recent Literature.

*Lectures on Clinical Psychiatry.* By Dr. EMIL KRAEPELIN, Professor of Psychiatry in the University of Munich. Authorized Translation from the German, Revised and Edited by THOMAS JOHNSTONE, M.D., Edin., etc. pp. 302. New York: William Wood & Co. 1904.

Considering the welcome that has justly been accorded the teachings of Kraepelin by students and practitioners of psychiatry generally, it is somewhat surprising that no adequate and unadulterated English rendering of them has appeared until now. In this volume the author's views of mental disease in all its clinical aspects are fully set forth, and it is remarkable how large a field is satisfactorily covered in these lectures which he modestly labels "A Guide to the Clinical Investigation of the Insane." The method

followed is a model for all clinical lecturers, and stamps upon the mind as no other can, not only the condition described but its relations to others as well. The detailed picture of the disease is not only most carefully drawn but in the process is interwoven a running analysis of the differential diagnosis. No less striking and helpful are the apt and concise terms and expressions descriptive of the salient conditions of thought and action which distinguish the various forms of insanity. An unusual and welcome feature is the verification of the diagnosis by notes on the patients' condition several years later.

The opportunity of thoroughly familiarizing themselves with Kraepelin's larger treatise on the whole domain of psychiatry is given to few, but all may be sure of finding in these lectures the essence of his teachings and the details necessary for a practical knowledge of the subject. Taken as a whole, it has not, to our mind, its equal in the English language as an exponent of clinical psychiatry as taught to-day.

Not a little of the value of this edition of the work is due to the translator who has given every shade of the author's meaning its right interpretation and clothed it in a style that is clear and attractive.

*Manual of Physiological and Clinical Chemistry.* By Elias H. Bartley, B.S., M.D., Ph.G. Professor of Chemistry, Toxicology and Pediatrics in the Long Island College Hospital, Author of "Medical and Pharmaceutical Chemistry." Second Edition, Revised and Enlarged. P. Blakiston's Son & Co. Philadelphia. 1904.

This is a small manual, consisting of 188 pages, devoted to experiments in physiological chemistry and to the ordinary clinical examinations of the urine, blood, gastric contents, feces and milk. The subject matter under these various headings is so brief that it is scarcely more than a working guide. The methods are, for the most part, accurate, and some of them are original with the author.

*Kirkes' Handbook of Physiology.* Fifth American revision. By Frederick C. Busch, B.S., M.D., Professor of Physiology, University of Buffalo. New York: William Wood & Co. 1904.

Even in its fifth American revision this well-known textbook has been allowed to retain many features characteristic of the English rather than the American methods of teaching physiology. For example, more than one hundred pages are devoted outright to histology, a subject taught as a part of morphology, not physiology, in most American medical schools. The pages newly introduced contrast pleasantly with the evidence of worn type seen in the unchanged parts. The recent important researches on the action of the digestive glands are reported briefly, but those on motor localization in the cortex are conspicuously absent. The book will continue to maintain its high place because of its good general qualities of orderly arrangement and conciseness and for the excellent illustrations.

*Kirkes' Handbook of Physiology.* Nineteenth Edition. By W. D. Halliburton, M.D., F.R.S., Professor of Physiology, King's College, London. P. Blakiston's Son & Co. 1904.

Kirkes' Handbook in the hands of Professor Halliburton has so thoroughly renewed its youth that the publishers are justified in printing on a fly leaf "Halliburton's Handbook of Physiology." The book is printed with new type, has 148 more illustrations than the American edition, and has been brought up to date in every particular by a master teacher. One excellent feature of this edition is the discrimination in the text between elementary and advanced information. The advanced work has been inserted briefly in small print; the student may therefore get first the essentials, in the large text, and later add to these by study of what is given in the smaller type. This edition, which is advertised as the only authorized edition, can be recommended for the general good qualities which Kirkes' Handbook has always manifested, plus the many improvements which Halliburton has wrought.

*A Textbook of Physiology.* By Isaac Ott, A.M., M.D., Professor of Physiology in the Medico-Chirurgical College of Philadelphia. 137 illustrations. Philadelphia: F. A. Davis Co. 1904.

This book, written at the solicitation of students who had attended the author's lectures, is marked by the easy conversational style of the lecturer. Subjects are approached with directness as in a syllabus, and are disposed of diagrammatically without discussion. Students may be led into wrong conceptions of function by such uncritical statements as this: "We have then two glands, one of which arrests peristalsis — the adrenal; the other, which excites it — the spleen," when the evidence for the statement comes wholly from injection of extracts of these organs. The illustrations, taken mostly from other textbooks are of the nature of lecture diagrams. The book is a royal octavo volume, 563 pages, but, as the author states in the preface, is elementary in character.

*Clinical Lectures and Essays on Abdominal and Other Subjects.* By H. D. Rolleston, M.A., M.D., F.R.C.P. Philadelphia: P. Blakiston's Son & Co. 1904.

The lectures and papers collected and published in this small octavo of 178 pages have all appeared previously in divers medical periodicals. There are seventeen distinct numbers. Among the titles are such subjects as: The Treatment of Gastric Ulcer, Primary Carcinomatous Stricture of the Duodenum, Some Points in the Treatment of Typhoid Fever, Primary Carcinoma of the Vermiform Appendix, Ascites, Hypostatic Albuminuria, Persistent Hereditary Œdema, Progressive Myositis Ossificans, The Antagonism of Some Diseases and the Curative Effect of One Disease on Another, Real and Reputed.

The student and the practitioner will find scattered all through these pages careful and accurate observation, and wise and useful suggestions.

THE BOSTON
# Medical and Surgical Journal.

THURSDAY, NOVEMBER 24, 1904.

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## THE IMPORTANCE OF THE STUDY OF THE HISTORY OF MEDICINE.

IN an address delivered at the one hundred and fifth anniversary of the Medical and Chirurgical Faculty of the state of Maryland, Dr. Eugene F. Cordell makes a plea for the importance of the study of the history of medicine. Starting with the proposition that medical history is but a part of general history, he emphasizes the strange difference in the estimation in which the two are held in our system of education. No subject is considered of more importance than history in the literary courses of our universities. He finds from the register of students of the Johns Hopkins University that the number of those pursuing historical study is exceeded in only two other departments — English and chemistry.

As the result of some pains to ascertain to what extent the history of medicine is taught in this country, and of a correspondence with the deans of fourteen of our leading universities having medical departments, Dr. Cordell has tabulated the meagre replies received from Harvard, Yale, Cornell, Buffalo, Columbia, New York, Pennsylvania, Johns Hopkins, Maryland, Virginia, Tulane, Chicago, Michigan and Minnesota.

From this it appears that a full course of lectures, fourteen to sixteen in number, is attempted in but three, *viz.:* Universities of Pennsylvania, Maryland and Minnesota. There are four "lectureships;" one just established and still without an incumbent, and another held jointly with a "Clinical Professorship of Dermatology." One of the "courses" consists of three lectures. There is but one professorship and that an "Honorary" one. In two institutions "some" instruction is given by the Professor of Therapeutics and the Assistants in Surgery, respectively, in the latter case only in surgery. In one, and that one strange to say, Harvard, lectures were attempted, but "no great interest was shown" and they were discontinued. There is no uniformity in those receiving instruction; sometimes it is the Sophomores, sometimes the Juniors or Seniors, and sometimes any that *choose* to attend. In but one is the claim made that the course is compulsory. In none is there any examination. One can readily imagine what the attendance must be under such circumstances, and the experience of Harvard is instructive. However, according to the table, in three cases it is "good," "one-half the class" and "poor," respectively. The table gives the size of the medical libraries attached to the universities, and, finally, I would call your attention to that very useful auxiliary, the Medico-Historical Society. There are two of these, but as one is limited to a dozen graduates, is not attended by the students, and takes no part in their instruction, it does not concern us here. The other is the excellent Historical Club of the Johns Hopkins Hospital, founded in 1890, upon a very broad basis, and which has exercised a profound influence, not only locally, but throughout the entire country.

More than seventy-five years ago Jefferson provided for the teaching of the history of medicine in the University of Virginia. At the present time there is no course on the subject at that institution.

Dr. Cordell considers that the facts which he has gathered indicate a shocking neglect, an inexcusable apathy on the part of our medical schools; that this age is too much carried away with the rage for novelty; that haste is stamped on everything, and that this is particularly true of Americans; that we seem to be drifting more and more into mere machines, mere worshippers of physical science. He ventures the prophecy that the time is near at hand when the standing of university medical schools will be judged by their attitude toward this branch and when it will be assigned a front rank in the curriculum.

There is, undoubtedly, much truth and much to compel sympathy in Dr. Cordell's attitude toward this subject. We should be glad to know there was such a course in all our medical schools; but there is one maxim of the father of medicine with which we moderns are more and more impressed, — that art is long and time is brief. The decline of the lecture has kept step with the development of the laboratory and the clinic. The crowding of subjects and courses has outrun the lengthening of terms and the increase of years, and the prospective practitioner views with apprehension the advancing age at which his active work can begin.

The situation at Harvard and at the University

of Virginia reflects these conditions. The general tendency is to leave more and more to the student that which can be done apart from the clinic and the laboratory. In what remains of the lecture the student demands the practical summing up of the actual experience of the teacher. At Harvard two distinct attempts were made to present the study of the history of medicine, and these under the most favorable auspices, and the answer to Dr. Cordell's questions is: "Course attempted, no interest shown, abandoned."

Dr. Cordell sums up some of the advantages of the study of medical history as follows:

(1) It teaches what and how to investigate.

(2) It is the best antidote we know against egotism, error and despondency.

(3) It increases knowledge, gratifies natural and laudable curiosity, broadens the view and strengthens the judgment.

(4) It is a rich mine from which may be brought to light many neglected or overlooked discoveries of value.

(5) It furnishes the stimulus of high ideals which we poor, weak mortals need to have ever before us; it teaches our students to venerate what is good, to cherish our best traditions, and strengthens the common bond of the profession.

(6) It is the fulfilment of a duty — that of cherishing the memories, the virtues, the achievements, of a class which has benefited the world as no other has, and of which we may feel proud that we are members.

## UNIFORMITY OF MEDICAL STANDARDS.

A difficulty in medical education which this country has had to meet in greater measure than many others is the inequality of requirements both for admission to the medical course and for graduation with the degree of doctor of medicine. It is eminently desirable in medical education, as in common school education, that standards be established which shall apply equally to various parts of the country. It is an anomalous state of affairs which permits the requirements for medical practice to be high in one section of the country and low in another. Illness is the same everywhere, and it is clearly for the good of the profession at large, as well as for the community, that physicians should be equally well trained in whatever part of the country they may choose to practise. Germany has set an example in this matter of uniform standards which other countries will do well to emulate. As is well known, students in the German universities pass from city to city, thereby gaining the advantage of a wider horizon and contact with different teachers, and finally receive their degrees at any one of the universities which they may have attended during their course of study. It is recognized that the degree is granted at certain of the German universities with less stringent examination than at others, but in general the standard of all is maintained at such a level that no invidious distinction can be made. Statistics of the German universities have shown the rather interesting fact that during the academic year of 1903–4, twenty-six men were graduated from Berlin, whereas fifty were graduated from the smaller university of Kiel and eighty-eight from Munich. This naturally gives no idea of the relative number of medical students studying in the different cities, but illustrates the simple fact, which we wish to bring forward, that the degree may ultimately be conferred at a smaller university with equal credit to the recipient.

That such a university system will ever prevail in this country is extremely doubtful, and perhaps not advisable, but the principle involved is one which it is of the greatest importance that those influential in medical education in this country should recognize. As a preliminary means to this end statistical investigations of exactly what has been done in America in our various medical institutions is of value. This work has been accomplished in a painstaking fashion by Dr. George W. Webster of Chicago, who is chairman of the committee of curriculum and preliminary requirements and first vice-president of the National Confederation of State Medical Examining and Licensing Boards. Dr. Webster's work, which has been published in the *New York Medical Journal*, shows, as did Dr. H. L. Burrell's paper in this Journal for Sept. 26, 1901, that there is a great lack of uniformity in regard to the length and character of individual medical courses in various medical schools

In forty-three institutions, upon which his first report was made, all prescribing a four years' course, it appears that the average time devoted to surgery was 596 hours, medicine 544, anatomy 549, pathology 295, obstetrics 177, gynecology 145, neurology 82, pediatrics 72, psychiatry and jurisprudence 27. These are some of the more striking figures, and certainly illustrate the imperfect balance between various subjects which is now prevalent. The proper division of time we cannot here enter upon, but it is clear that the changing demands of various

subjects must lead to the adoption of a sliding scale regarding the number of hours required for each.

Encouraged by this first report, Dr. Webster has offered a second report for the purposes of which the attempt was made to collect information from one hundred and fifty-seven medical schools in the United States. The answers to the circular sent out were very general, although a number of institutions failed to respond, and a very few, among which was the Harvard Medical School and the Albany Medical College, declined to fill out the blank for reasons not assigned. The result of this statistical study was surprising in the very great lack of uniformity shown in regard to the relative importance of the various studies as indicated by the time devoted to them. To bring out this fact clearly is certainly a matter of importance and must be the first step toward a greater uniformity. It is clear that there must always be a certain variation in the time devoted to subjects at various schools, depending upon the enthusiasm for teaching of individual instructors and the attitude of the student body toward their work. Nevertheless, with such statistics before us as Dr. Webster has provided, it should soon be possible to map out a curriculum which meets the needs of the greatest number, and adhere to it until such time as changing conditions demand modification. Naturally, the introduction of the elective system makes an added complication. We are convinced, however, that all means which may lead toward a more uniform standard are desirable, and such work as this which Dr. Webster has inaugurated is certainly a step toward that end. We are impressed with the fact that at the present time in many of our medical schools the importance of a subject to a student is lost sight of by the teacher. The rarities of medicine are presented to him and the commonplaces are too often neglected. Some check upon the present system is certainly desirable.

## RAILWAY ACCIDENTS.

ATTENTION has been drawn of late to the extraordinary number of railway accidents in this country, resulting in loss of life or serious injury. The recently published bulletin of the Interstate Commerce Commission presents certain facts which are worthy of our attention. In the year ending June 30, 1904, four hundred and twenty passengers were killed on our steam railways, either through accident or through personal carelessness on the part of the employees. Comparing this record with the English railways for the year 1903, it is found that nearly eleven times as many passengers were killed by accident in this country as in the United Kingdom during an equal time. Furthermore, it is stated that last year only nine employees were killed in Great Britain by accident, whereas in this country there were seven hundred and forty-nine. A final basis of comparison between the English and American roads is that in England six hundred and forty-four deaths occurred as compared with three thousand seven hundred and eighty-seven in this country, being a ratio of nearly one to six, and that in spite of the fact that the total number of passengers in the United Kingdom was greater than in the United States.

The reason for this state of affairs is no doubt very subtle and difficult of analysis. Ultimately it must always come down to human carelessness, although such carelessness may in many cases not be blameworthy in the eyes of the law. We are apt to underrate the strain upon those who bear the responsibility of successful railway transportation. The complication of the system and the personal responsibility which rests upon individuals together make possible accidents, which, however much they may be deplored, are yet in a measure explainable.

Commenting on the psychology of railroad accidents, the current number of the *Journal of the American Medical Association* alludes to the opinion of a railroad president, who claims that certain accidents are due to temporary mental aberration which may occur in the most trustworthy employees without obvious cause. However true this may be, and we can easily recognize its possibility, railroad companies should appreciate clearly the strain to which their trusted employees are exposed, and, as our contemporary suggests, should so modify the work required that the possibility of mental lapses may at least be reduced to a minimum.

"Railroad work is often very exacting, and there is too frequently caused a degree of mental and physical strain that is inconsistent with competency adequately to meet emergencies. The human machine overtaxed is as dangerous as any other worn-out or weakened part of the railroad machinery. An engineer or dispatcher, whose nervous system has been strained almost to the breaking point, may be as much a source of danger as a weakened or broken bridge. Modern requirements of speed and close connec-

tions of fast trains render such a possibility more than ever a matter to be guarded against. There is, moreover, in the human machine the added difficulty that defects involving nervous accuracy cannot always be so easily detected as can defects in mechanical appliances. The greater is therefore the danger in requiring special stress and strain in railroad employees, and the more serious the responsibility of those who permit it."

This is certainly true, and we are inclined to think that if the subtle significance of certain symptoms of the nervous system were more clearly recognized and investigated, the peculiar and often inexplicable aberrations of engineers or switchmen, which lead to fatal accidents, might be averted. That such investigation is a matter of the utmost difficulty we do not question, but it is none the less incumbent upon railway managers to see that their employees are in perfect physical condition as well as the more mechanical parts of their system. The accurate and painstaking examinations which are now being made of the eyesight of railway employees is, of course, to be commended, but the investigation should not stop short of a thorough-going examination into the functions of the nervous system in general, to the end that those who bear the responsibility of many lives should be the most perfectly poised individuals which it is possible to obtain. The disparity between the accidents in this country and in England no doubt must also be explained by a combination of circumstances which we have not the knowledge to discuss, but the suggestion that the human mechanism be in the most perfect order is a matter which may well be drawn to the attention of officials.

## MEDICAL NOTES.

A Centenarian. — Mrs. Catherine T. Rooney, who was reported to be one hundred and two years old, died at Fairfield, Vt., recently.

The Jefferson Medical College Library. — The report of the librarian of the Jefferson Medical College Library for the year just ended showed some interesting and noteworthy facts concerning the contents and circulation of the college library. There were three thousand and nine volumes in the library, of which four hundred and thirty-nine were added during the year; two hundred and three by gift and two hundred and thirty-six by purchase and binding, the largest gift being seventy-eight volumes from the library of the late Dr. C. W. Horner. There are fewer than two thousand volumes of general textbooks in the library, and from these there was a circulation of ten thousand six hundred and sixty-three volumes.

Yellow Fever in Cuba. — It is reported from Washington that yellow fever has appeared again in Cuba, after an immunity dating from the American occupation. Four cases are said to have been reported through the Marine Hospital Service, and along with this report comes information that the Cuban government has ceased to adhere to the strict rules of sanitation laid down by the Americans, and that cleanliness is no longer maintained.

Memorial to Mr. Cadge. — It has been arranged that the unveiling of the memorial window to the late Mr. Cadge, in Norwich Cathedral, England, shall take place on Tuesday, Dec. 6, at 3 p.m. The Dean of Norwich proposes to conduct a short service on the occasion. The President of the Royal College of Surgeons, Mr. Tweedy, has consented to unveil the memorial, and it is hoped that as many subscribers as possible will be present.

Restriction of Work of Pneumonia Commission. — It is reported, we trust incorrectly, that the Civil Service Commission of Greater New York has ruled that assistants in other cities may not be employed unless they first go to New York to undergo a local civil service examination. The idea of the commission was that the work of investigation might be very materially forwarded through the co-operation of physicians in other cities who should receive a small salary therefor. If the report is true, this important part of the work will be seriously interfered with, if not wholly prevented.

### BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon Nov. 16, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 53, scarlatina 24, typhoid fever 19, measles 17, smallpox 0.

### NEW YORK.

Annex for Tuberculosis at Post-Graduate Medical School. — Through the generosity of a friend of the institution, the New York Post-Graduate Medical School has been able to open an annex for the treatment of patients suffering from advanced tuberculosis who are unable to leave the city. A house in East 19th Street, in

the vicinity of the Post-Graduate, has been leased and fitted up for the desired purpose, and the anonymous donor has promised $6,000 per annum for its maintenance for a certain term of years. The special features of this tuberculosis hospital include a constant circulation of fresh air, which is filtered through absorbent cotton, and an approved "hyper-nutrition" regimen. The annex makes possible the constant intelligent supervision of a patient during the most critical stage of his disease, and he can thus remain an in-patient until he is sufficiently improved to become an out-patient of the Post-Graduate dispensary.

Bequests. — Among the charitable bequests made in the will of the late Solomon Rothfield of New York are the following: $5,000 to the Mount Sinai Hospital, $2,000 to the Montefiore Home and Hospital for Chronic Invalids, $1,000 to the Beth Israel Hospital Association, and $500 to the Colored Home and Hospital.

Meeting of Directors of Montefiore Home. — The annual meeting of the directors of the Montefiore Home and Hospital for Chronic Invalids was held on Nov. 6. During the year there were treated at the parent institution 889 patients, at a cost of $283.98 each per annum. Of this number, all but 32 were free patients. Many needed improvements were added both to the home and to the country sanatorium for tuberculosis at Bedford, Westchester County, and $28,500 was expended in the erection of a new building adjoining the home, to be known as the Louis Gans Memorial.

National Association for Study and Prevention of Tuberculosis. — A meeting of the board of directors of the National Association for the Study and Prevention of Tuberculosis was held in New York on Nov. 16. Dr. William Osler of the Johns Hopkins University presided, and the plan of organization for the first annual meeting of the Association, to be held in Washington in May next, was discussed. It was decided to appoint an advisory committee of prominent physicians and laymen throughout the United States and to make an appeal for contributions to philanthropic people generally. The help of municipal bodies all over the country will also be sought.

Food Preservatives. — At a meeting of the New York Academy of Medicine, held Nov. 17, Dr. H. W. Wiley, Chief of the Bureau of Chemistry, United States Department of Agriculture, read a paper on "The Influence of Preservatives and Adulterants in Food on the Public Health," in which he gave the results of the experiments which have been made during the past three years under his direction at Washington. It was conceivable, he said, that there might be conditions in which the use of preservatives of a chemical nature was permissible, but he could see none in a country like America, where food is abundant and is procurable without difficulty in its fresh state. Persons who preferred the preserved foods should, of course, have the right to procure and consume them, but the sale of such to the general public to be eaten as fresh and wholesome food he thought was a direct fraud. On the second of January next an order, prepared by Dr. Wiley at the request of the Secretary of Agriculture, is to go into effect, which requires that all imported food products must show on the labels of the packages for the consumer just what preservatives, other than the accepted alimentaries, salt, sugar, vinegar and wood smoke, are used in their preparation.

## Miscellany.

### MORTALITY AMONG MEDICAL OFFICERS IN WAR.

According to a Russian medical journal quoted in the *Journal of the Association of Military Surgeons of the United States* the rate of mortality during the Turco-Russian war was much larger among military surgeons than in the combatant branches of the army. The following statistics embody the results of a comparative study of the official records of former wars: During the campaign of 1813-15 there were 2,170 surgeons in the Prussian army, of whom about 10% were either killed or wounded, this proportion being about equal to that of casualties among combatants. In the French campaign against Constantine in 1837, while every thirteenth combatant officer was killed, every sixth surgeon died. This in proportion to the numbers shows that the mortality among surgeons ($16\frac{2}{3}\%$) was more than double that of the combatant officers ($7\frac{7}{8}\%$). During the Crimean war, according to French official statistics, the mortality among the surgeons was 18.2%, while that among the combatant officers was 7.3%. In the last Russian campaign 355 surgeons out of a total of 2,839 died, being $12\frac{1}{2}\%$. In the French-Mexican expedition the rate of mortality among the surgeons was about 20%, while that of the combatant officers was only about 4%. The only instance on record in which the proportion of deaths among combatant officers was larger than that of the medical officers, is said to have been in the Prussian army during the Franco-Prussian war, 1870-71. — *British Medical Journal.*

## THE CAPE AS A HEALTH RESORT.

For many years South Africa has enjoyed, in common with Australia, New Zealand and Colorado, a high reputation as a health resort for patients suffering from pulmonary phthisis. Recent events, moreover, which have made South Africa appear for the time the land of promise, have directed the attention of many invalids to that country. Under the circumstances, it is important that physicians at home should be in a position to offer advice to their patients who may intend to emigrate, not merely on the subject of the choice of destination, but as to the necessary conditions of life and probable chance of employment. The most important point to be decided is whether a patient should be advised at all to go abroad. There is no doubt that in many cases a patient, in an advanced stage of phthisis, with cough, expectoration and pyrexia, will not lengthen his life one day by a change of climate. On the other hand, he merely suffers the misery of his last illness among strangers in a foreign land, away from all the comforts of home and friendship. Still, hope being what it is, one rarely likes to leave untried what may after all be a chance of recovery, and one can recall many cases of recovery even among the apparently hopeless. In going to South Africa, a patient, even in early stages of consumption, must be supplied with sufficient means to keep him for at least a year or two. Otherwise he will probably find his choice of employment limited, and he may be forced into work which will prove disastrous to his health. Great attention must be paid to the choice of residence, the altitude being the most important factor. In the low altitudes in Cape Colony, up to eight hundred feet, there is plentiful vegetation and much moisture, while in the high altitudes of the Great Karroo, two to five thousand feet, conditions are quite opposite. It may, however, be wiser for the physician at home to leave the decision of a suitable locality to a *confrere* at Cape Town, and indeed, a patient should always be warned to lose no time in placing himself under a competent physician on his arrival in a new country. — *Medical Press.*

## RESOLUTIONS ON SAMUEL W. ABBOTT, M.D.

The members of the Middlesex (East) Medical Society hereby express their sorrow at the death of their fellow member Dr. Samuel W. Abbott. For many years an active member of the Society, he lost no opportunity of being present at its meetings and contributing from his knowledge and experience.

While quiet and unassuming, he was of unusual ability. His advice was often sought and freely given to younger members of the profession, and his counsel esteemed by all.

We regret the loss of a good physician, a personal friend and a good man.

Middlesex (East) Medical Society,
C. W. Harlow, M.D., *Secretary.*
November 16, 1904.

## RECORD OF MORTALITY

For the Week ending Saturday, November 12, 1904.

| Cities. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid Fever. | Cerebro-spinal Menin-gitis. |
| New York . . | 3,908,644 | 1,228 | 316 | 23.04 | 17.83 | 2.28 | 1.71 | .90 |
| Chicago . . . | 2,021,086 | 413 | 110 | 26.61 | 13.80 | 3.14 | 2.42 | — |
| Philadelphia | 1,407,968 | — | — | — | — | — | — | — |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | — | — | — | — | — | — | — |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 128 | 38 | 21.87 | 23.43 | 1 56 | 2.34 | 1.56 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 70 | 16 | 11.44 | 8.58 | 4.29 | — | — |
| Boston . . . | 617,950 | 194 | 43 | 21.65 | 14.95 | 2.58 | .51 | .51 |
| Worcester . . | 136,925 | 29 | 4 | 6.90 | 13.79 | — | — | — |
| Fall River . . | 119,349 | 36 | 13 | 44.44 | 16.67 | 2.78 | — | — |
| Lowell . . . | 104,402 | 23 | 8 | 30.43 | 13.04 | 4.35 | 4.35 | — |
| Cambridge . | 100,998 | 22 | 5 | 13.63 | 27.27 | — | 9.09 | — |
| Lynn . . . . | 73,875 | 19 | 3 | 15.80 | — | — | 5.26 | — |
| Lawrence . . . | 72,348 | 19 | 6 | 5.26 | 26.31 | — | — | — |
| Springfield . | 72,020 | 26 | 2 | 7.69 | 3.85 | 7.69 | — | — |
| Somerville . | 70,413 | 17 | 1 | 17.64 | 11.76 | 5.88 | — | 5.88 |
| New Bedford | 68,863 | 31 | 11 | 19.35 | 16.13 | — | 3.26 | — |
| Holyoke . . . | 50,538 | 9 | 3 | 33.33 | 22.22 | 11.11 | — | 11.11 |
| Brockton . . | 46,601 | 10 | 2 | 20.00 | — | — | — | — |
| Newton . . . | 39,310 | 8 | — | — | — | — | — | — |
| Haverhill . . | 39,061 | 10 | 2 | 20.00 | 10.00 | — | — | — |
| Malden . . . | 37,205 | 6 | 1 | 33.33 | — | — | — | — |
| Salem . . . . | 37,188 | 9 | 3 | — | 11.11 | — | — | — |
| Chelsea . . . | 36,499 | 11 | 4 | — | 18.18 | — | — | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 5 | 1 | 20.00 | — | — | — | — |
| Everett . . . | 30,209 | 9 | 3 | — | — | — | — | — |
| North Adams | 29,201 | 8 | 1 | 25.00 | — | — | — | — |
| Quincy . . . | 26,798 | 3 | — | — | — | — | — | — |
| Gloucester . | 26,121 | 4 | — | — | — | — | — | — |
| Waltham . . | 25,797 | 10 | 1 | 30.00 | 10.00 | — | — | — |
| Brookline . . | 23,576 | — | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | — | — | — | — | — | — | — |
| Medford . . | 21,956 | 2 | — | — | — | — | — | — |
| Chicopee . . | 21,692 | 4 | 2 | 25.00 | — | — | — | — |
| Northampton | 20,314 | 8 | 0 | — | — | — | — | — |
| Beverly . . . | 15,807 | 4 | — | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 0 | — | — | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 5 | 0 | 20.00 | 20.00 | — | — | — |
| Newburyport | 14,478 | 4 | 1 | 25.00 | — | — | — | — |
| Woburn . . . | 14,315 | 2 | — | — | — | — | — | — |
| Melrose . . . | 13,819 | 2 | 1 | — | — | — | — | — |
| Westfield . . | 13,809 | 3 | 1 | 33.33 | — | — | — | 33.33 |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 3 | 0 | 33.33 | — | — | — | — |
| Revere . . . | 13,609 | 0 | — | — | — | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 2 | 1 | 50.00 | 50.00 | — | — | — |
| Southbridge . | 11,716 | 3 | — | — | — | — | — | — |
| Watertown . | 11,575 | 3 | 3 | 66.67 | 33.33 | — | — | 33.33 |
| Weymouth . | 11,350 | 3 | 0 | 33.33 | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 2,405; under five years of age, 606; principal infectious diseases (smallpox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 538; acute lung diseases 383, consumption 275, scarlet fever 11, whooping cough 9, cerebrospinal meningitis 19, small pox 4, erysipelas 1, puerperal fever 4, measles 12, typhoid fever 41, diarrheal diseases 106, diphtheria and croup 56.

From whooping cough, New York 3, Chicago 4, Pittsburg 2. From measles, New York 3, Chicago 3, Pittsburg 3, Boston 2, Haverhill 1. From scarlet fever, New York 8, Chicago 2, Pittsburg 1. From cerebrospinal meningitis, New York 11, Pittsburg 12, Boston, Somerville, Holyoke, Marlboro, Westfield and Watertown, 1 each.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending Oct. 29, the death-rate was 15.0. Deaths reported 4,382; acute diseases of the respiratory organs (London) 145, whooping cough 31, diphtheria 54, measles 119, smallpox 3, scarlet fever 36.

The death-rate ranged from 6.4 in Hornsey to 21.5 in Merthyr Tydfil; London 14.7, West Ham 14.8, Brighton 16.1, Southampton 9.3, Plymouth 17.4, Bristol 13.2, Birmingham 15.9, Leicester 14.7, Nottingham 15.9, Birkenhead 18.2, Liverpool 20.3, Wigan 17.4, Bolton 16.6, Manchester 18.7, Salford 18.2, Halifax 15.0, Bradford 13.5, Leeds 16.2, Sheffield 13.0, Hull 17.7, Newcastle-on-Tyne 17.8, Cardiff 11.8, Rhondda 11.1, Hanley 19.6.

## METEOROLOGICAL RECORD.

For the week ending November 12, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in Inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S.. 6 | 29.71 | 36 | 42 | 29 | 73 | 65 | 69 | N | N W | 7 | 8 | O. | O. | 0 |
| M. 7 | 29.70 | 38 | 44 | 32 | 56 | 64 | 60 | W | W | 15 | 14 | F. | C. | 0 |
| T.. 8 | 29.86 | 40 | 47 | 32 | 58 | 46 | 51 | W | N | 13 | 7 | F. | C. | 0 |
| W. 9 | 29.98 | 36 | 42 | 31 | 71 | 81 | 76 | N | N | 6 | 8 | O. | C. | T. |
| T..10 | 30.16 | 38 | 47 | 30 | 74 | 62 | 68 | N W | S W | 8 | 8 | C. | C. | 0 |
| F..11 | 30.02 | 34 | 39 | 30 | 70 | 72 | 71 | N W | W | 9 | 5 | O. | C. | 0 |
| S..12 | 29.82 | 40 | 52 | 28 | 64 | 56 | 60 | S W | S W | 12 | 12 | C. | C. | 0 |
| ☞ | 29.89 | | 45 | 30 | | | 65 | | | | | | | T. |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for week.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING NOVEMBER 19, 1904.

H. B. FITTS, surgeon. Ordered to the "Buffalo."

E. G. PARKER, passed assistant surgeon. Detached from the "Buffalo," Nov. 26, and ordered to the Naval Station, Tutuila, Samoa, and also to additional duty on the "Adams," sailing from San Francisco, Cal., Dec. 1.

C. MCLARTY, pharmacist. Detached from the Navy Yard, Norfolk, Va., and ordered to the "Solace" temporarily, and thence to the Naval Hospital, Yokohama, Japan.

F. W. BROCK, pharmacist. Detached from the Naval Hospital, New York, N. Y., Nov. 25, and ordered to the Navy Yard, Norfolk, Va.

A. FARENHOLT, surgeon. Detached from the "Monterey" and ordered to the "Raleigh."

R. M. YOUNG, assistant surgeon. Detached from the "Oregon" and ordered home.

U. R. WEBB, assistant surgeon. Detached from the Naval Station, Cavite, P. I., and ordered home.

G. M. MAYERS, assistant surgeon. Detached from the "Raleigh" and ordered home.

W. S. HOEN, assistant surgeon. Detached from the Naval Station, Cavite, P. I., and ordered to the "Oregon."

J. R. DYKES, assistant surgeon. Detached from the "Rainbow" and ordered to the Naval Station, Cavite, P. I.

J. COWAN, pharmacist. Retired. Detached from the Naval Station, Port Royal, S. C., and ordered home.

## SOCIETY NOTICES.

SUFFOLK DISTRICT MEDICAL SOCIETY.—Meeting of the Surgical Section of the Suffolk District Medical Society, Wednesday evening, Nov. 30, at the Medical Library. Ptosis of the Abdominal Organs with Especial Reference to Ptosis of the Kidney: 1. The Importance of Keeping in Mind Ptosis of the Viscera in Considering the Treatment of the Kidney, Dr. M. P. Smithwick. 2. Experience with Treatment by Abdominal Supporters, Dr. W. H. Smith. 3. The Actual Results at the Massachusetts General Hospital following Operative Treatment, Drs. F. G. Balch and J. R. Torbert. 4. The Results at the Boston City Hospital, Drs. Paul Thorndike and J. B. Cunningham. Discussion: To be opened by Dr. H. D. Chadwick of Waltham: Followed by: Dr. J. W. Elliot, Dr. H. L. Burrell, Dr. A. T. Cabot, Dr. A. K. Stone, Dr. W. B. Conant.

E. A. CODMAN, M.D., *Secretary.*

SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.—The seventeenth annual meeting of the Southern Surgical and Gynecological Association will be held at the Hotel Hillman, Birmingham, Ala., Dec. 13, 14 and 15, 1904.

D. W. HAGGARD, M.D., *Secretary.*

NEW YORK ORTHOPEDIC DISPENSARY AND HOSPITAL.—The trustees of the New York Orthopedic Dispensary and Hospital announce that the surgeon-in-chief, Dr. Russell A. Hibbs, will give a course of clinical lectures on Orthopedic Surgery at the Institution, on Tuesday and Thursday afternoons, at four o'clock, from Dec. 6 to Jan. 5 (both inclusive). The course will be free to the medical profession and students.

MUTTER LECTURE ON SURGICAL PATHOLOGY, COLLEGE OF PHYSICIANS OF PHILADELPHIA.—The Mütter Lecture for 1904 will be delivered in the Hall of the College of Physicians, N. E., corner of 13th and Locust Streets, on Friday, Dec. 2, at 8.30 P.M., by Dr. George H. Monks, Assistant-Visiting Surgeon, Boston City Hospital; Lecturer on Surgery, Harvard Medical School. Subject: Studies in the Surgical Anatomy of the Small Intestine and its Mesentery. The Profession is cordially invited to be present.

JOHN H. BRINTON, M.D., *Chairman,*
GEORGE MCCLELLAN, M.D.,
J. ALISON SCOTT, M.D.,
*Committee of the Mütter Museum.*

## RECENT DEATH.

HENRY E. ALLISON, M.D., of Matteawan, Dutchess County, N. Y., died on Nov. 12, in the fifty-third year of his age.

## OPERATIONS: BOSTON CITY HOSPITAL.

The following operations will be done and cases shown in the amphitheater of the Boston City Hospital on Nov. 25, from 10 A.M. until 12.30 P.M.: Amputation of leg; Appendectomy; Radical Cure, Inguinal Hernia; Radical Cure, Hydrocele; Dissection, glands of neck; Abdominal Tumor.

## BOOKS AND PAMPHLETS RECEIVED.

A System of Practical Surgery. By Prof. E. von Bergmann, M.D., Prof. P. von Bruns, M.D., and Prof. J. von Mikulicz, M.D. Vol. V. Translated and edited by William T. Bull, M.D. and Edward Milton Foote, M.D. Illustrated. New York and Philadelphia: Lea Brothers & Co. 1904.

Light Energy. Its Physics, Physiological Action and Therapeutic Applications. By Margaret A. Cleaves, M.D. Illustrated. New York: Rebman Company. 1904.

Refraction and How to Refract, including Sections on Optics, Retinoscopy, the Fitting of Spectacles and Eye-glasses, etc. By James Thorington, A.M., M.D. Third Edition. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1904.

The Woman's Home Library. Edited by Margaret E. Sangster. Beauty through Hygiene. Common Sense Ways to Health for Girls. By Emma E. Walker, M.D. Illustrated. New York: A. S. Barnes & Co. 1904.

Department of the Interior. Bureau of Government Laboratories. Biological and Serum Laboratories. Report on Bacillus Violaceous Manilae: A Pathogenic Microörganism. By Paul G. Woolley, M.D. Manila. 1904.

Department of the Interior. Bureau of Government Laboratories. Serum Laboratory. Texas Fever in the Philippine Islands and the Far East. By James W. Jobling, M.D., and Paul G. Woolley, M.D. Biological Laboratory. Bulletin No. 2 of the Entomological Division. The Austrian Tick (Boophilus Australis Fuller) in the Philippine Islands. By Charles S. Banks, Entomologist. Manila. 1904.

Lectures to General Practitioners on the Diseases of the Stomach and Intestines. With an account of their relations to other diseases and of the most recent methods applicable to the diagnosis and treatment of them in general; also "The Gastro-Intestinal Clinic," in which all such diseases are separately considered. By Boardman Reed, M.D. Illustrated. New York: E. B. Treat & Co. 1904.

A Text-Book of Pathology. For Practitioners and Students. By Joseph McFarland, M.D. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

A Text-Book of Diseases of Women. By Charles B. Penrose, M.D., Ph.D. Illustrated. Fifth Edition, Revised. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

Hand-Book of the Anatomy and Diseases of the Eye and Ear. For Students and Practitioners. By D. B. St. John Roosa, M.D., LL.D., and A. Edward Davis, A.M., M.D. Philadelphia: F. A. Davis Co. 1904.

Vibratory Stimulation. Its Physiologic Basis and Therapeutic Possibilities. By Samuel S. Wallian, A.M., M.D. Reprint.

Diet and Food Considered in Relation to Strength and Power of Endurance, Training and Athletics. By Alexander Haig, M.A., M.D. Oxon., F.R.C.P. Fifth Edition. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1904.

Enlargement of the Prostate. Its Treatment and Radical Cure. By C. Mansell Moullin, M.D. Oxon., F.R.C.S. Third Edition. Philadelphia: P. Blakiston's Son & Co. 1904.

Annali dell' Instituto Maragliano per lo Studio e la Cura Della Tubercolosi e di Altre Malattie Infettive. Pubblicati sotto la direzione del Prof. E. Maragliano. N. 2, Settembre, 1904.

The Pathology of the Eye. By J. Herbert Parsons, B.S., D.Sc. (Lond.), F.R.C.S. (Eng.), Vol. i, Part 1. Illustrated. New York: G. P. Putnam's Sons. London: Hodder & Stoughton. 1904.

# Original Articles.

## ON CERTAIN UNAVOIDABLE CALAMITIES FOLLOWING SURGICAL OPERATIONS.*

BY MAURICE H. RICHARDSON, M.D., BOSTON.

I HAVE selected this subject, first, because I wish to hear what the experience of others has been in these distressing calamities, and if possible to get some help in trying to avoid them; and, furthermore, because the subject has been of extreme interest to me. I present these cases, too, for the benefit, and perhaps comfort of those who have not yet encountered such calamities, but to whom it is only a question of time when they will come.

Finally, it seems to me that we all should at times be reminded that surgery, brilliantly successful as it has become by the extraordinary advances of the past quarter century, is still attended by certain unavoidable risks, that disasters may occur in the cases which are apparently the simplest and safest; that they cannot with our present knowledge be predicted or provided against by even the most experienced surgeon; that when they do occur, they occur not as the result of ignorance or neglect, but, as my title describes them, as the *rare and unavoidable calamities of surgery.*

Of the conditions which may predispose to, the symptoms which may portend, the means which may prevent, and the course which may retrieve disaster, we have little or no knowledge; for these occurrences are exceedingly infrequent of illustration. The opportunities for investigation in the hands of any one man, or of any one hospital, are from the nature of things limited. The possibility of occurrences which I mention must, however, be borne in mind in advising surgical operations, especially in the abdomen; for disaster and even death may take place in the cases which are apparently the simplest.

So long as we are human, we must expect occasionally to meet with failure and disaster in the practice of surgery, and that in spite of every precaution. In the great majority of cases failures and disasters may be traced to some error of observation, of judgment, or of technique. In many instances, however, the most rigid review of the case will fail to show the error by avoiding which a similar disaster may be prevented. Disasters occurring as the results of causes which cannot be detected may be classed as unavoidable, and yet in a strict sense they properly are avoidable. Indeed, it would be difficult to imagine a combination of circumstances, however disastrous, which by an accurate foreknowledge could not be successfully provided against. The errors will sooner or later be discovered and corrected.

Let us consider, for example, suppression of urine after a hysterectomy, when that operation has been decided upon after careful observation of heart, lungs and kidneys. Even if everything favors operation, it is not unheard of for patients to have complete and fatal suppression of urine. Such a calamity is exceedingly rare, it is true; yet it undoubtedly does occur. If ether has been used for anesthesia, it is common to say that ether caused the suppression, and that if chloroform had been used no renal changes would have followed, and therefore no suppression. I do not believe that ether alone is often responsible for urinary suppression, if, indeed, it ever is; and yet ether is usually said to be the cause of this accident. Assuming that ether is responsible, we may say that chloroform would not, on the chances, have caused death from suppression, and that the disaster was therefore avoidable. But if chloroform had been used, the patient would have run even greater risk from the lethal effects of chloroform itself. In the case in point, there being no way of determining beforehand the patient's idiosyncrasies, suppression of urine in such cases may be regarded as an unavoidable calamity.

The disaster of infection of the knee-joint, general septicemia and death, following arthrotomy, is clearly owing to an infection from without; and infections from without are, in a strict sense, avoidable. But are infections of wounds always avoidable by any human agency? Can we always determine just that lapse of strictest watchfulness and foresight by which the joint received its bacterial contamination? We all know that we cannot, and that infection will occur at an operation which has been provided for by every care, even as to the minutest detail. In the strictest sense, perhaps, such infections are avoidable; in the practical, every-day construction of the word, they are unavoidable. The operation may have been performed upon a dusty day, and particles of germ-laden dust may have drifted into the wound; the skin incision may have infected the knife, and that the joint; the patient's phagocytic powers may have been feeble, in a word, the joint may have been infected in any one of a thousand ways, all of which, theoretically avoidable, are unavoidable by human foresight. Nevertheless, an infection is lightly condemned by some as in itself conclusive evidence of blundering or carelessness. A certain percentage of infections must be regarded as unavoidable, no matter how confident in the perfection of his technique the surgeon may be.

Then there is the disaster of post-operative hemorrhage — one of the most formidable and distressing calamities of surgery; who can predict when it will occur? Who can by taking thought always avoid it? And yet the disaster of hemorrhage should rightly be regarded as among the most easily prevented of all post-operative disasters. Who could predict, much less prevent, a hemorrhage from the vessels of the lesser curvature of the stomach following a cholecystostomy for jaundice? Such a disaster occurred, after simple tube drainage through the gall-bladder, in the case of a strong man of fifty-seven years who had been jaundiced for two

* Read before the American Surgical Association, June 14-17, 1904.

or three months. Hemorrhage was, of course, feared, and every provision possible was made for it. The blood coagulation time was brief; there was no hemorrhage at the operation. On the third or fourth day after operation, however, oozing from the wound began, and continued in spite of all that could be done. Secondary operation seemed successful, though no source of the bleeding could be found. Autopsy showed that the blood came from a vessel of the stomach at the lesser curvature, far from the operative field. Death was welcome in this case, however, for the cause of jaundice was cancer of the pancreas.

Who, by experience, forethought, aseptic technique, and operative skill, can make sure that in no case of hydrocele, varicocele, or hernia, either from hemorrhage or from infection, will the integrity of the testicle be threatened? These accidents, too, are in a strict sense avoidable; but is it not too much to expect of human frailty that they can in every instance be actually prevented? I have no doubt that the surgery of the future, no matter how perfect it may become, will always be attended by such disasters as I have mentioned.

It is not, however, to consider technical errors, slipping of ligatures, infection of joints, sloughing of testes, or errors of carelessness and of observation, all practically or theoretically avoidable, that this communication is presented, but rather to consider a certain class of accidents which are not even theoretically avoidable. Chief among these are changes in the blood which result in venous thrombosis and in death from pulmonary embolism.

Phlebitis following abdominal operations is not uncommon, and it is an accident which, as far as my observation goes, is practically unavoidable. Indeed, I believe that it is theoretically unavoidable. Perfect healing by first intention, without evidence of sepsis in pulse, in temperature, or in blood, by no means insures the patient against phlebitis. The clinical picture of post-operative phlebitis is, unfortunately, only too familiar to the experienced surgeon. There is, in the great majority of cases, every appearance of aseptic wound healing; there is no local infection, there is no constitutional disturbance. Indeed, the signs of phlebitis do not usually appear until the patient is ready to leave her bed. Then we have the painful and tender veins, with slight rise of temperature and pulse. The only evidence of bacterial infection lies in these trivial disturbances. It is at once assumed by some that there has been a wound infection, transmitted to the veins of the limbs through the venous plexuses of the pelvis. Doubtless, the thrombosis which affects the left lower extremity may be traced to the seat of operation, though it is hard to see how a right-sided operation like appendectomy should be followed by a thrombosis of the veins of the left calf. This thrombosis may be the result of wound infection, but such an explanation seems to me against common sense and experience. The chief point is, however, that it is unavoidable, either theoretically or practically.

In my experience phlebitis is more common after extensive dissections in the female pelvis, especially in patients who have for a long time been bleeding from the uterus, than it is in any other class of cases. It is frequently a disease of exsanguination, of thin, watery blood. Phlebitis is, therefore, more common after operations upon the fibroid uterus, whether myomectomy or hysterectomy, in patients who have been bleeding. The proportion of cases is not large, but it is large enough to be regarded as a serious evil effect of operative treatment. Phlebitis occurs most frequently in those patients whose wounds have pursued a uniformly favorable and aseptic course.

Sometimes I have thought that venous thrombosis is the result of enforced quiet, that the patient would have had the complication if she had been put on her back and kept perfectly still for four weeks without operation. I have, therefore, required my patients to keep their legs moving freely, at no time to keep them perfectly still.

The occurrence of phlebitis after operations upon the uterus or upon the ovaries, suggests the extension of simple clotting from the uterine or ovarian plexuses of veins into the iliac vessels. Phlebitis rarely occurs after any other abdominal operation. I have seen but one case of phlebitis after a simple appendectomy;[1] none after a gall-stone operation; none after such an operation as ventral fixation. I have never seen a septic thrombosis in the course of any ordinary phlebitis, though in cases originally septic I have seen a few instances of pylephlebitis and multiple abscesses of the liver.

The common phlebitis is, I believe, aseptic in its origin and in its course. It can never be predicted and it can never be avoided. If this disease has a septic origin, the sepsis is of the mildest form, and too trivial ever to cause signs of local wound infection.

Phlebitis, when definitely developed, does not seem likely to cause pulmonary embolism. It is the sudden detachment of the unsuspected thrombus which causes the disaster. I have never seen an embolus from this source, except perhaps once many years ago, when, as interne, just prior to proposed amputation of the leg, I saw, in a case of long-saphenous phlebitis, a thrombus forced from its bed into the venous current by an Esmarch bandage. The clot lodged in the pulmonary artery, and caused instant death.

The ordinary phlebitis, of which I have seen many examples, is, I am convinced, the origin of pulmonary embolism in an extremely small percentage of cases. If a thrombus forms in a vein as the very first step in the process of phlebitis the detachment of that clot and plugging of the pulmonary artery takes place before the patient shows any local or constitutional signs of phlebitis. As I have already said, the detachment of a clot after the veins have become tender and after the development of slight constitutional symptoms, is of such rarity, that I can at this time recall no cases of embolism. When embolism does take place in phlebitis, that embolism is of the multiple

[1] S. H. R., vol. xxx, p. 96.

form, and that phlebitis of the septic suppurating variety. The small and septic thrombi which become the foci of multiple infarcts in the lungs and elsewhere are a sequel of a form of phlebitis quite different from that under discussion. There is in such cases incontrovertible evidence of both local and constitutional sepsis. The clinical sequence is not easy to determine between two local areas of sepsis — the primary phlebitis and the secondary infarct — between, for example, a presumable sepsis in the uterine sinuses after myomectomy and a fatal septic meningitis.

Recently I lost a patient [2] a strong woman, aged thirty years, after a myomectomy for multiple fibroids. The operation was uncomplicated. There was much oozing, which required many ligatures. A long series of uninterrupted recoveries had led me to look upon myomectomy as an operation safer in practice than in theory. The patient died in two weeks of a septic meningitis. There were no signs of sepsis in the abdomen, but there was unusually marked constitutional disturbance. Whether in the uterine sepsis, if it really existed, there was a thrombo-phlebitis to which the meningeal disease was secondary, it is impossible to say; for there was no autopsy. But even if no direct connection between the two lesions could have been made out, common sense would indicate that the fatal meningitis was in some way secondary to the myomectomy. A septic uterus after myomectomy is, of course, beyond the scope of the unavoidable calamity and the scope of this paper.

Thrombosis with detachment of clot and pulmonary embolism is a distinct feature of venous complications, and a disaster of such magnitude that it has seemed to me worthy of being considered the chief subject of this paper. But is thrombosis of veins, detachment of clot, and pulmonary embolism *prima facie* proof of a phlebitis? I do not feel convinced that it is. Phlebitis and pulmonary embolism may have a common origin. Clinically, however, the latter takes place before there is even a suspicion of the former. Detachment of clot and plugging of the pulmonary artery precede any symptoms of ordinary phlebitis, and the patient of course does not survive for the demonstration of the latter condition. Patients who die suddenly during an aseptic and satisfactory convalescence after abdominal operations, especially the pelvic, may be assumed, in the absence of an autopsy, to have died of a sudden plugging of the pulmonary artery by a thrombus; for in by far the greater number of cases autopsy has shown this mechanical condition. A careful review of such cases in my experience has shown this cause invariably present.

Sudden death after a serious abdominal operation may be ascribed, then, in almost every case, to pulmonary embolism. No signs, either local or constitutional, precede this accident. The patient is seized with precordial distress, oppression and suffocation, gasps for breath and dies. Sometimes there is a slight attack, followed soon after by a severe and fatal one. At the autopsy a clot is found plugging the pulmonary artery, and often there is no evidence as to the source of the clot. A patient rapidly convalescing dies instantly, and the house of rejoicing is turned into a house of mourning.

In my own experience this accident has taken place only in pelvic and abdominal cases. At the Massachusetts General Hospital I have known a death from this cause to follow an extensive operation for breast cancer. The occurrence is not infrequent in the medical wards.

Pulmonary embolism usually occurs after abdominal operations during which large uterine sinuses are laid wide open. The number and size of these sinuses are often extraordinary. I have found the uterine artery itself, greatly enlarged, concealed in a mass of veins the size of the wrist, each vein a quarter of an inch or more in diameter. The closure of these veins is sometimes by ligature and sometimes by spontaneous blood coagulation. When the uterine artery is isolated and tied, hemorrhage from the veins ceases spontaneously. As there is no afferent supply, there is no efferent flow, especially if the actual cautery is used in cutting through the pedicle and the cervix. In all cases these sinuses are closed either by suture or by spontaneous blood-clotting after ligation of the uterine arteries (which I usually isolate and tie separately in order to avoid the ureters). The clotting of blood varies in different cases. I am inclined to think that the woman who by long-continued uterine hemorrhage has become markedly exsanguinated is the one in whom coagulation may be most rapid, but in whom the coagula are most easily detached. Her life has perhaps been preserved during her long illness by this tendency of bleeding sinuses to close themselves. Be that as it may, the patient who is anemic and yellow at the time of operation is the one in whom I am led to fear pulmonary embolism.

Is pulmonary embolism avoidable? Can the likelihood of its occurrence be predicted? Has it a definite relation to phlebitis?

In my experience pulmonary embolism may occur after the most successful operation and during a perfectly satisfactory convalescence. There is no way of predicting it, and there is no known predisposition to it. The possibility of its occurrence must be remembered, especially when operations not actually imperative are under consideration.

The following cases illustrate some of the conditions under which sudden death has taken place after my operations for abdominal diseases:

Case I. George E. S.,[3] aged twenty-two years, living in Fall River, patient of Dr. W. T. Learned, after a week's illness, was operated upon for appendix abscess on April 28, 1894. The operation consisted of a deliberate and careful dissection down to the cecum, behind which was found thin, fecal pus. The main cavity of the abdomen was not opened.

While convalescing extremely well, this young man, during the second week, suddenly died. Autopsy

[2] O. R., vol., xlix, p. 97.

[3] S. H. R., vol. xxxiii, p. 55.

showed the pulmonary artery completely plugged. There had been no suspicion of phlebitis.

CASE II. Mrs. Ella C.,[4] aged fifty years, patient of Dr. J. M. Crocker of Cambridge, I saw on Nov. 22, 1899. This patient had come to Dr. Crocker two years before complaining of metrorrhagia. I found a fibroid the size of a cocoanut, tender and pressing on the bladder. Hysterectomy was advised. The uterus containing a fibroid about the size of an orange was amputated above the cervix with the actual cautery.

The patient rallied from the operation, and everything went well until the afternoon of the fourth day, when she suddenly gasped for air, and died before either nurse or physician could reach her.

The autopsy was performed by Dr. Swan twenty-four hours after death. An extensive thrombosis of the superior cava was found, with plugging of the pulmonary artery. It was hard to tell where the thrombi began. They were very extensive, and from their character there was no doubt that they had formed before death.

CASE III. Laura C.,[5] aged forty years, colored, I saw at the State Hospital in Tewksbury on March 17, 1897. In this case there was a history of a uterine fibroid since 1895. This patient was mildly demented. She made a good recovery from the operation — an abdominal hysterectomy — but four weeks later died suddenly while trying on an abdominal supporter. Dr. Whitney reported that the growth was fibromyoma of the uterus.

Autopsy was made by Dr. M. W. Richardson, who reported as follows:

"Brain shows considerable injection of vessels of pia. Otherwise nothing abnormal noted. Seat of operation apparently in first-rate condition. Kidney normal in shape and size. Capsule peels off fairly easily. Microscopically, kidney, though somewhat old for satisfactory examination, shows a considerable increase in interstitial tissue between tubercles, and also thickening of capsules of glomeruli. Otherwise nothing abnormal noted. A moderate chronic interstitial nephritis."

This death was supposed to have been caused by pulmonary embolism, though none was observed post-mortem. The death was soon enough after operation to make reasonable some direct connection between them. If not *post hoc ergo propter hoc*, yet it would be hard to convince one that the death was not in fact the result of the operation. I include this case in the list of unavoidable fatalities, though I admit that there is no direct pathological connection between the operation and the death. In this case the line of suture was perfect; there was not even an adhesion: no operation ever went more smoothly, and yet the patient was not free from danger up to the time of fitting an abdominal supporter preparatory to walking about.

CASE IV. Mrs. Maria R. S.,[6] aged thirty-four years, of Wales, Mass., thin, pale and sickly, had a right-sided tumor, fluctuant and closely attached to uterus. On Dec. 20, 1902, at the Brockton Hospital I removed a dermoid cyst with twisted pedicle. The patient died of pulmonary embolism on Dec. 30, 1902.

In this case there was more than the usual non-adherent aseptic cyst; changes had taken place which made the operation extremely difficult and the prognosis grave. The patient did well, nevertheless, for ten days, when she died instantly, without any premonitory symptoms. (Autopsy showed a plugging of the pulmonary artery.)

CASE V. Another case, not abdominal but pelvic, was that of a woman in middle life, a patient of Dr. Henry W. Boutwell of Manchester, N. H. There was marked exsanguination, owing to a submucous fibroid, in reality a pediculated uterine polyp, removal of which did not take ten seconds. There was no hemorrhage from the pedicle. Within a few hours of the operation the patient died instantly from the lodgment of a thrombus in the pulmonary artery.

CASE VI. A final case was that of a man exsanguinated by bleeding piles, for which a clamp-and-cautery operation was performed. Within twenty-four hours of the operation this man suddenly died, without premonitory symptoms.

In these last two cases the nidus of the thrombus was undoubtedly in the venous plexuses of the pelvis. Both patients were yellow from loss of blood; and, as I believe, peculiarly liable to venous stasis and blood coagulation. I am convinced that in such cases there is from this cause danger enough of serious disaster to be taken into consideration. In cases of this kind, however, operation is imperative, whatever the dangers, and when the blow does fall, it is softened by the fact that the family and friends have been warned of its possibility.

In none of these cases had there been any pain in the legs, or any evidence whatever of phlebitis. There had been no disquieting symptoms of any kind, in fact.

Suppression of urine as a sequel of surgical operations is not especially infrequent. In many cases the suppression may be reasonably predicted; in the rarest instances it occurs unexpectedly, after demonstration of the sufficiency of the kidneys. In some cases it has occurred after operations the performance of which was absolutely essential to the preservation of life, in spite of known renal disabilities — the condition of the kidneys was unfortunate, but the risk of suppression had to be run.

In other cases, happily infrequent, suppression has followed operations of convenience or of comfort, so to speak, operations for the relief of conditions threatening neither life nor — seriously — health. The suppression of urine following myomectomy or hysterectomy for fibroids which do not seriously offend belong to this class. I do not advise the removal of small, non-offending fibroids, however, unless the indications are plain or the diagnosis is doubtful; and even then only when the other organs are perfect.

Suppression of the urine after trivial operation, when the kidneys are found at autopsy to be seriously diseased, is a deplorable calamity; but an avoidable one. Such a calamity cannot occur if routine examinations of the urine are made. My experience has never included a urinary suppression after a trivial operation. I have, however, had one case of suppression of urine and death after a hysterectomy which would not have been performed had the urine been examined.[7]

[4] S. H. R., vol. xlix, p. 45.
[5] S. H. R., vol. xxxvii, p. 38.
[6] O. R., vol. xlii, p. 7.
[7] S. H. R., vol. li, p. 65.

By a mischance the diseased condition of the kidney had not been discovered, the physician understanding that the surgeon had examined the urine; the surgeon, that the physician had examined it; and both thinking that it was normal.

These cases do not belong in the category of unavoidable calamities; for suppression of urine is, in the great majority of cases, avoidable if operations are not performed upon patients with diseased kidneys. Careful observation of the amount of urine passed in twenty-four hours, the quantity of urea, the presence of albumin and sugar, the detection of casts and other renal elements, will enable the surgeon to avoid these calamities in connection with operations of comfort, convenience and looks, rather than of necessity. As far as my own experience goes, suppression of urine has occurred but once when the kidneys were perfectly healthy. Suppression is, therefore, *prima facie* evidence of renal disease or renal insufficiency.

The limitation of urinary suppression to pelvic abdominal surgery may, as already stated, suggest that in some cases of suppression I may have tied, or in some other way occluded, the ureters. The only operation which can seriously threaten one or both ureters is that of hysterectomy, with the possible exception of removal of a cyst or other tumor deeply placed in the broad ligaments. I have carefully excluded from consideration those cases in which the suppression of urine was immediate and permanent. Such a form of suppression is the only one which can possibly suggest occlusion of the ureters, and such a form I have never had the misfortune personally to encounter. Indeed, when the operation is necessarily in close contact with the ureters, a careful, deliberate dissection which exposes the ureters as an early and indispensable step in the process makes sure that the ureters can neither be tied nor cut without the surgeon's full knowledge of the fact. Rapid blind mass ligation deep in the layers of the broad ligament, followed immediately by total cessation of urinary flow, is in itself proof that both ureters have been occluded. If care is exercised, however, such a disaster is, of course, as unlikely to occur as are injuries of the pneumogastric, phrenic, or recurrent laryngeal nerves in dissections of the neck.

Of all post-operative disasters the most distressing and deplorable is hemorrhage. It has been only after operations upon the gall-bladder, in my experience, that uncontrollable capillary oozing has occurred. The result in cases of hemorrhage following operation upon the biliary tract has been in my cases so fatal that the discovery of blood staining the dressing some days after operation cannot but cause the gravest fears. I have had four deaths from uncontrollable hemorrhage after operations upon the biliary tract. In three cases there was jaundice; in the fourth a biliary fistula had existed for a year. In the case of biliary fistula a stone impacted in the common duct diverted the entire biliary stream through the gall-bladder and out of the original wound — the wound of an operation for acute cholecystitis. There was consequently no bile either in the intestine or in the blood. During the operation, the field, dry in the beginning, began to ooze from every capillary; and the hemorrhage could be controlled neither by ligation nor by gauze pressure. The predisposition to hemorrhage in this case could not have been owing to bile in the blood; it must have been owing to absence of bile in the processes of nutrition.

Fatal capillary hemorrhage may be regarded as avoidable in jaundiced patients only when operation is avoidable. When in jaundice life can be preserved only by the removal of the cause, usually a stone impacted in the common duct, operation must be performed, in spite of the well known danger of hemorrhage. Under these circumstances death from hemorrhage may be regarded as an unavoidable calamity. A fatal hemorrhage in surgery, even when before operation predicted as possible, during the operation observed as constitutional, after operation found to be uncontrollable, and post-mortem demonstrated to be unavoidable, — a fatal hemorrhage, even under these circumstances, is the most distressing calamity of them all.

Can post-operative capillary hemorrhage in jaundiced patients be prevented by treatment before operation and the calamity thus be made avoidable?

In jaundiced patients I always use, for some time before operation, internal treatment, especially if the blood-coagulation time has not been satisfactory. The treatment consists in the use of ox gall, fruit acids, and sometimes calcium chloride. Whether this treatment has any real preventive effect seems extremely doubtful. When I have feared hemorrhage the most, there has been none; when I have feared it the least, it has occurred. I should still use preliminary internal medication in jaundice, however doubtful the efficacy of the treatment.

While hemorrhage has been going on, I have used in vain gelatine and calcium chloride.

In some cases of gall-bladder surgery not included in the class of unavoidable disasters, the hemorrhage has been from the friable vascular masses of malignant disease. Though these hemorrhages are perhaps unavoidable, they are to be expected; and the fatal termination cannot be regarded as a calamity wholly to be deplored.

Hemophilia is uncontrollable, but so unusual that I need hardly consider it in connection with this subject. I have never seen a case of hemorrhage from this cause. In one case, a case of nephrectomy for cancer in a woman, a history of hemophilia had served to postpone operation to a time very unfavorable for permanent cure. When I first saw the patient, operation was imperative, in spite of the history. The kidney was removed without loss of blood; but the patient, herself a physician, had managed with a story of hemophilia to postpone her operation, as it proved beyond the possibility of permanent cure, though she lived for a year or more after the operation.

The last group to be considered includes those

cases of death after operation in which no adequate cause can be found. I can offer no explanation for them.

An illustrative example recently occurred at the Massachusetts General Hospital. A woman, aged thirty-five years, was operated upon by me for an ovarian tumor. The operation was difficult and prolonged, as the tumor was deeply sessile and adherent. The patient died in three or four days with distention, obstipation, vomiting, high temperature, and high pulse. She, therefore, presented a typical picture of peritonitis. I had no doubt whatever that the cause of death was an extensive peritoneal infection. The autopsy showed, however, no signs of infection and no cause for death; no micro-organisms were found in the peritoneal cavity, and all cultures were sterile.

I had seen similar cases before. The only explanation which seems probable is that this was indeed a case of infection, but that the bacterium was one which escapes detection by our present methods of research; that it was one which fails to grow upon ordinary media; and that possibly the infection was one which fails to give the usual physical signs in the peritoneum. The death could not have been the result of any ordinary overwhelming infection, for there was sufficient time before death for the development of gross and microscopic evidence of a bacterial cause.

These considerations lead us, however, into realms of conjecture in which one guess is as good as another. The deplorable fact is that deaths occur in these cases. It is but a slight consolation to be told that there is no infection; for if there is no infection, how can we in future provide against the main and distressing fact — the death of the patient? Perfection of asepsis is of little moment if the patient dies.

Cases like the ones mentioned in this paper are fortunately unusual. Were they common, the surgeon's burden would be indeed too great to bear. The few cases with which I have illustrated this subject have been distributed over a period of fifteen years, and among some five thousand abdominal operations.

Can these disasters be foreseen and prevented? The answer must be, I think, in the negative. It seems unlikely that this small fraction of danger will ever be eliminated from surgical cases — the hazard of surgical operation must always include such risks as pulmonary embolism, suppression of urine, capillary hemorrhage, and inexplicable and fatal peritoneal symptoms.

## PULMONARY TUBERCULOSIS AND SANATORIUM TREATMENT.*

BY VINCENT Y. BOWDITCH, M.D., BOSTON.

A FEW years ago I had the honor of giving you the results of my knowledge of the sanatorium treatment of tuberculosis at the Sharon Sanatorium, and now it is again my pleasure to address you with the hope that the results of a larger experience may be of service to you and hence to the cause for which we are all striving.

Since I last spoke before you, an astonishing change has come over the community in regard to the whole question of tuberculosis, not only among the profession but among the laity as well. Marked apathy has changed to extraordinary zeal, and, as is often the case, those who have been among the first to advocate certain measures which they know to be of great use, find themselves not infrequently obliged to take a rather conservative position lest the often extravagant claims made by recent converts shall only result in a reaction of sentiment in the community and a consequent unreasonable prejudice against methods of treatment which, beyond the shadow of a doubt in the minds of those who are best able to judge, are of infinite value, when rationally used, to thousands of sufferers.

In this somewhat conservative position I find myself to-day, and while not abating one iota in my enthusiasm for sanatorium treatment in properly selected cases of tuberculosis, yet I wish to sound a note of warning against what I know to be extravagant claims for " open air treatment," made often by those who have only superficially studied the subject.

While warmly acknowledging what we owe to the press, and while not wishing to underrate its value in promulgating the ideas which are essential for the proper use of these methods, yet the flaring and exaggerated statements which often appear in our daily papers of what has been accomplished at such institutions as the state sanatorium at Rutland and that at Sharon have often been such as to make "the judicious grieve." Exaggerations of true facts only serve to weaken the cause in the end, for the misguided individuals who rush for aid in the hope of healing a far-advanced process only meet with disappointment in the majority of cases. In their bitterness they and often their friends denounce the whole system as a fraud simply because they have been misled by the false statements of those who are not in authority, and in spite of the vain explanations of those in charge of the institutions. Our own profession also is often to blame, I regret to say, in this particular. Greater caution than now should be used in speaking of a " cure " before a number of months have passed during which time the patient has remained well under ordinary conditions of life after he has left a sanatorium. I feel that I cannot emphasize this point too strongly, for the often careless method of speaking of cases as "cures" when, after a stay of a few weeks, possibly months, the patients have the appearance of health only, is on the face of it, with our knowledge of the disease, absurd, and is apt to bring discredit later upon those who do their utmost to correct these false impressions. For myself, I can state that, recognizing the treacherous nature of the disease and wishing not to make extravagant claims, I have never in my fourteen years of experience of sanatorium treat-

* Read before the Worcester District Medical Society at a meeting to discuss the question of " Pulmonary Tuberculosis," Oct. 12, 1904.

ment used the word "cured" when a patient has been discharged from either institution, no matter how well he has appeared. I have adhered to the term "arrested" only, for those cases in which abnormal symptoms have ceased. The subsequent history has often justified the more favorable term, but up to the present I have followed the same method, although I think I stand alone on this point at present.

In our report at Rutland it will now be noticed that the terms "apparently cured" and "arrested" are used together. This has been done in deference to my colleague, Dr. Clapp, who makes use of the former term, and for the sake of greater uniformity in the report. In reality the two forms are supposed to represent about the same condition, and are meant to express at least an arrest of the disease which may or may not be permanent, and to prove which the test of time must be applied. In spite of these precautions, statements to the effect that patients are discharged "cured" are continually put into our mouths by ex-patients and their friends, to the detriment, naturally, of the methods used when relapses have occurred.

In regard to the class of cases which are admitted both at Sharon and Rutland, there exists a very mistaken idea even among the profession. As our circulars announcing the wish of the trustees of the sanatorium at Rutland state that only incipient cases or at least only those susceptible of improvement should be admitted, it is a very common idea that most of our cases have really few if any symptoms of active disease. This is the exact reverse of the truth, the fact being that really incipient cases form but a very small percentage of those treated in the sanatoria I mention, the majority having well-marked symptoms, many having advanced signs of disease in the chest. This being the fact, then, it speaks all the better for sanatorium treatment that we are able to accomplish as much as our statistics show. When we state, as we are able to in recent years, that about 50% of *all* cases admitted have left with the disease "arrested," we are massing our incipient and advanced cases together. When we show that among the cases which seem to be really incipient, between 70% and 80% leave with the disease arrested, it is only a proof of the importance of what we are constantly endeavoring to teach, *viz.:* not to wait until symptoms are well-marked but to send the patients at once when the first symptoms appear. Until the profession learns this, we are wasting valuable time. In spite of continued requests and statements to the contrary, however, patients are recommended by physicians to both institutions far beyond the incipient stage of tuberculosis. At Rutland we have been forced by the state authorities to enlarge the institution at the risk of making our work much less efficacious because, in order to fill the beds, it necessitates the admission of many far-advanced cases for which there is practically no hope of permanently arresting the disease even when a certain amount of benefit can be obtained. In speaking for myself, I know that I speak for others who are engaged in this special line of work, both at Rutland and elsewhere, when I say that in order to counteract this tendency and so to accomplish the best results we must have a clearer idea than at present exists among our own profession as to what constitutes a really "incipient" case for which there is a great hope of permanent arrest of disease.

I mention these details, not in any spirit of fault-finding, and with full knowledge of how useless it is to attempt to continually refute false statements. I simply wish to bring before you the difficulties which beset us in our work in our endeavor to be just in our claims, and to tell you wherein the profession can aid the work. It is my desire, moreover, to let my experience stand for what it is worth to help others to judge better, if possible, what can and what cannot be done by sanatorium treatment for sufferers from tuberculosis.

Just here it may be well for me to state what my belief is in regard to the comparative merits of sanatorium treatment near our homes and the so-called "climatic treatment," about which so much has been written and such hot discussions *pro* and *con* have arisen by the advocates of either method. From the outset, in urging the establishment of sanatoria for the treatment of suitable cases in favorable localities, not far from our great cities, I have always believed that for the *majority* of cases a climate in which the maximum of weather suitable for being out of doors could be obtained is the best for a tuberculous patient, other things being equal, that is, the ability to have good food and comfortable living, which are essentials. The mental attitude of the patient also should have great weight in making any decision. I still believe that properly regulated sanatoria in such localities can obtain better results than in less favorable climates; but for the hundreds and thousands who cannot avail themselves of such changes, these institutions near home are of infinite value, to say nothing of what is of even greater importance, their educational value to the community at large upon matters of hygiene. That many patients undoubtedly do better in suitable situations in their native climate than in those to which they are unaccustomed is perfectly true, as we have had many instances to prove; but I differ entirely with those who take the position that it is no longer necessary for any one to leave home, that he can be cured as well at or near home as by going away. Such conclusions are to me far too sweeping. In this as in every other disease the individual must be studied by himself and not as one of a class to be treated all alike. To attempt to prove, moreover, as has been done occasionally, that patients can improve as well at their homes in the impure air of cities as in the purer air of the country by the so-called "fresh-air treatment," seems to me the height of absurdity.

With this somewhat lengthy preamble, let me now briefly state what our reports at Sharon and Rutland have shown in recent years.

To quote from the Annual Report of the Sharon

Sanatorium, March 1, 1904: During the year 54+ % of all cases of tubercular disease were discharged with the disease "arrested." Thirty-one minus per cent were discharged as improved, some of these just falling short of total arrest of disease. Nine per cent were not improved. Five minus per cent of doubtful cases which for one reason and another did not give positive proof of the presence of tubercular disease although showing very suspicious signs, were discharged "apparently well," and were not included among the tubercular cases.

In the last Annual Report (1903) of the State Sanatorium at Rutland the following figures appear: During the year, forty-eight and nine tenths per cent of all cases admitted were discharged as " arrested " and " apparently cured," the two services of the hospital being thus classed together as previously stated. Forty-three plus per cent were discharged as " improved," which includes all shades of improvement from great to slight. Seven and nine-tenths per cent were discharged " not improved."

A slight difference between the percentage of arrested cases at Sharon and Rutland will be noted, the balance being rather in favor of the smaller institution, which is also intended for people of limited means only, and although it would be idle to draw conclusions upon such a slight basis, the fact is of interest in one or two particulars.

In the first place it would be reasonable to suppose that the somewhat closer supervision of the patients possible in a small institution would militate in its favor. Another point, however, is of special interest in that it confutes the rather loose statement which I heard uttered by a practitioner not long ago that no sanatorium should ever be placed below 1,000 feet altitude. As a matter of fact the Sharon Sanatorium stands at an altitude of about 250 feet only, and is only about 12 miles in a direct line from the sea. The Rutland Sanatorium stands at an altitude of about 1,100 feet, and is 50 miles from the sea. It is my own belief that given certain favorable qualities of situation, such as a porous soil, shelter from harsh winds, and a good water supply, the difference of a few hundred feet has little effect one way or the other upon the patients. When we come into the thousands, it is a different matter, for physiological changes then take place which may work for good or ill.

I come now to the last point of my paper, *viz.:* the subsequent histories of patients who have been discharged from sanatoria as arrested cases. It is still a little early, of course, in the history of our great state sanatorium, to tabulate for satisfactory data all the cases that have left the institution with the disease in a state of arrest, although we have hundreds who, after the lapse of four or five years, continue to show the great benefit, to say the least, which they have obtained there.

At the Sharon Sanatorium, however, which is now in its fourteenth year, I have been able to show satisfactory data to prove the lasting effects of the " fresh air treatment " with all that this embodies and as practised at that institution.

Last year I read before the American Climatological Association a paper entitled " Subsequent Histories of Seventy-nine Arrested Cases Treated at the Sharon Sanatorium from 1891 to 1902, Inclusive."[1] Of these cases 15% had died; the others who had left anywhere from one to eleven years before, at time of writing were in excellent health apparently, many of them engaged in active work. In looking up the causes of death in the 15% who had succumbed, another interesting fact came to light, *viz.:* that one died from another cause, after an operation an examination of the lungs having been made by an eminent physician just before and no evidence of disease found in the lungs; the others had either been advanced cases in which an arrest of disease had come unexpectedly, or where this was not the case the patients had returned to unhygienic surroundings and employments against advice, with fatal result after varying intervals of time. It should be stated, moreover, that several cases who were discharged as " much improved " had later regained their health by following out sanatorium methods.

Thus, gentlemen, those of us who are working in this special line place these results somewhat briefly before you. No one recognizes more keenly than we the dangers of claiming too much; no one knows the discouragements that come from unsuccessful cases more than we. The long, tedious, weary waiting to see whether a case will improve or fail is a well-known factor in our lives, but when one pauses and thinks of the utter hopelessness that characterized the disease in former days and of what can now be done, doubt and discouragement disappear and he feels with justice that by following in the footsteps of Hermann Brehmer, Dettweiler, and others in Germany, and Trudeau in our own country, that tuberculosis need no longer be regarded as a hopeless disease as in the past, and that we may yet be able to class it as we do small pox and the plague, as horrors of the past which have only to raise their heads to be vanquished.

[1] Journal of the American Medical Association, 1903. Transactions of the American Climatological Association, 1903.

## MECHANICAL RESTRAINT AND SECLUSION OF INSANE PERSONS.*

BY CHARLES W. PAGE, M.D., DANVERS, MASS.

WHILE a certain proportion of the human family must have suffered from mental disorders for ages past, it is only about one hundred years since the propriety of controlling insane persons by the aid of manacles, shackles, chains, ropes, straps, etc., was especially called into question. At this stage of the world's progress, it is difficult for one to comprehend those former-day doctrines of philosophy, religion and ethics which overpowered or distorted human sensibilities to such a degree that compassion for the afflicted insane

* Read at State Board of Insanity Conference, State House, Boston, May 17, 1904.

had little, if any, weight in deciding what measures should be employed in their treatment; while a vague mysterious horror, or fear of the disease, readily suggested to friends or custodians barbarous antagonism to its manifestations. During the political and social upheaval of the French Revolution, but quite aside from any design on the part of the revolutionary actors, that great moral genius, Philippe Pinel, was appointed superintendent of the Bicetre, the great Paris asylum for incurable insane men. When Pinel entered the asylum with M. Couthou, a member of the Commune, they were greeted, it is said, " by the yells and exclamations of three hundred maniacs, who mingled the clanking of their chains with the uproar of their voices." This horrible condition of things had existed indefinitely without a recorded protest from political officials, church authorities, or friendly philanthropists. Public opinion had come to regard such conditions as inevitable and yet we all know to-day that the shocking features of that gloomy Paris prison asylum were due entirely to ignorance, and " man's inhumanity to man." Pinel alone held such an opinion at that time, and when he requested permission of the government to do away with " the chains, iron cages and brutal keepers " he was generally regarded as a reckless visionary, almost an insane man himself. Nevertheless, he removed the chains from some fifty men at once, and the others subsequently, without a resulting accident or untoward event. Owing, no doubt, in part, to unsettled political conditions in France at that time, this epoch-marking, dramatic incident in the world's progress of humanity, was not widely known or duly appreciated until after many years had elapsed. Meantime, an English Quaker, William Tuke, becoming sorely distressed with the depleting and repressive methods to which the insane in the government asylums of Great Britain were subjected, founded at York, England, and at his own expense, a hospital for the insane, where lunatics would be treated as sick people, and where gentleness and patience would, under all conditions, be exercised towards them.

This humane innovation in lunatic asylum practice attracted considerable attention in England, and, although his " Retreat " was conducted without ostentation, but in the simple, quiet methods which characterized Quakerism, it aroused intense hostility, and its methods were denounced and vilified, especially by those interested in the management of English asylums, in which insane inmates continued to be treated according to the rigorous code of the conservative British authorities. Chains, straps, strait-jackets, threats, force, coercion, held sway in practically all public asylums, while the York Retreat continued its gentle and most successful non-restraint ministrations to the insane. No doubt, theories and methods in many English asylums were in time somewhat modified by the influence of the York Retreat, but nowhere else were the efficient, advanced, Quaker principles adopted as the prevailing moral tone and force of an English institution prior to 1838, when at the Lincoln Asylum, Dr. Gardner Hill, seconded by Dr. Charlesworth, endeavored to absolutely abolish mechanical restraint. But their convictions were regarded as too radical by the authorities above them, and, as a consequence, they lost their situations as asylum officers. Yet the time for a revolution in lunatic hospital management was ripe, and the requisite man, with masterful endowments, was at hand.

In the following year, 1839, Dr. John Conolly, without previous experience in such work, assumed control of the lunatic asylum at Hanwell, containing over eight hundred patients. For some years previously this asylum had been managed upon lines which were conspicuously mild for those days. In fact, " it was deservedly considered one of the best managed asylums in England," and yet, Dr. Conolly found there forty patients subjected to mechanical restraint and, designed for such uses, about six hundred instruments, of one kind and another, half being leg locks and handcuffs, with forty coercion chairs. All these he collected in one room, which was called the museum, and from that time, no patient in Hanwell was subjected to mechanical restraint. In 1844, Dr. Conolly wrote as follows: " After five years' experience, I have no hesitation in recording my opinion that with a well constituted governing body, animated by philanthropy, directed by intelligence and acting by means of proper officers, there is no asylum in the world, in which all mechanical restraint may not be abolished, not only with safety, but with incalculable advantage." Dr. Conolly abolished mechanical restraint, not simply because it was an inheritance from the prison régime to which the insane were formerly subjected, but more especially because it was the material embodiment of all prison policy — coercion. As an English authority has stated it, " what he sought was not only to abolish the tangible instruments of restraint, but to substitute the power of a superior mind, guided by unvarying kindness. He showed by reasoning, he proved by trial, and he enforced, by all the high courage of his unvarying patience and his tender heart, the great principle that the insane are best governed by a law of kindness and that all coercion applied to them is not only unnecessary, but hurtful. The credit of first suggesting non-restraint does not belong to Conolly, but it has been well said the credit of originality is often due, not so much to the man who first suggests a thing, as to him who suggests it in such a manner as to display its value; or, not so much to him who sets an example worthy of imitation, as to him whose example compels imitation by its worth. What Conolly did was not merely to abolish restraint and torture within the sphere of his personal control, but to render their continuance impossible within the limits of civilization. Under the influence of his example, the fetters fell from the limbs of the lunatic in all English asylums. By example and precept,

by tongue and pen, he labored without ceasing, in defence of the great principles involved, and he had the satisfaction of ultimately seeing the practice founded upon them, more or less closely copied in every asylum in England, and in many others located in various parts of Europe. He found the lunatic an object of dread and suspicious horror; he left him an object of commiseration and kindness. He found insanity regarded as a disease of the mind, he left it recognized as a disease of the body. He found a madhouse a prison, and a place of torture without mercy; he left it a hospital for many and an asylum, in fact, as well as in name, for all inmates."

This great work, immeasurable in its continued and ultimate effects, was accomplished only as the result of the most painstaking personal application to detail in his own wards and a long continued battle for mercy and justice. Opposition to his theory and practice, some of it honest doubting, but much of it ignorant and bitter prejudice, sprung up and attacked him from all quarters. He met it first from his own country, from English asylum officials, and later from Continental critics. He met all opponents in the true Quaker spirit and his intelligence, his courage, and his sincerity triumphed, as such qualities always will, over error and ignorant prejudices. When his detractors could no longer maintain the commonly believed error that for mechanical restraint some substitute treatment no better, perhaps more reprehensible, was adopted, the assertion that Dr. Conolly's patients were of a different, a milder type than those to be found in other asylums, was advanced. First, in Great Britain, it was claimed that the Hanwell patients were a specially effeminate lot. Then, when non-restraint became the general working policy of English asylums, Continental fault finders asserted that English people were a more docile race than native Frenchmen or Germans. The same untenable assumption is often heard to this day in extenuation for the continual use of mechanical restraint in certain hospitals. It will be seriously stated that the original character of hospital populations varies, from the mild to the aggressive, in different sections of a given country, or state, and possibly in contiguous districts, even. At Danvers, mechanical restraint was abolished about four years earlier in the women's than in the men's wards, not because women patients are less difficult to manage, but for the reasons that an arbitrary position on this question was not assumed by the superintendent at first, and because the assistant physicians and supervisors in the women's department were especially responsive to suggestions in this direction. Eventually, when non-restraint had permeated the whole hospital, and when the chief assistant who had been gradually convinced of the feasibility of non-restraint against his pre-convinced but honest convictions, remarked in answer to some statement of fact, which was made one day, "Oh, it's a comparatively easy matter to avoid mechanical restraint now because we don't have the cases that require it as we formerly did," then and there, the superintendent took occasion to point out that he had discovered exactly what every man brought into intimate association with non-restraint, had discovered; namely, that non-restraint once established in an institution, conditions which formerly suggested its use rarely if ever occur; that, as institution after institution had been placed on the non-restraint basis, there had been a continuous, successive rediscovery of the same altered internal conditions, from the days of Conolly to the present time, a period of some fifty years. Such being the fact, it must be admitted that this less fractious, less turbulent condition of the insane in the wards of the hospitals was always the outcome of non-restraint and never the forerunner.

This discloses the real solution of the controversy. Where restraint is permitted, the general spirit of the management breathes coercion, antagonism enforced submission. When non-restraint is the undeviating rule, tact, persuasion and sympathy soften and mellow every act towards the inmates. The employment of mechanical restraint gives the attendants a wrong sense of their personal power over patients, such a physical advantage that they instinctively incline to self-assertion; to issue peremptory commands; to use ill-considered, irritating speech; to give curt answers; to make threats; in short, to attempt to intimidate all but the most quiet patients. "Do this, or so, or you will be sent to the back wards, you will be secluded, or you will be put in a strait-jacket," is the natural style of speech adopted by attendants when threats and penalties are at their command. Having thus threatened a penalty, the average uninstructed attendant concludes that proper hospital discipline demands its infliction unless the excited, frightened patient meekly capitulates, a result one could hardly expect with a sane person, much less with a deranged, apprehensive lunatic. Even well meaning attendants naturally fall into such errors unless carefully drilled and faithfully watched. Fresh recruits are constantly entering the nursing service, and only by individual work with them can the highest ideals of a qualified nurse be instilled into their minds.

I cannot understand how the superintendent of an insane asylum can satisfactorily regulate the use of mechanical restraint if he permits its use. He may reserve to himself the decision as to whether or not it shall be used in each case. But the chances are that he only learns of the final links in the long chain of circumstances which connect the special overt acts of the patient with some affair, trivial it may be, that originated the trouble, and which, by injudicious treatment from the attendants, ultimately assumed serious phases. Under such conditions, the supervising medical officer, when he authorizes the use of restraining apparatus, simply endorses the judgment of the attendants. Let it be understood

that restraint can be used only in exceptional cases, and exceptional cases will be brought to his attention too frequently.

An eminent English authority has recorded his convictions that "there can be no real compromise between the frequent use of mechanical restraint and its entire abolition. One system or the other must predominate in every asylum." In managing the insane, the first impulse of the attendant is to assume authority or superiority, and give commands or orders, and often with a penalty for disobedience expressed, or implied. When the non-restraint principle is adopted, attendants are under no temptation to utter such threats. Thus, they are dispossessed in advance of that which, in the great majority of cases, occasions troublesome friction between themselves and the patient. When driving patients is out of the question, attendants must induce or lead them. They must exercise the art of persuasion, of pleasing, of soothing. Thus, fears will be allayed; confidence will be gained, and a relation of helpfulness and friendship be established. In such arts, the capacity of the individual nurse varies; but all who approach patients in the right spirit, with that desire to befriend which qualifies attitude, tone of voice, choice of words, expression of the eye and use of the hands, can demonstrate the power of a kindly disposed, orderly mind over a disordered intellect. No doubt, there are insane patients who would suffer no personal injury, mental or physical, by the application of restraining apparatus. Indeed, I am willing to concede that cases may arise where, could their management be absolutely disassociated in its influence from all others, mechanical restraint might be the most expedient treatment. But, in an institution for the insane, it should be only the last resort, since so much for the general good of the inmates depends upon the nursing morale of the hospital, and the demoralizing ill effects of exceptions to the non-restraint rule are so pernicious and wide reaching, that officials or nurses should use mechanical restraint only when satisfied beyond question that its use or neglect would determine the life or death of the patient.

Perhaps I speak with assurance, but I worked out this problem at Danvers, where mechanical restraint was abolished deliberately. As has been stated, its use was discontinued in the female wards four or five years before it was wholly given up in the male department. The annual report of the Danvers Insane Hospital for 1897 contains comments upon this subject. To quote:

"I am aware that many persons regard non-restraint in lunatic hospitals as a fad of enthusiasts. I often hear this subject discussed in such terms, or dismissed with such indifference, that I infer comparatively few physicians even view this question from our standpoint, and therefore deem it proper to explain why mechanical restraint is abolished at Danvers. Mechanical restraint may be, and certainly is, used occasionally upon patients in general hospitals with no injurious consequences; but conditions in general hospitals and lunatic hospitals are so dissimilar, this fact proves little. I formerly permitted the use of restraining apparatus upon patients, endeavoring to limit its use to rare and exceptional cases. While working under this policy, I not only found it difficult to decide upon cases, and to convince the nurses that restraint was seldom necessary, but every exception in favor of mechanical restraint seemed to weaken the courage and resolution of the nurses, as well as to diminish my influence and control over them. Then, too, as long as nurses understood that straps and jackets could be employed as final measures, they not only relinquished mild efforts too quickly, but were inclined to assume a dictatorial, aggressive manner towards patients upon slight occasions; and this spirit of coercion as evinced by the nurse in his or her attitude towards the patient was, according to my observation, the starting-point of the trouble with refractory patients in the great majority of cases.

"Now that mechanical restraint is discarded, the nurses understand that they will be regarded as incompetent unless they can manage the patients in their charge without resort to violent measures, seclusion and restraint. Intelligent nurses do not complain of such restrictions. They appear ambitious to demonstrate that a trained nurse can manage the insane without the fetters and instruments which are relied upon in such cases by the unprofessional keeper. Certainly, the non-restraint rule has advanced a kindly, humane spirit in our wards as no other measures could have done. Nurses have no temptation or power to control patients by threats of punishment. Under such conditions, whatever native tact, art and persuasive powers the nurse may possess are rapidly developed; and, as a result, more sympathetic, friendly relations are early established between nurse and patient, and the common annoyances and irritations formerly experienced by both parties are largely avoided. The beneficial effects thus ensuing, when considered in the aggregate, are of such magnitude, I am resolved that the non-restraint rule shall not be broken except as a last resort, as a life-saving measure."

Since that time, I have been responsible for the custody and treatment of more than six thousand insane persons, not one of whom was restrained with mechanical appliances by my orders or within my knowledge. Because a former superintendent purchased retaining apparatus and experimented with it upon not more than two patients and for a period not exceeding one week, according to reports, the makers of such apparatus continue to circulate a statement that the Danvers Asylum is one of their patrons. I have seen patients who in their quiet moments requested that, in their recurring attacks of excitement, a strait-jacket might be applied. But, in such cases, I have found there existed a morbid, hysterical element, which, when properly treated, did not develop the frenzied periods the patient had come to expect and

dread. I have dealt with trying subjects. A native of West India was once transferred to Danvers from another state institution, because, if the nurse who conducted the transfer knew the facts and stated them, "they could not manage her." "But you have had her in restraint," I said. "Oh, yes," the nurse replied, "she has been let out of restraint only two hours a day." This patient was destructive, suicidal and vicious. She remained in the Danvers Hospital three years and nine months, and was never restrained there by the aid of mechanical appliances. In time, she greatly improved; she took her meals for a considerable period in our congregate dining room, and for a time before leaving was granted limited parole of the grounds. I confess that the case of this patient, who was epileptic, therefore hopeless as far as recovery was concerned, was a severe tax upon the mental and physical conditions of both officers and nurses, greater, perhaps, than the results to this single individual warranted. But the non-restraint principle, the *animus* of an ideal hospital régime was at stake, and its preservation was, in my opinion, worth all it cost. Besides, I regard the self-sacrificing care, the sympathy and the patience exercised by the nurses who accomplished such excellent results in this case, as examples of moral heroism, quite as creditable as many that have received public approbation and medals of honor; and who will put a price on moral heroism? Besides, what official or nurse, imbued with proper pride in his or her profession, is willing to admit that science, training and skill have no methods with the insane superior to those instinctively suggested to the mind of an inexperienced, uneducated layman? Too much emphasis cannot be put in the assertion that it is less the machinery employed in mechanical restraint than the spirit of coercion, which its employment fosters, that should be abolished from an insane hospital.

A prominent general practitioner of medicine once remarked to me, "This talk about non-restraint is all rot; we use it at times in our general hospital." This gentleman did not appreciate that the relationship existing between patient and nurse in the general hospital differs widely from that necessarily established in the insane hospital. He did not take into account the fact that, in the general hospital, where every act of the nurse is under the constant watch of rational observers, the use of restraint is safe-guarded as it cannot be in the insane hospital wards. Nor did he comprehend this important distinction, that in the general hospital, the chief end to accomplish by restraint is the control of the patient; while, in the insane hospital, the prime requisite for the highest success in management is the intelligent self-control of the nurse.

The argument against mechanical restraint applies in large measure to seclusion of the insane. While seclusion is, in some degree, less demoralizing in its effects or its influence upon the nursing staff of an institution, only in rare and exceptional cases can its employment be remedial or beneficial. If, as Conolly said, "Restraint is Neglect," it is doubly true that seclusion is neglect. If used, it should never be prolonged. As a rule, thirty minutes' seclusion is worth, as a corrective measure, more than twenty-four hours of the same treatment. Next to execution, solitary confinement is the severest doom that legal tribunals can pronounce upon hardened criminals. Solitary confinement is universally considered to be painfully trying to a sane mind. How can it be improving to a deranged man, shut away from associations with human beings, incapable of comprehending the logic of his position, consumed by delusions or burning with revengeful indignation towards the authors of his imaginary wrongs?

Can all the insane be managed without restraint or seclusion? Conolly always said "Yes" to that question. When, after consulting with him, superintendents of other institutions remarked that they would return home, and try non-restraint in their asylums, he would coolly reply, "You will succeed if you are in earnest." Some Continental hospital officials were well-nigh exasperated by Conolly's calm, significant, qualified prediction, "You will succeed if you are in earnest." He had been in earnest. In order to attain his ends at Hanwell, he had devoted a surprising amount of personal attention to each trying, difficult patient, visiting such both by day and night, watching the conduct of attendants towards such cases with unceasing vigilance. Superintendents who hope to accomplish results which made his name famous as a philanthropic physician and skillful asylum manager must imitate the example of Conolly to the extent, at least, of giving considerable personal attention to those patients whose conduct taxes the patience and wits of the nurses. The successful management of the turbulent insane without restraining apparatus cannot be accomplished by simply forbidding its employment.

Rules to meet the exigency of every possible situation cannot be formulated in advance, since the various patients will present such dissimilar, unexpected and individual features of difficulty. Therefore, the hospital rule maker, the commanding official, must intimately share with the nurses the labor and responsibility which trying cases force upon the management. I believe it is an important part of the system of instruction that each instance of friction between nurse and patient receive consideration from the superintendent, and if thought best, that the involved nurse be commended when she acted judiciously, or be admonished when evidently failing to exercise due art as a trained nurse. When the position of the nurse was faulty, the better way should be pointed out. Such methods teach, and the physician who adopts them is soon able to identify those nurses who have special aptitude for their work, and can select for the difficult posts those best qualified for the trying duties. Nurses who possess self-poise, capacity for tact, and power to rapidly conceive expedients will

naturally succeed. I have seen slender, light-weight girls manage the hardest wards quite as well as those of large stature. As an aid towards the development of such nurses at Danvers, each ward is supplied with special report slips to be used according to directions printed on each slip; *viz.*, "When a patient escapes; attempts to escape; receives an injury, accidentally or otherwise; has to be handled with force, or is secluded; the attendant engaged in the affair, or the one in charge of the patient at the time, must send a written report to the medical officer in charge of the ward in which the patient belongs, who will countersign the same and forward it to the office of the superintendent." At a convenient time, the patients thus reported are visited by the superintendent with the slip in hand, when such personal investigation and instructions as may seem necessary can be given.

Being in earnest is the solution of the non-restraint question. The ruling authority over and above the nursing staff must be in earnest; and this signifies clear insight as to the evil and its remedy; certainty as to what can be done with the insane by virtue of patience, sympathy and tact; with determination, watchfulness, faith and enthusiasm.

## POTT'S DISEASE. TREATMENT AT A LATE STAGE. REMARKS ON THE PATHOLOGICAL ANATOMY.

BY E. W. TAYLOR, M.D., BOSTON,
*From the Neurological Service, Long Island Hospital.*

The following case derives its interest from the facts that the disease developed in an adult, following an attack of typhoid fever, that the process in the spine progressed steadily to involvement of the cord resulting in a practically complete paraplegia, and that persistent treatment produced a definite amelioration of the condition, in spite of the serious damage to the cord, as shown post-mortem:

P. McG., forty-five years old; Irish; by occupation a teamster; was admitted to the Long Island Hospital, April 16, 1895. He had been in the Boston City Hospital the preceding summer with typhoid fever. About two weeks after his discharge he noticed a lump about the middle of his back, which was not painful. Shortly after this he had difficulty in walking, and was then treated at the Carney Hospital by Dr. J. E. Goldthwait. Under this treatment the lump decreased considerably in size.

The history given at the Long Island Hospital was as follows: He denied venereal infection, and in general had been well antecedent to the attack of typhoid fever mentioned. He had remained in bed twelve weeks, and for three weeks had been treated with a plaster jacket, after which he was able to do his work. About two months before admission to the Long Island Hospital he had noticed weakness of the legs, although he was still able to walk. At the time of entrance he was unable to walk and complained of numbness of the legs and cold sensations in the legs from the knees down. He also had some difficulty in micturition, but no incontinence. There was at no time any cerebral disturbance.

*Physical examination* at this time showed the arms uninvolved; passive movement in both hips slightly hindered; stiffness and rigidity of both legs, particularly of the right; ankles rigid; active movement impaired in all directions; no ataxia; feet in position of marked plantar flexion; knee jerks on both sides very much increased, with patella clonus; ankle clonus strongly indicated on both sides; plantar on both sides definite;[1] cremaster present, slight; abdominal and epigastric reflexes normal. Sensibility to pin prick was at this time unimpaired; contact was also normal and there was no loss of muscle sense in the toes.

From this time on the symptoms already noted increased steadily in spite of such treatment as was applied, the kyphosis varying in size, dependent largely upon whether the patient attempted to sit up, when it at once increased. The spastic rigidity of the legs increased to practically complete paraplegia with highly exaggerated reflexes, but without marked objective disorder of sensibility. Sensations of numbness in the legs were prominent; difficulty in micturition persisted, and he had at times painful sensations in the epigastrium when he attempted to sit up. Contractures of the feet became very marked, and slight but definite disorders of sensibility came on in the legs; the prick of a pin could no longer be recognized as such. This condition remained fairly constant with occasional temporary improvement, but on the whole there was a steady increase in the signs of injury to the cord.

On July 20, 1898, he was discharged to the Carney Hospital to be again under the care of Dr. J. E. Goldthwait. During his stay there he improved decidedly in spite of the development of a genito-urinary tuberculosis. Dr. Goldthwait has kindly written me as follows of the case, in which he took a very personal interest:

"He was seen by me [Dr. Goldthwait] about nine years ago, first at the Carney Hospital, then being about forty-four years of age, with a sharp knuckle in the spine, undoubtedly representing a beginning Pott's disease. He was treated at that time but gradually developed a paraplegia, for which in those days we knew no other treatment than long quiet in bed. The principle of hyperextension, which has been used so much since, was not then instituted. Accordingly, as it meant a long period of rest he went to Long Island, and was seen by me two or three years afterwards. At that time the paralysis had existed for four years, and while there was naturally little expected of treatment by hyperextension, in the light of a few cases with marked improvement where the paralysis had existed for a shorter time, his removal to the Carney Hospital was advised, a statement being made at that time that he could be no worse and might possibly be improved.

"At the time of the transfer there was absolute paraplegia, except that in one foot the toes could be moved slightly, due apparently to some slight power in the short flexors. On entering the hospital the spine was hyperextended, this treatment being continued for nearly two years. During the long period of paralysis adhesions had formed in the knee, hip and ankle joints, the feet being in a position of extreme dorsal extension. These adhesions were broken under ether and tenotomy of the tendo Achillis performed. In the first six months decided improvement took place, and voluntary contraction of practically all the muscles below the waist became possible. There was, of course, much less strength than normal, but the contraction of all the muscles was definitely apparent, and there was

[1] The Babinski phenomenon had not at that time been studied.

sufficient in the anterior thigh muscles so that horizontal extension of the legs was possible. With the jacket it became possible for the patient to swing himself out of bed, and with the aid of crutches to hitch along the ward. The improvement made him distinctly less helpless, so that the hospital care was less arduous. During the last year of his stay at the hospital the improvement amounted to little. There was, perhaps, a slight increase in the amount of strength in the legs, but the change was almost imperceptible.

"If you remember, you saw him several times at the Carney Hospital during the first six months of his treatment, and the case interested me exceedingly, as it apparently represented one in which impulses were transmitted through a diseased cord after four years of paralysis. Undoubtedly, a part of his improvement was due to the manipulation and the operation for the deformity of the feet, but it did not seem probable to any of us, and I think that you shared the same opinion, that all the improvement could be explained in this way."

After staying two years at the Carney Hospital he returned to the Long Island Hospital, Feb. 29, 1900, with a decided improvement in all of his symptoms. Passive motion still remained limited in both hips and knees, more marked on the right; he was able to abduct and adduct the legs but had no flexion. He had fairly good motion in toes and plantar flexion in both feet. The knee jerks were very active, and there was ankle clonus on both sides. Sensibility was essentially normal to pain and temperature. The back was straight, somewhat rigid, without kyphosis. A leather jacket was continually worn, but it was with great difficulty that the patient could be induced to walk or take exercises. He was able, however, to walk the length of the ward with crutches, swinging his legs somewhat from the hips, a very marked improvement over his condition before going to the Carney Hospital.

From this time on up to Oct. 13, 1901, his condition remained fairly good apart from excessive constipation and disability resulting from the cord lesion. Oct. 31, 1901, he was seized with a sudden attack of abdominal pain with vomiting. Examination showed tenderness over the abdomen, but without distention or spasm. He improved, and on Dec. 6, complained of nothing beyond persistent constipation. Recurrence of abdominal pain appeared with attacks of nausea, vomiting, and a gradual failure in physical condition. (I omit the details of his final illness, due to the extension of the tuberculous process, with its accompanying effects.)

Feb. 15, 1902, the following note was made: "Last night the patient was seized with a very severe attack of nausea and vomiting. About this time the pain in the abdomen became marked and was not benefited either by irrigation or fomentations. Patient complained of feeling very weak; pulse was rapid and weak. He was stimulated and given calomel in divided doses by mouth. He passed a fairly comfortable night. This morning he seemed much better, took a fair amount of nourishment and retained it. His condition remained the same throughout the day with no signs of nausea, vomiting or pain until about 4.30 P.M. when he was found by the nurse to be in a state of collapse. There was marked cyanosis and dyspnea; pulse was rapid and weak, and he complained of excruciating pain in his abdomen. Under vigorous stimulation he rallied for a few hours, but quietly died at 10.30 P.M."

AUTOPSY (02: 14, lxx.). By Dr. G. B. Magrath, Feb. 18, 1902. Sixty-four hours post-mortem.

*Anatomical diagnosis:* Chronic adhesive pleuritis; edema of the lungs; hypostatic congestion of the lungs; amyloid infiltration of the spleen; focal necrosis of the liver; chronic nephritis; tubercular pyelonephritis; amyloid infiltration of the kidneys; dilatation of the ureters; chronic cystitis; tuberculosis of the prostate; tuberculosis of the epididymis; fistula of the urethra; tuberculosis of the spine; tuberculosis of the aortic lymph nodes.

*Body:* That of a man fifty-one years of age; length 168 cm.; well-developed; some atrophy of the muscles of the thighs and legs; rigor mortis absent; post-mortem lividity of dependent parts. Pupils equal, .6 cm. in diameter. The outer aspect of the left upper arm presents an elevated area about 2 cm. in diameter, the central part of which supports a reddish crust. Marked plantar flexion of the toes of both feet. The perineum at its middle point presents an opening .5 cm. in diameter, the edges of which are grayish-red, and which upon pressure yields thick, greenish-yellow pus. Upon section, subcutaneous fat 1 cm. in thickness; muscles pale and fat, infiltrated. Vermiform appendix is retroperitoneal, directed upward and backward behind the cecum. Mesenteric lymph nodes normal.

*Thorax:* Height of diaphragm fourth interspace on right side, fifth rib on left.

*Pleural cavities:* Both completely obliterated by old fibrous adhesions of the pleuræ.

*Pericardial cavity:* Normal.

*Heart:* Wt. 305 gm.; upon section, myocardium brown and somewhat flaccid. Wall of left ventricle 1.5; of right 0.2 cm. in thickness. Mitral valve 11, aortic valve 5, pulmonary valve 8.3, tricuspid valve 12 cm. in circumference. Depth of left ventricle 9 cm. Valves and cavities normal. Coronary arteries present a very slight degree of sclerosis.

*Lungs:* Anterior borders meet in median line. The left in its posterior two thirds is dark bluish-red and of slightly increased consistence, upon section, very frothy on pressure. The right lung presents similar characteristics with the addition of a small puckered scar at the apex. Both lungs are fairly crepitant throughout.

*Abdomen:* Peritoneum normal; a dilated loop of the sigmoid flexure occupies a position in front of the cavity at the level of the umbilicus.

*Spleen:* Wt. 130 gm.; consistence doughy; upon section brick-red, the surface of section studded with pale gray, transparent areas ½ to 1 mm. in diameter, which upon the application of iodine become mahogany-brown.

*Stomach:* Not remarkable.

*Intestines:* Several loops of the ileum lying in the pelvis present considerable injection of the veins. The colon contains numerous scybalæ.

*Pancreas:* Normal.

*Liver:* Wt. 1,650 gm.; the anterior border 11.5 cm. above the costal margin; the organ is twisted upon its long axis; color brown-red. Upon section, markings vague; cut surface slightly marbelled, presenting pale brown areas 1 cm. in diameter, with a purple-brown field. Iodine test negative.

*Gall bladder:* Normal.

*Kidneys:* Wt. of left 180 gm.; estimated wt. of right 100 gm.; capsule slightly adherent. Left kidney 12 cm. in length, free surface considerably lobulated, the lobules pale brown, the depressions red; upon section, markings distinct, pyramids brown, cortex pale yellow-brown; glomeruli visible as pale points which upon the application of iodine become mahogany-red; cortex uneven, 4–5 mm. in thickness; some of the pyramids show small, irregular, cheesy areas. Right kidney 7.5 cm. in length; the perinephric fat about

the upper lobe presents an irregular cavity about 3 cm. in diameter, containing thick, greenish-yellow pus; upon section, the apices of the pyramids present erosions, in one instance extending to the cortex, and resulting in a cavity containing a calcareous mass; the pyramids in the vicinity of the erosions are somewhat caseous; pelvis slightly dilated, its mucous membrane in places reddened; general color gray-red; cortex .4 cm. in thickness. The right ureter is dilated, 2.5 cm. in circumference; upon section, wall 3 mm. in thickness, the inner surface smooth and red.

*Adrenal glands:* Normal.

*Bladder:* Somewhat hypertrophied; upon section, the mucous membrane presents numerous red, rough, irregular elevations; capacity about 100 cc.

*Genitalia:* Prostate normal in size; the prostatic urethra at a point to the right of the veru montanum presents a circular opening 5 mm. in diameter, continuous with the fistulous tract and communicating with the sinus in the perineum. The prostate is 4 cm. in breadth; upon section, presenting multiple larger and smaller yellow areas, some of them slightly prominent, others soft and purulent. The cavity of the tunica vaginalis, both right and left, is completely obliterated by old fibrous adhesions. The right epididymis (head), upon section, presents a dry, caseous area about 1 cm. in diameter. Vasa deferentia apparently normal. Vesiculæ seminales, upon section, show some thickening of the walls; otherwise not remarkable. The perineum, upon section, shows a well-defined abscess cavity 2 cm. in diameter, containing thick, green-yellow pus; this cavity is in continuity with the fistula above noted.

*Aorta:* Upon section, shows moderate arteriosclerosis with slight calcification; the thoracic portion lies 3 cm. to the left of the median line. Aortic lymph nodes 3 x 2 cm.; upon section showing multiple yellow areas, some of which are purulent, 1–3 mm. in diameter.

*Spinal column:* At the level of the eleventh thoracic and the first to third lumbar vertebra shows some general thickening with some flattening of the anterior surface of the bodies, together with backward curvature. This segment of the spine removed and placed in 10% formalin.

*Organs of the neck:* Not examined.

*Cranium:* Not examined.

*Spinal cord:* Segment removed in loco with portion of spine.

*Bone marrow:* Not examined.

### SPINE.

The following detailed examination is limited to the spine and cord:

Longitudinal, dorso-ventral hemisection of the spine (see Fig. 1) shows several vertebral bodies invaded by the tuberculous process, and one body (eleventh thoracic) practically entirely disintegrated. Above and opposite to this body the tuberculous mass constricts the spinal canal. A similar process, but much less marked, occurs in the bodies immediately above and below this point, especially on their ventral aspects. The dorsal kyphosis is slight, due to the fact that the opposite vertebral body, although disintegrated, is not greatly deformed. The sub-dural space of the cord is at no point invaded, and the damage to the cord at this level, conspicuous in the clinical side, through the course of the illness was brought about certainly in part by the effects of extra-dural pressure. Immediately above this focus of disease (Fig. 1, 4) is an annular constriction of the lumen of the canal, reducing its caliber one fourth to one third. There is absolutely no intra-dural tuberculosis here or elsewhere, but the dura is traversed by annular connective tissue bands which are apparent on its inner surface. The dura is easily separable from the bone dorsally, excepting at this point of constriction. Ventrally, the dura is closely adherent to the bone, and also laterally, but to less degree. On the ventral side, the dura and the periosteum are firmly adherent for a distance of three and a half inches or about three bodies. Above and below this point of special constriction the cord is

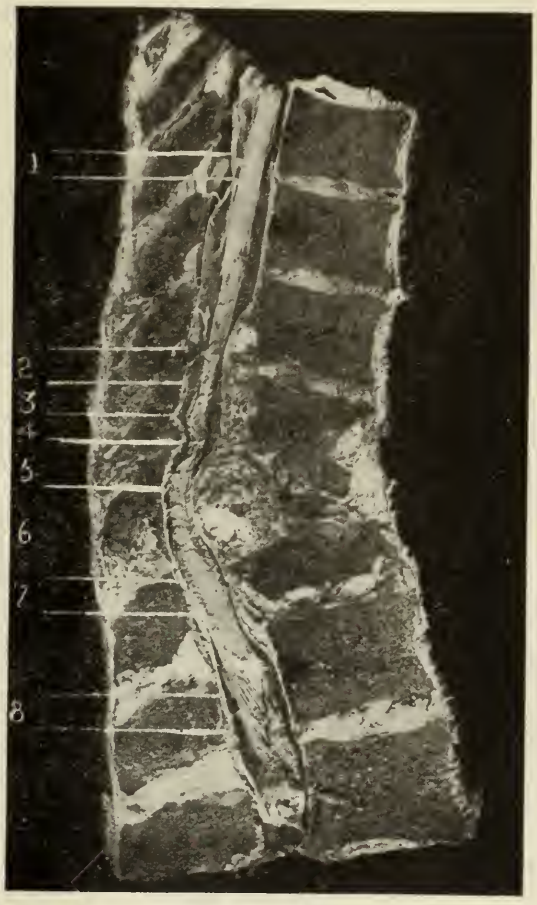



Fig. I. — Hemisection of spine from seventh thoracic to second lumbar vertebra inclusive, showing tuberculous process especially developed at the eleventh thoracic vertebra.

externally normal, the lumen of the canal not being sufficiently narrowed to exert immediate pressure. The freedom of the canal from tuberculous deposits is particularly worthy of note. Further sections of the vertebral column show various foci of old, inactive tuberculosis in the bodies at the level under consideration.

### MICROSCOPIC EXAMINATION. CORD.

Sections of the cord were cut from eight levels, below, through and above the main tuberculous lesion (Fig. 1) and stained by the Weigert myelin sheath, hematein-eosin and phosphotungstic acid-hematoxylin methods. The extent of the local injury to the cord is shown by the secondary degenerations. Studied from below upward the various levels show the following noteworthy points:

The lower sacral cord is normal.

In the lumbar enlargement (Figs. 1 and 2, 8) the membranes show no alteration and the larger blood vessels are normal. The ventral horn cells show an abnormal degree of pigmentation; in many instances

the entire cell body is filled with pigment granules, obscuring or actually taking the place of the nucleus. The ventral nerve roots do not, however, show signs of degeneration. The dorsal tracts are not deeply stained, but are not degenerated. Both pyramidal tracts show well defined though not complete degeneration. Many fibers, presumably belonging to this system of neurones, are intact. The cross section is otherwise normal.

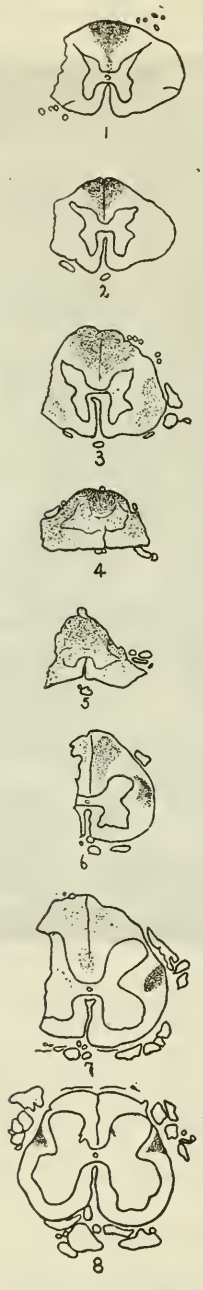



FIG. II. — Cross sections, showing areas of degeneration at the eight levels studied. (See Fig. I.) Edinger drawing apparatus; accurate tracings. The defect in the sections, especially in 1, 2, 6, 7, is due to the fact that a preliminary hemisection of the spine with the cord in situ was made. The deformity of the cord, due to actual pressure, is shown in 4 and particularly in 5, being in sharp contrast to the well preserved general contour of the other levels.

Sections slightly higher (Figs. 1 and 2, 7) show blood-vessel alterations, especially conspicuous in the degenerated area of the pyramidal tract. The walls are very markedly thickened, but the lymph spaces about the vessels show no definite dilatation. The dorsal columns are extensively degenerated, particularly in their ventral portions, but dorsal nerve roots are normal. Hyperpigmented ventral nerve cells are frequent, and there is a somewhat doubtful degeneration of ventral nerve roots. The neuroglia overgrowth (phosphotungstic acid-hematoxylin) is considerable in the degenerated areas with many star shaped cells with apparently attached processes. The marginal layer of neuroglia is somewhat but not markedly thickened. At the level (Figs. 1 and 2, 6) degeneration both dorsal and lateral is extensive. The region of the pyramidal tract shows few normal myeline sheaths, with dense neuroglia overgrowth. This area of degeneration extends, however, very much beyond the confines of this tract in all directions. In the dorsal tracts the degeneration is also extensive, though less complete than in the lateral columns. Vacuoles occur sparingly in the less degenerated parts, but are unrelated to the blood vessels. Dilated perivascular spaces occur, but are not conspicuous and of doubtful pathological significance. The smaller blood vessels show definite and fairly constant thickening of their walls, which stain homogeneously (hyaline). The larger vessels of the pia and the ventral artery of the cord do not show these alterations. This level otherwise resembles the preceding.

At the level (Figs. 1 and 2, 5) the cord is extremely distorted, through the alterations in the vertebral canal which were most marked at this point.[2] The substance of the cord is much altered by diffuse fiber degenerations, neuroglia proliferation and altered blood vessels, as previously described. The general appearance is that of the late stage of an inflammatory destructive process. Cells with small round nuclei are numerous, occasionally grouped, presumably in great part neuroglia, but nowhere is anything approaching an active inflammatory exudate present, standing in direct relation to blood vessels. There are no free polynuclear leucocytes, nor giant cells. Eosin-staining homogeneous bodies, usually round, are numerous (corpora amylacea). The dorsal portion of the section is invaded to a slight degree by a mass of highly cellular connective tissue, apparently continuous with the pia. From the histological appearances conduction through the cord at this level must have been almost wholly interrupted.

At level 4 (Figs. 1 and 2) there is likewise a marked deformity of the cord with dorso-ventral flattening. The histological changes are essentially the same as those of the next lower level, 5, practically a complete transverse lesion.

Figs. 1 and 2, 3: There is extensive dorsal degeneration, no doubt in great measure secondary, with a few normal fibres entering in the root zone. There is also a diffuse lateral degeneration occupying a good part of the tracts, including commissural fibres lying in this part of the cord. Other alterations are as noted in preceding sections. The pia as at all other levels, except for the trifling exception noted at height 4 and to less degree at 5, is normal, and shows no sign whatever of tuberculous involvement.

Figs. 1 and 2, 2, show marked secondary degeneration of the column of Goll and very slight diffuse degeneration in the lateral tracts, particularly near the periphery. The cells of Clarke's column are in general of normal contour and number, but like the ventral horn cells are, in many instances, hyperpigmented, to the extent of complete obliteration of the fine cell structure. The direct cerebellar tracts show no

[2] The possibility of artefact is excluded since the cord and bone were hardened together, and the cord not handled until its shape was thoroughly fixed.

systemic degeneration; due, no doubt, to the fact that the main lesion lies below the point at which the constituent fibers of these tracts first make their appearance.

Considerably higher in the thoracic region (Figs. 1 and 2, 1) the thickening of blood-vessel walls persists, and the pigmentation of cells is as noticeable here as below, the cell bodies of Clarke's column sharing in this change. The region of the direct cerebellar and Gower's tracts is somewhat faintly stained, but the lighter staining is not sharply limited to these tracts, and there is no marked disappearance of individual fibers or alterations in the contour of the myeline sheaths. The neuroglia is proliferated in places. The dorsal tracts, in their median portion (column of Goll), show a very extreme degree of degeneration, extending from the dorsal periphery to the dorsal commissure. There is practically a complete loss of myelinated fibers in this area, with a few fibers spared in the more ventral portion. This extreme destruction of fibers, together with a very extensive neuroglia overgrowth, demonstrates the completeness of the injury to sensory nerve roots at the level of the chief lesion either without or within the cord. The high degree of degeneration in the dorsal median column is in contrast to the less marked degeneration of the pyramidal tracts below the lesion. The dorsal external tracts (Burdach) are entirely normal at the level studied, constituted by fibers entering above the lesion, as are naturally also the dorsal nerve roots. The dorsal degenerations at levels 6 and 7, as the lateral degeneration at 3, are presumably commissural tracts.

A summary of the foregoing findings gives these points of special importance: Tuberculous disintegration of eleventh thoracic vertebra, and to less degree of several adjoining vertebræ; constriction of lumen of the spinal canal; no intradural tuberculosis; widespread degeneration and deformity of the cord at the level of the eleventh vertebra; secondary degenerations above and below this level, with marked sensory involvement.

The following matters call for further comment. First: the effect of treatment in relation to the post-mortem findings; secondly, the method of production of the cord alterations; thirdly, the relation of the lesion to prognosis in tuberculosis of the spine in general, and the means by which mechanical treatment benefits.

It appears from the clinical course of the case in relation to the autopsy that a process of extreme severity, leading to irremediable alterations in the cord must have occurred early in the disease. The comparative slightness of the kyphosis at any time is no doubt in a measure explained by the late onset of the disease, at the age of forty-four. It is of interest, though it has frequently been observed before, that the degree of cord injury is not dependent upon the amount of bony deformity, but is rather due to the character which the tuberculous process assumes. In a detailed study of two cases of Pott's disease, Spiller[3] alludes to the fact that only in an exceedingly small percentage of cases is the injury of the cord due to deviation of the vertebræ alone; in the great majority, 98% by one estimate, the paralytic symptoms are produced by an external pachymeningitis brought about by the tuberculous deposit. Inasmuch as such a deposit is usually of gradual formation and is prevented for a considerable period of time from actually encroaching upon the cord, because of the intervening dura, the tendency of paraplegic conditions towards recovery finds a ready explanation. It often enough happens that in cases which are particularly active, or in those in which treatment may not have been faithfully carried out, the dura is penetrated and the cord then becomes exposed to a direct pial inflammation and an accompanying invasion of its substance, a matter also discussed in a measure by Spiller. In such cases the hope of recovery is less and the possibility of a general tuberculous infiltration with an acute softening of the cord, correspondingly increased.

In the case which forms the subject of this communication, the paraplegic symptoms were well developed, though they afterwards increased somewhat, when the patient first came under observation at the Long Island Hospital. Before he was transferred to the Carney Hospital for special treatment, the condition of the legs and sphincters, exaggerated knee jerks, etc., justified the assumption that the cord was definitely involved. Laminectomy for the relief of these symptoms had been considered, but was not done. In spite of the apparently hopeless condition of the patient, the vigorous and long-continued treatment by extension, supplemented by massage, unquestionably led to a very considerable amelioration of the symptoms, during the first year of his stay at the Carney Hospital under Dr. Goldthwait's personal supervision. The improvement would no doubt have been permanent and in a measure progressive had not a genito-urinary tuberculosis supervened, with a gradual, wide dissemination of the process. As it was the patient was able to be up, and to make some pretence toward unaided locomotion. The study of the condition post-mortem, to be discussed in detail, later, showed a wholly extradural tuberculous process, not very active in appearance, which early in the disease had no doubt been more acute, and had led to sufficient pressure, aided by the kyphosis, to injure the cord and nerve roots to the extent of producing a destructive, transverse local lesion, with the later development of the secondary degenerations which have been described. It is hard, therefore, to picture a case which clinically, and as more completely studied post-mortem, could present a more hopeless prospect of benefit through treatment, however energetic.

It is increasingly evident that the exact mechanism of the cord lesions, in Pott's disease, varies in different cases, and it becomes a matter of importance to determine, if possible, the character of the underlying process. Schmaus and Sacki,[4] in a detailed article on the subject, like Spiller, insist upon the rarity of bony compression as a cause of the cord alterations and are inclined

[3] Spiller: A microscopical study of the spinal cord in two cases of Pott's disease. Bull. Johns Hopkins Hosp., ix, 125. 1898.

[4] Schmaus-Sacki: Vorlesungen über die pathologische Anatomie des Rückenmarks, p. 417.

to attribute importance to edema, produced by venous and lymph stasis, leading secondarily to glia proliferation, swelling of nerve fibres, and the elaboration of certain chemical substances, which in turn give rise to inflammation. Apart then from the mere fact of greater or less compression of the cord, a toxic cause is also at work, the result of edema, which indirectly is due to the altered conditions of the circulation, brought about by the tuberculous process. Animal experimentation has shown that edema quickly leads to degeneration of nerve elements and sclerosis. Other factors these writers regard as of less consequence than edema, though the possibility of anemia of the cord and direct transmission of inflammation by way of the pia are recognized. The term compression is naturally disapproved, the condition being rather due to the results of disordered circulation. From this point of view such improvement as takes place is regarded as due to the relief of edema, and also possibly to the preservation, and even to the conceivable regeneration of central fibers with restoration of function. The recent experimental work of Max Borst embodied in the last Warren Triennial Prize Essay, is important in relation to the question of the possibility of the restoration of fibers of the central nervous system. Results appear to prove that under favorable conditions a certain regeneration may take place.

W. L. Worcester [5] described briefly some years ago a case of probable regeneration of nerve fibers in the pons. The sections, which I had an opportunity of studying, certainly appeared to bear out this assumption; at least no other satisfactory explanation presented itself. Very recently Bikeles [6] has asserted the possibility of slight regeneration of intra-medullary nerve roots, referring critically to Spiller's and Frazier's[7] recent article on the subject in the University of Pennsylvania Medical Bulletin. Bethe's work in this connection is also of interest. Small, however, as the evidence for such regeneration still is, certain facts brought out by these and other recent observers must be given due weight, and the supposed fixed principle that central fibers have no power whatever of regeneration must be held liable to modification.

Considering the case here presented, bony compression, probably more than ordinarily met with, accounts in a measure for the pronounced cord symptoms. The deformity of the cord bears evidence to this fact. A further cause must, however, be sought for the high degree of pathological change within the cord. No doubt, vascular changes with edema, as described by Schmaus-Sacki, were responsible although the evidence of edema at the late stage when the cord was studied was not apparent. In the absence of extra- and intra-dural tuberculosis, no other explanation appears available, unless we admit the local action of a problematic toxin elaborated by the neighboring, at one time active, process. Alfred Gordon [8] has recently described in detail a case in which marked changes of the cord were found, with no pressure whatever from displaced vertebræ, and quotes Homen's experiments, in which he showed that such lesions are due to toxins, elaborated by the bacteria, when the bacteria themselves are no longer demonstrable.[9] The fact, at least, must now be generally admitted, that actual pressure is but one element in the production of the lesions occurring in Pott's disease, and that disordered conditions of the circulation and possible toxemia play a definite, though not as yet precisely determined part.

A recent paper by C. L. Dana[10] is also of interest. Among five different ways in which tuberculosis may affect the spinal cord, Dana includes a myelitis of tuberculous origin, which he asserts is not yet recognized as a pathological entity by neuropathologists. He quotes a case, in which a man, suffering from amyotrophic lateral sclerosis, suddenly developed fever, with a rapid paraplegia, death occurring within a week. Post-mortem the cord showed an acute non-hemorrhagic softening in the lower part of the cervical region, and in this softened area tubercle bacilli were found. Dana regards this, therefore, as a case of acute tuberculous infection, with myelitic softening. No other evidence of tuberculosis was found, but the examination was not absolutely thorough. This important case is suggestive from several points of view. It establishes the possibility of a softening (myelitis?) from the presence of tubercle bacilli alone, and possibly explains the frequent suddenness of onset of paraplegic symptoms, which gradual compression or edema would not be sufficient to produce.

The following case recently seen in consultation with Dr. Wm. H. Grainger is also suggestive of a true tuberculous myelitis in Dana's sense, although unfortunately no post-mortem verification was possible.

A man of forty-four had had tuberculosis of one lung for several years, and a rectal abscess, but with no signs whatever of Pott's disease, or spinal cord involvement. For about five weeks before I saw him, he had rapidly grown worse. Ten days before, paraplegia began to develop, which in the course of a few

[5] Worcester: Journ. Nerv. and Ment. Dis., xxv, 698, 1898.

[6] Bikeles: Zur Frage der Regeneration im Rückenmark, Neurolog. Ctb., xxiii, 559, 1904.

[7] Also: Contributions from the Wm. Pepper Laboratory, No. 4, 1903.

[8] Gordon: Journ. Nerv. and Ment. Dis., xxxi, 526, 1904.

[9] In this connection a paper by Orr, "A contribution to our knowledge of the course of the lymph stream in the spinal roots and cord," Rev. Neurol. and Psych., I, 639, 1903, is suggestive. His main conclusions are as follows: 1. Although bacteria have little tendency to spread along the nerves, their toxins can be carried in the lymph stream and exert their influence some distance from their source of origin. 2. In the spinal roots the flow of lymph is upwards towards the cord. 3. Of the lymph flowing up the posterior roots, the greater part passes into the posterior columns, while a small quantity flows into the lymphatic spaces of the pia-arachnoid covering the posterior and lateral regions of the cord. 4. Where the fibers enter the cord, at which point their sheath and neurilemma are lost, they are specially vulnerable to the influence of toxins in the lymphatic system of the roots and meninges. This applies to both sensory and motor nerves. The last two conclusions are important in view of the recent opinion expressed by Marie and Guillain on the etiology of tabes, viz., that this disease is due to a lesion — probably syphilitic — of the lymphatic system constituted by the posterior roots, pia and cord. 5. The course of the lymph stream in the posterior columns is ascending. 6. The lymphatic system of the posterior columns does not communicate with that of the lateral columns.

See also Guillain: Rev. Neurolog., No. 23, 1899.

[10] Dana: Med. News, April 9, 1904. Also Studies from Department of Neurology, Cornell University, Vol. 1, 1904.

days went on to signs of complete transverse lesion of the lower cord, with the usual disorders of sensation and loss of sphincter control. The temperature was moderately elevated, 102°, and bed sores developed, with delirium. He died one week after.

In this case the opinion was expressed that a lumbar transverse myelitis had developed on the basis of a pre-existent tuberculosis, although there had been no previous sign of involvement of the vertebræ or invasion of the spinal canal. In the case reported in this paper, however, the microscopic evidence is not sufficient to establish such an origin for the lesions nor was the course characteristic, although the widespread degeneration at one level lends a certain weight to this assumption. Actual pressure, with consequent edema, are, no doubt, sufficient to explain the appearances.

Finally, the question of prognosis is naturally of great importance, as studied from the standpoint of the pathological changes. That Pott's disease of the type seen fifteen or twenty years ago is now a comparatively rare affection will at once be acknowledged. Mechanical methods of treatment have been chiefly responsible for this change. Extreme degrees of interference with cord functions may now be practically cured by attention directed to a relief of pressure in the broad sense. Cases taken early in their course are therefore remediable, in spite often of very high degrees of spasticity; if taken too late, however, after actual cord lesions have developed, the chance for recovery is essentially the same as in any other destructive cord affection. Even in such cases, improvement of very considerable degree may take place, as demonstrated by the instance here reported. Operative measures, laminectomy, have of late years not been attempted. If the case be in an early stage, operation is not necessary, and if in a late stage, it is unavailing.[11] The immediate source of the disturbance, ventral to the cord, cannot be reached, and the mere removal of dorsal pressure could only in the rarest instances be efficacious. The case here reported could in no way have been relieved by laminectomy, whereas it was very materially benefited by systematic stretching and manipulations extended over a long period.

The points to which special attention is called in the case are:

The rapid onset of Pott's disease, in a man over forty years old, otherwise non-tuberculous.

The evidence of actual bone pressure on the cord as shown by its deformity.

The extreme local injury to the cord, suggestive of a myelitis.

The very marked predominance of motor over sensory symptoms, in spite of extensive degenerations in sensory areas.

The unquestioned improvement under treatment.

[11] Bullard and Burrell in 1889, Boston Med. and Surg. Journ., Oct. 24, 1889, discussed the question of operation for caries of the spine, on the basis of a case operated on by Dr. Burrell. At that time they were able to collect only eleven cases of operation for the removal of compression.

# Medical Progress.

## REPORT ON MENTAL DISEASES.

BY HENRY R. STEDMAN, M.D., BROOKLINE, MASS.

(Concluded.)

### RATE OF INCREASE OF INSANITY.

A close analysis of the admission statistics of the institutions for the insane in England and Wales from 1891 to 1901 inclusive, which appears in the last annual report of the Commissioners in Lunacy, shows that the percentage increase of the ratio of the insane to the population in those countries had risen in these ten years from 1 in 307 men and 1 in 296 women to 1 in 274 and 1 in 269 respectively. Their statistical facts, if trustworthy, and it appears to them that they are, although as they point out, they only refer to about four fifths of the total (known) insanity in the kingdom, also justify the inference that as regards those who were cared for in asylums, hospitals, and licensed houses, the rate of increase in the numbers, both of those in residence and those admitted, when contrasted with the total number of persons living at each term, has been much smaller amongst those who are of ages twenty to fifty-four than amongst those above the latter age. Indeed, if comparison with the actual rate of increase of the population in the ten years be permissible, the rate of increase of the ratio of the insane to population is seen to be below the foregoing rate in the younger group, but above it in the older.

It may, therefore, be inferred that the growth of insanity amongst those of the community upon whom its burden would most be felt is really lower than the rate of growth in population at the same period of life; and that it is only when that term is past that a rate of increase in excess of that of the population is to be found.

### PARANOIA.

Smith [1] holds the following views on this subject: 1. The term "paranoia" is useful if it be limited to cases of chronic delusional insanity in which there are organized and systematized delusions, whether of persecution or exaltation, and whether these run separately, concurrently, or by transformation from persecution to exaltation, and whether the disorder originates in childhood and youth (*originare paranoia*) or later in life (*tardive paranoia*), and whether associated with heredity or not.

2. In all these cases the importance of the affective element of mind must not be ignored, and it is erroneous to use the term "paranoia" as implying primarily intellectual disorder to the exclusion of, or prior to, disorder of "affect."

3. Allowing that there are acute cases in which delusions appear to be organized and systematized, and yet in which recovery appears to take place, many of these are merely the initial phase of chronic delusional insanity with a remission of symptoms.

[1] Presidential address. Jour. Ment. Sci., October, 1904. Vol. I, No. 311.

4. If the incubus of the idea of primary intellectual disorder be got rid of, there is no difficulty in recognizing that some cases of paranoia may begin with an acute functional mental disorder of the nature of melancholia or mania (as is indeed recognized even by those who take the primary intellectual view), or even may follow a delirious or a confusional state.

5. With this exception, acute confusional insanity (acute *Verwirrtheit*) and acute delusional states (acute delirium, collapse-delirium, *Erschopfungs-delirium*) should be regarded etiologically and clinically, and from the point of view of diagnosis and prognosis, as entirely apart from paranoia or chronic delusional insanity.

6. Mercier's term " fixed delusion " should be used for states secondary to acute forms of insanity, where the persisting delusions are not organized or progressively systematized.

7. With regard to terminal dementia in paranoia, it is trying to prove too much to say, as some authors do, that dementia does not even supervene in this condition; and he thinks that Kraeplin's action in removing a large group of diseases in which terminal weak-mindedness occurs, from the domain of paranoia to that of dementia precox is open to question. There seems to the writer a possibility that dementia precox with its hebephrenic, katatonic and paranoid forms, may become the new universal disease (" Universalkrankheit "), into which large numbers of cases may be thrown, and which will give rise at no distant date to as much discussion as has attended paranoia.

### MENTAL SYMPTOMS ASSOCIATED WITH PERNICIOUS ANEMIA.

Pickett [2] reports five cases of pernicious anemia exhibiting mental symptoms. A composite picture of the mental disturbance in these cases presents a shallow confusion with impairment of ideas of time and place (disorientation) more marked on awakening from sleep. The patient fabricates, relating imaginary experiences of " yesterday " in a circumstantial way. Illusions, particularly of identity, are common. Hallucinations appear at times, pertaining to any of the senses. Based upon these illusions and hallucinations, persecutory delusions arise. These are usually transient, causing episodes of fear or agitation, but they may persist for considerable periods and be thus somewhat fixed; they may be even systematized, as in one of the cases described.

The pernicious anemia psychosis is mainly an abeyance of mind; it rarely presents that spontaneous excitement by which some types of confusion seem to merge into true mania; so that the term " amentia," in Meynert's sense, seems appropriate for it.

### PSYCHOSES OF THYREOID ORIGIN.

Latarjet [3] lays great stress on the surgical treatment of these psychoses, stating that medical treatment by hygienic measures, drugs, etc., loses valuable time. Psychic disturbance is as much an indication for operation as the mechanical reasons, compression of the trachea or other neighboring organs. One remarkable case is detailed in a woman who had a small tumor on the left half of the thyreoid gland, and whose grave mental symptoms were entirely removed four days after removal of the tumor. Free drainage should be stimulated after these operations and sutures should not be immediately applied. Latarjet thinks a careful examination should be made of the thyreoid gland of all patients who begin to exhibit untoward mental symptoms.

### DELIRIUM OF INANITION.

Toupert and Lebret state [4] that this delirium has been known among the shipwrecked and in pregnant women attacked with uncontrollable vomiting. Their case occurred in a patient with gastric ulcer. After apparently improving under milk and vichy, kefyr, and ice on the epigastrium, the patient died suddenly, from some unknown cause. But few cases of this delirium are on record.

### CRIMINALITY OF THE INSANE.

Angiolella [5] discusses the relation between insanity and crime, basing his views on a study of a series of criminal lunatics in the Nocea asylum. The number of such cases admitted in ten years was 115, which, compared with the total male receptions in the same period, gave a proportion of 3.99%. The number actually under treatment is 81, being 9.96% of the daily average of male patients. These proportions, he points out, though high, when it is borne in mind how the presence of such cases must interfere with the order and discipline of a general asylum, are extremely low considering the current ideas of the criminal tendencies of the insane.

Of the 115 cases 68 were lunatics who had committed crimes, and 47 were criminals who had become insane in prison.

Of the former category 33, or nearly half, were epileptics in the wide sense of the Italian school; 15 others were paranoiacs; 13 moral imbeciles; while recurrent mania and chronic mania accounted for two each, and hebephrenia, lypemania and hallucinatory delirium for one each. Thus criminal tendencies were chiefly associated with the insanities arising on a basis of degenerescence, and were hardly found at all in the pure pyschoneuroses.

Moreover, except in cases of paranoia, there is very rarely any apparent connection between the mental disease and the criminal act; of the twelve epileptics, for instance, who had actual convulsive attacks only six committed their offences in the dream state. And, though in cases of paranoia the victim of the lunatic's violence is generally the villain of his delusions, the interpretation of this fact is not, he holds, that the insanity caused the crime, but rather that the

[2] Am. Journ. Med. Sci., June, 1904.
[3] Lyon Med., Sept. 11, 1904. N. Y. Med. Journ., Oct. 22, 1904.
[4] Press Med., Oct. 1, 1904.
[5] Il Manicomio, anno xix, No. 3, 1903. Journ. Ment. Sci., October, 1904.

aptitude for both lay in the individual's nature. The anomaly of character, in fact, which is the potentiality of paranoia, has considerable affinity with the essential anomaly of the moral lunatic and the criminal. And a further proof of this is found in the fact that the typical insanity of the criminal in prison is of paranoiac form; in the 47 cases, for instance, of insane prisoners in Angiolella's series, all but four were cases of paranoia. He maintains, therefore, that in general there is little difference between criminal lunatics and lunatic criminals; both are criminals with a psychopathic aptitude, and it is a question of environment and of the strength of the insane as compared with the criminal tendency whether crime or lunacy appears first.

Details of a number of the cases are given, as well as tables showing for the whole series the relation of the form of the delinquency to the form of insanity, the distribution of the cases in the several provinces, the cranial characters of the individuals, etc.

As regards the character of the delinquency, the series showed the usual predominance of homicidal offences, 78 out of the 115 being of this nature, while there were only eight crimes of acquisitiveness and four of lust. Special note is made of the fact that criminal tendencies seem to be more prevalent with paranoia than with epilepsy, there being 46 paranoiacs as against 19 epileptics among the homicides. And this is confirmed on comparing the criminal with the non-criminal inmates of the asylum, the proportion of criminal paranoiacs to paronoiacs in general being considerably higher than that of criminal epileptics to all epileptics.

## Reports of Societies.

### AMERICAN DERMATOLOGICAL ASSOCIATION.

Twenty-eighth Annual Meeting, Held at Niagara Falls, N. Y., June 2, 3, 1904.

First Day, Thursday, June 2.

The President, Dr. Joseph Zeisler of Chicago, in the Chair.

#### ADDRESS BY THE PRESIDENT.

In his address, Dr. Zeisler confined himself to various suggestions touching upon the future welfare of the Association.

#### RHINOPHYMA; A PATHOLOGICAL ANALYSIS OF FOUR SEPARATE TUMORS OCCURRING IN ONE PATIENT.

Drs. Grover W. Wende and Charles A. Bentz of Buffalo: The patient was a male who died at the age of sixty-nine years. For fifty years he had been a hard drinker of beer and spirits. When he was twenty years of age, he noticed a condition of congestion at the tip of his nose and upon his cheeks, usually following indulgence in drink, changes in temperature and overfeeding. The congestion was succeeded by an eruption of papules and pustules affecting the entire face. Several years later a bulbous enlargement invaded his nose. Up to the time of his death, no less than eight tumors had developed of which the two largest were attached to the nose by separate pedicles. The largest of the tumors measures four and three-quarters by three and one-half inches.

The changes in the tumors, those showing the beginning of the process, might be summarized, as follows: There was enlargement of the sebaceous glands, owing to hyperplasia of their cells and dilatation of the glands. Dilated blood vessels were numerous and conspicuous. There was an increased amount of cellular connective tissue, with very little elastic tissue. The tumors contained numerous plasma and mast cells. The epidermis lining the ducts of the sebaceous glands showed marked hyperkeratosis; many of them contained plugs of bacteria which stained by Gram's method. Some of the bacteria were micrococci, others were small bacilli, agreeing in size and shape with the bacilli described by Gilcrist for acne vulgaris. In the oldest tumor the sebaceous glands were atrophied, and had almost disappeared. The blood vessels were dilated and their outer coats thickened by the development of fibrous tissue. The bulk of the tumor consisted of dense, white fibrous tissue, with little elastic tissue. Dr. Wende said it was hard to tell whether infection had anything to do with the process in these cases. Although all authors seemed to find bacteria in the ducts of the tumors leading to rhinophyma, the same thing was true of ducts where there was no hypertrophy. If the bacillus of acne vulgaris was accountable for one condition, it might be claimed that it might also be the cause of rhinophyma in susceptible individuals.

#### GRANULOMA PYOGENICUM (BOTRYOMYCOSIS OF FRENCH AUTHORS).

Dr. M. B. Hartzell of Philadelphia stated that in 1897, in a communication to the French Congress of Surgery, Poncet and Dor reported four cases of a new growth which they believed represented a form of neoplasm not previously described as occurring in man. In two of these cases there was a small tumor upon the fingers, in the third the growth was situated upon the thenar eminence, and in the fourth upon the shoulder. These tumors were pea to nut sized fungoid masses, attached to the underlying parts by a slender pedicle, and upon section were found to be composed of inflammatory tissue having a very vascular fibrous stroma, throughout which were scattered yellowish granular masses. Microscopic and bacteriologic examination also revealed the presence of a micro-organism which when cultivated and inoculated into the ass, produced a growth similar to that from which it had originally been obtained. The authors concluded from their researches that this organism was identical with one found by Bollinger, in 1870, in certain inflammatory tumors occurring upon the scrotum and spermatic cord of the horse, the so-called fungus of castration (*champignon de castration*), and to which he had given the name botryomycosis, because of the mulberry-like mass produced by it in the tissues. They accordingly regarded these tumors as human botryomycosis, similar in all essential features to the equine disease.

During the past eighteen months, Dr. Hartzell said, he had seen four cases of this affection, two of which he had had the opportunity of studying more or less closely clinically, and one of them microscopically. He regarded it as a granulation tissue tumor, and the micro-organisms found in it were nothing more than the yellowish staphylococci of suppuration.

Dr. Augustus Ravogli of Cincinnati said that these eruptions of granulation tissue were not uncommon in cases of long-continued suppuration, especially in the negro race, and among people who were negligent and lacking in cleanliness. As regards their treatment, he

preferred the sharp curette, followed by an application of resorcin.

DR. HARTZELL, in reply to a question, said he believed that the so-called raspberry-like growths sometimes seen after vaccination belonged to the class of tumors described in his paper.

### A PECULIAR ECZEMATOID ERUPTION OF THE LIP REGION.

DR. H. W. STELWAGON of Philadelphia: The eruption usually involved the lips and sometimes invaded the neighboring mucous membrane. It was of a somewhat dark red or violaceous red color, more or less marginate, with slight scaliness. The lesions were superficial or moderately infiltrated, suggesting objectively, to a varying extent, some of the features of seborrhoic eczema, lupus erythematosus, a superficial tubercular syphilide, and on the mucous membrane it presented some resemblance to lichen planus. When the case was well defined, with the circinate or segmented grouping tendency of the cutaneous eruption, and the peculiar involvement of the mucous membrane, one could not avoid at first glance the suspicion of syphilis, but the superficial character of the eruption, the absence of all destructive tendency, its evident benign character and its course and behavior negatived that conclusion. In the two instances especially suggestive in that direction he was led to put the patients experimentally upon anti-syphilitic treatment, with, if any effect, an aggravation rather than improvement.

DR. ZEISLER spoke of the resemblance of these cases to syphilis, and said he had never been able to entirely eradicate the idea that the eruption was a mixed affair, a mixture between seborrhoic eczema and syphilis, such as Unna some years ago had pointed out.

DR. H. G. KLOTZ of New York City reported a case which proved to be non-syphilitic, and in which he made the diagnosis of some irregular type of seborrhoic eczema.

DR. JOHN A. FORDYCE of New York City reported a case of very superficial squamous syphilide of the lip which was very similar to those described by Dr. Stelwagon.

DR. JAMES NEVINS HYDE of Chicago said he had long held that our clinical features of lupus erythematosus, good as they were, did not include all the varieties of that disease.

DR. JAMES C. WHITE of Boston said one often saw these puzzling eruptions about the mouth and upper and lower lips which closely resembled some forms of syphilis, eczema and lupus erythematosus, and it was sometimes very difficult to establish a clear diagnosis.

### NOTES ON CERTAIN POST-VACCINAL ERUPTIONS.

WILLIAM T. CORLETT of Cleveland: The author stated that post-vaccinal eruptions might be provisionally divided into four classes: The first class contained those which were associated with or soon followed the subsidence of the vaccinal lesion. They might be subdivided into (*a*) deep-seated ulcerations at the site of inoculation, and (*b*) moist undermining of the epidermis at the periphery of the desiccating vaccinal lesion.

The second class contained the bullous eruptions.

The third class was represented by scaling forms which occurred usually several weeks after vaccination, and might or might not develop near the site of the inoculation.

A fourth class might possibly he added, including scrofuloderma and lupus.

The etiology of these post-vaccinal eruptions was doubtful, but the writer believed that they probably depended upon (*a*) impure vaccinal virus; (*b*) uncleanliness at the time of or during the vaccination process; and (*c*) possibly the local disturbance caused by the vaccinal process in a subject of low resisting power.

DR. J. F. SCHAMBERG of Philadelphia said that when we remembered how universal vaccination was, and that it produced not only a wound but an acute infectious disease, we would recognize that there must of necessity take place a certain number of eruptions which bore no relation to the vaccination excepting a chronological one. In Philadelphia, during the past year, one third of the population had been vaccinated, and among these, in the natural course of events, a certain number would have developed some kind of skin disease even without vaccination. There would seem, however, to be some relationship between the development of these bullous types of eruption and the operation of vaccination.

DR. DOUGLASS W. MONTGOMERY of San Francisco said he had always looked upon these bullous pustular lesions following vaccination as pyogenic affections.

DR. WILLIAM A. PUSEY of Chicago thought there was no doubt that vaccination bore a close etiological relationship to certain eruptions of the skin.

DR. JOHN T. BOWEN of Boston said that in a recent paper he had reported a number of cases of bullous eruptions following vaccination in children. Of this type he had seen altogether perhaps a dozen cases. He had also seen several of the same type which had not followed vaccination.

### PARASITIC SYCOSIS COMMUNICATED FROM CATTLE: PRELIMINARY REPORT.

DR. W. F. BREAKEY of Ann Arbor, Mich.: The author described a number of cases of infection of the face and neck which was directly traceable to cattle. In one instance there was a severe inflammatory condition of the neck and face, chiefly on one side, and particularly involving the bearded portion; patches of the beard were already gone, leaving crusted, nodular masses, furuncular abscesses, burrowing sinuses and a brawny swelling reaching up to the ear and down on the neck. The mycelia and spores of the *tinea trichophyton barbae* were readily demonstrated in the roots and shafts of hair of the beard, and in the crusts and scrapings of the cuticle This patient was a young man who had charge of a herd of cattle which was affected with a disease of the skin and hairs. Other similar cases were reported, and photographs illustrating the condition were shown.

DR. FRANCIS J. SHEPHERD of Montreal said he had seen quite a number of these eruptions occurring in grooms who were infected by horses.

DR. RAVOGLI referred to similar infections from camels and sheep. Also from the domestic animals.

DR. HARTZELL mentioned a case of trichophytosis of the forearm in which the disease was contracted from a calf.

### INSTABILITY OF VASCULAR EQUILIBRIUM IN RELATION WITH CERTAIN DERMATOSES.

DRS. JAMES NEVINS HYDE and MACEWEN of Chicago: The authors' conclusions were as follows: 1. There are morbid conditions of the integument of the hands and feet, usually described as separate diseases, which are really symptoms, differing in their features and in grades of intensity, directly resulting from instability of the vascular equilibrium. 2. Instability of vascular equilibrium is that condition in which there is interference with the normal and proper distribution of pressure within and about the arterioles, capillaries and venules of the human body. 3. The causes of instability of vascular equilibrium are numerous and dissimilar. They include ingested toxins (as in tobacco

and alcohol narcosis) and those elaborated in the system. As (*a*) in microbic disease (for example, in tuberculosis); (*b*) in perverted metabolism (as in gout); (*c*) in defective elimination (as in obstinate constipation). 4. The cutaneous symptoms of instability of vascular equilibrium are as numerous and dissimilar as the etiological factors effective in their production. They are for the most part associated with an augmentation of the secretion sweat, due (*a*) to constriction of arterioles under the influence of the vaso-constrictor nerves; (*b*) as a consequence of this, to increased intra- and extra-capillary pressure; (*c*) to increase in the quantity and acceleration of the stream of lymph about the sweat glands, which also receive stimulation from the sweat centers in the cord, the centers of the glands being excited by the factors influencing the constrictors of the arterioles. 5. Abnormal diaphoresis, in cases of embarrassment of the circulation, is directly related to a series of derangements in the process of keratinization, manifested both in the skin and in the nails; and evidence is not wanting to show that the organic changes in parts more deeply seated than the skin, including the periosteum and bone, may result from the same disturbance.

Dr. Thomas C. Gilcrist of Baltimore called attention to the fact that in certain skin diseases, there seemed to be a selective action upon certain cells of the blood; it was not often that all the various blood cells were found in the same type of lesion.

*(To be continued.)*

## Recent Literature.

*The Medical Record Visiting List or Physician's Diary for* 1905. New Revised Edition. New York: William Wood & Co..

This visiting list is too well known to require an elaborate description. This edition has been carefully revised. The amount of matter likely to be useful in emergencies, and especially of therapeutic matter, has been increased; on the other hand elimination has been practised where possible without loss.

*A Treatise on Bright's Disease and Diabetes, with Especial Reference to Pathology and Therapeutics.* By James Tyson, M.D., Professor of Medicine in the University of Pennsylvania, etc. Second edition. Illustrated. Including a section on the Ocular Changes of Bright's Disease and in Diabetes. By George E. DeSchweinitz, M.D., Professor of Ophthalmology in the University of Pennsylvania, etc. Philadelphia: P. Blakiston's Son & Co. 1904.

The first edition of Dr. Tyson's Treatise on Bright's Disease and Diabetes was published in 1881, and has been out of print for many years. The present, second edition, has therefore been in large part rewritten and much enlarged. There are new sections on acute interstitial nephritis, and on the dietetic treatment of Bright's disease. The pathology and etiology of diabetes are still the subject of active discussion and investigation and are dealt with as such. There are full and accurate analyses of the more common diabetic foods, so-called. Original colored plates have been added in illustration of the pathology of Bright's disease, and in Dr. De Schweinitz's department in illustration of the ocular manifestations of Bright's disease and diabetes. The book is an octavo of 380 pages, is well presented, and will be found to meet well the wants of practitioners and students for a guide on the subjects of which it treats.

*A Textbook of Clinical Diagnosis.* By Laboratory Methods. For the use of Students, Practitioners, and Laboratory Workers. By L. Napoleon Boston, A.M., M.D., Associate in Medicine and Director of the Clinical Laboratories of the Medico-Chirurgical College, Philadelphia; formerly Bacteriologist at the Philadelphia Hospital and at the Ayer Clinical Laboratory of the Pennsylvania Hospital. Octavo volume of 547 pages, with 320 illustrations, many of them in colors. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

Dr. Boston does not claim to have attempted to furnish more than a working introduction to the department of medicine under discussion — clinical diagnosis. He has confined himself to such laboratory methods as can be carried out with a minimum of complicated apparatus. In fact his aim has been to meet the needs and facilities of the busy practitioner in his office as well as those of the student in the laboratory. He has produced a book which may be regarded eminently as a practical and serviceable guide, sufficiently full and detailed for practical purposes, and clear withal, and has avoided the pedantic and cumbersome.

The paper and print of the book are excellent, the illustrations are both numerous and good and there are a very satisfactory table of contents and index.

*The Medical News Visiting List for* 1905. Philadelphia, New York: Lea Brothers & Co.

A pocket-sized, wallet-shaped book, containing memoranda and data important for every physician, and ruled blanks for recording every detail of practice.

This Visiting List is in its nineteenth year of issue, and embodies the results of long experience and study devoted to its development and perfection. It is issued in four styles to meet the requirements of every practitioner.

*Saunders' Question-Compends. No.* 3. Essentials of Anatomy; including the Anatomy of the Viscera. By Charles B. Nancrede, M.D., Professor of Surgery and Clinical Surgery in the University of Michigan, Ann Arbor. Seventh Edition, thoroughly revised. 419 pages, fully illustrated. Philadelphia, New York, London: W. B. Saunders & Co., 1904.

In this seventh edition few changes have been made beyond a practical rewriting of the chapter on the nervous system.

THE BOSTON
# Medical and Surgical Journal.

THURSDAY, DECEMBER 1, 1904.

*A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.*

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## THE NATIONAL ASSOCIATION FOR THE STUDY AND PREVENTION OF TUBERCULOSIS.

THE foundation of this association, which has long been awaited by physicians and laymen alike, has now taken definite form under auspices which insure its continuance. The directors of the association constitute a list of names from various parts of the country which represents the best that is being done toward the combating of tuberculosis. The president is Dr. Edward L. Trudeau who stands as the pioneer in the rational treatment of tuberculosis in this country. The names of Drs. Osler, Biggs, Bowditch, Flick, Jacobs, Otis, Ravenel, Welch and many others, appear as directors of the enterprise. On Nov. 16 a meeting of the Board of Directors of the association was held in New York, and hope was expressed on that occasion that the significance of the association be as widely disseminated as possible to the end that it might more definitely bring about the objects which it has in view.

The first annual meeting is to be held in Washington in May next. At this meeting it is proposed that two general sessions be held at which distinguished investigators in the subject of tuberculosis will speak. Following this more general work three sections, on the sociological, pathological and bacteriological, and clinical and climatological aspects of the subject, are to be constituted for the purpose of more detailed discussion. Each of these sections is to be presided over by a chairman especially known for his work in that field, and care will be taken that only papers of exceptional merit will be presented. This is a wise precaution, since tuberculosis, about which so many people know something, lends itself peculiarly to superficial consideration at the hands of imperfectly qualified persons. The meeting should bring together a large number of laymen and physicians who are interested in the struggle against tuberculosis. It is, however, not the intention of this association to limit itself to the holding of meetings at stated intervals, but rather to become the source and inspiration of the general crusade against tuberculosis by assisting in the formation of local societies, by giving advice, by spreading literature, and in general by encouraging any work which lies in its special field.

Headquarters have been established in the United Charities Building in New York, where an assistant secretary is in charge. Membership in the association may be obtained at an annual assessment of five dollars, and to such as join the association there will be sent free of charge the "Handbook of Tuberculosis," which is published by the New York committee of the Charity Organization Society, and also "The National Directory of Sanatoria, etc., for Consumptives," soon to be issued.

We need hardly say that we are in the completest sympathy with the work and the methods which this newly formed association represents. There can be no question that concentrated and systematic study of the problem which tuberculosis presents will in the very near future lead to results of the utmost importance. Such results have already been attained in various parts of the country by smaller organizations, but the concentration of effort which this association stands for cannot fail to carry the matter much further than is possible by individual effort, or by the efforts of small bodies of persons however enthusiastic they may be.

## THE RELATION OF ALCOHOL TO ARTERIOSCLEROSIS.

DR. RICHARD C. CABOT presented a paper[1] at the last meeting of the American Medical Association in which he gives the results of his study of this question. He first investigated how many cases of arteriosclerosis not referable to syphilis or to advancing age are to be found among alcoholics; and, secondly, endeavored to determine in what proportion of cases of relatively early arteriosclerosis of the peripheral arteries alcoholism was present.

The material for studying the first part of the problem was derived from the Bridgewater State Farm and the Foxboro Asylum for Diplomaniacs;

[1] Reprint from the Journal of the Association, Aug. 17, 1904.

that for the second part was found in the wards of the Massachusetts General Hospital.

Dr. Cabot then consulted the records of the pathological laboratories of the Boston City Hospital and of the Massachusetts Hospital. The results of these last investigations are tabulated, and Dr. Cabot sums up his conclusions as follows:

1. Only 6% of 283 cases of chronic and excessive alcoholism under fifty years of age showed any evidence of arteriosclerosis.

2. Of 45 cases of arteriosclerosis examined by him at the Massachusetts General Hospital, only 13% gave any history of alcoholism.

3. Of 656 autopsy cases of arteriosclerosis, only 95 or 14.5% were under the age of fifty.

4. Out of these 95 cases under fifty, in which arteriosclerosis was found post-mortem, only 21%, and if we exclude cases complicated by chronic nephritis, only 17% appear to have consumed alcohol in any notable excess.

Finally the case is cited of a well known young Bostonian, who deliberately drank himself to death at the age of thirty-six. For the previous ten years of his life he had been in the habit of taking one or two quarts of whiskey a day for about eight months in the year. At the post-mortem examination particular attention was paid to the condition of the arteries, and they were found to be entirely normal.

Dr. Cabot was led to make his investigation by the prevalent belief in the dependence of arteriosclerosis on alcoholism, and the unconditional assertion of most standard text-books and standard treatises on the heart and blood vessels of the importance of the excessive use of alcoholic liquors in the production of arteriosclerosis.

It is doubtless profitable at times to turn over our beliefs and reinspect the foundations on which they rest, and the more hoary these are the more profitable is the pursuit sometimes likely to be.

## THE STUDY OF EPILEPSY.

The fourth annual meeting of the Association for the Study of Epilepsy met in this city last week. Although the sessions lasted only through an afternoon and evening, a number of papers of much significance were read and a stimulus provided for continued work on this widely prevalent disease. However much some persons may object to the tendency toward specialism, it is evident that the best work in any field can only be attained by the devotion of a large number of men to the various problems which that particular subject presents. The gradual development in this country of colonies for epileptics, long in successful operation in Europe, has accomplished many definite results through the study of groups of cases and the determination of efficiency of various methods of treatment which hitherto has been quite impossible. The impression one had from attendance at the meetings of the society was in the first place that the disease is still elusive, and that in spite of progress its genesis and real character remain obscure. One, however, could not fail also to be impressed with the fact that a considerable body of men is now at work upon the problem in such a spirit that results of positive importance will soon be forthcoming. Through the work of Clark and Prout light is being thrown into the dark places of its pathology, and on the practical side rational treatment is by degrees taking the place of empiricism. This meeting of the association, under the presidency of Dr. William N. Bullard, must be recognized as another step toward the solution of the great problems connected with this peculiarly unfortunate class in the community. We are glad also to note that the association is to make an attempt to include the epileptics in the census returns hereafter, which should do much toward framing the exact problem with which we have to deal. The number of epileptics is recognized as very great, certainly sufficient to justify a separate enumeration.

## MEDICAL NOTES.

A National Convalescent Home. — It is reported that Mr. Andrew Carnegie has purchased Lea Park, one of the most beautiful estates in the south of England, for which he paid upwards of three million dollars. His intention is to convert the place into a national convalescent home for which it appears to be well fitted.

Death of Dr. Thomas M. Drown. — The death of Dr. Thomas M. Drown, President of Lehigh University, occurred Nov. 16, at the age of sixty-two, at Bethlehem, Pa. Although not closely identified with medicine during the last years of his life, he was graduated at the medical department of the University of Pennsylvania in 1862, thereafter entering the army as surgeon and later prosecuting his studies abroad. Returning from Europe, he occupied successively the position of instructor in metallurgy in Harvard College, professor of chemistry in Lafayette College, and for the ten years from 1885 to 1895 a similar position in the Massachusetts Institute

of Technology. In 1895 he accepted the presidency of Lehigh University where he was active up to the time of his death. He was a man of much force and personal popularity, and his somewhat untimely death will be a source of regret to various classes in the community.

### BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon Nov. 30, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 43, scarlatina 22, typhoid fever 16, measles 12, small pox 0.

REGISTRATION IN MEDICINE. — The last examination held for registration in medicine in Massachusetts resulted in success for forty-one of the sixty-eight candidates examined. It is said that 40% of failures is approximately the average for the November examination, since a number of candidates who have previously failed usually reapply at this time.

OPENING OF NEW BUILDING FOR INDUSTRIAL SCHOOL FOR CRIPPLED CHILDREN. — A new school building on St. Botolph Street for the Industrial school for Crippled and Deformed Children was formally opened to-day. The building has been planned to meet the requirements of the partially disabled children who attend the school, and should prove a great addition to the facilities hitherto provided for their training.

NURSES IN THE PUBLIC SCHOOLS. — A movement is on foot in this city to consider the desirability of providing nurses for public schools to supplement the medical inspection which is already practiced. Such a plan is said to have been in working operation in New York whereby nurses visit with regularity a certain number of schools, devoting such time to each as is necessary for the care of the minor ailments met with. The work of such nurses also extends to the homes of the pupils where instruction is given to mothers in the care of sick children. We see no reason why such a plan, under proper supervision, should not be of distinct service in combating the ailments met with in our public schools.

BOSTON MORTALITY STATISTICS. — The number of deaths reported to the Board of Health for the week ending Nov. 26, was 212, as against 188 the corresponding week last year, showing an increase of 24 deaths, and making the death-rate for the week 18%. The number of cases and deaths from infectious diseases was as follows: Diphtheria, 36 cases, 3 deaths; scarlatina, 23 cases, 1 death; typhoid fever, 18 cases, 7 deaths; measles, 9 cases, 1 death; tuberculosis, 42 cases, 26 deaths; small pox, no cases, no deaths. The deaths from pneumonia were 43; whooping cough, 2; heart disease, 17; bronchitis, 9; marasmus, 4. There were 8 deaths from violent causes. The number of children who died under one year was 33; under five years, 51; persons over sixty years, 65; the deaths in public institutions, 60.

### NEW YORK.

SITE FOR CONSUMPTIVES' SANATORIUM DENIED. — The board of supervisors of Sullivan County exercising the discretionary powers granted such boards at the last session of the Legislature, have denied the application of the City of New York for permission to locate a sanatorium for consumptives at Mamakating in that county.

ADULTERATED MILK. — Dr. Gordon Dickinson, President of the Jersey City Board of Health, in announcing the relinquishment of the endeavors by his department to stop the sale of adulterated milk, makes the following statement: "We have done our best, as city officials charged with the care of the public health, to prevent unscrupulous dealers from doctoring their milk with formaldehyde. We find it impossible to secure juries that will punish dealers who sell milk not up to the standard. For the present at least, we shall drop the crusade against impure milk and permit people to drink it if they want to."

ATMOSPHERIC CONDITIONS IN THE SUBWAY. — Professor Chandler has made a report to the Board of Health in regard to the atmospheric conditions in the subway, but this is not regarded by President Darlington as a final and official endorsement by the departments. Having presented a detailed statement of his investigations, Dr. Chandler says that the results of the studies and analyses thus far made satisfy him that the air of the subway is entirely satisfactory, and that there is no cause for complaint as to its present condition or alarm for its future condition. In regard to the suggestion which has been made that the subway will sooner or later become charged with dangerous bacteria, he states that the only bacteria that find their way into it are such as are met with in the atmosphere above ground and in the houses of the city, and that it cannot be said that the subway air will be a breeding place for bacteria, since these

cannot multiply in the absence of water, and the subway is and probably will continue to be substantially dry. In conclusion, Dr. Chandler says he will continue his investigations with careful determination of the amount of carbonic acid gas in the atmosphere of the subway, and also with regard to the extent to which the air is renewed by the entrance of fresh air into the various openings. As regards the carbon dioxide, the high percentage of oxygen already demonstrated indicates pretty conclusively that there cannot be any great increase of the poisonous gas.

## Miscellany.

### MEDICAL AND SURGICAL FEATURES OF THE RUSSO-JAPANESE WAR.

At a meeting of the county branch of the New York State Medical Association, held Nov. 21, Dr. Louis L. Seaman, who was surgeon of the Volunteer Regiment of Engineers in the Spanish-American War and who has recently returned from a tour of observation in the East, read a paper on "The Medical and Surgical Features of the Russo-Japanese War." His observations tended to show what could be accomplished by absolute cleanliness and the proper care of the stomach of the fighting soldier. Of the more than one thousand wounded received in Tokyo prior to July 1, he said, not one case had ended fatally, and every patient remaining in the wards presented a favorable prognosis. It is the rule of the Japanese surgeons at the front to do little or no operating, except in cases of extreme emergency, as where hemorrhage threatens immediate death. All cases are treated by the application of the first aid dressing, and then sent to the rear as quickly as possible, thence by hospital boat or transport to the base hospitals in Japan. The Japanese soldier has been taught how to treat his intestines, and consequently his intestines are now treating him with equal consideration. His plain, rational diet is digested, metabolized and assimilated. It is not an irritating, indigestible, fermenting mass, acting as a local irritant and producing gastritis and the long list of inflammatory intestinal and hepatic processes with which all were familiar in the hospital wards at Camp Alger, Chattanooga, Tampa, Montauk Point, and in Cuba and Porto Rico. The three great lessons to be learned from the Japanese are from the medical, the commissariat and the transport departments. The Japanese authorities permitted our government to send five military attachés to accompany their army in the field; yet among those detailed for this duty there was not a single surgeon, quartermaster or commissary officer. The killing departments got the appointments, while representatives of the life-preserving departments were entirely omitted.

## RECORD OF MORTALITY

For the Week ending Saturday, November 19, 1904.

| Cities. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid Fever. | Diarrheal Diseases. |
| New York . . | 3,908,644 | 1,232 | 300 | 22.97 | — | 2.92 | 1.46 | 3.16 |
| Chicago . . . | 2,021,086 | 479 | 120 | 22.55 | 13.78 | 1.67 | 1.67 | 3.55 |
| Philadelphia | 1,407,968 | 401 | 87 | 21.94 | 17.70 | 2.99 | 1.99 | 2.24 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 190 | 46 | 9.47 | 13.15 | 2.10 | 3.62 | .53 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | 137 | — | 21.17 | 24.09 | 7.30 | 2.19 | 4.38 |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 51 | 11 | 9.80 | 19.60 | 1.96 | — | 1.96 |
| Boston . . . | 617,950 | 199 | 48 | 17.08 | 18.09 | 3.51 | 1.10 | 1.50 |
| Worcester . . | 136,925 | 29 | 11 | 10.34 | 17.24 | — | 3.45 | 6.90 |
| Fall River . . | 119,349 | 21 | 7 | 28.57 | 14.28 | — | — | 14.28 |
| Lowell . . . | 104,402 | 33 | 2 | 12.12 | 18.18 | 3.03 | — | 3.03 |
| Cambridge . | 100,998 | 27 | 9 | 18.51 | 11.11 | — | — | 7.40 |
| Lynn . . . . | 73,875 | 20 | 4 | 20.00 | — | — | — | — |
| Lawrence . . | 72,348 | 18 | 4 | 27.77 | 22.22 | — | 5.55 | 5.55 |
| Springfield . | 72,020 | — | — | — | — | — | — | — |
| Somerville . | 70,413 | 15 | 3 | 13.33 | 33.33 | — | 6.67 | — |
| New Bedford | 68,863 | 19 | 7 | 10.53 | 5.26 | — | — | — |
| Holyoke . . . | 50,538 | — | — | — | — | — | — | — |
| Brockton . . | 46,601 | 10 | 3 | 10.00 | 10.00 | — | — | — |
| Newton . . . | 39,310 | 4 | 1 | — | — | — | — | — |
| Haverhill . . | 39,061 | 13 | 1 | 15.40 | — | — | — | — |
| Malden . . . | 37,205 | 12 | 4 | 41.65 | 25.00 | — | 8.33 | — |
| Salem . . . . | 37,188 | 13 | 4 | 23.10 | — | 7.70 | 7.70 | — |
| Chelsea . . . | 36,499 | 18 | 1 | 16.67 | 5.55 | 5.55 | — | — |
| Fitchburg . . | 36,335 | 9 | 3 | — | 11.11 | — | — | — |
| Taunton . . . | 34,577 | — | — | — | — | — | — | — |
| Everett . . . | 30,209 | 3 | — | — | — | — | — | — |
| North Adams | 29,201 | 6 | 1 | 66.67 | — | 16.67 | 16.67 | — |
| Quincy . . . | 26,798 | 9 | 3 | — | 33.33 | — | — | — |
| Gloucester . | 26,121 | 13 | 4 | — | — | — | — | — |
| Waltham . . | 25,797 | 4 | 1 | — | 25.00 | — | — | — |
| Brookline . . | 23,576 | 9 | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | 7 | 1 | — | — | — | — | — |
| Medford . . | 21,956 | 3 | — | — | — | — | — | — |
| Chicopee . . | 21,692 | 3 | 1 | — | — | — | — | — |
| Northampton | 20,314 | 8 | 4 | — | — | — | — | — |
| Beverly . . . | 15,807 | 4 | — | — | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 1 | — | — | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 4 | 2 | — | — | — | — | — |
| Newburyport | 14,478 | — | — | — | — | — | — | — |
| Woburn . . . | 14,315 | 4 | — | — | 25.00 | — | — | — |
| Melrose . . . | 13,819 | 2 | — | — | — | — | — | — |
| Westfield . . | 13,809 | 3 | — | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 2 | 0 | — | — | — | — | — |
| Revere . . . | 13,609 | 3 | 2 | — | 33.33 | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 2 | — | — | — | — | — | — |
| Southbridge . | 11,716 | 2 | 1 | 50.00 | — | — | — | 50.00 |
| Watertown . | 11,575 | 5 | 1 | — | 40.00 | — | — | — |
| Weymouth . | 11,350 | 4 | 1 | 50.00 | — | 50.00 | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,051; under five years of age, 698; principal infectious diseases (small pox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 614; acute lung diseases 282, consumption 316, scarlet fever 21, whooping cough 4, cerebrospinal meningitis 14, small pox 2, erysipelas 5, puerperal fever 12, measles 15, typhoid fever 52, diarrheal diseases 86, diphtheria and croup 84.

From whooping cough, New York 1, Chicago 3. From measles, New York 7, Chicago 4, Pittsburg 4. From scarlet fever, New York 15, Chicago 1, Philadelphia 1, Baltimore 3, Lawrence 1. From cerebrospinal meningitis New York 13, Baltimore 1. From small pox, Chicago 2.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending Nov. 5, the death-rate was 14.9. Deaths reported 4,372; acute diseases of the respiratory organs (London) 158, whooping cough 34, diphtheria 72, measles 109, small pox 2, scarlet fever 58.

The death-rate ranged from 5.8 in Croydon to 23.8 in South Shields; London 14.9, West Ham 15.0, Brighton 16.1, Southampton 10.2, Plymouth 17.4, Bristol 14.9, Birmingham 17.3, Leicester 13.3, Nottingham 14.3, Birkenhead 13.6, Liverpool 20.0, Wigan 12.5, Bolton 14.5, Manchester 15.8, Salford 16.9, Halifax 11.6, Bradford 15.2, Leeds 14.8, Sheffield 14.3, Hull 17.0, Newcastle-on-Tyne 15.5, Cardiff 12.7, Rhondda 12.8, Hornsey 6.4, Merthyr Tydfil 7.9.

## METEOROLOGICAL RECORD.

For the week ending November 19, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S..13 | 29.76 | 40 | 45 | 36 | 71 | 96 | 84 | S W | N E | 9 | 20 | R. | R. | 1.18 |
| M..14 | 29.44 | 38 | 41 | 34 | 70 | 58 | 64 | N W | N W | 28 | 18 | O. | C. | .38 |
| T..15 | 30.10 | 42 | 49 | 34 | 60 | 60 | 60 | W | W | 16 | 8 | C. | C. | 0 |
| W.16 | 30.16 | 42 | 49 | 34 | 64 | 60 | 62 | W | N W | 10 | 18 | O. | N. | T. |
| T..17 | 30.56 | 28 | 34 | 21 | 34 | 70 | 52 | N | N | 17 | 9 | C. | C. | T. |
| F..18 | 30.35 | 26 | 34 | 17 | 70 | 72 | 71 | N | N | 11 | 9 | O. | C. | 0 |
| S..19 | 30.10 | 36 | 50 | 22 | 54 | 41 | 48 | N W | W | 8 | 9 | C. | C. | 0 |
| ☞ | 30.07 | | 43 | 28 | | | 66 | | | | | | | 1.56 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for week.

## OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE SEVEN DAYS ENDING NOVEMBER 16, 1904.

GASSAWAY, J. M., surgeon. Granted leave of absence for four days from Nov. 23. Nov. 12, 1904.

YOUNG, G. B., passed assistant surgeon. Granted leave of absence for one month, or so much thereof as may be necessary, on account of sickness. Nov. 15, 1904.

GRUBBS, S. B., passed assistant surgeon. Granted leave of absence for six days from Nov. 14. Nov. 11, 1904.

ANDERSON, J. F., passed assistant surgeon. Granted extension of leave of absence for three days from Nov. 16. Nov. 12, 1904.

CURRIE, D. H., passed assistant surgeon. To proceed to Merced, Cal., for special temporary duty. Nov. 10, 1904.

STEGER, E. M., assistant surgeon. Granted leave of absence for four days from Nov. 9, 1904, under paragraph 191 of the regulations.

HALLETT, E. B., acting assistant surgeon. Granted leave of absence for two days from Nov. 23. Nov. 12, 1904.

STEARNS, H. H., acting assistant surgeon. Granted leave of absence for thirty days from Dec. 2. Nov. 15, 1904.

COOK, B. J., acting assistant surgeon. Granted leave of absence for eighteen days from Nov. 19. Nov. 15, 1904.

DAVIS, H. E., pharmacist. Department letter of October 13, 1904, granting Pharmacist Davis leave of absence for fifteen days from Oct. 26, 1904, amended so that said leave shall be for 12 days only. Nov. 5, 1904.

### BOARDS CONVENED.

Board convened to meet at the Marine Hospital, Port Townsend, Wash., Nov. 21, 1904, for the physical examination of an officer of the Revenue-Cutter Service. Detail for the Board: Passed Assistant Surgeon J. H. Oakley, chairman; Passed Assistant Surgeon D. E. Robinson, recorder.

### PROMOTIONS.

DUNLOP MOORE, assistant surgeon. Commissioned as passed assistant surgeon, to rank as such from June 4. Nov. 11, 1904.

CARROLL FOX, assistant surgeon. Commissioned as passed assistant surgeon, to rank as such from July 27. Nov. 11, 1904.

MATTHEW K. GWYN, assistant surgeon. Commissioned as passed assistant surgeon, to rank as such from Aug. 8. Nov. 11, 1904.

CHARLES W. VOGEL, assistant surgeon. Commissioned as passed assistant surgeon, to rank as such from July 27. Nov. 11, 1904.

### REMOVAL.

C. E. D. LORD, removed from the position of assistant surgeon in the Public Health and Marine-Hospital Service, Nov. 15, 1904.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING NOVEMBER 26, 1904.

M. E. LANDO, assistant surgeon. Ordered to the Naval Hospital, Mare Island, Cal.

C. K. WINN, acting assistant surgeon. Ordered to the Naval Hospital, Norfolk, Va.

H. T. NELSON, Jr., assistant surgeon. Appointed assistant surgeon, with rank of lieutenant, junior grade, from Nov. 14, 1904.

T. A. BERRYHILL, surgeon. Detached from the "Baltimore" and ordered to the "Oregon."

O. DIEHL, surgeon. Detached from the "New Orleans" and ordered to the "Baltimore."

R. P. CRANDALL, surgeon. Detached from the "Oregon," and ordered to the "New Orleans."

H. T. NELSON, Jr., assistant surgeon. Ordered to the Naval Hospital, Washington, D.C.

## SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.—There will be a meeting of the Society at Sprague Hall, Medical Library, on Monday Dec. 5, 1904, at 8.15 P.M. Subject, Ocular Strain. The following short papers will be presented: Dr. Myles Standish: Eye strain as a factor in functional nervous disabilities. Dr. E. E. Jack: In what cases should eye strain be suspected? Dr. Allen Greenwood: Eye strain as a factor to be considered in children backward in their studies. Dr. H. W. Kilburn: Eye strain considered as a factor in the production of lateral curvature of the spine. Dr. H. H. Haskell: The relation of nasal conditions to eye strain. Dr. F. M. Spalding: Some difficulties encountered in the prescription of glasses. Dr. E. W. Clap: The relation of eye strain to neurasthenia. Business: Election of a nominating committee. Report of the Prudential Committee on the future of the society. There will be a social half hour after the meeting. All members of the profession are invited to be present.

ARTHUR K. STONE, M.D., *Secretary.*
CHARLES M. GREEN, M.D., *President.*

BOSTON MEDICAL LIBRARY MEETINGS.—The Boston Medical Library in conjunction with the Suffolk District Branch of the Massachusetts Medical Society will hold a meeting on Wednesday, Dec. 7, 1904, at 8.15 P. M., at the Library, 8, The Fenway. Program: The Humane Treatment of Malignant Disease from a Surgical Point of View, Dr. John C. Munro. Discussion: To be opened by Dr. D. W. Cheever, Dr. R. H. Fitz, Dr. A. T. Cabot, Dr. F. B. Lund. Light refreshments at the end of the meeting. Drs. George W. Gay, Fred B. Lund, Elliott P. Joslin, Committee on Medical and Social Meetings.

PAN-AMERICAN MEDICAL CONGRESS.—Physicians desiring to contribute papers upon Internal Medicine at the next meeting of the Pan-American Medical Congress which meets at Panama, Jan. 2–6, 1905, will kindly send titles at their earliest convenience to the Secretary of the Section on Medicine, Dr. Judson Daland, 317 South 18th Street, Philadelphia, Pa.

FOURTH PAN-AMERICAN MEDICAL CONGRESS.—Dr. Rudolph Matas, of New Orleans, Secretary of Section of General Surgery for the United States, informs us that an arrangement with the United Fruit Company has been perfected by which a steamer of this line will leave New Orleans for Colon on Wednesday, Dec. 28, 1904, at 10 A.M. (instead of Friday, Dec. 30, at 11 A.M. as previously announced) which will reach Colon (Panama) on Monday, Jan. 2, 1905, the opening day of the Congress. In view of the facilities offered to reach Panama via New Orleans it is expected that many will choose this route and those who intend to do so will please forward their names to Dr. R. Matas, Secretary of Section of General Surgery, 2255 St. Charles Ave., New Orleans, La., not later than Dec. 22, 1904.

## RECENT DEATH.

NELSON L. NORTH, M.D., a prominent physician of the Eastern District of Brooklyn, N. Y., died on Nov. 23 from pulmonary hemorrhage. He was born in Elba, N.Y., April 20, 1830, and was graduated from the College of Physicians and Surgeons, New York, 1854. All his professional life was passed in Brooklyn. For three years he was physician to the Williamsburgh Dispensary, and from 1857 to 1865 was consulting physician to that institution. He was also consulting surgeon to the Methodist Episcopal Hospital and to the South Third Street Industrial Home. From 1861 to 1869 he was surgeon to the Metropolitan police. At one time he contributed considerably to medical literature, and among the subjects on which he wrote was Asiatic Cholera and the cause and treatment of inflammation. He is survived by a son, Dr. Nelson L. North, Jr., a well-known specialist in diseases of the eye.

## OPERATIONS: BOSTON CITY HOSPITAL.

The following operations will be done and cases shown in the amphitheater of the Boston City Hospital on Dec. 2, from 10 A.M. until 12.30 P.M.: Radical Cure, Inguinal Hernia; Coeliotomy, removal abdominal tumor; Plastic operation for hypospadias; Radical Cure of Umbilical Hernia; Excision of Epithelioma Lip; Excision of Carious Rib; Radical Cure, Inguinal Hernia, — the sac of which contains bladder.

## Clinical Lecture.

# CLINICAL LECTURE ON URETHRAL STRICTURE DELIVERED AT THE BOSTON CITY HOSPITAL TO FOURTH YEAR HARVARD MEDICAL STUDENTS.*

BY F. S. WATSON, M.D., BOSTON.

GENTLEMEN:

IN a general sense stricture means a narrowing in the course of the urethral canal irrespective of the nature of the condition which causes it. Thus we speak of several sorts of stricture, *viz.*, spasmodic, inflammatory and organic. The last of these is the only one which is stricture in the true, strict meaning of the term, and it is to that variety that what I have to say will be confined for the most part.

### DEFINITION OF ORGANIC STRICTURE.

Organic stricture is a narrowing of the urethral canal at one or more points, due to the formation of connective tissue in or beneath its mucous membrane, or in both places, which results either from injury — in which case the stricture is called "traumatic" — or from a preceding chronic inflammatory process, the latter being almost invariably of gonorrheal origin.

The tissue changes incident to the formation of the fibrous tissue which constitutes stricture have been described to you in a former exercise, and we will not therefore go over that ground again, but will assume that stricture has already become organized, and proceed from that point.

The connective tissue forming the stricture varies in amount and in the depth and extent of the structures involved by it, and also in the manner of its distribution, in different cases, and



FIG. 1.

according to the one or the other of these elements there occurs a corresponding variation in the form, extent and quality of the stricture.

* All instruments referred to in the text were shown to the students in the lecture and the manner in which they should be used was demonstrated.

Strictures are divided for the sake of description, into three principal classes, *viz.*, linear, annular and tortuous or innodular. These forms may be illustrated thus:

Picture to yourselves the urethra as a rubber tube. Tie a thread around the outside of it at some point, and you will have produced, of course, a circular, narrow constriction on the inside, of greater or less degree, according to the tightness with which the thread has been drawn. This is linear stricture.

Linear stricture as it progresses, takes the form of a delicate membrane stretched across the canal. The opening through it may be either central or on one side of the membrane. This variety of stricture does not invade the submucous or peri-urethral tissues.

Now instead of a thread, tie a bit of tape around the outside of the tube, and you have made an annular stricture.



FIG. 2.

This form varies in its width, may extend over a considerable area, may or may not involve the submucous and periurethral tissues.

Next think of the tube as being subjected to varying degrees of pressure from different points of its outer surface, and you will see that there will be a series of irregular projections produced in its interior, occupying more of the canal at one place, less at another, and necessarily giving a twisted or tortuous course to the channel running through the strictured part of the urethra. This represents a tortuous stricture.

Further descriptive names are given to strictures to designate certain special qualities which they present, thus: of recent formation, of long standing, dense or resistant, tough, hard, intractable, irritable, resilient, of large or small caliber, etc.

The resilient stricture is one which after being dilated, rapidly recontracts to its former size.

The dividing line between strictures of wide and small caliber is an arbitrary one; usually

anything larger than twenty-two of the French scale is termed stricture of wide, anything smaller than that number, of narrow caliber.



FIG. 3.

NUMBER — LOCATION.

Theoretically there may be as many strictures in the urethra as there is space in it to accommodate them, practically as many as fourteen have been found in one case.

As has been said there is a preference shown by strictures to choose certain parts of the urethra for residence rather than others. The reasons for this are: (*a*) The presence of points of natural narrowing of the canal as compared with wider portions immediately behind them, in consequence of which there is a less free exit offered to the products of inflammation which, being in some part retained, perpetuate by their irri ating character the chronic process from which they originate. (*b*) The relatively greater vascularity of some parts of the canal than others, which tends to the establishment of areas of congestion in these localities. (*c*) The existence of a larger proportion of follicular and glandular structures in some parts of the urethra than in others, in consequence of which, as has been shown in a former lecture, there is a tendency of the chronic inflammatory processes to become localized there.

STRICTURE OF THE DEEP URETHRA.

It has been asserted by some observers that stricture of the membranous urethra does not result from gonorrhea, but is due to traumatism alone, the reason assigned for this being the absence of glandular structures in that portion of the urethra. On the other hand it is claimed that the membranous urethra is more frequently the seat of gonorrheal stricture than any other part of the canal. In a recent article by Bazy and Decloux there is given the description of some cases in which stricture of the membranous urethra, originating in gonorrhea, was present, and demonstrated by microscopic examination of post-mortem specimens, but in these instances it was shown that the strictures began in the bulbous urethra and had subsequently extended back to the membranous portion.

Stricture of the prostatic urethra has not been observed. The reasons assigned for this have never appeared to me to be altogether satisfactory, and I shall content myself with simply noting the fact of the failure of the condition to exist in this locality, and pass on directly to the clinical side of the subject, which I am able to illustrate to-day by several cases.

Here is a man of forty-five years of age who at different periods during the past twenty years has had attacks of gonorrhea of varying duration.

The last of them, which was contracted two years ago, has continued in a chronic form ever since. The principal symptom being a slight gleety discharge from the meatus, usually most noticeable in the mornings, at times seen only then, with occasional exacerbations following excessive sexual indulgence.

There has been no narrowing of the urinary stream or other change in its character until about six months ago, at which time he began to notice a slight diminution in its size, and in the force with which it was expelled. This condition has gradually increased up to the present time, though as yet the degree of narrowing has not been important, and he still passes a fairly good sized stream. A slight frequency of urination, most marked during the day time, has also been present for about the same length of time, and finally there has been a noticeable dribbling of urine after the apparent completion of micturition.

This patient presents, typically, the classic symptoms of the early stages of stricture.

It has been asserted that a chronic gleet is a certain sign of stricture. It is more true to say that it is frequently an evidence of this condition. It should invariably excite suspicion of it, but it may exist without stricture, and conversely stricture may be present without giving rise to gleet; in the former case the gleety discharge is frequently furnished from the seminal vesicles, or from Cowper's glands, or even in a few cases, by long persisting areas of chronic inflammation, more especially in the prostatic urethra where, as we have said, stricture is never found.

When stricture is present without the occurrence of gleet, it is usually in cases in which the contraction is of long standing. The rapidity with which stricture forms subsequent to gonorrhea varies in different cases, and has been claimed to be as long as twenty years in a few instances. It seldom occurs much under two years and the average is perhaps about three and a half or four years. In traumatic stricture it occurs much more quickly, owing to the greater destruction of tissue which takes place in those cases, and the correspondingly large amount of connective tissue formed. In passing I may note here the fact that the large number of injuries inflicted from without upon the urethra, fall upon the membranous and

bulbo-membranous part of the canal, hence the great majority of traumatic strictures are here.

If left to itself stricture continues to contract more or less rapidly until no urine can be passed through it, and we have the condition known as urinary retention. Before this occurs, or at times coincident with it, there may be a rupture of the urethra, behind the stricture, through which the urine escapes into the peri-urethral tissues and burrows in them to a greater or less extent, producing in many instances violent septic inflammation.

According to the more widely accepted belief at present the rent in the urethra is produced from without inward, by the rupture into it of an extra-urethral abscess, usually originating in the glands of Cowper, or others in the neighborhood of the bulbous or prostatic portions of the canal, the escape of urine taking place secondarily, and being the consequence, and not the cause, of the suppuration in the peri-urethral and other more distant tissues. Others again consider that this condition may arise quite independently of the presence of urine in the tissues at all, and that it is an acute diffuse phlegmonous inflammation.

In whatever way it takes place, it represents the condition ordinarily called urinary extravasation or infiltration. These, the two most important complications of stricture, namely: retention and extravasation, I shall not refer to in this lecture but will confine myself to the treatment of the condition after the actual formation of stricture has occurred, with a word about the methods of examining the urethra for the purpose of establishing the diagnosis and in order to accurately locate the obstruction, estimate their caliber and number. (Four members of the class were then called from the seats and given the opportunity to examine the urethras of two patients with strictures.)

### EXAMINATION.

Two instruments are used to detect stricture of the anterior urethra, the acorn tipped sound or *bougie a boule*, and the urethrometer.

The former gives the most characteristic sense to the fingers, the latter measures more accurately the caliber of the stricture. In the first case there are three well-marked strictures of the anterior urethra. You will feel the shoulder of the acorn tip, as it is withdrawn, after being passed into the part of the urethra behind the strictures, give a sharp jump upon going over them. The sensation is much the same as if the butt of the tip were drawn across the stretched web between the thumb and forefinger. Nothing but organic stricture feels like this, and once felt is not to be forgotten.

The distance of the stricture from the meatus is readily measured by placing the thumb nail upon the stem of the instrument as it emerges from the meatus at the moment when the shoulder of the tip has come in contact with the posterior face of the stricture. The distance between these two points measured after withdrawing the instrument is that of the stricture from the meatus.

Strictures of the membranous urethra are, as has been said, relatively few. That part of the canal is but three quarters of an inch in length, consequently we may estimate stricture of that locality accurately enough for practical purposes by means of the conical steel sound.

There is one frequent source of error in examining this part of the urethra for stricture, *viz.*, spasm of the compressor urethræ muscle, which is often produced by the presence of the sound. It may be distinguished from organic stricture in the following manner: If the sound is warm, well lubricated, and is gently and steadily held against the obstacle opposed to its entrance into the membranous urethra, the latter will presently relax and allow the instrument to pass through easily if it is due to spasm, whereas it will not do so if it be organic stricture. Also in its passage in cases of spasm, the membranous urethra alternately relaxes and contracts upon the sound, and conveys in so doing a series of jerky, twitching sensations to the fingers. The feeling given by an organic stricture to the fingers is as if the instrument were being drawn through a sticky substance which grasps it more or less tightly but steadily.

### TREATMENT.

There is no palliative treatment for organic stricture. The object of all treatment is the restoration of the canal to its normal caliber, and that method which accomplishes this most safely, most efficiently and most permanently is the best. There is, however, no one method which fulfils all these conditions for all cases.

The question which meets us at the outset is, What is the normal caliber of the urethra? Personally I am a strong believer in the views held by the late Dr. Fessenden Otis of New York. Briefly put, his conclusions were as follows:

Urethras are not all of one size any more than noses are! There is, however, an average size for them and it is a caliber of 32 of the French scale.

The size of the meatus is not a measure of the urethra behind it. The average meatus is about 22 of the French scale. It is rarely as large as the urethra to which it belongs.

There is a definite relation between the circumference of the flaccid penis and the caliber of the urethra within it.

This ratio Otis found to be as follows:

A penis with a circumference of 3 inches has a urethra with a caliber of 30 of the French scale. With each quarter of an inch increase in the circumference of the former, there is a corresponding increase of 2 mm. in the urethral caliber. There are more urethras showing a variation above the average size, 32 mm., than there are below it.

### METHODS OF TREATMENT.

There are five ways in which stricture may be treated, *viz.*, By dilating (or stretching), by splitting, by cutting through, cutting out and by

the application of an electric current. These methods are called, respectively, dilatation, divulsion, urethrotomy, resection and electrolysis.

Dilatation is divided into three kinds: Rapid, continuous and gradual. The last is the only one of them that need be referred to in detail.

Gradual dilatation consists in the dilatation of the stricture by the passage through it of successively increasing sizes of special instruments, called sounds or bougies, at intervals of time of of varying lengths, until the canal has been opened to its normal caliber. (Six members of the class were instructed in the passing of sounds during this exercise.)

How often should the sounds be passed? No absolute rule can be laid down as to this, but the following may be taken as a general one:

Let the intervals between the sittings be short; about five days, until the normal caliber has been restored, thereafter make them as long as possible, to be determined by the time elapsing before the stricture begins to recontract. This period varies greatly with different individuals. In the early stages of stricture there will sometimes be no tendency to recontract for six months, the time will vary from this to the other extreme in which the recontraction takes place within a few hours as is the case with some resilient strictures, which it is useless to try to treat by this method.

The following rules you may accept as absolute in connection with the treatment by gradual dilatation.

### RULES TO BE OBSERVED IN THE TREATMENT BY GRADUAL DILATATION.

Never undertake this, or any instrumental treatment of stricture if there be an acute urethritis present.

Never continue it if constitutional symptoms, chills, fever, fainting, threatening symptoms of suppression of urine, follow the use of the instruments, or if they excite acute inflammatory reaction in the urethra.

Never use any but gentle manipulation.

Have the sounds warm when they are used.

Do not pass the instruments with the patient standing up.

Lubricate the instruments amply and use a sterile medium for the purpose.

Sterilize the instruments before using them. The steel sounds by heat, an alcohol flame is the most convenient manner of applying heat to these instruments. The webbing bougies may be boiled in a saturated solution of rock salt for twenty minutes.

Irrigate the urethra when possible before passing the instruments, preferably with a $\frac{1}{4000}$ solution of permanganate of potash.

Use the webbing bougies until the stricture has been dilated as far as number 18 or 20 French scale, and the steel sounds from this upward.

Avoid making jerky, sudden movements in using the instruments, urge them steadily and gently forward. Hold the handle lightly, do not grip it.

Do not undertake the treatment if you do not know the road through the urethra well.

Do not try to gain too much at one time, on the other hand do not have your patient come to you twice as often as is necessary.

### HOW TO PASS THE STEEL SOUNDS.

Preferably, stand on the patient's left side. Enter the tip of the sound into the meatus, with the shaft of the instrument in the line of Poupart's ligament and not much raised above the surface of the body. Next, push the instrument onward through the urethra directly toward the anal orifice, bringing the shaft at the same time gradually to the middle line of the body, but not lifting it much above the surface, until the tip has reached the further end of the bulbous urethra; this you will know by the fact that it is stopped at that point. The left hand holds the head of the penis between the thumb and forefinger during this movement and follows the right hand across to the middle line of the body. On reaching the bulbous urethra and feeling the tip of the sound arrested there, withdraw it slightly, put the penis on the stretch by traction with the left hand, then bring the shaft of the sound directly forward over the symphysis pubis toward the space between the legs.

In making this movement the tip of the sound rises and follows the course of the membranous and the prostatic urethra into the neck of the bladder.

If, by the first examination it has been determined that there is no stricture beyond the anterior urethra, one should avoid passing the sound into the bladder subsequently, since, though the chance is small of so doing, one may sometimes carry infection into the deeper part of the canal and to the bladder; moreover it is from the deep urethra that the impulses which in some cases produce shock or other nervous symptoms are originated.

### DIVULSION.

In this method the stricture is split or ruptured by the quick passage through it of a metal instrument having the size of the normal urethra.

### URETHROTOMY.

Internal urethrotomy consists in division of the stricture by a single incision through it, which should be made in the middle line of the roof of the canal. This line is selected because of the relatively small blood supply of this part.

The operation is the best performed by the Maisonneuve instrument upon strictures having a smaller caliber than 16 of the French scale. For strictures of a larger caliber I prefer the dilating urethrotome of Otis, which by the separation of the two blades which form its shaft, puts the stricture upon the stretch whereby its complete division is insured, and enables the operator at the same time to cut it to an exactly determined size; the caliber is registered upon the dial at the

distal end of the shaft which shows the degree of separation of its two blades.

The incision of the stricture is made by drawing a narrow knife through it. The knife is concealed in a slot at the distal end of the upper branch of the shaft so that it does not cut until drawn out of it for that purpose. There is a scale of inches along the whole length of one side of the shaft, whereby the distance of the knife from the meatus may be determined and the cut applied to the strictured portions of the canal and nowhere else, the distance of the stricture having been established previously by the use of the urethrometer or *bougie a boule* as already described.

Internal urethrotomy should be limited to the anterior urethra because of the difficulty of dealing with hemorrhage in or beyond the membranous urethra, and because of the greater liability there to retention of inflammatory products and urine, owing to the action of the compressor urethræ muscle, and to septic absorption from the surface of the wound. The urethra should be irrigated thoroughly with a cleansing solution both before and after the operation. A catheter is not tied into the urethra, because of the liability of its exciting urethritis, which if it occurs threatens the success of the operation. In this as in all other methods of treatment, the meatus should be cut to a size a little larger than the normal caliber of its urethra. The best way of doing this is by means of a meatatome, such as that of Civiale which I will pass around for you to see.

Every second day following the operation a full-sized sound should be passed through the urethra, to keep the wound open while it is healing. The cessation of bleeding after the use of the instrument in this way is the signal for discontinuing it. This bleeding accompanying the use of the sounds usually continues for about a fortnight. After this, ten days, then a month, and then six months are allowed to elapse without the use of the instrument, and if no recontraction has taken place then, the patient is directed to come once a year for examination.

This operation, except in cases of very old, dense strictures, offers in my experience about 60% of chances of *cure*, by which term is meant that the stricture shows no tendency to recontract, the patient not using instruments to keep it open.

### EXTERNAL URETHROTOMY.

This term usually is applied to the opening of the urethra by an incision made longitudinally through the median line of the perineum. It is appropriate to cases of stricture of narrow caliber or those too dense or resilient to be amenable to gradual dilatation, and to all strictures situated in the membranous or bulbo-membranous urethra.

In any case in which even a filiform guide can be passed through the stricture into the bladder, external perineal urethrotomy is one of the simplest operations; when nothing can be passed through it, it becomes a very difficult one.

The case which is now coming in belongs to the former of these two classes, and you will see that there is already a filiform guide in the urethra.

The neatest way, I think, of doing this operation in all cases in which a filiform can be passed, is that proposed by my colleague, Dr. Gavin of the Boston City Hospital, which I will now show you in this case.

The Maisonneuve staff is first screwed into the metal cap on the end of the filiform guide, which already lies in the urethra. The staff is then passed through the stricture, pushing the guide ahead of it. The triangular blade, blunted on its apex, is next passed into the slot of the staff, and with one steady movement is driven to the further end of it, whereby every stricture is divided to the size of the blade which is used. If the instrument is provided with a number of sufficiently large blades this one internal incision can be made of the same size of that of the normal caliber of the urethra, which is being operated upon, but this is not customary nor altogether free from danger.

The patient is now placed in the lithotomy position. A good-sized grooved staff is passed through the urethra into the bladder, and upon this staff, guided by the nail of the left forefinger placed in the groove from the surface of the perineum, as a guide to it, the point of the knife, its cutting edge being upward, is pushed into the groove of the staff alongside the finger nail, and all the tissues, including the urethra, may be divided with one cut about half an inch in length.

The whole operation need not occupy more than two minutes, and is done with exactly two cuts. It is in truth primarily an internal urethrotomy, the external excision being made to supply drainage, which is secured by fastening a catheter in the bladder through the perineal wound, to avert entrance of urine and septic matter into the cut surfaces and to control hemorrhage if need be. The catheter is left in place for forty-eight hours.

The whole urethra should be thoroughly irrigated with a cleansing solution immediately after the perineal cut has been made. The subsequent treatment by the passage of sounds is the same as that already described.

External perineal urethrotomy without a guide is a very different matter.

The problem here is to trace a minute channel which passes in an irregular way through a dense mass of connective tissue. When false passages have been made by the unskillful use of instruments in previous attempts to enter the bladder, the undertaking is rendered infinitely harder. We will begin by assuming that such is not the case. When it is not, the procedure is as follows: If the anterior urethra will admit a Wheelhouse staff (the instrument was here shown and described), the caliber of which is 15 of the French scale, this instrument is passed into it until it is stopped by the front face of the stric-

ture in the perineum. The urethra is then laid open for a distance of half an inch by an incision from the perineal surface as already described.

The Wheelhouse staff insures the lower end of this incision being at least a quarter of an inch in front of the stricture.

When there are strictures of the anterior urethra of too small caliber to admit the staff, they may be dilated sufficiently to allow of its passage, or, if for any reason this cannot be done, any instrument other than the Wheelhouse that will pass through them, and locate the face of the stricture in the perineal region, may be used in its stead, the only thing to be remembered being that the incision which exposes it in the urethra must not be carried at its lower end nearer the face of the stricture than a quarter of an inch. The object of this maneuver is to preserve intact this bit of the urethra in front of the stricture for the sake of making its course close to the latter clearly visible.

When this has been done a suture is passed into each side of the divided urethra, close to its edge, and these threads are then drawn outward and forward in such a way as to open the urethra widely. The Wheelhouse staff is now turned around and the blunt hook which is on the opposite side of the tip is drawn up against the upper angle of the incision in order to still further display the interior of that part of the urethra. In this way there is formed a funnel-shaped canal at the apex of which lies the orifice of the channel running through the stricture. Sometimes this is detected at once, at others a long search for it may be required. When found the endeavor is made to pass a filiform guide through it.

This is generally successful, if so, it only remains to lay open the canal through the strictured portion by following the filiform guide with the knife. (These operations were demonstrated by illustrations first, then done in the case of a patient in which a guide could be passed.)

When false passages exist, they are more apt to be on the floor or lower side of the urethra than elsewhere, and they start usually at or near the anterior face of the stricture; from here they dissect up the peri-urethral tissue for a greater or less distance. In consequence of being on the floor of the canal, they are apt to be laid open by the incision before the urethra is, and are often mistaken for the latter. The difference in the appearance of the inner lining of the urethra and the false passage is the best guide for distinguishing the one from the other. The largest instrument that can be made to pass through the anterior urethra is the one which is most likely to avoid being caught in the false passage.

When the true canal cannot be traced by any means, there remain two things to be done. One is the operation known as Cock's, and the other, supra-pubic cystotomy and tracing the course of the urethra through the constricted portion from behind. This then becomes an easy matter. The posterior and anterior limits of the strictured area are defined by the tip of a sound resting against each one of them, respectively,— one having been passed from the bladder, and the other through the anterior urethra, — and all that remains to be done is to divide the fibrous tissue between these two points in order to restore the continuity of the urethra.

Cock's operation consists in laying open the urethra behind the stricture by a thrust of the knife from the perineum, guided by the tip of the forefinger of the other hand, which is placed in the rectum against the apex of the prostate. Of the two methods I unhesitatingly prefer the suprapubic in such a case.

The entrance to the stricture when doing the usual perineal operation may sometimes be found by pressing downward upon the bladder from above the symphysis pubis, thereby forcing a few drops of urine through the stricture, which, issuing through orifice of the true channel through the constricted part of the urethra, will serve to locate it.

### ELECTROLYSIS.

This method is carried out by applying to the anterior face of the stricture an electric current of measured strength, for stated periods of time, and at certain intervals, by means of an acorn-tipped electrode. Under this influence the passage through the stricture presently enlarges, and allows the instrument to go through it. Of this method I have only to say that I have tried it personally and carefully, and that it has been not only unsuccessful, but has in several instances produced a stricture of greater density and toughness than was originally present.

### COMPARISON OF METHODS OF TREATMENT.

Gradual dilatation is more frequently employed than any other form of treatment because of the following reasons: 1. The general practitioner feels competent to do it. 2. The word operation deters many patients from accepting a manner of treatment which involves one. 3. The patient is not confined while it is being carried out.

Its disadvantages and limitations are as follows: It is useless for resilient and very dense strictures. It is unsafe as compared with the operations in those cases in which constitutional symptoms attend the passage of the instruments.

Internal urethrotomy is undesirable in cases of stricture of the deeper part of the urethra, unless it be combined with perineal section and drainage, but when so done it is the best method for those cases. It is the only effective operation for resilient or non-dilatable strictures. It is the only operation which offers the prospect of permanent cure in the proper sense of the word. It is not more dangerous than any other operative procedure when applied to stricture of the anterior urethra. In this class of cases it is, I believe, the operation of choice. If you read, as you will sometimes, that the making of an internal urethrotomy incision in the urethra necessitates the

use of sounds to keep the passage open always in the future, you may take my word for it, this is not true.

External urethrotomy is the safest and most satisfactory one in cases of stricture of the bulbo-membranous or membranous urethra which are not amenable to gradual dilatation or in which the patient has serious constitutional disturbance during the course of dilatation. It allows better control of bleeding, and furnishes drainage of the bladder and for septic products, thereby preventing in greater measure their absorption from the open surfaces of the urethra than internal urethrotomy alone does in the cases of stricture of the character and locality mentioned above. It is a valuable adjunct to an internal urethrotomy in cases in which the stricture can be traversed with a guide beforehand, and which, therefore, admit of the combined operation being done in the manner described already. The risk of urinary fistula resulting from the operation is very slight if the catheter is not retained longer than two days. When chronic cystitis is present it is better to incur the risk of fistula by keeping the catheter longer in place, for the sake of the benefit that results from bladder drainage in those cases.

Divulsion is as safe but not safer than internal urethrotomy. With the exception of a few cases of early stricture it offers no prospect of permanent cure. It opens a free passage through the urethra at once, but does so in an inexact way, for the extent and direction of the splitting of the stricture is not in the control of the operator. It sometimes results in the formation of a mass of connective tissue larger and more dense than the original one, and consequently less amenable to treatment.

The treatment may be summarized briefly thus:

1. The meatus must be cut to a caliber 2 mm. larger than that of its normal urethra previous to properly carrying out any form of treatment.

2. Internal urethrotomy yields the most permanent results of any method, and for strictures of the anterior urethra, irrespective of their character, is the operation of choice.

3. All resilient, intractable, nondilatable and impassable strictures of the bulbo-membranous or membranous urethra are best treated by external perineal urethrotomy.

4. With the exception of these, all strictures so situated are best treated by gradual dilatation, unless, during its course, constitutional disturbances of importance arise, in which case it is safer to divide them at once by an external perineal urethrotomy.

5. Divulsion and electrolysis are not methods to be commended.

(During this exercise six students were given the opportunity to examine the urethra for stricture, and to pass sounds, and two assisted at the operation of combined internal and external perineal urethrotomy referred to in the text of the lecture.)

# Original Articles.

## SERUM DIAGNOSIS OF TUBERCULOSIS.*

BY DRS. ARLOING AND COURMONT, LYONS, FRANCE.

For several years our method of serum diagnosis of tuberculosis as practiced by us has been employed in most of the large scientific centers of Europe, but in America, although commonly employed by some writers, it does not seem to have been put to general practical use. Is this because of ignorance of the work of the Lyons physicians or of the difficulty of obtaining and maintaining the homogeneous cultures necessary for the agglutination reaction? This question we cannot answer.

However, it has seemed to us profitable to indicate here the actual status of this subject, so important for the diagnosis of tuberculosis, and to study briefly the history, the technique and the results of the serum diagnosis by the agglutination of homogeneous cultures.

### I. The Historical Aspect of the Subject.

In 1898 Arloing published a method of obtaining liquid homogeneous cultures of the bacillus of Koch, and was the first to show that these cultures could be agglutinated by the serum of tuberculous human beings or by animals rendered tuberculous, thus creating the serum diagnosis of tuberculosis.[1]

Certain improvements in obtaining and in the choice of homogenous cultures [2] and chiefly the clinical application [3] and general significance of the serum reaction for tuberculosis have been studied by Arloing and Paul Courmont in numerous publications.

The serum diagnosis of tuberculosis in bovines has been further studied by Arloing.[4]

The variations in the agglutinating power of effusions and tuberculous effusions has been investigated by Paul Courmont and the result published in various articles.[5]

Since 1899 many authors have studied this subject, both in France and in foreign countries, and a certain number of points have for some time been established beyond all question. The following facts are admitted by all writers:

1. The bacillus of Koch can be cultivated in homogeneous fluid cultures. Certain experimenters, such as Buard (of Bordeaux), Bronstein (of Moscow), Carriere (of Lille), etc., have accomplished this result by starting with solid cultures different from ours. All those to whom we have sent our homogeneous cultures have maintained them easily.

2. These homogeneous cultures are very readily agglutinated in variable strengths by the serum of tuberculous human beings or of animals rendered tuberculous. Beck and Rabinowitch, with whom we disagree on other points, have recognized that it is possible to raise the natural agglutinating powers of the blood of an animal by inoculating it with tuberculosis.

* Translation of paper presented at the Section in Medicine of the Congress of Arts and Sciences at St. Louis, September, 1904.

As to the practical application and the clinical value of the tuberculous serum reaction opinions are divided in the following manner: Most authors confirm the results which we have obtained in every way. (Ferré, Mongour,[6] Buard,[7] Rothamel,[8] in Bordeaux, Mosny[9] and Ravaut in Paris. Carriere[10] in Lille. Bendix[11] and Romberg[12] in Germany were the first writers who used this method with success.)

Bendix in Germany arrived at the same conclusions that we did concerning the frequency of the serum reaction in tuberculous cases and also demonstrated that the greatest intensity of this reaction occurred in the first and second period of the disease, and in consequence showed the value of serum diagnosis for the detection of incipient or even latent tuberculosis. The statistics of Romberg, based on ninety-five cases in which he arrived at the same results as ours, but by a different technique, is of great interest, and we shall speak of this later.

Some writers, confirming the essential points of the serum diagnosis of tuberculosis, make, however, certain reservations with regard to its applications, for the most part because they have not been able to base their statistics on a sufficient number of cases. (Frenkel[13] of Halle, Knopf[14] of New York, Ficker[15] of Leipzig, Bronstein[16] of Moscow.)

But since 1901 many scientists of various nationality have published works absolutely confirmative and based on a large number of cases. We can do no more than enumerate them here: In France, Dieulafoy[17] Widal and Ravaut,[18] and Schrapf[19] of Paris, Clement,[20] Weill and Descos, Descos[21] and Froment[22] of Lyons, Hawthorne[23] of Marseilles, Rodet and Logriffoul[24] of Montpellier. In Germany, Rumpf and Guinard[25] (in a publication in which they compare the results of serum diagnosis by our method and by that of Koch). In Russia, Kazarnion.[26] In Italy, Llvento,[27] Margazalli and Lapareno,[28] Marchetti and Heprnelli,[29] etc.

Only a small number of writers have been unable to obtain good results with the serum reaction: Beck and Rabinowitch,[30] Nobele and Beyer,[31] Ivanoff,[32] De Grazia,[33] Gebhardt,[34] Ruitinger,[35] Koch.[36]

We can only repeat here the criticism we have made in other places of these latter works, among others that of Beck and Rabinowitch.[37] Certain authors have not been able to reach our conclusions because they have employed other technique than ours, for example, Koch. Others obtaining statistical results analogous to ours have not known how to interpret them on account of their unwillingness to admit the great frequency of tuberculosis in subjects non-tuberculous in appearance. Finally, certain authors have not followed in their technique the precautions which we have indicated.

*It is remarkable, in any event, that it should be the great majority of authors who have confirmed our researches and that this confirmation should be more marked the greater the number of their cases and the more extensive their statistics.*

## II. The Technique for Investigating the Serum Reaction of Tuberculosis. Difficulties and Sources of Error.

The technique of maintaining homogeneous cultures for performing the serum reaction presents serious difficulties for the beginner because it requires care and precautions which are not necessary in the serum diagnosis of typhoid fever, for instance. It is this, without doubt, which has caused murmurings on the part of some experimenters, and the reservations which certain authors have made in regard to this subject, but these difficulties can easily be overcome with a little perseverence and some precautions, in a well-equipped labaratory.

### 1. The principal difficulties and sources of error.

These we have often indicated and we are now going to recapitulate the principal points. The sources of error in the application of serum diagnosis of tuberculosis are of two sorts, some arising from the nature of the malady itself, others from the properties of the cultures.

*A. Sources of error arising from the localization and the evolution of the tuberculous process itself.* — In certain diseases running a typical course, like typhoid fever, the clinical diagnosis can in most of the cases finally be made with certainty, and it is easy to compare the clinical findings with those of serum diagnosis. But in tuberculosis in which the foci are multiple and may require a long period for their development, — the disease presenting itself in the most varying aspects and which may be even compatible with an appearance of health, — the difficulties of clinical diagnosis are often great, especially at the beginning. Therefore, in many cases a serum diagnosis which is positive in proper dilution may be at variance with the clinical examination, especially when this has been superficial and points to an intercurrent disease without taking tuberculosis into special account; thus we have often seen the results of serum diagnosis confirmed by autopsy despite the fact that they were at variance with the clinical findings. It is for this reason that experimenters who perform the tuberculous serum reaction with the blood of cases in which they have not taken into account the complete clinical examination or the protocols of the autopsy cannot draw any valuable conclusions from their work. Some time ago we established the fact that certain cases of long standing tuberculosis (usually the sickest) may not give the serum reaction, and moreover that subjects who are really tuberculous but well in appearance may give a very positive reaction. On account of this apparent contradiction certain writers have come to erroneous conclusions with regard to the futility of serum diagnosis in tuberculosis.

In order to carry out profitable research on this subject one must be able, on the one hand, to study the serum reaction in the laboratory with all the essential precautions, and, on the other

hand, to establish a clinical diagnosis as completely as possible by means of all available resources. (Clinical examination, analysis of sputum, and the use of tuberculin, etc.) Really indisputable statistics should not be based on any cases except those where complete autopsy has been done, with anatomico-pathological and bacteriological examination, when necessary. This was done by Arloing in bovine tuberculosis.[38] As this is not always possible in human statistics, one must remember that only those cases in which the clinical diagnosis is positively established, should be used for comparison with the results obtained by the serum reaction.

*B. Sources of error arising from the development of the cultures.* — These sources of error have been expounded at considerable length in another paper of ours [39] and have been further considered and even exaggerated by Ficker.[40]

This author, as well as Romberg, also shows that the reasons for the inexplicable differences of opinion of some observers must be sought for in these sources of error, but they go too far in saying that the difficulties encountered render this procedure inapplicable, simply because certain investigators have not been able to overcome them.

These difficulties can be further summarized under three headings:

1. It is really a difficult and delicate procedure to transform an ordinary stock culture of the bacillus of Koch into a liquid homogeneous culture. This difficulty does not exist any longer since we are prepared to send liquid stock cultures of bacilli to any who ask for them. It is even preferable that investigators who wish to try this method should use the same bacilli which we employ.

2. The homogeneous cultures show a great variability in their aptitude for agglutination, owing to their varying richness in bacilli, conditions of their development, age, etc. By employing a technique always the same for the same observer these difficulties can be overcome. The employment of a test serum, and by the use of diluted cultures, most of these difficulties are avoided.

3. Since the agglutinating power is low with serums from human tuberculous cases (it is rarely above 1 to 20), it is necessary to take into account slight variations in order to judge accurately the serum reaction. Concerning this last point we shall see farther along how this problem can be solved (the use of a standard serum and estimation of the reaction by the naked eye). It is certain beside that these last two points are sufficient to explain the divergent opinions of some writers. Among different observers some do not take sufficiently into account the precautions necessary to overcome the variations in the properties of the culture, or do not accurately estimate by the same method the degrees and the amount of agglutination, and, as a result, the conclusions of these writers differ from those who have followed the necessary conditions more strictly using a technique always the same.

2. HOW TO OBTAIN HOMOGENEOUS CULTURES OF THE BACILLUS OF KOCH IN LIQUID MEDIA.

This result is obtained by two procedures: In the first the object is to obtain a luxuriant growth of confluent colonies having a greasy and shining appearance on potato.

In the second these colonies are grown in liquid media (for details see S. Arloing Ac. des Sciences, 9 Mai 1898). To preserve the homogeneity of successive generations shaking the culture is necessary; this overcomes the tendency of the bacilli to grow in granules or in a scum. It should be borne in mind always, however, that this tendency diminishes as the successive generations become more numerous. We have even in time succeeded in making these bacilli grow easily in non-glycerinated bouillon. If these cultures are allowed to grow at rest some colonies will rise to the top and develop on the surface of the bouillon. In that event three layers of the culture can be distinguished: At the bottom a layer of bacilli isolated or clumped in granules, in the middle clear, transparent bouillon, and at the top a layer of bacilli forming a scum.

These homogeneous cultures have lost in part their power of retaining stains when acted upon by acids. The experimenter who uses these cultures should recognize the variability of their character in order that he may not be led into error, or take for impure cultures those in which the bacilli have lost a part of their classical properties. The return of these properties to the normal, by allowing them to grow for some time, should always be the criterion by which they should be judged.[41]

Their resistance to decolorizing agents and their variation in virulence are not the only changes which occur, since their agglutinability varies also.

3. METHOD OF OBTAINING CULTURES THE MOST FAVORABLE FOR AGGLUTINATION.

The chief factor which renders serum diagnosis of tuberculosis more difficult than in other diseases is as follows:

The homogeneous cultures of the bacillus of Koch show a considerable variation in their aptitude for agglutination. This variability depends largely upon one point, namely, their richness in bacilli and in agglutinable material.

This richness in bacilli and in agglutinable material depends above all things upon the luxuriant development of the culture. The agglutinability, more or less great, varies with favorable and unfavorable conditions in the course of development; the older and more concentrated the cultures the more difficult they are to agglutinate, therefore it is necessary to use fresh cultures or slightly diluted old cultures. In order to estimate and measure the agglutinability of these cultures or their dilutions, a standard serum should be employed.

*A. Conditions necessary for maintaining cultures.*[42] — The same conditions must always be observed: From 4% to 6% glycerinated bouillon

just neutralized must be used, the flasks must be shaken daily in order to maintain their homogeneity.[43] An incubation temperature of 38° C. must be maintained. Flask cultures should be planted from thoroughly homogeneous stock cultures about one month old. The constant use of the same technique is essential.

*B. Dilution of the cultures.* — Young cultures of a few days' growth can be used but we actually prefer old cultures diluted. A well-developed culture of one month's growth should be chosen and removed from the incubator. The necessary quantities are taken and diluted with salt solution, 8%, until the mixture becomes slightly milky, like a solution of glycogen. With a little practice the desired dilution is obtained, and each time tested with the standard serum; this diluted culture is used directly for the serum diagnosis.

*C. Method for using the standard serum.* — In order to estimate the agglutinability of the young or diluted culture, use is made of human or animal serum in which the agglutinating power has been determined. The culture, or diluted culture, should not be used unless agglutinated at the exact strength determined by this test serum.

*D. Methods of preserving cultures for dilution and the standard serum.* — Once those cultures intended for dilution have been removed from the incubator they should be kept in a dark, cold place,[44] at a temperature below 10° C. if possible. This is the best method of keeping them. In this manner the cultures can be used for dilution over a period of three or four weeks. The standard serum retains its power for several months if it is kept at an even, cold temperature and in the dark.

These improvements in the technique, and especially in the use of diluted cultures, render the method more practical than at the beginning of our researches. Thus a small quantity of a month-old culture can be used by diluting it for several hundred serum reactions, since each one only requires two or three cubic centimetres of diluted culture.

### 4. THE TECHNIQUE OF THE SERUM DIAGNOSIS.

We can only repeat here what we have so often said before, and we will only recall the following points:

*A.* The serum of the patient (obtained by pricking the thumb and catching the blood in a tube) should be fresh, clear and sufficient in amount (about half to one cc. of serum).

*B.* The culture is diluted as we have described and tested with the standard serum.

*C.* The serum agglutination reaction is then performed with the suspected serum in the same manner as for typhoid fever; but the proportions of the diluted culture and serum are 1 to 5, 1 to 10, and 1 to 15, and higher if necessary.

*D.* The agglutination should be observed with the naked eye in the first three to five hours and only positive results should be noted in tubes, which show complete agglutination easily visible to the naked eye, and showing flocculi and subsequent clarification.[45]

*E.* Comparison of the results obtained is then made with the results shown with the standard serum. The reaction can be considered positive only when the suspected serum shows an agglutinating power greater than that obtained with the normal serum of the kind of animal under consideration (in man at 1 to 5). The agglutinating power of the serum of tuberculous human beings is rarely very great. By our method it varies between 1 to 5 and 1 to 20 or 30.

## III. RESULTS AND CONCLUSIONS.

The results of the serum diagnosis of tuberculosis are not based alone upon our personal work but on that of the numerous writers which we have quoted. Here in brief are the results:

In tuberculous human beings the serum has a similar reaction to certain animals rendered tuberculous, for instance, guinea pigs. Its agglutinating power rarely rises above 1 to 20, never to the higher degree which we have shown exists in the dog. Generally it fluctuates about 1 to 10, and in order to estimate it accurately it is necessary to follow the precautions which we have indicated.

### 1. THE AGGLUTINATING POWER OF HUMAN BLOOD SERUM.

*A.* In the so-called medical cases of tuberculosis we have studied the serum in more than four hundred cases, taken principally by chance from the service of Professor Bondet and Professor Tesseire at the Notel Dieu in Lyons. These are the results:

In clinical cases of tuberculosis: Positive reactions, 87.9%, negative reactions 12.1%. In cases not clinically tuberculous: Positive reactions 34.6%, negative reactions 65.4%. In subjects well in appearance: Positive reactions 26.8%, negative reactions 73.2%.

If comparison is made of the figures of the positive reactions in these three classes it is seen that the percentage gradually diminishes in going from the tuberculous cases (87.9%) to hospital cases in general (34.6%), and finally is least in healthy subjects (26.8%). This corresponds with what is known of this last class of cases with regard to the frequency of tuberculosis in individuals of non-tuberculous appearance.

In the tuberculous class we have chosen those cases differing most widely regarding localization (lung pleura, peritoneum, intestines, glands, etc.), and regarding severity (all the way from phthisis with cavity, galloping phthisis, caseous pneumonia, to benign pleurisies and discrete lesions of the apices). For a long time we have noted that the severe cases of tuberculosis nearly all gave negative reactions, and on the other hand the discrete and curable cases nearly always gave a positive serum reaction. Mongour, Buard, Rothamel in 1899, Bendix and Romberg have absolutely confirmed and emphasized this point.[46]

Among the patients not clinically tuberculous we have been able to discover by means of the serum reaction a large proportion of latent tuberculous cases; this should not surprise us. The

autopsies have often enabled us to confirm the findings of a serum diagnosis which during the life of the patient disagreed with the clinical diagnosis as to the apparent disease.[47]

The inferences to be drawn from Romberg's statistics agree absolutely with ours.[48] As to whether a positive serum reaction can exist where there are no apparent tuberculous lesions judgment must be reserved since it is certain that a former tuberculous infection, due to recently healed lesions, or even very small lesions that have escaped detection, or even latent bacillary tuberculosis, may explain such an hypothesis.[49] In regard to the subjects of healthy appearance, the low frequency of a positive serum reaction is again in accordance with the frequency of latent tuberculosis in these cases.

*B.* In the so-called cases of surgical tuberculosis a study of the patients taken by chance and reported in the thesis of Clemant [50] has led us to the following conclusions:

In the non-tuberculous cases the reaction has always been negative. In the tuberculous cases the serum reaction has been positive in the following proportion: 76.6% in the cases where the lesions were osteo-arthritic; 75% in the cases where the lesions were purely osseous, and 70.6% in varying tubercular lesions.

### 2. THE AGGLUTINATING POWER OF SEROUS TUBERCULOUS FLUIDS.

The general method has been extended by me to the diagnosis of the nature of pathological effusions, by investigating the agglutinating power not only of the blood serum but of the pathological serous fluids themselves.

All the details for the application and the results obtained from a study of 135 serous effusions, tuberculous and non, in men and animals, will be found in a recent work.[51]

The agglutinating power is always absent in non-tuberculous effusions, and it is nearly always present, and often in marked degree, in tuberculous pleurisies and in benign tuberculous peritonitis; it may be absent in cases of severe tuberculosis (purulent pleurisy and miliary pleurisy, peritonitis, meningitis, etc.). The demonstration of the agglutinating power of a pleural fluid is of great value in the diagnosis of tuberculosis.

### 3. THE CAUSES WHICH BRING ABOUT A MODIFICATION OF THE AGGLUTINATING POWER IN TUBERCULOUS CASES.

We have already seen that the grave cases of tuberculosis have often none, or at best, a very feeble agglutinating power. It is known that analogous instances are encountered in the use of tuberculin as a diagnostic measure; bovines affected with very advanced tuberculosis react very poorly to tuberculin. In order to discover the cause of this fact we have tested numerous animals with regard to the agglutinating power of their serum before and after inoculation with cultures, some of which were very virulent and some much attenuated. These experiments are recorded in our writings.[52]

Our general conclusions were as follows:

The agglutination in these experiments seems to be modified by two factors:

1. The virulence of the "tuberculizing" agent.
2. The susceptibility of the species of animal to tuberculosis.

The development of the agglutinating power in an individual seems to require that this individual shall resist to the greatest possible extent the tuberculous infection. Resistance will be offered under two conditions: when the organism naturally offers a poor medium for the proper evolution of the tuberculous process or when offering a favorable soil it receives an attenuated virus. Without doubt it is possible for other conditions to influence the variations in the agglutinating power of the serum in tuberculous men and animals, but we believe that the preceding conditions are of the greatest importance. It is not necessary to dwell upon the inferences to be drawn from these facts which explain the cases of negative serum reaction in man and which may have some importance in regard to the prognosis in different forms of human tuberculosis.[53]

### 4. THE SERUM REACTION AT DIFFERENT AGES.

We have investigated the influences which the age of the patient has upon the frequency of positive serum reactions in healthy and tuberculous persons. Romberg and Descos [54] have studied the serum reaction in children; Froment,[55] in the aged. The conclusions which have been drawn from our observations and those of these writers are as follows:

*A.* Serum of the new born is never agglutinated, even when the patient is born of a tuberculous mother. (The new born themselves are very rarely tuberculous.)

*B.* As the infant advances in age the serum reaction increases in frequency as well as degree: thus, from five to ten years of age, children show a power of agglutination which increases with the age, thus it is possible to discover advanced or latent tuberculosis.[56]

*C.* The adult serum gives the reaction most frequently and the greatest degree of agglutinating power (see our statistics), whether it concerns clinical tuberculosis manifest or latent. It is seen, then, that the frequency of positive serum reactions increases with age up to the maximum age for adults. With the increase in age there is a corresponding chance of tuberculous infection with which the above increased frequency of the serum reaction corresponds. This point is well shown in the works of Naegel in Germany. The results obtained by means of the tuberculin reaction are the same and absolutely identical with ours.[57]

*D.* In the aged the frequency of positive serum reactions is diminished, for at this age the tuberculous lesions should have been healed for some time or would have carried off, long before, the subjects attacked. When the serum reaction is

plainly positive in the adult it indicates an active tuberculous process.

Nothing is more interesting than the evolution of the serum reaction considered from the standpoint of patients of different ages. It corresponds exactly with what is known of tuberculosis latent or evident at the different periods of life. The different methods control and confirm each other.

## General Conclusions.

We can, at present, thanks to our general statistics and experiments, or confirmative observations, made by numerous writers, repeat with more confidence than ever the following general conclusions and clinical applications:

*First:* The use of homogeneous glycerinated-bouillion cultures of the bacillus of human tuberculosis has enabled us to investigate the agglutinating power of fluids and especially the serum of tuberculous patients, and thus establish the serum-diagnosis of tuberculosis.

*Second:* The advantages of the method are those of serum diagnosis in general:

(1) Absolute harmlessness, since all that is necessary is to withdraw a few drops of blood or remove a little serous fluid, and it can be applied in all cases, whether febrile or not, whether seriously or slightly sick.

(2) Ease and rapidity, since it is not necessary to have the patient under observation, and it requires only a few hours for its accomplishment.

(3) The delicacy of the reaction in cases where the lesions are discrete or latent and difficult to recognize by the usual methods.

It is true that the details of the technique for maintaining suitable fluid cultures and the performance of serum diagnosis require that fairly exact and indispensable conditions should be followed, on account of the slight degree of agglutinative power of the serum from cases of human tuberculosis.

*Third:* In the cases of slightly advanced pulmonary tuberculosis the agglutinating power of the serum is nearly always constant, but in varying degree. It varies from 1 to 5 to 1 to 20 and more.

In advanced cases with very extensive or virulent lesions the serum reaction is often absent or very slight. It may also diminish in intensity and disappear as the disease becomes progressively worse. The experimental data confirm those of the clinic. *The agglutinative reaction in tuberculous subjects appears most often and within certain limits in inverse ratio to the gravity of the infection and the extent of the lesions.*

*Fourth:* In cases suffering from other divers diseases and in which the clinical data does not reveal positive signs of tuberculosis the serum reaction enables us to discover a large number of cases of latent tuberculosis. Autopsy or further development of the disease frequently confirms serum diagnosis.

*Fifth:* Likewise with persons apparently healthy the reaction, so frequently absent, is positive in a certain number of cases, in a proportion corresponding to that of the known frequency of latent tuberculosis.

*Sixth:* Its value in practical use:

(1) A positive serum reaction in the case of a suspected subject is a diagnostic point of great value in establishing the existence of visceral tuberculosis still active or having become *inactive recently.*

(2) A negative serum reaction will have less value as a negative sign since agglutination is absent in a certain number of tuberculous cases.

(3) But the absence of the serum reaction in cases of advanced tuberculosis, where serum diagnosis is no longer necessary, may in certain cases confirm an unfavorable prognosis. But on the contrary in the case of a patient suspected of tuberculosis, in the absence of clinical signs and symptoms of importance, the absence of the reaction may be of great value in helping to eliminate this disease. The same conclusions are applicable to serous pleural effusions.

It goes without saying that agglutination by the blood serum does not point out the locality of the tuberculous infection, but it is the place of the clinician to make use of the findings of the laboratory.

*Seventh:* In conclusion it seems to us that the serum reaction constitutes a rapid procedure, inoffensive to the patient and of great value for the early diagnosis of tuberculosis, especially in patients suspected of having early pulmonary lesions.

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[44] See Arloing and Courmont.
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## REMARKS ON THE JURISPRUDENCE OF CIVIL MALPRACTICE, BASED PRINCIPALLY ON THE DECISIONS RENDERED BY FRENCH COURTS.*

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MEDICINE, unlike mathematics, is not an exact science, and like all sciences based on observation it is supported by hypotheses; like chemistry and physics it includes numerous scientific systems, and it is to the noble fight in which the partisans of the various systems engage that is due the marvelous progress of this science, so useful to humanity. It is difficult to say whether a perfect accord will ever reign in medicine, and also whether the true theories will appear which will forever put an end to the ever-changing aspects of medical science. If such a time should come, it will only be in distant generations to come, because science always takes a long time to penetrate the thick shades which blind the feeble human brain. It can hardly be compared to the drop of water which, during centuries, falls on the same stone without tracing more than an almost imperceptible furrow. Slowly, as more truth has come to light, systems disappear only to be replaced by others. No one can pretend that he alone possesses the truth, and no one can say that such and such a medical theory, to-day accepted by the majority of physicians, will not be soon replaced by another, which only on the eve before was looked upon with the deepest disdain.

In trials for civil malpractice it is out of the province of anybody to say what is the truth and what is erroneous, and this applies above all to the magistrates. The jurisprudence of Massachusetts and many other states have clearly understood this fact, and the same may be said of French jurisprudence, and although in the judgments rendered, the principle of medical liability is recognized, it has always discarded the disputes of schools and has always avoided becoming intermingled in scientific controversies. It has recognized the fact that it is out of its province to blame or to praise such or such a system, and that if it should enter upon this field it would in all probability render the practice of medicine quite impossible.

The principles that we uphold will, we trust, allow us to come to some solution regarding medical liability in the case of embryotomy on the living child, and faithful to the title of this paper we will consider the aspects of the case as it has appeared in France. One of the greatest authorities on obstetrics, Professor Pinard of Paris, thus poses the question in a clinical lecture that he delivered five years ago, as follows: A woman in labor cannot be spontaneously delivered on account of a contracted pelvis; the child is living and at term. The operation that the physician judges both necessary and indispensable is objected to by either the patient herself or her family and another interference is imposed upon the physician and this intervention implicates the death of the child. Under these circumstances the physician has only the choice between embryotomy on a living child, a most detestable and unscientific operation, and the Cesarean operation, which at the present time has a very small mortailty for the mother, and only a slight one for the child. Opinions differ as far as medical doctrine is concerned. Noegelé and Caseaux admitted that one had no right to perform the Cesarean operation on a woman without her consent, and that if a sacrifice was to be made at all, it was

* Read by invitation before the New York Society of Medical Jurisprudence, Nov. 14, 1904.

wiser to kill the child in order to save the mother. Now Professor Pinard upholds that the Cesarean operation is no more dangerous for the mother than embryotomy, and that it is the only operative means by which the labor may be terminated, because, as he points, out the accoucheur has neither the moral, legal nor scientific right to perform embryotomy on a living child. I would go still further and say that the Cesarean operation is far much safer for the mother, and that the operation of embryotomy has at present time practically no indications whatsoever.

Now we will suppose that a physician performs embryotomy and the mother brings suit against him for malpractice. There is no doubt whatever that the court could not find the physician liable. The question thus presents itself: Had the physician wrongly or properly acted in performing embryotomy on a living child? It is evident that the court cannot reply in either sense without penetrating into the realms of science to which it is forbidden.

Medical abortion is also a purely scientific question, and the physician who performs it has only to call upon his conscience as to whether he is doing right or wrong; but in order to be perfectly sure of his position in the matter it is always wiser, we believe, after consultation with one or more physicians, to notify the medical examiner of the district if the operation is to be done. The courts are not called upon to appreciate the value of such therapeutic procedure, because the physician should be perfectly free to choose the system and the medication that he considers proper to employ, and Tourdes has said that, "the physician who has chosen his doctrine, his method of treatment, his operative procedure, and who testifies, scientifically, his manner of acting, cannot be condemned in the name of a different doctrine." It may be that success does not crown his efforts, and that the patient dies who might have been saved had another treatment been employed, but it would be quite unjust to hold the physician liable, who in all conscientiousness had given the patient his care.

It would be both unjust and dangerous for society at large to hold physicians liable for their system of therapeutics. Unjust, because a physician is not in the wrong who has ordered a prescription, the administration of which may possibly have resulted fatally, if his studies, researches and former successes have led him to conscientiously accept the given method as the best. Dangerous for society, because physicians, if perpetually threatened with suits for malpractice, would dare to prescribe only certain medicines, inoffensive without doubt, but equally without action on the disease and incapable of arresting its progress. And for that matter, who could come forward and affirm with certitude that it was the treatment employed which caused the death of the patient? and how many times would the court be in danger of holding the physician liable when in reality the unfortunate outcome was entirely due to unforeseen circumstances?

We would even go very much further than this and say that a physician is not obliged to follow the opinion of the majority, and he may, contrary to what his *confreres* think, employ a method that he has good reason to believe good, that is to say that he has employed it on previous occasions successfully and has scientifically justified himself. The case would not be the same where a consultation has taken place, and a treatment having been unanimously adopted, if one of the physicians should modify this treatment without any change taking place in the disease which would justify this attitude. He would in this case seriously endanger his liability, according to our way of thinking, because if an unfortunate result should occur, and if it could be proven that the change in treatment was the direct cause, there is no reason why the victim or those representing him should not bring suit for civil malpractice.

A physician cannot, we think, be held liable for an inopportune operation, no matter what the result may be; but given the danger that surgical operations present in general, the physician should not undertake the intervention until he has obtained the consent of the patient or of those who are authorized to give such consent. If such a consent has not been obtained he should be held liable for the unfortunate outcome of the operation, as was the judgment rendered at Liége not very long ago.[1]

Regarding the conservative Cesarean section, Professor Pinard believes that it may be done without the consent of the mother, because under the circumstances two lives are involved, and he says: "Is it possible to admit that a mother can refuse to allow an operation being performed upon her which is the only means of removing a living child, by invoking the possible danger of this operation, and under the pretext that by killing the child she will run less danger?" In spite of so great an authority, we believe that under the circumstances the consent of the mother to the operation is absolutely necessary and we are decidedly of Noegelé's opinion when he says: "*Mater sola discernendi jus habet, nec ulla in terris potestas jure eam cogere potest, ut de vita dimicet.*" We could not, however, concur with the opinion of Caseaux, who goes so far as to give the right of refusal to the husband, against the wishes of the mother.

The discussion of this question only exists for the conservative Cesarean section, and as far as all other operations are concerned every one admits, both in jurisprudence and medicine, that before undertaking a surgical operation the physician must obtain the consent of the patient or of those persons under whose authority he is placed. However, a physician may consider himself authorized to perform an operation for the relief of an affection which will cause death very shortly, the necessity of which is consequently most evident and cannot be deferred without rendering all curative measures impossible. Under these circumstances one of two things must naturally

[1] Liég. Pas. 90, p. 83.

happen: either the operation will be successful and the patient may have some chance of becoming well, or on the other hand death may be the result. In the latter case it cannot be upheld that the operation could come under the head of malpractice, because the patient without it would have died within a short lapse of time, and one might add on the contrary that the physician should be held morally guilty if, in such a situation, he did not try the only means that he had in his power to save the life of his client. The question now arises as to whether a physician has the right to make scientific essays on his patients, and whether or not he can employ new medicines; and if these essays should result disastrously, can he be tried for malpractice?

We admitted in principle that the physician is free in his choice as to his method; that he alone is the judge of the therapeutical measure that he should employ. To be logical, we should recognize the right of physicians to carry on experiments and employ newly discovered remedies. Experiments, however, may be undertaken with two very different ends in view. They may be undertaken in order to satisfy scientific curiosity, to verify hypotheses, or, on the other hand, they may only be intended to obtain the cure of patients, when after having employed all known systems, the patient's condition still remaining hopeless, the physician takes the chances of an untried medicine. In the first case, quite in accord with jurisprudence, we admit the physician is guilty who makes an essay with an unknown treatment on a patient, simply to satisfy his scientific curiosity. Doubtless, physicians have binding obligations to science, and their rôle is not merely to cure patients or relieve their suffering, but it should always extend and increase the domain of science, every day tearing away a strip of the cloak of mist behind which develops the infirmities of humanity. In this struggle between science and nature, experimentation is a redoubted arm in the hands of the *savant* that cannot be taken from him without running a risk of compromising the victory.

We should not, however, forget that human life is sacred and that nothing can justify any attacks that one might feel inclined to make upon it. It is not permissible to use human beings for experimental fields and to sacrifice life for the satisfaction of a passion, no matter how noble. The cult of science should not demand human sacrifices, and jurisprudence has had occasion to pronounce its decision in a most exciting affair which took place at one of the hospitals at Lyons nearly fifty years ago. An interne of the Antiquaille Hospital asked permission of the attending physician, which he obtained, to inoculate a young subject with pus from certain contagious syphilitic lesions. Brought to trial by the authorities, the interne and visiting physician were condemned by the correctional tribunal of Lyons, and the court in its charge declared that the facts brought against the defendants were all the more reprehensible inasmuch as they were practiced upon a child incapable of any free consent, confided to public charity and to the care of the defendants. Upon the conclusions on which the judgment was rendered the general advocate said: "The conditions of legitimate experimental work in medicine are, on the one hand, the science and the title of the experimenter; on the other hand the cure of the patient as a unique, essential and fundamental end to be obtained by the experiment; such is, for example, the use of a new therapeutic measure in a hopeless disease and when all other means have been employed."[2]

In those cases where the experiment has for its end the cure of the patient, the physician should proceed with the most extreme prudence; and that great authority, Brouardel, has so justly said in his recent excellent work on medical liability that "the essay of new medications can only be undertaken after numerous experiments on animals controlled in the presence of competent persons, capable of lending instantaneously an efficacious assistance." A physician would seriously compromise his liability if, in a perilous situation, he abandoned a rational treatment, admitted by everybody, in order to try a new medication, the ultimate issue of which he could in no way foresee. Tourdes says that "when a disease which menaces the patient with an immediate death, like pernicious fever, has its recognized remedy an imprudent experimentation should not substitute the uncertain tentative for the rational practice of the art." The right of the physician to employ newly discovered drugs with the end of curing his patient does not necessitate the undertaking of hazardous essays, as has been declared in 1873, in a decision handed down by the court of Gray.

Mistakes in diagnosis also constitute a scientific error which escapes the appreciation of the courts. It would be unjust and at the same time would render the practice of medicine impossible to hold a physician responsible for his errors in diagnosis, because often it would hold him liable in a fortuitous case, and no physician would ever dare to undertake the care of a patient under these circumstances, because he would never be sure, no matter how great his attention, devotion and knowledge might be, not to fall under the sword of suits for either civil or criminal malpractice. The human body is replete with mystery, and although it may be said that each disease possesses its characteristic symptoms, it would be quite inexact to affirm that these symptoms are equally evident in each and every patient. They are frequently accompanied by multiple signs due to the nature and temperament of the patient himself, and all knowledge of the physician, no matter how great, is quite impotent in unravelling them. Occasionally by using prudence and allowing the disease to continue its work for several days or weeks, the physician may be able, on account of the advent of other external signs, to acquire some certitude. But it can also happen that these few days of waiting simply render his mistake complete, and here we are dealing with a fortuitous case, a major force, against which all

[2] Lyon., 15 dec., 1859, D. 59, 3.87 et 88.

the will and all the knowledge of the physician will become annihilated.

A few examples of the facility with which an erroneous, and yet justifiable, mistake can be made may not be out of place here, and in many of these it may be seen how easy it is for the physician to be led into an erroneous prognosis and treatment from the very fact of his mistaken diagnosis. Certain cardiac murmurs, produced by an organic lesion, may be badly interpreted and attributed to a simple nervous condition or to marked anemia, from which results a pernicious treatment consisting of cold baths which may produce fatal syncope. Hepatic, lead and nephretic colic are all characterized by a very precise group of symptoms, but there are indefinite forms of these affections in which a correct diagnosis is well nigh impossible. Then, again, take the example of a nephritis at its beginning in a young girl, which may simply be characterized by an extreme degree of anemia, while the usual signs of nephritis may be absolutely wanting. Under these circumstances a physician might easily make the mistaken diagnosis of chlorosis or even pulmonary tuberculosis. The patient then being considered a chlorotic is given iron, or from the fear of tuberculosis a very active forced feeding will be instituted, and whichever it may be, the patient follows a regimen which is absolutely fatal for the undiagnosed renal lesion.

An error in diagnosis is extremely liable to occur in the examination of hysterics, and it is well known that hysteria is a great simulator. Patients present what appears to be various forms of paralysis, epilepsy, a peritonitis or even hip joint disease, when in reality these disturbances are simply of hysterical origin, and if the characteristic signs of hysteria are not very distinct a physician might easily be led into error and order a useless, or even dangerous, treatment.

Syphilitic lesions frequently give rise to mistakes. For example, certain tumors of the brain are merely syphilitic neoplasms, and by the symptoms alone it is quite impossible to know whether one is dealing with a malignant tumor of the brain or a gumma. The diagnosis is, however, essential because with a malignant growth the prognosis is serious and a surgical interference may be required, while in the case of a gumma, antisyphilitic treatment will usually result in a cure. A syphilitic chancre is sometimes difficult to distinguish from a soft chancre or herpes, and a physician consulted in relation to marriage may be seriously embarrassed in his diagnosis.

Oftentimes a diagnosis which could be made by a physician practicing in a large city, possessing all the requisite apparatus for making such diagnosis, will be quite impossible for a country physician to make. For example, it is generally admitted that a differential diagnosis between diphtheria and other forms of throat affections in which a membrane is present is quite impossible unless a bacteriological examination is made; it is consequently evident that many physicians residing in distant parts of the country are unable to have this done.

In surgical practice it would at first sight appear that the diagnosis should be easier, but this, however, is not the case. What is true is that the scientific progress of surgery has rendered many diagnostic errors absolutely harmless, but it cannot be denied that in many cases the difficulties in establishing a correct diagnosis are oftentimes insurmountable, and it would be quite unjust to consider an error of this kind as an instance of malpractice.

But when the diagnostic error is one that should be repaired, as for example, the opening of an artery, the physician who has not done everything in his power to repair the defect resulting from his operation has committed a serious mistake. The greatest physicians and surgeons, both in the past and present, have committed mistakes in diagnosis, such as opening an aneurism of the axillary artery, believing it to be an abscess of the axilla, and cases of simple pregnancy have been diagnosed by eminent surgeons as ovarian cysts in so many instances that they can no longer be counted. To sum up, we would say that an error in diagnosis should not be considered as a case for civil malpractice, because a correct diagnosis is often an impossibility, and it would be rendering the physician liable for a fortuitous case. Although we are of the opinion that it would be dangerous for justice to hold physicians liable for their errors in diagnosis we do not intend to convey the idea that instances of imprudence or negligence, which have for a result an erroneous diagnosis, in cases where a correct one might have been made if the physician had been more attentive, should go unpunished.

As is generally accepted by the jurisprudence of many states of our country, it is out of the province of the court to settle a scientific question, to pronounce upon the opportunity of an operation or to express its opinion as to whether such or such a treatment resulted disastrously or otherwise. We have endeavored to show in this paper that the courts should not emit any appreciation on this point, even after expert opinion has been given. Although it is true that medicine is a conjectural science, it is none the less true that it comprises general rules, verified and admitted by all as axioms. These truths can give rise to no discussion or to any school controversy; they should form the scientific baggage of every physician who is desirous of conscientiously practicing his profession, and he who does not know these rules should be held liable for any harm resulting from such ignorance.

A physician, accused of homicide from imprudence, was tried before the Criminal Court of London. He had administered a powerful potion to his client who had heart disease. In summing up to the jury the legislation and pointing out what questions it would have to consider in order to formulate its verdict, the Lord Chief Justice said: "Every man who practices a scientific profession, every man who undertakes a task which is permitted him by law, or who assumes it himself, is obliged in the accomplishment of this duty or of this task to present the normal ability of a

competent man, if not he should be considered guilty of negligence. The circumstances which constitute culpability do not lend themselves to an absolute legal formula. There is a question of fact which varies with each case. The jury has to decide if, in the present case, the accused has acted with ability or sufficient care."

*(To be continued.)*

## THE DIAGNOSIS OF INCIPIENT PULMONARY TUBERCULOSIS.*

BY JAY PERKINS, M.D., PROVIDENCE, R. I.,
*Physician to Department of Pulmonary Tuberculosis (Out-patient), R. I. Hospital.*

The report of the Adirondack Cottage Sanitarium for 1903 shows that 158 patients were discharged after treatment for pulmonary tuberculosis, and that of these 59 either had no expectoration or no bacilli in their expectoration when admitted. Dr. Vincent Y. Bowditch in his paper, "Subsequent Histories of Seventy-nine Arrested Cases Treated at the Sharon Sanitarium, 1890-1902," states that in only about one half of the cases was the diagnosis confirmed by the presence of tubercle bacilli in the sputum or by the tuberculin reaction. I am not infrequently asked by physicians if it is possible to make a diagnosis of pulmonary tuberculosis without the finding of bacilli in the sputum; and in the Boston Medical and Surgical Journal, Feb. 25, 1904, Dr. F. T. Lord questions the reliability of a diagnosis of pulmonary tuberculosis without the demonstration of tubercle bacilli in the sputum or of a tuberculin reaction.

Autopsy findings demonstrate that a large percentage, authorities varying from 25% to 80%, of cases coming to autopsy after death from other diseases than tuberculosis present lesions of healed pulmonary tuberculosis. In most of these cases the disease was arrested while in an early stage and without presenting sufficient clinical evidence of tuberculosis to cause that disease to be suspected. We have thus forced upon us the knowledge that from pulmonary tuberculosis recovery frequently takes place, and what is of equal importance that this recovery usually takes place while the disease is in an incipient or early stage. In these cases it is not possible to state what physical signs were presented, but in cases of known pulmonary tuberculosis in which the disease has extended from one lung area to another it has been possible to learn the earliest signs presented by a tuberculous lesion and to follow the development of this lesion. By the aid of autopsies upon tuberculous subjects it has been possible in some cases to compare the physical signs of a recent extension with the actual pathological lesion, and in experiments upon animals the pathological lesions produced soon after infection have been studied. Clinically, every specialist on diseases of the chest has had abundant opportunity to see suspicious cases develop into well-marked tuberculosis. Therefore, while medicine is an inexact science and while mistakes may be and frequently are made by even the best diagnosticians, it is possible by a careful examination and a judgment born of experience to diagnose pulmonary tuberculosis with a reasonable degree of accuracy in a large percentage of the cases which present themselves for examination before bacilli appear in the sputum and without the tuberculin reaction.

With a rapid development of laboratory research there has been a tendency on the part of many to rely too much on laboratory findings and too little on thorough clinical work. Giving full credit to the value of sputum examination and the tuberculin reaction these are but aids to the clinician and not the *sine qua non* of a diagnosis. The sputum examination is so easily obtained that it should be used in every case of suspected pulmonary tuberculosis, and when tubercle bacilli are found there is no doubt but that tuberculosis exists in the respiratory tract. A negative examination, however, means only that the bacilli were not found, and the bacilli may be absent from the expectoration until the disease is advanced. We cannot, therefore, consider the absence of the bacilli in the sputum as of any value in an incipient case. The tuberculin test is of great value in doubtful cases but it needs to be used very carefully and with the patient under skilled observation in order to obtain its full value. There is sufficient prejudice (unfounded, I believe) against its use, and sufficient care and observation needed in its execution to make it impracticable in a large percentage of cases except in institutions; nor do I believe it to be necessary in a large percentage of the suspected cases in which tubercle bacilli cannot be found. As the test is frequently used, I have as much confidence in the opinion of Dr. Bowditch and of the physicians at the Adirondack Cottage Sanitarium, when they say that tuberculosis is present as I have in the test.

A diagnosis of pulmonary tuberculosis in its early stages can be made by judiciously connecting the physical signs and clinical history with the pathological lesions and systemic effects of a slight tuberculous infection. I will not here go into the methods by which infection takes place, but will consider the condition brought about by the infection. In early pulmonary tuberculosis the signs which we get are not produced directly by the tubercles but by the changes which take place in the tissue of the lung and accompanying the tubercle, notably caused by the stimulation or irritation of the toxins of the tubercle bacillus. There is an infiltration or thickening of the alveolar walls surrounding or adjoining the smaller bronchial tubes, thus giving a more or less complete consolidation or infiltration of the affected portion of the lung. If the lung reacts against the tuberculous toxin, a fibrous tissue formation accompanies this infiltration and the extension of the disease is held somewhat in abeyance, and breaking down or ulceration does not readily take place. If the lung does not react by the formation of fibrous tissue the tubercles soon break down, tuberculous

* Read before the Providence Clinical Club, October, 1904.

ulcers are formed and the tuberculous matter expectorated unless the bronchial tubes are occluded. In the cases which give a fibrous thickening we have the bronchial tubes patent and more or less of the lung tissue consolidated, and this gives us the physical signs which, according to the laws of physics, should accompany such a consolidation; that is, the normal vesicular murmur is replaced by breath sounds more or less bronchial in character. The first change to be noticed is usually an intensified expiratory sound. Instead of hearing simply the normal inspiratory vesicular murmur we get in addition a slightly tubular or harsh expiratory breath sound. If we get the case in a sufficiently early stage, this may be all that is to be heard. The next change in breathing is an increase in the tubular character and roughness over the normal sound of inspiration and also a still further increase in the length and tubular character of the expiratory sound. In this stage a few rales may or may not be present. They are not certain to be heard and are not pathognomonic if heard. Accompanying the harsher breath sounds there will be also an increase of the transmitted voice sounds, the amount of the increase depending as much upon the nearness of the lesion to the lung surface and upon the presence or absence of pleural adhesions as upon the extent of the disease. Changes in the percussion note cannot usually be detected in this early stage unless pleural adhesions are present over the diseased area or unless the infiltration is near the surface of the lung. The most frequent location for such a lesion is at the apex of the lung, and the sounds are heard first above or just below the clavicle or above the spine of the scapula of the affected side. It should be borne in mind that at the right apex the breathing is usually a little harsher and the voice sounds are transmitted more distinctly even in health than on the left side. In those cases, however, in which the lung does not react by the formation of fibrous tissue, instead of getting the harsh breathing and the abnormal transmission of the voice sounds we get all of the breath sounds suppressed, and and upon forced inspiration or following cough we hear moist rales, and in extreme cases may obtain a suction sound or click, especially following cough. As in the fibrous form the percussion note is variable, depending upon the distance of the lesion from the surface and the amount of compensatory emphysema surrounding the diseased area. The difference in the signs obtained in the two forms depends upon the absence or presence and quality of secretion in the bronchial tubes, one extreme giving harsh respiration, increased vocal resonance and fremitus and no rales, the other extreme giving diminished respiratory sounds, diminished vocal resonance and moist rales. Any degree of variation between these two extremes may be found, depending upon the amount of fibrous tissue formation or the amount and consistency of secretion present. In the fibrous form we are not as likely to obtain bacilli as early in the disease in point of time as in the non-fibrous form, nor are we as likely to see a lack of proper expansion or a sinking in of the chest as early as in the fibrous form. Another physical sign, which is frequently present in these early cases when they come for examination is a rise of temperature sometime during the afternoon, this rise being less marked in the fibrous form. Hemorrhage may take place early in the disease even before any physical signs can be obtained by oscultation or percussion, and even in these hemorrhagic cases it may not be possible for a long time to find tubercle bacilli in the sputum. Any expectoration of blood, unless some cause for the hemorrhage can be found in the mouth or throat, is a very strong presumption of pulmonary tuberculosis. Tubercle bacilli may be found in the sputum without any physical signs being detected in the lung. In the earliest stages of the disease which can be detected by physical examination, it is possible for the signs to be obscured by improper breathing or by temporary conditions leading to imperfect expansion of the chest, as caused by neuralgia in the chest wall, by pleurisy or from constriction of the chest, or we may get a temporary collection of mucus in one or more bronchioles, but repeated examinations will overcome all of these obstacles to a correct diagnosis. In connection with these signs we also frequently get marked assistance from the clinical history, these symptoms being less marked in the fibrous form than in the non-fibrous. There is one group of symptoms which is very commonly present, — malaise, indigestion, chlorosis, loss of strength and loss of flesh. In a large number of cases we get a history of a hacking cough, especially in the morning, or of repeated colds, associated with which there is usually a loss of strength. Assistance is frequently obtained by a knowledge of exposure to infection, or by a history of numerous cases in the family, if the element of contagion from one to another can be eliminated.

With the physical signs and symptoms as outlined above, these signs and symptoms persisting for any length of time, I believe that physicians constantly examining tuberculous patients are fully justified in stating that a patient has tuberculosis, even if the bacilli are not found in the sputum and without using the tuberculin test. There is a class of cases in which the lesion is so deeply seated that we cannot get these signs but in which we do get some of the symptoms, and in these cases the tuberculin test is of inestimable value. The criticism, if any, which I should make is not that certain cases are classed as tuberculosis without the tuberculin reaction, but that certain ones are said not to have tuberculosis without the use of the tuberculin test.

In closing, I would emphasize the following points:

*First:* Competent observers can by observation and repeated examinations make a reasonably accurate diagnosis of incipient pulmonary tuberculosis without the finding of tubercle bacilli in the sputum or the use of the tuberculin test.

*Second:* When there are persistent symptoms of a mild toxemia as shown by malaise, chlorosis

and indigestion, or a daily rise of temperature, with or without cough being present, especially if combined with any loss of flesh or strength, in the absence of any other manifest cause, even without tubercle bacilli being found in the sputum or physical signs as outlined above, tuberculosis should be suspected and its presence or absence verified by the use of tuberculin.

*Third:* The presence of moist rales, when localized, are sufficiently indicative of pulmonary tuberculosis to make careful watching and repeated examinations imperative, but are not by any means pathognomonic of pulmonary tuberculosis unless persistent and accompanied by evidences of a mild toxemia.

*Fourth:* A negative examination of the sputum for tubercle bacilli is of no value. In all suspicious cases many examinations should be made. Tubercle bacilli may be absent from the sputum of a tuberculous case because none of the tubercles are softening and communicating with a bronchial tube, or because there is such a profuse bronchial secretion that the bacilli are relatively too few to be demonstrated microscopically, though an inoculation of the same sputum into the abdominal cavity of a guinea pig might show their presence.

## Clinical Department.

### CLINICAL REPORT FROM THE WARD FOR SKIN DISEASES AT THE MASSACHUSETTS GENERAL HOSPITAL.

BY HARVEY P. TOWLE, M.D., BOSTON,
*Assistant Physician for Diseases of the Skin.*

#### A CASE OF MYCOSIS FUNGOIDES.

Case I. Sister F., age sixty-two. Family history negative except that father died at about forty of some asthmatic trouble. Previous history negative.

Present illness began twenty-three and a half years ago when a palm-sized red spot appeared on the outer side of the right thigh. This spot persisted a long time, how long patient cannot say as there were no subjective symptoms to call her attention to it. After its disappearance there was an interval of freedom. Two and a half years after the appearance of the first spot, or twenty-one years ago, a second spot appeared on the left ankle which was red, itching, scaling and painful. For a few weeks at its beginning this patch bore small blisters which were painful. When the blisters had attained the size of a pea they burst and with the bursting the pain ceased. This was the only time in the course of the whole disease when there was any vesiculation. The evolution of this second patch was very slow but it finally did disappear. From this time on patches which were red, scaling and slightly indurated and which pursued this same sluggish course appeared on various parts of the body. Gradually the evolution of the patches became slower and slower until for the last eight or nine years none have disappeared. Gradually also the induration of the patches became more and more marked until the skin was much thickened and very scaly. Eight years ago a reddened patch appeared on the left knee. For five years it was merely red and scaly with an unbroken skin beneath the scales. Three years ago it was noticed for the first time that the skin was broken. Thenceforward the ulceration progressed steadily both in extent and depth. Its edges became rolled up and much elevated above the surrounding skin. About a year ago tumors appeared for the first time, suddenly and chiefly over the extremities, sparsely on the body. The general health has been unimpaired throughout.

On examination the scalp was found to be completely covered with large, white, thick scales beneath which the skin was reddened. There was marked thinning of the hair everywhere. The skin over the ears was red, thickened, roughened and covered with fine scales. The skin of the face was everywhere involved except over a few small areas. The process was most marked, however, over the cheeks and right eyebrow. Here the skin was much reddened and thickened and covered with large white scales, adherent by one edge and easily detached. On the right eyebrow was a



Mycosis Fungoides.

patch about one and a half by two and a half inches, which was superficially excoriated in small spots from which oozed a clear serum. The patch was not elevated and bore many large papery scales. Over the rest of the face the skin was dry, red, scaly and somewhat thickened. The neck, front and back, was covered by a red, thickened, scaling and elevated patch which was so extensive that scarcely any normal skin remained. The skin of the back was covered with numerous patches of a similar character of all sizes and shapes. These patches coalesced on all sides with other patches and thus inclosed irregular areas in which the skin was either entirely normal or at most erythematous. The involved skin was red, elevated above the surface about one sixteenth of an inch, covered with large papery, easily detachable scales, adherent by one edge. On close examination it was seen that the patches were made up of large papules and were surrounded by a narrow zone of redness. The skin of the

chest, abdomen and arms was almost universally covered by similar red, rough, scaling, elevated bands which ran in all directions and crossed and recrossed each other, inclosing islands of skin which were less involved but which were yet reddened and scaling. The skin of the hands was universally involved and much thickened, red, scaling and fissured. On the thighs were the same elevated and thickened patches and bands. But in addition there were numerous tumors which arose from the patches already described. These tumors were, in general, of an oval shape, with rounded tops, projecting from one fourth to one half inch above the surface of the patches and averaged two or three inches in length and one half to one inch in width. Some were comparatively solid, others were made up of long finger-like projections packed closely together so that the surface had a crackled appearance. The latter suggested somewhat in shape and appearance a macaroon. These tumors were discrete and as already stated usually arose from skin already thickened and elevated. Occasionally one arose from apparently healthy skin. There were many of these



Mycosis Fungoides.

tumors on the arms and, to a less degree, on the lower legs. The feet were dry and much fissured. Over the left patella and just above and to the outer side on the thigh were two ulcerated lesions. These were irregularly circular in shape. The lower had a diameter of three inches, the upper of five inches. Their edges were elevated about one eighth of an inch above the surrounding skin, were of a purple color, and sloping. The centers of the lesions were ulcerated. The bases of the ulcers were slightly irregular and papillomatous and secreted an abundant sero-pus. A blood count showed present polynuclears 63.5%, lymphocytes 32.5%, eosinophiles 4%. Two pieces taken from the edges of the tumors were examined microscopically. The appearances were the same in both. There was tremendous hyperplasia of the rete. The interpapillary prolongations were several times their normal length, and were thin and pointed. There was a corresponding increase in the length of the papillæ. There was nothing which could be called an infiltration of the corium.

Under the x-rays the ulcers of the leg healed promptly. Tumors in several regions were also exposed to the x-rays. All have improved greatly while many have disappeared wholly. An area on the forehead which grew red and threatened to break down was also exposed and healed rapidly. On other parts the tumors have shrunk very much under salicylic acid plaster but have not disappeared. The same treatment has also had a favorable effect upon the thickened skin. Before using the rays and the plaster the patient had been given various forms of internal treatment but without effect.

SCLERODERMA.

CASE II. Female, admitted to the Dermatological Ward, April 20, 1904; age nineteen. Family history negative. Previous history negative. Present illness began three years ago with the appearance of sores around the ends of the fingers and on the knuckles. At the same time the fingers felt cold and turned blue and were painful. The fingers remained sore for a year when they cleared up. Before the fingers were entirely well sores appeared on the large joints of the extremities, both upper and lower, and these joints have remained sore ever since. One year ago she noticed that her back and legs were becoming so stiff that she had difficulty in sitting down. Soon after this the fingers became stiff and finally contracted. A little later the forearms also became stiff. Two years ago her skin, which she states was formerly fair — she is of Indian blood — became universally pigmented. For nine months this pigmentation remained unchanged when small white spots began to appear. These white spots gradually increased in size and new ones were continually appearing. The general health was not much affected at first and, even at the time of admission, although she was much emaciated, she always said that she felt well. Examination showed a patient who was markedly emaciated. The arms and legs particularly were "skin and bones." Extension of the arms at the elbows was impossible beyond a right angle. The fingers were flexed at the second joint and motion in any direction was practically absent. Like the arms at the elbows, the legs were drawn up at the knees and extension beyond a right angle was impossible. The tendons of both arms and legs were tense and prominent. The motion of shoulders and hips was but slightly impaired. Over the dorsal and lumbar regions of the spine motion was much impaired. The heart, lungs and urine were negative. The skin of the whole body presented a speckled brown and white appearance, except the back which was uniformly brown. The face appeared to be white but close inspection showed many pea-sized patches of brown. The ears too appeared white. From the outer edge of the eyes to the ears and from the scalp to the edge of the jaws the color was chiefly brown. But scattered through the brown were many lighter spots which are either circular in shape or in the form of short bands, either discrete or coalescing, midway between a white and a brown in color. The skin over these areas was atrophied but was depressed, little if at all, below the surrounding skin. The upper half of the neck was quite brown but the lower half showed light areas similar to those on the neck. The skin of the chest

was thin and drawn tightly over the bones. There were more and larger white areas over the front than over the sides. The skin over the sternum was almost entirely white, having only a few small brown spots. Passing from the central line of the body outward the white spots grew smaller and fewer until far out on the



Scleroderma.

sides the color was uniformly brown. On the abdomen also the white areas were larger and more numerous in the center than on the sides. There was also much speckling of the extensor surfaces of the arms and legs and the inner surface of the left thigh. These white areas occurred everywhere in round spots or in bands or sheets and varied in size from a pin's head in the smallest to areas four or five inches wide and six or seven inches long. In them the skin was atrophied, of a dead white or brown white color, not much if at all depressed. Here and there an area was bordered by a line of hyperpigmentation, which was quite marked. Over all the large joints, such as the wrists, elbows, knees, and many of the knuckles, on the outer sides, were wart-like crusted lesions which sometimes projected about a quarter of an inch above the surface and measured a half inch in diameter and which were situated on a reddened and indurated base. The skin over the outer two thirds of the fingers was white and atrophied. The only points of interest noted during the patient's hospital stay were that on May 18, the toes on the left foot became blue and painful. It was some days before this condition subsided. May 28, it was noted that a gangrenous spot had appeared on the ball of the left big toe. The general health had gradually grown worse until when she was taken home by her people she was quite weak.

## FOUR CASES OF LAPAROTOMY DURING TYPHOID FEVER: WITH RECOVERY.

BY R. R. FITCH, M.D., BOSTON.

The following cases are from the services of Dr. H. F. Vickery and Dr. J. J. Minot, at the Massachusetts General Hospital:

Case I. Harry O., nine years old, born in Russia. Gave a history of two weeks' duration; headache, feverishness, loss of appetite and diarrhea, being the chief complaints.

At entrance his temperature was 102°, pulse 120, respiration 20. White count, 11,400. Widal reaction positive in dilution of 1 to 50. Urine not remarkable. Blood pressure 87 mm. by the Riva Rocci method.

The child was poorly developed and nourished. Nothing abnormal was found in the throat or chest. The abdomen was somewhat distended and tympanitic, with slight general tenderness. There were several rose spots but the spleen could not be demonstrated as enlarged or felt. Patient's mental condition was dull, but he was apparently comfortable.

The child took baths and nourishment only fairly well. On the second night after entrance he reacted even more poorly to bath than on previous occasions, and his pulse became small. However, he soon went to sleep and was quiet until 7.30 the next morning, when he complained of slight abdominal pain which was not sufficient to be reported by the nurse. The pain was unrelieved by a turpentine stupe. Two hours later the entire abdomen was acutely tender, somewhat rigid and not distended. The liver dullness was not diminished, the blood pressure was unchanged, and the white count had fallen to 4,200. His pulse became somewhat more rapid and of smaller volume. Temperature and respiration were practically unchanged.

Operation by Dr. S. J. Mixter, four hours after onset of abdominal pain, showed gas and intestinal contents in the peritoneal cavity. A perforation of the intestinal wall was found a short way above the ileo-cecal valve. This was closed and the peritoneal cavity washed out with normal saline solution and drained.

The temperature reached normal on the day after operation and the patient had an uninterrupted convalescence.

Case II. Thomas W., twenty years old, born in Russia. Entered the hospital having been sick for five days. At entrance temperature, 104; pulse, 100; Widal reaction, positive. He ran a typical course of typhoid fever for the next two weeks, when his temperature began to come down, but he had a recrudescence with temperature going to 105°. The temperature remained high for five days and then rapidly fell, reaching normal on the twenty-first day after entrance. The temperature ranged from 98° to 100° for four days, when it began to go up again, reaching 102.4° in three days. At this time there was slight tenderness, dullness and resistance just inside the crest of the right ilium. These signs steadily increased until the next morning when there was a distinct mass palpable in this region. White count, 6,000.

Operation by Dr. G. W. W. Brewster. The mass proved to be an appendix abscess. The appendix was removed and the wound drained. The temperature remained normal after operation and the patient was discharged well after an uneventful convalescence.

These two cases, with one of perforation and another of ruptured pus tube, both operated upon by Dr. C. L. Scudder and ending in recovery (to be reported in detail by the operator) were the only cases of typhoid fever in this hospital during the past summer, which came to laparotomy, and are illustrative of the good results of early operation in such cases.

# Reports of Societies.

## AMERICAN DERMATOLOGICAL ASSOCIATION.

TWENTY-EIGHTH ANNUAL MEETING, HELD AT NIAGARA FALLS, N. Y., JUNE 2, 3, 1904.

(Continued from No. 22, page 605.)

FIRST DAY — (Continued).

### A CASE OF REINFECTION OF SYPHILIS.

DR. H. G. KLOTZ of New York: The patient was a German furrier, who first came under the author's observation in the summer of 1882, when he was admitted to the German Hospital to be treated for a large, gummatous infiltration over the middle portion of the sternum and the adjacent ribs on the right side, several gummatous intumescences of the right tibia, and a number of peculiar strands and plates imbedded in the external muscles of both thighs. He acknowledged having had gonorrhea when he was seventeen years of age, but did not give a history of chancre or secondary symptoms. In spite of this statement, the affection of the sternum and the adjacent ribs admitted of no other interpretation than that of syphilitic gummatous periostitis. The only other thing to be thought of was a tubercular affection, but that would not have healed under anti-syphilitic treatment alone, as the lesions in this case did. In 1901 the patient was re-infected and developed a typical chancre, followed in due course by secondary symptoms. This was more than six years after the symptoms of the previous disease had absolutely disappeared.

### REASONS FOR CONSIDERING DERMATITIS COCCIDIOIDES AN INDEPENDENT DISEASE.

DRS. DOUGLASS W. MONTGOMERY and HOWARD MORROW of San Francisco: The authors stated that the following points were characteristic of coccidioides as against blastomyces. The cultures were characteristic. The organism had a double cycle of development, one cycle differing absolutely from the other. There was no budding formation either in the cultures or in the tissues. There was endogenous spore formation in the tissues, and this appeared to be the sole mode of reproduction in the tissues. The capsulated bodies in the tissues were comparatively large and were almost always circular. In animal experiments, the testicle was the favored seat of the disease. The infection strongly tended to become generalized. The prognosis was absolutely bad. The administration of potassium iodide had no control over the disease.

DR. GILCRIST thought that dermatitis coccidioides was a sub-division of dermatitis protozoica; the latter was a broader term and he saw no reason why we should change the name of these cases. They probably all belonged to the one group of blastomycetic dermatites.

DR. FRANK H. MONTGOMERY of Chicago said that in some cases of blastomycosis, the systemic symptoms preceded by several months the cutaneous lesions, and in one case recently reported in Chicago there were no cutaneous lesions whatever. In other cases, typical metastases had been demonstrated. As to the cultural features of the blastomyces, while as a rule the growth was quite uniform on a given culture media, the organism differed considerably in different cases and on different culture media.

DR. HYDE said that while this subject was still somewhat obscure, he thought that eventually it would be proven that they were dealing with the same organism, which had a different mode of development and growth.

DR. SCHAMBERG referred to an ulcerative case of blastomycosis which proved utterly refractory to the use of potassium iodide and the x-rays. There was not only no improvement, but a gradual extension of the lesions during the employment of these measures.

DR. SHEPHERD said he could also testify to the inefficiency of potassium iodide in some cases of blastomycosis.

DR. STELWAGON mentioned a case in which the improvement under the iodide of potash only continued up to a certain point. The patient died in the course of two or three years from some complication.

DR. D. W. MONTGOMERY, in closing, said he thought the distinction between blastomycosis and dermatitis coccidioides would never be broken down. He regarded them as two separate diseases, although the respective micro-organisms resembled each other. As far as potassium iodide was concerned, it invariably gave no results in coccidioides, whereas it frequently gave good results in blastomycosis.

### SOME NOTES CONCERNING DOMESTIC REMEDIES FORMERLY USED IN SKIN DISEASES.

DR. JAMES C. WHITE of Boston: This paper mentioned the principal household remedies formerly employed in the more common affections of the skin, generally of a vegetable nature, which had been largely supplanted in later days by the many "proprietary" cures so widely advertised. To illustrate this, Dr. White called attention to the fact that in the last report of the Massachusetts Board of Health, a list of twelve well-advertised hair restorers containing acetate of lead was published; also nine cosmetics for the face, containing corrosive sublimate to the extent of from one to fifteen grains to the ounce, and thirty-three "sarsaparilla remedies" and "blood purifiers," holding potassium iodide in solution. This gave some idea of how extensively diseases of the skin were being treated amongst us independently of professional advice, and showed conclusively that the old-time domestic remedies had been largely displaced by the inventions of the modern caterer to the credulity of the public in such matters.

### XANTHOMA MULTIPLEX: HISTOLOGY OF THE PALMAR STRIAE.

DR. HENRY H. WHITEHOUSE of New York: The writer stated that the subject of xanthoma was one of the most interesting in the entire field of dermatology. This was largely due to the fact that it was one of the rarer affections of the skin and that its nature was so little understood. The author reported a case of xanthoma multiplex occurring in a robust woman, thirty-four years of age, with tuberose lesions on the elbows, and xanthoma planum lesions in other positions than the eyelids, which were free. This patient was otherwise apparently in good health, with the exception of a rheumatic heart. There was no discoverable liver, kidney or visceral lesion and no jaundice. The eruption was composed entirely of plane and nodular lesions, with no disseminated papules so often seen in this variety of the disease. In regard to the symptom of jaundice, Dr. Whitehouse said that all authorities seemed to agree that jaundice, or a xanthomatous dyschromia was almost always present in xanthoma multiplex. It was strange that in the seven cases he had observed personally — four males and three females — the symptom jaundice was entirely absent. They were all mild cases, however, and if the belief of some authors was correct that the jaundice was due to obstructive xanthomatous growths in the bile ducts, a ready explanation of his observation was afforded. The lesions in Dr. Whitehouse's case improved markedly under the use of the x-rays.

ERYSIPELOID.

Dr. Thomas C. Gilcrist of Baltimore: This paper contained the record of 323 cases of erysipeloid following injuries produced by handling live crabs. The disease was rather common in Baltimore when crabs were in season. There was a fairly constant incubation period of two or three days, followed by a rapidly spreading erysipelatous eruption. Histologically, the sections showed an acute inflammatory process in the upper half of the corium and in the epidermis. All cultures proved negative and inoculation experiments were unsuccessful. No micro-organisms could be found. Inoculation into a susceptible person of juice from the crab was also negative. Etiologically, the disease was thought to be due to a ferment.

Dr. Bowen said these cases were occasionally met with in Boston, usually in persons who handled fish.

Dr. Zeisler did not see the necessity of calling this affection erysipeloid, as it fitted entirely into the group of eruptions known as toxic erythemas. A great many similar eruptions were known to occur after infection with various animal poisons.

Dr. Klotz said he had seen several cases of this kind in which the infection was traced to preparing poultry, particularly removing the entrails. In the treatment, the local application of a $\frac{1}{1000}$ bichloride solution was usually efficient.

Dr. Gilcrist, in closing, said the name erysipeloid was first used by Rosenbach, because the eruption looked like erysipelas. It was doubtful whether it should be classed under the term toxic erythema, because it had not been proven that it was due to a toxic organism.

(*To be continued.*)

## Recent Literature.

*The International Medical Annual:* a Year Book of Treatment and Practitioner's Index. By various contributors. Twenty-second year. Illustrated. New York: E. B. Treat & Co.

The twenty-second annual issue of this year book offers few changes in form or principles from immediately preceding years. In spite of the rapid accumulation of medical literature, the editors have succeeded in keeping the text essentially within the limits of previous editions. The aim of this edition has been to lay stress upon practical matters in relation to professional work, and to supply sufficient illustrations to amplify the text. The illustrations in general are to be commended, and the book as a whole, as heretofore, fills a place of usefulness as an epitome of progress.

*Hare's Practical Therapeutics.* A Textbook of Practical Therapeutics; with Especial Reference to the Application of Remedial Measures to Disease and their Employment upon a Rational Basis. By Hobart Amory Hare, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. With special chapters by Drs. G. E. de Schweinitz, Edward Martin and Barton C. Hirst. New (10th) edition, much enlarged, thoroughly revised and largely rewritten. Octavo, 908 pages, with 113 engravings and 4 full-page colored plates. Philadelphia and New York: Lea Brothers & Co., Publishers. 1904.

Ten editions of a medical book of any work is a worthy record. Dr. Hare's Textbook of Therapeutics has reached this distinction. The new edition appears with a complete revision of the text and an entire resetting of the type. The form is as heretofore,— the discussion of drugs as such in the first part, and a description of the treatment of individual conditions and various therapeutic procedures in the second. In our experience this is a useful division of the subject, and no doubt it has been the experience of others, hence its continuance. The book is one peculiarly adapted for ready reference, is well illustrated, and, although not discussing pharmacological problems to any degree, is yet a practical and useful working volume for which alone the author intended it. We commend this new edition to the notice of our readers.

*Diseases of the Nervous System.* By H. Oppenheim, M. D. Translated and edited by Edward E. Mayer, A.M., M.D. Second American edition, revised and enlarged. 8vo. pp. 953. With 343 illustrations. J. B. Lippincott Company. Philadelphia and London. 1904.

The third edition of Oppenheim's *Lehrbuch*, greatly augmented in the eight years that had elapsed since the first edition was published, has won general recognition as one of the best, if not the best, manual of nervous diseases extant. When the first edition of this translation appeared we expressed a regret that the translator and publishers had not translated the work as a whole. This regret is intensified on examination of what purports to be a translation from the third German edition. The work has been condensed into about two thirds the bulk of the original. That condensation is sometimes of advantage is obvious. The peculiar merit of Oppenheim's work, however, is that in almost every chapter we find reference to the latest researches, even on the less important points, and many observations upon those points drawn from the author's own unpublished investigations, so that the book is of unusual value for reference to obtain the latest and most exhaustive information put in a very concise form. In the process of abridgment the translator has managed to eliminate a considerable portion of this, so that we get the essential and commonplace statements about the disease without these valuable *obiter dicta*. Worse than that, he has made additions of his own, which in many instances are not differentiated from the original. Many illustrations have been omitted, others marred in the reproduction, and others still inserted without a word of distinction. Finally, the translation is often inaccurate and usually couched in clumsy English. A good and complete translation of Oppenheim is greatly to be desired. This must be condemned as an unfair and inadequate presentation of an excellent work, another example of the old adage, "*Traduttore, traditore.*"

THE BOSTON
# Medical and Surgical Journal.

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## REPORT OF THE SURGEON-GENERAL OF THE NAVY.

THE annual reports of the surgeon-generals of the United States Army and Navy reflect the progress of medicine in general. Each year demonstrates the fact that the best medical methods are being more and more completely introduced into the public service. With this must come adequate recognition of the dignity of the medical profession in its relation to the army or navy, and a consequent desire on the part of young medical men to accept positions under the government.

We have before us the annual report for 1904 of the surgeon-general of the United States Navy, and a perusal of its pages demonstrates still further the truth of what we have just said. Regarding the medical corps, it appears that at the end of 1903 there were but two vacancies. Owing to the annual increase allowed by Congress and to certain retirements for disability, there were at the beginning of 1904 thirty vacancies. Ninety-nine applicants appeared for examination, of whom but twenty-three were found qualified and given commissions. In spite of the fact that, owing to legislation of 1903 increasing the number of surgeons and their rank, a closer parallelism was brought about between the army and navy, nevertheless unexpected difficulty was experienced in securing qualified men. On this matter the report says:

"There has always been difficulty in securing qualified medical men for the navy. Recent legislation, giving assistant surgeons of the navy the rank, pay (less 15% for shore duty), and allowances of assistant surgeons of the army, has more nearly equalized the advantages offered by the two branches of the military service. There is sound reason for a comparison of the status and pay of these two grades, inasmuch as they perform the same kind of service for the government, are drawn from the same civilian source, have practically identical qualifications, and it would seem best for the public service that there be equalization of their emoluments in every detail. The highest interest of the entire naval personnel, official and enlisted, is too seriously involved in the success of the effort now being made to secure and maintain the highest state of professional efficiency in the medical corps, for it to be wise to place it at a disadvantage, in comparison with the medical staff of the army, by offering inferior inducements to civilian medical men who might be inclined to enter the naval service."

This reluctance to enter the medical service of the navy is altogether to be regretted. That there are many qualified men who do not apply, and yet who do not succeed in civil practice, must be unquestioned. More inducements must evidently be offered if the naval service is to become popular. These will be forthcoming. The bureau, for example, renews its former recommendation that the titles of the different grades of the medical corps be changed in such a way that the official rank of physicians be recognized as well as their professional standing. A good report is made of the progress of the naval medical school. The students show appreciation of the privileges afforded them, and their work has been such as to bring encouragement to those in charge and to establish the school on a firm basis. The regular work of instruction has been supplemented by lectures given gratuitously by men eminent in medicine and science.

The department has approved the employment of trained women nurses as a part of the medical department of the navy, eligible for service at naval hospitals, on board hospital ships and for special duty. It has been demonstrated to the satisfaction of those in authority and through the experience of the army medical establishment that women may with advantage be employed in institutions under military control. The superiority of women over men in much of the work of nursing can no longer be questioned. The recommendation is, therefore, renewed that Congress be asked for legislation authorizing the employment of female nurses in the navy. Recommendation, as already twice made, is again presented for the authorization of the employment of dentists for service in the navy. It is estimated that the number should be in the proportion of one dentist for every thousand men, and that they should not exceed thirty in all. As we have recently had occasion to point out, the importance of the care of the

teeth and of the mouth cavity generally has been underestimated. We have no doubt that much illness might be obviated were the teeth of enlisted men as carefully attended to as their other bodily needs.

Another step in advance is the adoption of a policy which permits the issuance of microscopes as a part of the medical outfit of a vessel or command. The wide influence of such action in cultivating a spirit of exact observation and a general improvement in medical methods cannot be doubted. Every effort has also been made to encourage officers of the medical corps to keep in touch with progress by attending medical meetings held by physicians in civil practice. Many invitations have been extended to the medical department of the navy from various associations, and delegates to represent the service have been sent to take part in the discussions.

The greater part of the book is taken up with statistical details of disease and by the individual reports of surgeons of the various vessels and posts. In general, as Surgeon-General Rixey maintains at the conclusions of the report, a comprehensive review of the work shows a high grade of efficiency in the medical department.

## ELECTRICITY IN MODERN LIFE.

Until we are suddenly brought face to face with its danger, we are apt to overlook the constant menace which electricity, as now universally used, presents. Occasionally an accident happens which is put down to carelessness or palpable negligence, and such events are soon forgotten. Not long since an accident happened in a New England town which cannot be placed in either of these categories. The circumstances in brief were that a man holding in one hand a desk telephone attempted with the other to turn the switch of an ordinary incandescent lamp, with the result that he was instantly killed. It is reported that his clerk was seriously burned in attempting to drag his body away from the electric circuit. This incident very naturally came with a certain shock to the entire community, inasmuch as the apparent conditions under which the fatality occurred are often duplicated in every-day life. So far as we are aware, the investigation into the exact cause of this deadly short circuit has not been made public. It will be awaited with much interest, and we suspect will show that the electric current, through some means as yet unexplained, was far more powerful than is ordinarily used in buildings. In any case the possibility of such an accident brings us face to face with the fact that we are never quite free from danger while in the presence of powerful currents of electricity. The lesson is brought home to us that our extraordinary control of this force, as of others, is simply attained by an absolute subservience to its laws. We have no doubt that temporarily at least renewed care will be taken to prevent the possibility of the recurrence of this unique accident, but we cannot help looking with some trepidation into the future when, if signs may be trusted, electricity will become far more widely used even than at present.

## THE DISCOMFORTS OF NOTORIETY.

That notoriety is not always beneficial in medical treatment is illustrated by the following fact. According to a London letter, recently published in the *Medical News*, it appears that all but one of the fishermen wounded in the North Sea by the Russian fleet were placed under treatment in the Royal Infirmary at Hull. The exception to this humane policy was one unfortunate man who was taken to London to be treated there. The necessity for this was not apparent, but it is reported that through the influence of the Queen a message was sent to Hull stating that a bed was ready in the London Hospital for a patient. Following the good offices of the Queen, it was natural that a patient should have been sent from Hull to occupy this bed. Unfortunately, however, he was suffering from a severe comminuted fracture and from a serious wound of the neck. The delay and exhaustion incident upon the railway journey to London resulted in sepsis when he was finally admitted. As the reward for this somewhat unnecessary journey, the patient was visited by Sir Frederick Treves, and we trust has finally recovered. We speak of this not as the slightest reflection upon English methods, but merely as exemplifying the misfortune which not infrequently comes from notoriety. We have no doubt that this particular patient might have been treated with equal skill at Hull, and saved the discomfort of a long journey evidently arranged with the best intentions, but clearly unreasonable under the circumstances. The world has moved on since this much-talked-of incident in the North Sea, but for a time the unfortunate fishermen who were injured by the Russian shells were more widely talked of perhaps than any other patients, either in England or America. That this public

solicitude, through royal favor should lead to the positive discomfort of one of the unfortunate sufferers is worthy of our consideration now that the excitement is past.

## MEDICAL NOTES.

INDIA'S STATISTICS. — It is stated that statistics for the year 1902 show that the population of India has increased more than 40,000,000 since 1891. In the latter year the census showed 294,361,056. In the year 1902 approximately 36,000 persons were killed by wild animals. Deaths caused by reptiles numbered upwards of 23,000 and by tigers upwards of 1,000.

LABORATORY AND INFIRMARY AT THE PHILADELPHIA ZOOLOGICAL GARDEN. — It is stated that an infirmary and pathological laboratory is in operation at the Philadelphia Zoological Garden. The objects to be gained are a study of the diseases peculiar to animals and work in comparative pathology. The director of the laboratory is Dr. Charles B. Penrose.

### BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon Dec. 7, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 45, scarlatina 19, typhoid fever 17, measles 6, small pox 0.

TRUSTEES OF MASSACHUSETTS SCHOOL FOR CRIPPLED CHILDREN. — Governor Bates has appointed the following trustees of the Massachusetts School and Home for Crippled and Deformed Children: Dr. Edward H. Bradford of Boston, chairman; William Endicott, Jr., of Beverly, Hon. Alfred S. Pinkerton of Worcester, Dr. William A. Morrison of Boston, and Leonard W. Ross of Canton. These trustees are appointed under an act which permits them to construct a home for not less than three hundred children, officers and attendants, and to furnish and equip this building at a maximum cost of $300,000, subject to the approval of the governor and council. The State Board of Charity will have general supervision of the institution.

BEQUESTS. — By the will of the late Charles E. French, among public bequests amounting to about $200,000, the following are made to hospitals or allied institutions: Boston Home for Aged Men and for Aged Women, $1,000 each; House of the Good Samaritan, $1,000; Carney Hospital, $1,000; Massachusetts Homeopathic Hospital, $1,000; Boston Children's Hospital, $500; New England Hospital for Women and Children, $500; Massachusetts General Hospital, $10,000.

By the will of the late Mrs. Ednah D. Cheney, $50,000 is left to charity. Of this the Massachusetts General Hospital receives $5,500; New England Hospital for Women and Children, $8,000 for the use of the Training School for Nurses and $8,000 for other purposes, in addition to certain books and pamphlets.

### NEW YORK.

SPURIOUS ARISTOL. — A dispatch from Chicago having mentioned that in recent efforts made in that city to stop the sale of bogus drugs the fact was revealed that President McKinley's death was in part due to the use of a spurious aristol, Dr. Roswell Park, of Buffalo, one of the surgeons in attendance, has stamped the story as absolutely false. He authorizes the statement that he can positively assert of his own knowledge that the aristol which was employed in the treatment of the President's wounds was genuine, and not an imitation or spurious product. While aristol is expensive, he believes that it would be almost as costly to produce an imitation of the drug which would deceive an experienced physician as it would be to make the real article.

ANTI-TETANUS SERUM. — A cure of tetanus from the use of anti-tetanic serum is reported from the Newark (N. J.) City Hospital, where the patient, a lad of thirteen, had been under treatment since Oct. 19. The case is regarded as especially satisfactory from the fact that he was in the last stages of the disease when the serum was first employed. It is stated that the total cost of the serum used was more than $200, but the manner in which the injections were made is not given.

CONSTITUTIONALITY OF TENEMENT HOUSE LAW. — The Court of Appeals has sustained the constitutionality of section 100 of the tenement-house law, a decision which is of great importance both to the successful execution of an important phase of the department's work and to the moral and physical welfare of the city's tenement population. The case was a test one brought by the tenement-house department against Kate Moeschein, the purpose being to secure a decision as to the constitutionality of the provision requiring the removal of existing school sinks, one of the worst features of the tenement-house before the enactment of the present law. The main grounds of objection taken by the defense were that the school sink, having been erected in accordance

with previously existing law, constituted property which could not be removed by subsequent legislation without compensation to the owner, and that such removal necessitated "unreasonable and unwarranted expense." The constitutionality of the act has now been sustained by some eighteen judges, having received the unanimous support of all the courts in which it has been tested.

Free Public Bath. — The second free public bath built by the city was formally opened on Nov. 22. It is situated on West 45th street and is a low building of white stone with separate departments for the two sexes. There are in all 101 shower baths: 72 for men and boys, and 29 for women and girls. There are also ten porcelain bath tubs for the use of invalids and the aged. The floors are of concrete and the walls of the dressing and bath rooms are constructed of marble. The doors between the dressing and bath rooms are of sheet iron, and wood is introduced only for the doors from the dressing rooms to the corridors and for the seats in the two waiting rooms.

Food Adulteration. — In the course of an address, made by Dr. Wiley before the students of the College of the City of New York, he said: "The adulteration of food and drugs in this country has done more to sap the moral life of this country than the rum trade ever thought of doing. . . . I make this appeal in relation to adulteration, an appeal for honesty, for, after all, is not honesty the basis of our national integrity and honor?" Stating that as the champion of the poor over-worked stomachs of mankind he stood as an advocate of lighter work, less hours and more pay for the stomach, he referred to a number of instances in which injurious chemicals were employed. Among these was the coloring of certain imported peas by means of sulphate of copper. French white wines, he said, often contained sufficient sulphurous acid to seriously affect the digestion, sulphur being burned in the casks to make the color of the wine lighter and to act as a preservative. Among the strange stuffs which had re-recently come to his attention was a cargo of broken eggs from China. According to the Government experts, these eggs, gathered in China, are broken and mixed with five or six pounds of boric acid to the hundred pounds of liquid eggs before being shipped to this country, where they are in considerable demand and are often used by prominent confectioners in making fancy cakes.

## Obituary.

### HENRY MUNSON LYMAN, M.D.

The death of Dr. Henry Munson Lyman occurred Nov. 21 in Evanston, Ill., at the age of sixty-eight. He had been in ill health for a period of about four years, and the immediate cause of his death was angina pectoris. For many years he was a professor in the Rush Medical College in the chairs of chemistry, diseases of the nervous system, physiology and the nervous system, and from the year 1889 professor and professor emeritus of the theory and practice of medicine. Dr. Lyman was born in the Hawaiian Islands in 1835 and graduated at the head of his class from Williams College in 1858. He began the study of medicine at the Harvard Medical School, but was finally graduated from the College of Physicians and Surgeons in 1861, again leading his class. His further medical training was in Bellevue Hospital and acting assistant surgeon in the army in 1862 and 1863. He then established himself in Chicago, devoting particular attention to the nervous system. In addition to his various positions at Rush Medical College, he also for a time was professor of medicine in the Northwestern University Woman's Medical School. He was at various times connected with the Cook County Hospital in Chicago, the Presbyterian and St. Joseph's Hospital. Among other societies, he was a member of the Association of American Physicians and of the American Neurological Association, and of both he served as president. He was a man of large practice, wide influence, and stood for the best in medicine.

## Miscellany.

### STUDY OF THE HISTORY OF MEDICINE.

Apropos of the editorial in this Journal, Nov. 24, on the importance of the study of the history of medicine, our attention has been called to an editorial in the *Western Medical Review* on the same subject in its issue of April 15 last, from which we make the following extracts:

"No more profitable line of study nor any more interesting can be adopted by the physician in active practice than to take up the general study of the history of medicine. This work can be done either by looking up all those individuals who have contributed to medical knowledge or by becoming familiar with the development of medicine simply as a branch in the progress of knowledge in general. Along either line it will be found both fascinating and instructive. That the importance of this branch of study is being recognized more and more in educational circles is shown by the addition here and there of history of medicine as a separate course in our medical colleges. At least as many as five or six of the important schools make this course an integral part of the curriculum, and it is a fairly certain prediction that a few years will see such a course being given in all the important medical colleges in this country."

" It has been the writer's privilege for nearly two years to lecture regularly on the history of medicine in the Medical Department of the University of Nebraska. The interest taken by the students and by others who have occasionally attended the lectures has been exceedingly gratifying and the reference work done and the notes taken by these same stduents have been of a grade to justify the greatest satisfaction. It is difficult to add to the sum of total professional knowledge or to contribute in a marked degree to the progress of the medical profession unless one is already aware of the status of medicine in his own time. Dr. Benjamin Rush himself says ' that the physician has lived to little purpose who does not leave his profession in a more improved state than he found it.' "

We learn that in the University of Nebraska this is the third year in which a full course of thirty lectures has been given on the History and Literature of Medicine, and that in no course is there better attendance nor more interest shown than in this course. The lectures are given to the members of the freshman class, and interest in the medical library and library methods is stimulated by having all notes taken on index cards and a complete set submitted by each student in competition at the close of the year.

## ROUTES AND RATES TO THE FOURTH PAN-AMERICAN MEDICAL CONGRESS IN PANAMA, AND THE PUBLIC HEALTH ASSOCIATION MEETING IN HAVANA.

(COMBINED TRIP.)

THE routes to the Fourth Pan-American Medical Congress are gradually narrowing down as more advantageous rates are being offered. Those who go only to the Pan-American Medical Congress will probably go and return by the way of New York or New Orleans. From the former starting point one hundred dollars ($100.00) will be charged for the round trip; from the latter point fifty dollars ($50.00).

By far the greater number, however, will make the round trip to both of these meetings, returning to Baltimore *via* Jamaica on the steamer which the Commission is arranging to charter.

The Di Giorgio S. S. Line of Baltimore, Md., offers a special ship for exclusive use of party, including meals and berth at sea and in ports, to Panama, Havana and return, attending both meetings and visiting Kingston and Port Antonio, Jamaica, for one hundred and thirty dollars, ($130.00) providing fifty persons take passage.

The "Athos" will leave Baltimore Dec. 27, 11 A.M., arriving in Panama Jan. 2. Leave Panama Jan. 7, A.M., arrive in Havana, Jan. 9, A.M. Leave Havana for Jamaica Jan. 14, A.M., arrive in Baltimore, Jan. 18. The "Athos" is said to be one of the staunchest of steel ships, with electric lights, running water, and all modern equipments in the way of toilet conveniences. She has a fine deck surface and a number of deck staterooms, and is guaranteed to be in first-class condition. The president of the steamship company will be one of the party on the trip.

The members of the party can live on board when in ports if they desire, thus saving hotel expenses. Lunch and dinner will probably be served on deck when in smooth water. Physicians can bring members of their families and friends at the same rates. All arrangements must be closed ten days before sailing date.

Number of passengers limited to seventy, fifty must be guaranteed.

Application for reservation of staterooms, berths, etc., to be addressed to Ralph F. Nolley, 103 Park Avenue, Baltimore, Md., or to H. L. Johnson, Chairman Transportation Committee, Washington, D. C., enclosing check.

## THE USE OF MECHANICAL APPARATUS IN SURGICAL TREATMENT.

AT a meeting of the Chelsea Clinical Society, London, held on Nov. 15, Dr. Vincent Dickinson in the chair, Mr. Noble Smith read a paper on the above subject and exhibited patients.

He divided the cases requiring mechanical apparatus into two classes, the inflammatory and the non-inflammatory; tuberculous disease of joints being typical of the former class and deformity arising from various paralyses and weakness being instances of the latter class. In the inflammatory conditions, as every surgeon was aware, absolute rest of the affected parts was imperative; in the other class, the surgeon's object should be to correct the deformity without interfering with the natural movements. This was a completely different system from that pursued by mechanicians who were not surgeons, and it required the knowledge of physiology as well as of mechanics to cope with the peculiarities to be dealt with. Mr. Noble Smith then proceeded to demonstrate the methods of treatment by apparatus as applied to caries of the spine and to lateral curvature. The principles of the apparatus in both kinds of cases involved (1) expansion of the thorax without any pressure upon its anterior or lateral parts, (2) continuation downwards of the instrument to the seat in sitting, and (3) possibility of modification of the machine by the surgeon. The principles of *application*, however, differed widely in the two kinds of cases. In the inflammatory cases — caries — the body of the patient was kept close to the apparatus previously adjusted to the proper position, whereas in non-inflammatory — scoliosis — the apparatus was so arranged that it favored movement, and only came into action when the patient for any reason inclined towards a bad position. Thus as regards scoliosis a principle was introduced totally different from that appertaining to any spinal instrument devised by a non-medical mechanician. This same principle could be similarly applied in the treatment of all deformities requiring apparatus, and in which no inflammatory disease existed.

## INCREASED WATER SUPPLY.

At a meeting of the New York Board of Estimate and Apportionment held Dec. 3, it was unanimously resolved to submit a report presented by the Department of Water, Gas and Electricity, embodying a plan for the increase of the water supply of New York City, to the members of the commission of experts appointed by Mayor Low to investigate and report upon the best and most practicable sources of supply. In moving this action Mayor McClellan said that the report dealt with a question of first importance and vast magnitude, and one concerning which the opinions of himself and his official associates would scarcely be accepted by the public as satisfactory evidence of the plan offered; consequently, any action taken by them, however good their intentions, would subject them to merited criticism unless such action were supported by the advice of the best professional advice which could be obtained. It will be remembered that the Low Commission consisted of Prof. William N. Burr of Columbia University and Messrs. Freeman and Herring, all of them experts of the highest reputation, whose character and disinterestedness are beyond question. Their intimate knowledge of the whole subject, from the work already done by them, renders the determination to consult their views peculiarly appropriate, and as they undoubtedly enjoy the public confidence, their approval of the plans of the water supply department would insure their acceptance with unquestioned faith, while their condemnation of them for any reason would render the adoption of such plans impossible in the present composition of the Board of Estimate and Apportionment.

## Correspondence.

### LICENSES TO PRACTISE MEDICINE IN NEW HAMPSHIRE.

Office of
Regent of the State Boards of Medical Examiners,

Dec. 1, 1904.

Mr. Editor: The next examination for licenses to practice medicine in the State of New Hampshire will be held at the State House, Concord, on Wednesday and Thursday, Dec. 28 and 29, beginning at 8 o'clock A.M.

All unlicensed physicians who were not in practice in this state on and before March 16, 1897, must pass the examinations in order to receive a license to practice legally their profession. Fee, $10.

Subjects for examination: Chemistry, surgery, physiology and hygiene, anatomy, obstetrics, pathology and diagnosis, therapeutics.

No licenses issued by states, or diplomas from medical colleges, are endorsed by the regent in place of examination, with one exception, graduates from Dartmouth Medical School may receive a certificate on presentation of diploma, *if said diploma shall have been issued between the enactment of the Medical Law, March, 1897, and Jan. 1, 1903.*

Application blanks furnished and all information regarding the examination cheerfully given by the Department of Public Instruction, State Library, Concord.

Henry C. Morrison,
*Regent.*

## RECORD OF MORTALITY

For the Week ending Saturday, November 26, 1904.

| Cities. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid Fever. | Diarrheal Diseases. |
| New York . . | 3,908,644 | 1,328 | 344 | 21.38 | 20.55 | 3.01 | .90 | 2.03 |
| Chicago . . . | 2,021,086 | 425 | 97 | 23.76 | 13.88 | 2.11 | 1.88 | 5.40 |
| Philadelphia | 1,407,968 | 417 | 91 | 21.12 | 12.81 | 2.40 | 1.68 | 1.92 |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 166 | 37 | 18.07 | 12.65 | 1.81 | .60 | — |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | — | — | — | — | — | — | — |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 54 | 11 | 24.07 | 9.26 | 3.70 | — | 3.70 |
| Boston . . . | 617,950 | 212 | 51 | 20.28 | 24.53 | 1.41 | 3.30 | 1.41 |
| Worcester . . | 136,925 | 53 | 13 | 11.32 | 15.09 | — | 1.88 | 3.77 |
| Fall River . . | 119,349 | 25 | 12 | 20.00 | 20.00 | — | — | 16.00 |
| Lowell . . . | 104,402 | 41 | 15 | 12.19 | 7.14 | 2.44 | — | — |
| Cambridge . | 100,998 | 23 | 6 | 30.43 | 26.09 | — | — | — |
| Lynn . . . . | 73,875 | 22 | 3 | 9.09 | 4.54 | — | — | — |
| Lawrence . . | 72,348 | 11 | 4 | 9.09 | 27.27 | — | — | 9.09 |
| Springfield . | 72,020 | — | — | — | — | — | — | — |
| Somerville . | 70,413 | 19 | 5 | 5.26 | 15.79 | — | — | 5.26 |
| New Bedford | 68,863 | 17 | 4 | 17.65 | 29.41 | — | — | — |
| Holyoke . . . | 50,538 | 14 | 3 | 7.14 | 28.57 | — | — | — |
| Brockton . . | 46,601 | 5 | 2 | 20.00 | — | — | — | — |
| Newton . . . | 39,310 | 15 | 4 | 6.67 | 26.67 | — | — | — |
| Haverhill . . | 39,061 | 11 | 3 | 9.09 | 27.27 | — | — | — |
| Malden . . . | 37,205 | 8 | 4 | 12.50 | 25.00 | — | — | — |
| Salem . . . . | 37,188 | 17 | 3 | 11.76 | 17.65 | 5.88 | 5.88 | — |
| Chelsea . . . | 36,499 | 20 | 6 | 25.00 | 15.00 | — | 15.00 | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 8 | — | — | 25.00 | — | — | — |
| Everett . . . | 30,209 | 7 | 2 | 14.30 | — | — | — | — |
| North Adams | 29,201 | 6 | 1 | — | — | — | — | — |
| Quincy . . . | 26,798 | 5 | 2 | — | — | — | — | — |
| Gloucester . | 26,121 | 8 | 3 | 12.50 | — | 12.50 | — | — |
| Waltham . . | 25,797 | 9 | 1 | 11.11 | 11.11 | 11.11 | — | — |
| Brookline . . | 23,576 | 5 | — | — | 20.00 | — | — | — |
| Pittsfield . . | 22,870 | 6 | — | — | 16.67 | — | — | — |
| Medford . . | 21,956 | 5 | 2 | — | — | — | — | — |
| Chicopee . . | 21,692 | 5 | 3 | — | — | — | — | — |
| Northampton | 20,314 | 8 | 0 | 12.50 | — | — | — | — |
| Beverly . . . | 15,807 | 4 | — | 50.00 | — | 25.00 | 25.00 | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 1 | — | — | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 3 | 0 | — | — | — | — | — |
| Newburyport | 14,478 | 2 | 1 | 50.00 | — | 50.00 | — | — |
| Woburn . . . | 14,315 | 1 | 0 | — | — | — | — | — |
| Melrose . . . | 13,819 | 0 | — | — | — | — | — | — |
| Westfield . . | 13,809 | 2 | — | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 2 | 2 | 50.00 | — | — | — | — |
| Revere . . . | 13,609 | 3 | 1 | 33.33 | 33.33 | — | 33.33 | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 3 | — | — | — | — | — | — |
| Southbridge . | 11,716 | 2 | 2 | 100.00 | — | 50.00 | — | — |
| Watertown . | 11,575 | 1 | — | — | — | — | — | — |
| Weymouth . | 11,350 | 1 | 0 | — | 100.00 | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,000; under five years of age, 738; principal infectious diseases (small pox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 612; acute lung diseases 531, consumption 350, scarlet fever 15, whooping cough 5, cerebrospinal meningitis 18, small pox 1, erysipelas 7, puerperal fever 12, measles 13, typhoid fever 42, diarrheal diseases 71, diphtheria and croup 74.

From whooping cough, New York 1, Chicago 2, Boston 2. From measles, New York 9, Chicago 2, Boston 1. From scarlet fever, New York 9, Chicago 2, Philadelphia 2, Baltimore 1, Boston 1. From cerebrospinal meningitis, New York 14, Baltimore 1, Worcester 1, Brockton 1, Marlboro 1. From erysipelas, New York 3, Chicago 1, Philadelphia 2, Providence 1. From small pox, Philadelphia 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending Nov. 12, the death-rate was 15.7. Deaths reported 4,606; acute diseases of the respiratory organs (London) 171, whooping cough 27, diphtheria 59, measles 127, small pox 1, scarlet fever 34.

The death-rate ranged from 5.0 in Burton-on-Trent to 25.7 in South Shields; London 15.2, West Ham 14.8, Brighton 11.1, Southampton 15.3, Plymouth 16.5, Bristol 15.0, Birmingham 17.0, Leicester 12.3, Nottingham 12.4, Birkenhead 17.7, Liverpool 20.9, Wigan 22.4, Bolton 14.5, Manchester 16.3, Salford 15.7, Halifax 24.2, Bradford 15.4, Leeds 17.3, Sheffield 13.7, Hull 23.2, Newcastle-on-Tyne 17.8, Cardiff 12.1, Rhondda 15.8, Hornsey 8.3.

## METEOROLOGICAL RECORD.

For the week ending November 26, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S.. 20 | 29.86 | 50 | 60 | 40 | 55 | 61 | 58 | S W | S W | 6 | 12 | C. | O. | 0 |
| M. 21 | 29.82 | 44 | 52 | 36 | 72 | 68 | 70 | W | N W | 12 | 12 | F. | O. | .03 |
| T.. 22 | 29.98 | 40 | 49 | 31 | 66 | 63 | 65 | W | S W | 8 | 9 | C. | O. | 0 |
| W. 23 | 29.92 | 46 | 52 | 40 | 71 | 73 | 72 | W | S E | 10 | 9 | C. | O. | 0 |
| T.. 24 | 29.56 | 39 | 42 | 36 | 89 | 79 | 84 | N | N W | 14 | 12 | O. | C. | .03 |
| F.. 25 | 29.62 | 36 | 40 | 32 | 64 | 72 | 68 | N W | W | 20 | 15 | F. | C. | 0 |
| S.. 26 | 30.01 | 32 | 37 | 26 | 60 | 51 | 56 | W | W | 16 | 9 | C. | C. | 0 |
| ☞ | 29.82 | | 47 | 34 | | | 68 | | | | | | | .06 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for week.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING DECEMBER 3, 1904.

J. H. IDEN, passed assistant surgeon. Detached from the Naval Hospital, Philadelphia, Pa., and ordered to the Naval Hospital, Newport, R. I.

H. A. DUNN, assistant surgeon. Detached from the Naval Hospital, Newport, R. I., and ordered to the Naval Hospital, New York, N. Y.

A. R. ALFRED, surgeon. Detached from the Navy Yard, Puget Sound, Wash., Dec. 9, and ordered to the Naval Station, Cavite, P. I., reporting on the "Solace," Dec. 14, for duty *en route*.

D. N. CARPENTER, surgeon. Detached from the Naval Hospital, New York, N. Y., and ordered to duty in charge of the Naval Hospital, and to additional duty at the Navy Yard, Puget Sound, Wash.

F. L. BENTON, passed assistant surgeon. Detached from the Naval Station, Cavite, P. I., and ordered home to wait orders.

J. D. MANCHESTER, assistant surgeon. Detached from the "Columbia," and ordered to the "Marblehead."

A. M. FAUNTLEROY, passed assistant surgeon. Detached from the "Lancaster," and ordered to the Navy Yard, Norfolk, Va., Dec. 6, and thence to accompany a draft of men to the Navy Yard, Mare Island, Cal., thence to the "Philadelphia," with additional duty at the Navy Yard, Puget Sound, Wash.

JACOB STEPP, assistant surgeon. Orders of Nov. 5 modified. Detached from Navy Yard, Boston, Mass., and ordered home to wait orders.

H. DEVALIN, acting assistant surgeon. Ordered to the Naval Proving Grounds, Indian Head, Md.

W. H. BUCHER, surgeon. Detached from Naval Station, Olongapo, P. I., and ordered to the "Cincinnati."

L. L. VON WEDEKIND, surgeon. Detached from the "Cincinnati," and ordered home.

## SOCIETY NOTICES.

NEW ENGLAND HOSPITAL MEDICAL SOCIETY. — A regular meeting of the Society will be held at Hotel Nottingham, Boston, Mass., on Thursday, Dec. 15, 1904, at 7.30 P.M. The meeting will be in charge of the Section on Gynecological Surgery, Dr. Clara J. Alexander, Chairman. Papers: Anatomy of the Pelvis, by Dr. M. Ethel Fraser. Surgical Pathology of the Pelvis, by Dr. Mabel Austin. History of Gynecological Surgery, by Dr. Alice W. Tallant.

DR. AGNES C. VIETOR, *Secretary*.

THE SAMUEL D. GROSS PRIZE OF TWELVE HUNDRED DOLLARS. — This prize will be awarded on Jan. 1, 1905. The conditions annexed by the testator are that the prize "shall be awarded every five years to the writer of the best original essay, not exceeding one hundred and fifty printed pages, octavo in length, illustrative of some subject in Surgical Pathology or Surgical Practice, founded upon original investigations, the candidates for the prize to be American citizens." It is expressly stipulated that the competitor who receives the prize shall publish his essay in book form, and that he shall deposit one copy of the work in the Samuel D. Gross Library of the Philadelphia Academy of Surgery, and that on the titlepage it shall be stated that to the essay was awarded the Samuel D. Gross Prize of the Philadelphia Academy of Surgery. The essays, which must be written by a single author in the English language, should be sent to the Trustees of the Samuel D. Gross Prize of the Philadelphia Academy of Surgery, care of the College of Physicians, 219 S. 13th St., Philadelphia, on or before Jan. 1, 1905. Each essay must be distinguished by a motto, and accompanied by a sealed envelope bearing the same motto, and containing the name and address of the writer. No envelope will be opened except that which accompanies the successful essay. The Committee will return the unsuccessful essays if reclaimed by their respective writers, or their agents, within one year. The Committee reserves the right to make no award if the essays submitted are not considered worthy of the prize.

JOHN B. ROBERTS, M.D.,
WILLIAM L. RODMAN, M.D.,
WILLIAM J. TAYLOR, M.D.,
*Trustees*.

## RECENT DEATHS.

DR. WILLIAM F. CUSHMAN, a member of a prominent old New York family, and formerly a well-known physician in that city, died at his country residence in Ridgefield, Conn., on Dec. 2, from cerebral apoplexy. He was sixty-five years of age, and was graduated from the College of Physicians and Surgeons, New York, in 1863. For a considerable time he was treasurer of the New York Academy of Medicine. A number of years ago he retired from active practice on account of ill-health.

DR. LEONARD F. PITKIN, who was surgeon to the Interborough Railway Company, died on Dec. 1, at St. Luke's Hospital, New York. He was born in Hartford, Conn., in 1858, and was graduated from the medical department of the University of the City of New York in 1879. He had always practiced in New York, but last spring was compelled to give up work on account of illness.

DR. WILLIAM EDWARD CARROLL, a well-known practitioner of Newark, N. J., died on Dec. 2, from pneumonia, at St. Michael's Hospital in that city, where he was one of the attending physicians. He was born in Newark in 1857, and was graduated from the College of Physicians and Surgeons, New York, in 1884. He then spent two years in travel and study in Europe. He was for some time assistant to Professor William N. Porter at the New York Post-Graduate Medical School and Hospital.

## BOOKS AND PAMPHLETS RECEIVED.

A Case of Over-Correction of Convergent Squint without Operation. By Samuel Theobald, M.D. Reprint.

Are Tenotomies for Hyperphoria Necessarily more Uncertain in their Results than those for Esophoria and Exophoria? By Samuel Theobald, M.D. Reprint.

Twenty-seventh Annual Report of the Board of Health of the State of New Jersey and Report of the Bureau of Vital Statistics. 1903.

The Physician as a Carrier of the Contagion of Scarlet Fever. A Collective Investigation by John E. Loveland, M.D. Reprint.

An Unusual Case of Fungating Bromide of Potassium Eruption. By A. F. Büchler, M.D. Reprint.

The Illinois State Board of Health. Report of the Sanitary Investigations of the Illinois River and its Tributaries, with special reference to the effect of the sewage of Chicago on the Des Plaines and Illinois Rivers prior to and after the opening of the Chicago Drainage Canal. Springfield, Ill. 1901.

Illinois State Board of Health. Report of Sanitary Investigations of the Illinois, Mississippi and Missouri Rivers with relation to the effect of the Sewage of the City of Chicago and the sanitary conditions of the water supplies of the Cities of Chicago and St. Louis.

Normal Histology. By Edward K. Dunham, Ph.B., M.D. Third Edition, Revised and Enlarged. Illustrated. New York and Philadelphia: Lea Brothers & Co. 1904.

A System of Practical Surgery. By Prof. E. von Bergmann, M.D., Prof. P. von Bruns, M.D., and Prof. J. von Mikulicz, M.D. Vol. iv. Translated and edited by William T. Bull, M.D., and others. Illustrated. New York and Philadelphia: Lea Brothers & Co. 1904.

An Index of Symptoms as a Clew to Diagnosis. By Ralph Winnington Leftwich, M.D. Third Edition. New York: William Wood & Co. 1904.

A Short Treatise on Anti-Typhoid Inoculation Containing an Exposition of the Principles of the Method and a Summary of the Results achieved by its Application. By A. E. Wright, M.D. (Univ. of Dublin). Illustrated. Westminster: Archibald Constable & Co., Ltd. Chicago: W. T. Keener & Co. 1904.

## Address.

# THE VALUE OF THE PHYSIOLOGICAL PRINCIPLE IN THE STUDY OF NEUROLOGY.*

BY JAMES JACKSON PUTNAM, M.D., BOSTON,
*Professor of Diseases of the Nervous System, Harvard University.*

The subject of this address will be considered under three heads: First, the limitation in usefulness of those methods of medical investigation which are based on the assumption that disease is always a localized process; second, the importance of the part played in disease by readjustment and adaptation on the part of the organism, and the need of cultivating physiological conceptions as a means toward a proper understanding of these processes; third, the impropriety of attempting to draw fundamental distinctions between "functional" and "organic" disorders, and the significance of the hypothesis of "energies" as applied to living organisms and to disease.

When the late Professor Virchow was chosen to deliver the opening address before the International Congress at Rome, in 1894, he selected for his topic "The anatomical principle in the study of disease" ("*Morgagni und der Anatomische Gedanke*"),[1] a doctrine to the maintenance of which a great portion of his own long and splendid labors had been devoted. The anatomical principle was not conceived by Virchow in any narrow spirit. Its tenets were that disease is always a localized process, and ought to be susceptible of expression in some sort of anatomical terms, but he asserted that the search for this process might be made as properly through the clinical examination of the patient by the trained physician, together with a careful study of his history, as through the scalpel and microscope of the anatomist. He admitted that the time was still far distant when we should be able to discover the whole of the anatomical evidence, and urged that the inquiry should be extended from the organs to the tissues, and from the tissues to the cells, and even to the very "vital functions" themselves. But he insisted, nevertheless, that in some sense — a sense not as yet strictly defined or definable — every disease was to be thought of as occupying circumscribed areas, in the midst of tissues for the most part or in great part sound. "*Ubi est morbus?*" — "Where is the diseased spot to be found?" — was proclaimed as the watchword of the investigator, while at the same time the students of therapeutics were congratulated on having found means, as a result of anatomical discoveries, to carry local treatment to portions of the body hitherto regarded as out of reach.

It is needless to attempt a recital of the successes which have been won under this banner of anatomical research. The principle which the great master Virchow proclaimed was one that had appealed and still appeals alike to the faithful plodder and to the man of genius; its history is the best part of the history of medicine during the past half century; it has been the best thread of guidance since the history of medicine began.

The value of the anatomical principle has been quite as evident for the department of neural pathology as for any other, and the devotion to its maintenance quite as strongly marked. At the meetings of neurological societies the pathological anatomists have always been more certain of an attentive hearing than investigators of any other sort; in the direction of their work has seemed to lie the sure and trusted path of progress toward a better understanding and a better treatment of disease.

And yet, in spite of all that has been accomplished, there are abundant reasons for the opinion that the very successes of the anatomical principle have thrown unduly into the shade the claims of another mode of approaching the problem of disease, without the aid of which anatomical research must prove inadequate to the task which has been imposed upon it. For this latter principle, which emphasizes the importance of recognizing, in disease, the signs of more or less widespread modifications of function of the organism as a whole, the designation of "physiological principle" is appropriate.[2]

The argument is not that the anatomical principle is faulty because it has failed to accomplish all that had been hoped of it as regards the discovery of the essential nature of disease, but that, under it, certain local aspects of the disease-process are made the exclusive subjects of research, and that the mind is thus turned aside from a recognition of the fact that an equally important object of study is the modification of functional activity, local or general, which marks the efforts of readjustment on the part of the organism to the effects of the primary disturbance. Such a study as this cannot be adequately made without a thorough use of physiological methods, or of clinical methods inspired and guided by physiological conceptions, the term physiological being understood as including all means of research which throw light upon the mechanism of the processes of life. Psychological and chemical investigations belong preeminently in this category. The faintheartedness which most of us have felt in searching for an anatomical explanation of the great neuroses and psychoses has not been simply a quailing at difficulties which were theoretically surmountable, but has been due in part to a justifiable suspicion that we were not altogether on the right track. We have striven to ticket each one of the histories in our case-books with an anatomical designation indicative of some localized pathological process, but we have realized when we did so that our designations usually fell far short of expressing the whole state of the sick

* Read before the Neurological Section of the International Congress at St. Louis, Sept. 22, 1904.

[1] Berl. Kl. Woch., 1894.

[2] There has been a growing tendency to recognize the importance of this standpoint, and very recently Professor Wolkow of St. Petersburg has devoted an able and thoughtful essay to a series of considerations analogous to those here offered. (Die Physiologische Anschauung in der Klinischen Medicin, Berliner kl. W. Schr. 1904, Nos. 15 and 16.)

man whom we had before us when the history was made.

The widespread feeling that no investigation of symptoms, however thorough, could give us the sort of insight which we needed has led us to underestimate the real value of such inquiries. If the study of symptoms does not carry us to the heart of the disease, neither does the anatomical study of the disease carry us to the heart of the symptoms. In fact, a thorough inventory of symptoms, that is, an inventory of the signs of disordered functions of the body as a whole, can often tell us more of what we wish to know than an inventory of anatomical signs of altered structure. No anatomical research can pierce to the secret of broken coördinations, and yet it is in these that a great part of disease begins, or comes eventually to consist. No anatomical research can help us to estimate the margin of resistance against strain, and yet in the estimation of this margin, for each individual patient, issues depend which are of scientific and practical importance. One man's health is very different in quality and quantity from another man's health, though the two men, untested, may appear alike, and the investigation into their respective powers of effectiveness and of resistance is often a valuable part of the study of their diseases.[3]

We need, in short, to supplement our researches into the direct and local effects of a given lesion by a study into the more or less widespread modifications of energy which the organism exhibits as a result of the lesion, and which it is customary to designate as indicative of an attempt[4] to repair the damages which the lesion has induced. We need, also, to learn a great deal more about the genesis of symptoms, even though we must remain ignorant about the genesis of what one would call disease, in an anatomical sense.

The signs of readjustment constitute, in fact, all that we can really learn in the study of disease, for the disease-process, considered as independent of them, is an abstraction, without real existence.

And if this is so, then all the indications of this process of readjustment are proper objects of our study, whether they be of the nature of symptoms or of anatomical marks, whether they concern special localities and organs which are the seat of primary "lesions," or other parts standing in functional relationship to them, and even though they point to changes which are not to be classed as morbid, but rather as modifications favorable to health. The reactions after a so-called "healthy" fatigue, which often lead to new and better powers of endurance, would be of this latter sort, and the same is true of those reactions through which immunity is secured after infectious disease. At such points as these, "disease" and "health" touch hands, and it becomes, indeed, evident that neither disease nor health is a definite condition, but that both of them are movements towards some relatively endurable equilibrium,[5] a goal which is never fully reached.

Of course, to a certain extent, investigations of this sort are daily made by every student, but the question is, In what direction is it now most important that the *emphasis* of research should be thrown, and scientific instincts developed? Imitation and fashion play a large part, even in scientific investigation, and the almost universal tendency to bend all energies to the search for the physical evidence of localized lesions has led too often to a disregard of disturbances usually classified as functional. Not only is it essential that "clinical medicine" should be studied in the light of "physiology," but the field of morbid psychology, which now lies untilled save by a few students, is one of the utmost practical importance for each practitioner.

We can hardly treat a patient, no matter with what he may be suffering, without having to reckon on the vast and complex part which his mental attitude will play in controlling the result. In many instances, indeed, the physician's success depends upon the skill with which he makes this estimate. Yet how rarely is it systematically and consciously made, under the guidance of any definite principle, and how gladly would most physicians crowd out of sight the necessity for making it at all. A man meets with an injury attended with great nervous shock, and the neurologist is ready enough to spend infinite pains on the study of the necrotic areas in his spinal cord, but is apt to overlook the fact that this localized process does not explain why he has at the same time lost flesh and strength and color, and has become the football of his delusions and his fears. The data gathered by psychologists and physiologists, and the principles based thereon, count for but little in most assemblages of neurologists. The reason usually given for this disregard of psychological and physiological data is the insufficiency of our means for the verification and interpretation of them. But this fear should not hold us back from making the attempt to utilize these facts, for the same uncertainties attend anatomical research the moment we endeavor to use it for probing the essential problems of disease and life. The confusion attending the recent discussions over the neuron theory and the real seat of neural energy both justify and illustrate this statement.

This attitude towards the problem of disease, which claims pathology as a special department of physiology, is essentially the attitude of Wolkow, to whose stimulating essay I have alluded already, and it is also the attitude of Dr. Hughlings Jackson of London, whose brilliant studies, stretching back for nearly half a century, mark him as foremost among the advocates of the

[3] Physiologists recognize that organs, such as the heart (*cf.* the address by Welch, cited below), are able, under special stimulation, to work with more than usual effectiveness. This extra force is called the "physiological reserve."

[4] The word "attempt" and others of like meaning are here used not in a teleological, but only in a descriptive sense, for it seems plain that we must follow the example of the biologists who have studied the problems of growth and of repair (compare Thomas Hunt Morgan, "Regeneration,") and admit that there is no justification for assuming a special *vis medicatrix naturae*.

[5] "Stationary Equilibrium." (Ostwald, Die Philosophie der Natur.)

physiological method in neurological research. Professor Welch [6] of Johns Hopkins University has recently made substantially the same claim in his address upon "Adaptation in Pathological Processes," drawing his illustrations from the department of general pathology. Verworn [7] takes the same position when he speaks of diseases as stimuli (*Reize*) which alter the conditions under which life is carried on, thereby adopting Virchow's designation, "*Die Krankheit ist das Leben unter veranderten Zustanden.*"

The physical changes which the organism undergoes in this process of adaptation may be few and slight, and mainly local, or they may be so broad and numerous as wholly to overshadow the lesions by which they were set in motion. In illustration of this overshadowing of the direct effects of a lesion by the processes of readjustment, I will mention three instances of widely different sorts, yet similar, as I think, in principle. These are: first, myxedema; next, the vast changes that sweep through the organism at the great climacteric epochs of adolescence and the menopause; and, finally, those kindred processes of metamorphosis by which, through castration, the bull is converted into the ox.

In all these cases we see two tendencies at work, the one suggesting disease, or failure, the other pointing toward the establishment of a new sort of equilibrium, containing well-marked elements of stability and health. Is not the controlling principle in these instances analogous to that under which the neuter bee is converted into the queen bee through a change in nourishment, or that through which some of the lower forms of marine animals are altered in type by gradual removal from salt into fresh water, or by some kindred modification of the chemical constituents of the fluids by which they are surrounded?

The conservative physician is usually disinclined to admit biological principles as applicable to the problem of disease. Yet, in fact, it is just in this direction that our search should tend, and when we see complex disorders, such as Graves' disease, or even certain types of neurasthenia, of unknown primary lesion but with hosts of secondary physical and neural signs, we should remember the processes I have cited, and should hesitate before stamping summarily as "disease" modifications of structure and function which doubtless represent, in part, movements toward a new and relatively stable existence. Who can doubt that we ourselves, regarded from another point of view than our own, are defective and mutilated beings, who have sacrificed much to gain the faculties which we justly regard as so important?

This would be a proper place to mention in detail, at least by way of illustration, some of the more important contributions made by physiologists, psychologists and biologists which have thrown light upon the clinical problems of compensation and adaptation.

I have already referred to the principle of "physiological reserve" force, as utilized by Welch in his important address, and speak of it here again only as possibly helping to explain the numerous instances where the organism shows the power of fostering certain of the functions of the nervous system at the expense of other manifestations of its life. The case of the runner from the field of Marathon, who brought his message to Athens in spite of the gathering dissolution which laid him dead in the market-place at the moment of his arrival, is a striking illustration of a principle which is of frequent application.

Thus, the disarrangements of the nervous system that are liable to follow nervous shock of some severity are sometimes very late in making their appearance, and in the interval the patient may appear as if unaffected by the experience through which he has just passed. The final "breaking-down," due to prolonged strain, is often similarly postponed, only to come on eventually with great suddenness.

The fact is often overlooked that there is an analogous "latent period" in the early stages of toxic affections, when the symptoms are masked by this strong tendency on the part of the organism to continue offering an unchanged front in response to the calls of the environment. Thus a patient who is exposed to lead or alcohol may retain the power to use his weakened nerves and muscles for a long period, until finally, under some slight additional strain, complete disability suddenly makes its appearance.

It is apparently this same intense instinct to present a functionally adequate front to the demands of the environment that enables the hysterical patient whose vision is failing to retain the accuracy of the central field, and guides the brain in the reassertion of its powers after injury. The compensation in many cases is so complete as to leave no trace of the primary loss, although some relatively slight additional lesion may make it clearly evident. This is illustrated by the interesting compensatory relationship between the sensori-motor functions of the cerebral cortex and those of the semicircular canals, discovered a number of years ago by Ewald.

It is as difficult to explain adequately why it is that the organism thus seeks to reassert itself on the old lines, in a physiological sense, as it is to tell why the lower animals are able to make good the loss of important parts and organs, even those of the interior of the body, with regard to which the "habit" of restoration cannot have been acquired through evolution.

Many partial explanations, such as those indicated by Loeb under the name of "tropisms" are indeed of value, but Morgan,[8] after reviewing with great care the evidence at hand for the case of the restoration of lost parts, declares that a satisfactory explanation is there impossible. One important reason for arriving at this conclusion is that it is by no means invariably true that in the process of restoration the interests of the organism as a whole are consulted. In repair, as

[6] Transactions of the Congress of American Physicians and Surgeons, 1897.

[7] Berl. kl. W. schr., 1901, No. 5, and other papers.

[8] Regeneration.

in development, the results are often (from the standpoint of the ordinary observer) monstrous or grotesque. And so, too, in human pathology, the processes of compensation and readjustment seem sometimes to work distinctly toward disease instead of health. Nevertheless, these processes must remain the main subject of our study, and the principles underlying them must be restated more and more broadly, in physiological and philosophical terms, before a unifying conception can be reached.

It is to the clear insight of Hughlings Jackson [9] that we owe some of the most fruitful suggestions as to the mode in which symptoms of disease arise when the normal balance between the various functions of the nervous system has been broken. New light has been thrown on many of the phenomena of which he speaks by the physiologists who have worked on the vast subject of inhibition, and the effects of a disturbance of the interplay between inhibition and excitation. The names of Meltzer,[10] Sherrington, Biedermann, and Wedenski [11] come to mind, especially, in this connection. Nevertheless, the fundamental principles which Hughlings Jackson so long ago expressed retain for the most part their validity. He made it clear that the signs and symptoms met with in disease are of dual origin, that portion of them which is due to a lesion, such as we might expect to demonstrate anatomically being often the less conspicuous part, while the more conspicuous part is due to the vital energy of the uninjured remainder of the nervous system, acting without due control and yet with reference to such coördination as is still in force. Special and reciprocal coordinations of this sort exist between the cerebellum and the cerebrum, so that the special tensions and characteristics of either one is liable to come singly or pre-eminently into play when the activity of the other suffers a check. The disorders thus set up form " complementary inverses " of each other. Similarly, when any portion of the nervous system is damaged, there are signs of defect or " negative symptoms," due to impairment of the more highly coördinated functions of the part concerned and related parts, and signs of over-action, or " positive symptoms," due to uncompensated activity of the functions of " lower levels."

These "positive symptoms " might be classified simply as if due to unchecked liberation of energy, or as attempts at compensation (in a duly qualified sense) on the part of the organism as a whole. Sometimes the phenomena which seem at first glance to bear the stamp of " disease " are really better classifiable as of conservative or compensatory nature, while under other circumstances the reverse may also be the truer statement. Thus Strohmeyer [12] has pointed out how " compulsive ideas " may sometimes have a value for the mental health of the patient, and Hughlings Jackson has suggested an explanation for the fact that motor convulsions, in epilepsy, may, at least, be less injurious for the mental condition of the patient than the seemingly less serious psychic seizures.

We owe also to Hughlings Jackson the generalization that lesions which occur suddenly, and throw out of gear, as they are bound to do, the more delicate of the functions represented in that part of the nervous system which is concerned, are likely to be followed by symptoms of a more violent sort than those which take place slowly. Thus, the epileptic discharge accompanying a lesion so slight as to leave no recognizable anatomical trace behind, is liable, by virtue of its suddenness, to give rise to a maniacal outbreak, which represents the uncontrolled activity of relatively uninjured portions of the brain, while on the other hand, lesions which anatomically may appear infinitely more serious are accompanied by no such outburst. Different forms of epileptic discharge and their secondary results differ widely also among themselves in these respects.

These hypotheses are in need of further analysis and should be tested anew by neurologists trained in physiological methods.

Reasoning on lines similar to those laid down by Hughlings Jackson, Dr. Edward Cowles has recently sought to unify the various members of the large class of the psycho-neuroses of exhaustion, or of lowered mental tension. Thus the different phases of manic-depressive insanity are not due, he thinks, to separate and specific processes for which we might expect to find special chemical or anatomical expressions, one process leading to excitement and another to depression, but these phases, which in fact are often mixed, are phenomena of secondary occurrence, and are explicable on principles analogous to those outlined above as indicating the genesis of epileptic mania.

Some of the principles brought out by Hughlings Jackson are quite in harmony with those insisted upon of late years by a relatively small group of observers, abroad and at home, who have brought psychological investigations to the aid of clinical research. I have especially in mind the fine work done by such men as Janet and Freud in Europe, Morton Prince and Sidis in America, not to speak of many others who have labored in the same field. To them we owe such knowledge as we now possess of the contrast between the dissociation of consciousness so characteristic of hysteria, and of the contrast between this tendency and that which gives rise to the complex and varied mental phenomena of asthenic states, or to the temporary and quasi-normal disturbances of daily life.

It would be impossible even to name, in a few paragraphs, the many clinical researches tending toward a better understanding of mental symptoms, for the prosecution of which a knowledge of psychological and physiological

[9] The first lecture of " Hughlings Jackson Course," delivered in January, 1898, contains a brief outline of the importance of his generalizations. (*Lancet*, Jan. 8, 1898.)

[10] Medical Record, June 7, 1902. " The Role of Inhibition in the Normal and Some of the Pathological Phenomena of Life."

[11] Pflüger's Arch., f. d. ges. Physiol., 1900.

[12] The Conception of Compulsive Ideas as a Safeguard Neurosis ("Abwehrneurosen"), Cbl. f. Nervenheilkunde u. Psych., vol. 14, 1903.

generalizations is essential. A few illustrations must suffice.

Thus, in every movement leading to exact thought and exact expression, in every movement of the memory, vast numbers of mental processes must coöperate, and if the outcome is to be effective, this coöperation must be governed from the outset by a leading idea as a ruling motive. The failure of this ruling idea leads to the wayward flight of thoughts, so characteristic of various forms of mental weakness, as has been pointed out by Liepmann.[13] The psychological bearing of this principle has repeatedly been insisted on by the keen psychologist, Bergson, both in his work on memory and matter [14] and in a more recent essay.[15]

The psychological researches into *habit* and "*set*" are likewise of practical importance.

The laws of habit describe the tendencies under which the varied reactions of the nervous system recur under forms which are really stereotyped and predetermined, although simulating the purposive reactions of health, and often only with difficulty to be distinguished from them. The term "set" describes the process by which the reactions of every individual, besides their purposive significance, receive a form and coloring which in a measure reflect the general characteristics of the personal life of the actor, his temperament, his racial traditions, his education. It indicates, as has been justly said, the "signature" in the musical sense, under which the movement of his life goes on. The "set" of each patient must be understood before his illnesses can be mastered. In the study of these important laws psychologists and neurologists can lend each other mutual support.

If a further illustration was needed of the way in which a refined study of physiology and psychology can be made of the highest use to supplement anatomical data, in affording a basis for clinical conclusions, it could be amply furnished by a consideration of the problems of *fatigue*, that mysterious region, daily traversed, where health and sickness are so strangely mingled.

Thanks to recent investigations, we know a good deal about the anatomy, chemistry,[16] and physiology [17] of the nervous system in fatigue, as representing the primary lesions, but it needs only a brief reflection to show how numerous and varied are the secondary manifestations, neural and mental, involving eminently the functions of the organism as a whole and in all its parts, that characterize the clinical outcome of acute or of prolonged exhaustion.[18] To give to these manifestations an adequate expression would often mean the passing in survey the functions of all the organs of the body. This is a task which would be anatomically impossible, since even the most extensive anatomical survey would fail to take cognizance of the disarrangements of old coördinations and the establishment of new ones.

Almost equally important with the generalization that the manifestations of disease are largely compensatory or adaptive, *i. e.*, vital or physiological manifestations on the part of the organism, is that which describes these changes as affecting *not organs, but functions*. This view is justly made much of by Wolkow, who points out that too close an adherence to the analytic methods of the anatomist encourages a tendency to regard the body as a congeries of organs, of tissues, and of cells, having an independence of each other which, in reality, they do not possess. A mode of conception such as this robs the organism, regarded as a whole, of its individuality, and as a substitute for it we need to cultivate the habit of regarding each individual as representing a vast system of interlocking functions, partly known to us already, partly unknown. It is during the disturbances and reorganizations of these functions, either in themselves or in their relations to each other, that the symptoms of disease arise, and the problem of the physician is to cast up the patient's account at each critical juncture, and to reckon upon what assets, in a physiological sense, he has yet to reckon, upon what powers of compensation and readjustment he can still rely. In place of regarding the body so much by piece-meal, we need to regard it more as a whole; as a supplement to our study of structure we need a closer study of function. Some diseases, as Wolkow suggests, could best be defined as disorders of unknown functions. It is probable that, under the same principle, those disorders which we now classify as due to premature death of anatomical parts [19] could be more properly described as due to the premature falling out of more or less specialized functions.

In no department of pathology is it so difficult to arrive at satisfactory conclusions by the aid of the anatomical method alone as in the department of neural pathology. For it is the nervous system upon which the organism pre-eminently depends for the very existence and efficiency of these interlocking functions which are the basis of life. We can get on without admitting the existence of matter, in the familiar sense of that word, but we cannot get on without admitting the existence of *energies*,[20] superposed one over another in ever increasing complexity of organization, and to admit this conception of energies is at once to throw the emphasis of research upon the study of functions, and to admit the significance of the anatomical method only as a valued help toward the better understanding of function.

One unfortunate result of a too close adherence to the anatomical method is that it has introduced into medical literature, and, more important

[13] Ueber Ideenflucht; publ. by Carl Marhold, Halle, 1904.
[14] Matiere et mémoire.
[15] L'effort intellectuel. Rev. philosophique, 1902, p. 53.
[16] See especially various papers by Verworn and his pupils, which are published or referred to in the recent volumes of the Z. schrift f. Allgem. Physiologie, 1901 to 1904.
[17] See especially Richet, Dictionaire de Physiologie, article "Fatigue."
[18] See "Neurasthenia" by Cowles, Shattuck Lecture, 1891. Boston Med. and Surg. Journ.; see, also, the various accounts of the Exhaustion Psychoses, and of studies on the contests in the Olympian games.
[19] Termed by Gowers "abiotrophy."
[20] Of course, in the final analysis, it must be admitted that any given conception of "energies" can be taken only in a symbolic sense. It is, however, at present, the term most conducive to clear thought and adequate generalization.

still, into medical thought, a differentiation of diseases into two contrasted, although vaguely defined, categories designated as "functional" and "organic," two terms which are objectionable because they help to perpetuate false notions of physiological, pathological and clinical sorts.[21]

However useful these terms may have seemed as affording a convenient, if rough, classification of diseases, and however inspiring it is to reflect that with the idea of "functional" goes that of possible curability, it is nevertheless true that their employment has had a mischievous because a misleading effect, and that it turns away the mind from the true recognition of a nature of the facts at stake.

Contrast, for example, the cases of hysteria and epilepsy, with regard to which these terms are often used, as if with an essential meaning. If in calling hysteria "functional" and epilepsy "organic" it is meant that the one is curable and the other incurable, neither assumption is strictly accurate. If it is meant that in the case of hysteria there is, presumably, no essential anatomical peculiarity of the brain and nervous system, while in epilepsy such a peculiarity is present, neither assumption is correct. For no one can doubt that the brain of the hysteric is in some degree abnormal, and while we must make the same assumption in the case of epilepsy, we know nothing of the actual change which brings the epileptic fit about or makes it possible, nor can we even say that the fit itself is not a conservative process, in a certain sense. Again, the epileptic paroxysm, as such, is a sign which distinctly deserves the name of "functional," as much when occurring spontaneously as when induced by experimental excitation of the cortex. Furthermore, it would be only partially correct, and certainly not scientific, to call hysteria a "functional" and epilepsy an "organic" disease because epilepsy occurs oftener than hysteria in patients who exhibit certain physical peculiarities which we classify as stigmata of degeneration.

It would be equally erroneous to claim that having classified a disorder as "hysterical," and therefore as "functional," we have the right to consider it as representing a condition which anatomy need not take into account. Mental action is, in every sense, a real force, standing on the same plane with the other forces which we regard as more familiar, and as such it is capable of influencing the nutrition of the body. It is only by evasions and subterfuges that we can deny the reciprocal relationship between bodily processes and mental states. Both of them are manifestations of energy, and there must be some denominator common to them both. Between death from a bullet that traverses the brain and death from an emotional shock, the difference is one, solely of detail. When any disorder such as we should be inclined to call functional is hostile to the fundamental interests of the organism, it leads at once to manifest disorders of the nutrition. Not only is this true of depressive emotions, but even of excessive intellectual preoccupations, as when Dante said, "My great work has made me lean." This datum of common observation is receiving, more and more, the solid endorsement of scientific thought. Thus, Ostwald [22] dwells upon the fact that mental operations of a pleasurable sort directly favor nutrition and the normal flow of chemical energy, while those of a painful sort interfere with nutrition and hinder the flow of chemical energy.

At both these latter points the barrier between the functional and the organic is broken down. As a matter of fact, this barrier does not, by right, exist, and we should not be tempted to use the terms "functional" and "organic" as applied to disease, at all, were it not for two reasons, the first being the convenience of the custom, the second that there are many conditions which we recognize as being on the whole hostile to most of the interests of the organism and which we therefore feel justified in classifying as disease, yet where the disorder is not adapted for anatomical expression. If we adopted, as we should, the conception defended by the clear-minded philosopher and scientist, Ostwald, that the organism is a fabric built up, not of atoms, but of energies, we should never draw these unscientific distinctions between "function" and "structure," or "symptomatology" and "anatomical expression," as standing for fundamentally different and contradictory conceptions, or as affording, the one a truer and the other a less true method of approaching the study of disease, but we should admit that the data gathered under these different headings stand upon the same plane as regards their admissibility as evidence. The data furnished by the study of symptoms, which in the case of the so-called functional disorders constitute all the evidence at our command, are data of a physiological sort, and throw light rather on the reactions of the organisms than on the direct effects of the primary lesion. For this reason they are not susceptible to discovery by anatomical means.

In conclusion, then, I offer the following propositions:

Every organism, whether we call it diseased or well, presents itself to our view as a web of interwoven "energies," which, in order to study them by anatomical means, we must break artificially into fragments that have, in reality, no correspondingly separate existence.

These energies, under tendencies which countless ages of evolution have established, have woven themselves into a mechanism of interlocking functions, forming an endurable and relatively stable equilibrium which we denominate as health. This equilibrium, however, must always remain but relative, and would become a real equilibrium, if that were possible, only at the sacrifice of further evolution and progress.

The processes of mutual modification and adjustment through which such an organism seeks to gain and to maintain this equilibrium, under

[21] Compare in this connection, Obersteiner, Functionelle und Organische Erkrankungen, 1900; and Krehl, Die Functionelle Erkrankungen, in Die Therapie der Gegenwart, 1902.

[22] Philosophie der Natur.

the ordinary conditions which we classify as health, are the only means which it possesses to meet the more serious needs created by the unusual conditions that we call disease.

It rarely happens that these efforts [23] at readjustment (after any considerable disturbance of this equilibrium) are thoroughly successful, and in the abortive or exaggerated reactions on the part of the organisms, energies are set free and habits are established which are often hostile to the main interests of the organism as a whole, and therefore are reckoned as evidences of disease.

In many cases the processes of readjustment are taken part in by various functions of the organism which do not seem to be at first sight related to the changes primarily at stake, to such an extent that the earlier effects of the original lesion are overshadowed, and we seem to be in the presence of what would be called a change of type rather than a disease. In this way, for example, what are called by biologists the "secondary sexual characters" arise. Clinical examples of this tendency toward such a generalization of the process of readjustment have already been suggested.

Although these processes of readjustment do not seem to be guided by teleological influences, and although they often fail to benefit the organism, and, instead, work it great mischief, yet in many instances they do have all the outward appearance of being under the direction of some general principle analogous to that which governs the processes of growth, and is manifested in the repair of lost parts among the simpler forms of life.

This tendency, according to which the processes of repair are governed by a "general principle," presents interesting analogies with the government of the flow of thought and memory by a "leading idea." The same tendency probably finds application, in fact, in the case of all complex reflexes, no matter of what sort.

In order to give aid and guidance to the more favorable elements of these processes of readjustment, we, as physicians, need to bend all our powers to a better understanding of the resources which each organism has at its command for compensation, for continued life on the old lines, or for gaining a new and more stable life, no matter at what sacrifice. The patient who thoroughly understands his resources and is master of them, even if these are few and slight, is often in a better position than one who has more to draw upon but who is liable to be upset by surprises.

In the accomplishment of this task we need all the help that anatomy can furnish, but as it is the organism *in activity* that we seek eventually to understand, it is necessary that the splendid services of anatomy should be supplemented by physiology, and the physician — above all the neurologist — needs, therefore, to be trained more thoroughly than at present, to work and reason in accordance with physiological conceptions and methods as applied to the problem of disease.

As regards our duty in the treatment of our patients, we should not fail, first of all, to seek for the original cause, wherever it may lie, by which the old equilibrium of relative health has been, in one direction or another, broken into, and we are, therefore, bound to acquaint ourselves with all those functions and processes which are related to nutrition in the broadest sense. Still, for the neurologist in particular, the problem of nearest interest is often to gain a point of temporary vantage for his patient by training him to make the best of a present situation, and the methods by which this end is to be accomplished are classifiable under the general name of *education*.

In these methods the future therapeutics of the nervous system is largely to consist; to them we are more and more to look for guidance, both in relieving our patients of their ills and in teaching them how to bear them. The physician who knows best how to appreciate the needs and resources of those coming under his care, to divine their capabilities, to search out the hidden causes of their present troubles, — lying, perhaps, in the experiences of childhood, — the physician who has the trained keenness to recognize that, however poor the material with which he has to work there is almost invariably some benefit to be gained, if not in the direction of relief then in that of compensation, — such a physician as this can make himself of infinite service to the community in which he lives and works.

As among the newer representatives of the successful laborers in this field, we ought to recognize not the scientific investigators alone, but also those practical workers, whether lay or medical, who have shown what education can actually accomplish. I have in mind, especially, the physicians who have demonstrated that tabetic ataxia can be relieved, the sufferers from obsessions and morbid fears restored to their place in society, the vacant lives of imbeciles and dements made more full, and new promise given to the efforts for the reform of the waifs and wards of our great cities. In this outcome is to be sought one of the best practical pieces of evidence for the value of the physiological principle in the problem of disease.

[23] It is to be understood, as stated above, that the term "efforts" is here used in a descriptive sense alone.

## Original Articles.

### A CASE OF DIFFUSE ENCEPHALITIS SHOWING THE PNEUMOCOCCUS.

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(From the Laboratory of the Boston City Hospital.)

#### CLINICAL HISTORY.

The present case occurred in the service of Dr. Geo. B. Shattuck at the Boston City Hospital, to whom we are indebted for permission to use his records.

*Clinical history.* — The patient was a man, fifty years of age, a wood turner, a native and resident of Boston. His family history was negative. He seems to have been in good health previous to the present illness. He had scarlet fever as a child, rheumatism two years ago and "enteric fever" five months ago. He has had urethral discharge many times and "hard chancre" several times, the last time six months ago. Two years ago had several sores in his mouth and his throat was burnt out. He drinks beer or whiskey three or four times a day; tea, three or four cups a day; tobacco, fifteen cents' worth a week.

On admission to the hospital the following record was made: Definite history difficult to obtain. Patient states that he has been in bed about a month with cough and has raised considerable thick, white sputum, occasionally tinged with blood. Two months ago he vomited a cupful of bright red blood, not clotted, and a few days later he passed about half a cupful of dark, clotted blood per rectum. He complains now of progressive weakness, a feeling of feverishness and occasional night sweats. Bowels regular.

*Physical examination.* — Well developed and nourished. Alcoholic, mildly delirious with hallucinations. Pupils dilated, react to light. Tongue with dirty brown coat. Breath alcoholic. No tenderness or rigidity of the neck. Chest dull at base on both sides, elsewhere fair resonance with harsh, restrained respiration; numerous squeaks and rales. The area of cardiac dullness begins at the third rib above and extends 3.5 cm. to the right and 10.5 cm. to the left of the median line of the sternum. The maximum impulse of the apex beat is in the fifth space. The heart action is regular, heart sounds clear, of good quality, second pulmonic accentuated. The pulse is equal at the wrists, regular, of moderate rate and of good volume and tension. There is moderate sclerosis of the peripheral arteries. Abdomen lax, tympanitic, not tender; liver and spleen show nothing unusual. Old scar on glans. No general glandular enlargement. The deep reflexes in the extremities are lively; no edema.

Three days later it was recorded that the patient had gradually become comatose and cyanotic. Left hemiparesis was noticed. The respiration was at times rapid and superficial and sometimes suggested Cheyne-Stokes. Apparently did not suffer pain. No cough. Incontinence of urine and feces.

*Physical examination.* — Pupils equal, contracted, react to light. Chest shows equal expansion on either side; dull tympany over front, with faint respiration and very few rales. Heart sounds faint. Left extremities flaccid; considerable rigidity of right extremities. Reflexes lively. No Kernig sign; no Babinski. Temperature morning, 102°; pulse, 72; respiration, 43.

Again, three days later (sixth day after admission), it was noted that the cyanosis was gradually increasing. Profuse perspiration. Chest resonant throughout; many moist rales in back on both sides. Heart beat regular; sounds clear; pulse, 100; temperature, 102°; respiration, 60, rapid and superficial. Pupils contracted, left slightly smaller than right. Limbs as previously, the left flaccid, the right rigid. Knee jerks not obtained. Superficial reflexes diminished.

Patient failed slowly and died that day.

The following is the temperature, pulse and rate of respiration from the 20th, the day of admission:

| | 20 | | 21 | | 22 | | 23 | | 24 | | 25 | | 26 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | p.m. | a.m. | p.m. | a.m. | p.m. | a.m. | p.m. | a.m. | p.m. | a.m. | p.m. | a.m. | |
| Temp | 99.4 | 98.4 | 97 | 98.4 | 98.6 | 102 | 104.2 | 102.8 | 103.8 | 102.5 | 104 | 102.8 | |
| Pulse | 77 | 88 | 72 | 68 | 67 | 72 | 92 | 88 | 93 | 105 | 160+ | 100 | |
| Resp | . | . | . | . | . | 43 | 44 | 40 | 48 | 44 | 64 | 60 | |

CLINICAL SUMMARY.

Severe bronchitis in a man of fifty years with venereal and alcoholic history. Cerebral symptoms developed after a month's illness, ushered in by increasing weakness, fever and mild delirium (symptoms on admission). Two days later there appears flaccid paralysis of the left extremities with some rigidity on the right, cyanosis and incontinence. Gradual failure with rapid respirations, raised temperature, deepening coma, and death on the seventh day.

ANATOMICAL FINDINGS.

Well-developed and well-nourished male. Slight hypostatic lividity; marked rigor; no edema. Pupils equal, .4 cm.

Peritoneal cavity, normal. Appendix, 7 cm. long, adherent along the brim of the pelvis. Canal patent, contains small quantity of soft feces. Meso-appendix to tip. Mesenteric lymph nodes not enlarged.

Diaphragm: Left fifth space, right fourth space.

Pleural cavities: Right entirely obliterated by firm fibrous adhesions; left partially obliterated.

Pericardial cavity: The cavity about the entire left side of the heart obliterated by strong bands of fibrous tissue.

Heart: Weight, 380 gm. Subepicardial fat, normal in amount. Myocardium, dark red and rather soft. Endocardium, smooth. Valves, normal except the mitral, which is slightly thickened at the edges. Measurements: Tricuspid valve, 13 cm.; pulmonary valve, 9 cm.; mitral valve, 11 cm.; aortic valve, 8.7 cm.; left ventricle, 1 cm.; right ventricle, .5 cm.

No fat found in fresh specimen examined with acetic acid.

Lungs: Anterior portions normal. Posterior portions dark red, moist and crepitant. Cut surface slightly granular, small, yellowish-white plugs can be expressed from the larger bronchioles. The bronchial tubes contain purulent material. The left pulmonary artery is occluded by a red, firm, partially organized clot, adherent to the vessel wall. There are small calcified areas in both apices as well as a small nodule in the upper part of the lower lobe of the right lung, surrounded by a fibrous capsule.

Spleen: Substance, dark red. Pulp not increased. Malpighian bodies seen as grayish points, not enlarged.

Gastro-intestinal tract: Transverse colon firmly adherent to liver and spleen. Cecum adherent to abdominal wall. Otherwise the tract is normal. Small intestine is 15 feet long.

Pancreas: Vessels distended with blood. Otherwise not notable.

Liver: Weight, 1,640 gm. Much darker red and softer than normal. Surface smooth, except for adhesions mentioned. Cut surface dark brown, but considerably reddened by blood which escapes from the distended central vein. Lobules fairly well marked. Bile ducts normal. Gall bladder moderately distended and normal.

Kidneys: Weight, 370 gm. Cortex, .7 cm. Capsule thin, strips easily, leaving smooth surface. Stellate veins injected. Cut surface red. Markings a little obscure. Glomeruli seen as red points raised above the surface. No fat in fresh specimen examined with acetic acid.

Genital organs: Normal. Tubules of testicles string readily.

Organs of neck: On each vocal cord near the anterior part was a firm white nodule presenting the appearance of a healed ulceration.

Head (description by Dr. E. E. Southard): Scalp normal. Calvarium moderately thick. Dura everywhere closely adherent to calvarium, thickened over vertex to twice the usual depth and inseparable from the bone. Dura adherent to pia along lips of longitudinal fissure. Tenseness cannot be made out on account of calvarial adhesions. The sinuses contain elastic dark clot. Arachnoidal villi form a close white mat reaching indefinitely a finger's breadth on each side of longitudinal fissure from bregma to a point several centimeters behind lambda. The pia is closely stretched over slightly flattened convolutions. The smaller superficial cerebral veins are well and evenly injected. The larger veins contain no great amount of blood. The pia about superficial veins of sulci is almost everywhere thickened, and where the thickening is greatest, as about the middle cerebral and some of the superior cerebral veins, of a slightly yellowish shade of gray. Pia can be picked up and stripped rather easily on account of its thickness. The pial leaves of anterior part of longitudinal fissure are closely interadherent. The vessels at the base, explored to the primary branches, contain cruor clots.

Spread on a board, the brain is asymmetrically swollen. The right hemisphere bulges 9 cm. from median line, and flattens out a trifle. The left reaches 7.5 cm. The substance of the right parietal region is a shade softer than remainder of brain; limits of lesion indefinite. On section the lateral ventricles contain perhaps two teaspoonfuls each of clear fluid. Foramina of Monro patent. Ependyma and choroid plexuses normal.

Basal ganglia, midbrain, pons and cerebellum and bulb normal.

The tissue of the right centrum semiovale, for a distance corresponding with extent of body of ventricle, is softer and pinker than normal and contains on section numerous well-marked puncta cruenta besides a number of punctiform hemorrhages, more abundant in pea-sized to walnut-sized clusters. The deep tissue of centrum semiovale on left side also contains less well-marked and smaller areas of slight edema with a few punctiform hemorrhages. On the right side, almost the whole of the subcortical projection system would seem involved. On the left the area beneath Rolando and about Sylvian fossa seems spared except by edema.

Brain: Weight, 1,505 gm. The right hemisphere with basal ganglia weighs 690 gm., the left hemisphere with basal ganglia, 625 gm.

Spinal cord: Extradural veins injected and a little free blood in tissue about veins in cervical region. Cord cuts perfectly. No areas of softening found.

The autopsy was performed at the Boston City Hospital during the service of Dr. F. B. Mallory, to whom we are indebted for suggestions.

### SUMMARY OF ANATOMICAL FINDINGS.

Marked injection of nearly all of the organs of the trunk. Acute purulent bronchitis. Edema, softening, and punctiform hemorrhage involving the greater part of the right cerebral projection system with foci in the left centrum semiovale.

### MICROSCOPIC FINDINGS.

Cultures taken from the lungs, liver, kidney and the area of softening in the right cerebrum gave lanceolate diplococci showing capsules by Welch's method. These were mixed in the lungs and liver with a few colonies of streptococci and a large bacillus staining with Gram's method. The latter was also found in the cultures taken from the brain.

The larger vessels in all the organs show a slight intimal thickening.

Heart: Slight perinuclear pigmentation.

Lungs: Acute bronchitis with desquamation and with a bronchopneumonia of cellular type. There were small deposits of coarse fibrin and a fine meshwork of fibrin between the cells of the exudate. Some of the polynuclear leucocytes of the exudate contained lanceolate diplococci. Certain alveoli contained a considerable number of pigmented phagocytes.

Spleen: The capsule is moderately thickened. The trabeculæ are in places closely set. The reticulum is in places prominent. Some of the Malpighian bodies show a few hyaline deposits and the tunica media of some arterioles shows hyaline change. The pulp contains unusually numerous phagocytes, enclosing yellowish pigment. There is some free pigment. A few phagocytes contain unaltered blood corpuscles. There are more plasma cells than usual. Polynuclear leucocytes are scattered in rather large numbers throughout the pulp, and especially in association with small hemorrhages.

In the liver there is a slight narrowing and pigmentation of central cell columns, with some edema and diapedesis into pericellular spaces.

Kidneys: Cloudy swelling, especially of convoluted tubules and injection of glomeruli. Chronic intimal changes in arteries well marked.

Pancreas: Not remarkable.

Nervous system: Sections were taken from various parts of the brain and cord and fixed in Zenker's fluid, 10% formol and 96% alcohol. The stains chiefly used were methylene blue, Weigert's hematoxylin, phosphotungstic-acid-hematein and gentian violet.

The lesions involve an extensive area and vary somewhat in character and intensity. The subcortical region of the central, parietal and superior temporal convolutions on the right, and superior parietal on the left are most severely affected.

The lesions are related with the terminal branches of the cortical arterial system. They consist of minute hemorrhages with occasional pigmentation, and accumulations within and surrounding the adventitia of the vessels, consisting chiefly of granule cells, and a small number of lymphoid and plasma cells.

The external gray matter is largely free from the lesions, which are confined almost entirely to the medulla. Immediately beneath the cortex the lesions are more purely hemorrhagic in type, appearing as smaller and larger areas of fresh blood corpuscles which are clumped in the neighborhood of the vessels. Further away from the cortex the lesions become more extensive and more cellular.

Corresponding to the result of the examination of cultures from the affected areas of the brain, there are to be found in the tissue an occasional pair or short chain of lanceolate diplococci. They are rare enough to be easily overlooked if a culture did not call attention to their presence. They are found more readily in sections stained by Gram-Weigert and are associated with a large bacillus which also stains by Gram.

The latter appear more numerous so that two to three rods are found in an oil-immersion field. Considerable search shows the diplococci to be present in large mononuclear phagocytes and also inside the blood vessels.

The pia is pushed away from the cortex and its fibers are more or less separated by edema. In places there is marked fibrous thickening. Connective tissue nuclei are prominent, and there is a thin sprinkling of infiltrated lymphoid and plasma cells as well as granule cells. These cells are more abundant around some of the blood vessels.

The blood vessels are distended and injected through-

out the whole central nervous system. In the region of the lesions there is enormous distention. The walls of some of the vessels are slightly thickened. Many of the vessels show evidence of edema, the fibers of the tunica adventitia are separated and the spaces infiltrated with cells. The nuclei of the capillaries are generally swollen and prominent.

The cells found in the lesions were as follows: (1) Granule cells, (2) lymphocytes, (3) plasma cells, (4) polynuclear leucocytes, (5) eosinophiles. The granule cells appear in large numbers. They resemble those commonly seen in meningitis and cerebral softening. They occur thickly in and around the adventitia of the vessels in the affected foci, and scattered throughout the tissue in less dense arrangement.

About the same size as the epithelial cells lining the alveoli of the lungs, they are characterized by having a finely granular protoplasm and a large vesicular nucleus. This round or oval nucleus is usually found eccentrically situated and has a sharply defined, more or less irregular membrane, stained as a rule quite deeply with methylene blue, so that the small nucleolus is apt to be obscured. These cells contain fat vacuoles, detritus of myelin or blood globules. Occasionally one is found containing yellow pigment granules and rarely a pair or short chain of lanceolate diplococci.

Lymphocytes and plasma cells were found in small numbers sprinkled with the granule cells in the walls and in the immediate neighborhood of the blood vessels. Occasionally a vessel is found around which the exudate consists chiefly of lymphoid and plasma cells.

Polynuclear leucocytes are found frequently inside the vessels, but very few are seen outside. They are rarely found in the tissue, occasionally in the vessel sheath.

Eosinophiles appear occasionally in the meshes of the adventitia.

The nerve cells in the neighborhood of the lesions show pretty uniform changes, probably due for the most part to edema. They consist of the following essentials: Slight swelling of the cell body and nucleus, granular subdivision of the chromatic substance in the body and processes. In many cells the nucleus stains diffusely and the outline of the membrane is indistinct. This is more marked in the smaller cells. The nucleolus in many nuclei is somewhat enlarged and may contain several small, clear areas. Contraction of the cell body is found around the nucleus in a few of the large cells. The cell processes stain faintly, but, as a rule, they can be seen for a considerable distance from the cell body.

There are a few cells which stain very faintly throughout. The nucleus is very indistinct or absent, and the substance of the whole cell looks finely and distinctly mottled.

Some pigmentation is present, but it is not marked.

The nerve cells show much swelling and varicosity of the myelin sheath and many destructive changes of the axis cylinder affecting most of the fibers.

In sections taken from the lesions a small amount of fat occurs in various sized droplets, scattered discretely along the nerve fibers and collected in the somewhat swollen phagocytes. A few droplets of fat are found free in the vessel walls.

The neuroglia reaction of the surrounding tissue is marked. In the loose fibrillar groundwork in the area of the lesions are a considerable number of astrocytes, most abundant in the tissue immediately surrounding the foci of softening. They are several times the size of an ordinary neuroglia cell with a large round vesicular nucleus and a large amount of undifferentiated protoplasm with numerous long, coarse processes. Occasionally these cells are found with two or three nuclei. The single nucleus is eccentrically situated, often appearing almost entirely outside the body of the cell. It had a sharply staining periphery and prominent centrally placed nucleolus.

The subpial reaction is slight. A few small astrocytes appear, and there is a slight increase in the neuroglia fibers.

A few vessels in the lesion contain fibrin, but very little is present in the tissue. Small deposits of corpora amylacea are numerous throughout the medullary portion.

Cord: Marchi sections showed swelling of the myelin sheath and considerable fatty degeneration in the left crossed pyramidal tract, and in the dorsal columns, more general in the left. A few fat droplets are seen in the anterior root bundles.

The anterior horn cells present a moderate degree of central chromatolysis with eccentric nucleus (axonal degeneration).

The blood vessels are considerably injected.

### SUMMARY OF MICROSCOPIC FINDINGS.

Pneumococcus septicemia; slight arteriosclerosis affecting all the organs; acute bronchopneumonia; extensive diffuse encephalitis with hemorrhages and cellular lesions related to the cortical arterial system and confined to the subcortical region. The lesions consist of accumulations within and surrounding the adventitia of large numbers of granule cells of the type familiar in meningitis and cerebral softening and of small numbers of lymphoid and plasma cells with a few polynuclear leucocytes and eosinophiles.

Solution and fatty changes of the myelin in the surrounding tissue. Proliferation and hyperplasia of neuroglia cells with formation of numerous astrocytes. Edema changes in the nerve cells of the cortex. Fatty changes in the cord and early central chromatolysis of the anterior horn cells.

Lanceolate diplococci present in cultures and found in and surrounding the cells of the exudate in the lung lesions, and in the tissue and granule cells of the brain.

### SUMMARY.

The present case may be summed up as follows: After a month of severe bronchitis in a man of fifty, there develops a group of cerebral symptoms, weakness and mild delirium, followed by flaccid paralysis of the left side, with rigidity on the right, and incontinence. Death on the seventh day of the cerebral symptoms, after gradual failure and coma, with elevated temperature. At autopsy extensive diffuse encephalitis and bronchitis, with bronchopneumonia (pneumococcus). The pneumococcus was found by culture, free in the tissues, and within the phagocytes of the cerebral lesion. The lesions are related to branches of the cortical arterial system of both hemispheres, and are marked on the right side, where almost the whole of the subcortical projection system is acutely involved, by edema and punctiform hemorrhagic foci. The lesions are histologically simple, consisting of accumulations, within and surrounding the adventitia, of phagocytic cells of the type familiar in cerebral and meningeal lesions, and small numbers of lymphoid and plasma cells. The large cells

contain vacuoles, detritus of myelin, and an occasional pair or short chain of diplococci. There was no evidence of acute leptomeningitis or of ependymal changes.

REMARKS.

The acute non-purulent encephalitis of the adult was first brought prominently to the knowledge of the medical profession by Strümpell [1] in 1890, although in 1884 [2] he had described and discussed the acute non-purulent encephalitis of children. This disease was then considered as closely allied to the superior polio-encephalitis of Wernicke, and as differing from it pathologically, chiefly in the location of the lesions. The clinical symptoms, however, in the two affections were dissimilar.

Strümpell [1] describes this form of acute encephalitis in adults as an affection of very acute onset, with severe cerebral symptoms and rapidly fatal termination. Almost without prodrome a condition of dulness or apathy occurs, soon increasing to the deepest coma. This is usually accompanied by high fever, and hemiplegia appears as the loss of consciousness deepens.

Shortly after the publication of Strümpell's article other observers began to report more or less similar cases. Schmidt,[3] in 1892, related a case in a girl of nineteen, with involvement chiefly of the basal ganglia, and Fürbringer [4] and Königsdorf [5] published cases. Goldscheider [6] described a case of polio-encephalitis superior, with involvement of the optic thalamus, posterior commissure, internal capsule, and to a slight extent of the centrum semiovale. Büchler's [7] article in the *Archiv fur Psychiatrie*, describing Leichtenstern's cases, was the fullest and most complete up to this time (1891).

From the accounts of these writers it appeared that many cases of this affection were more or less closely connected with influenza, occurring either after an attack of that disease or during an influenza epidemic. In spite, however, of many attempts, the influenza bacillus could not be detected.

In 1895 Oppenheim [8] published six cases of this affection which recovered, and showed that the disease was not necessarily, or even generally, fatal. It was now recognized that the symptoms as described by Strümpell [1] must be modified, as in many cases these were prodromata, and the general course of the disease might be much less rapid than in his cases. Brie [9] in 1897 gives a good description of the symptoms.

The most important article which has appeared on this subject is, however, that of Oppenheim,[10] in which he gives a full description of this encephalitis, with a summary of all the knowledge acquired in regard to it up to the time of writing. He states that it may come on suddenly, or it may be preceded by headache, vertigo, nausea and vomiting, general weakness, apathy and insomnia. A rigor may occur. As the disease progresses the apathy becomes more marked, somnolence appears, which is apt to increase to total loss of consciousness, from which the patient cannot be aroused, or can be aroused only momentarily. This is usually accompanied by restlessness and delirium. General convulsions may occur, and in one case there was status epilepticus. Stiffness of the neck muscles and trismus have been recorded. The temperature is raised; the pulse may be slow or rapid; respiration may be rapid. The chief local phenomena are the paralysis, hemiplegia, monoplegia, aphasia; unilateral convulsions may occur. Anomalies of sensation are not marked. The deep reflexes vary. This is now the accepted symptomatology.

The first case which I have been able to find in which diplococci were detected is that of Hochhalt [11] in 1897. Fischl,[12] in 1899, in writing of the various forms of encephalitis in children, states that no bacteria have been found in them except such as might accompany septicemia.

Since 1897 little has been added to our knowledge of this disease. Friedmann's [13] article in 1899 is largely devoted to pathologic considerations, and Nonne,[14] in 1900, wrote a somewhat lengthy article on the same subject.

Meningitis, accompanied by and presumably due to pneumococci, has been known for some years. Boulez and Courtois-Suffit (1890), Hutinel (1892), Woods (1894), Ferrand (1896), Gaillard (1898), Graham (1899), may be consulted on this subject.

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[1] Strümpell: Ueber primäre acute Encephalitis. Deutsch. Arch. f. klin. Med., 1890, xlvii, 53.
[2] Strümpell: Ueber d. acute Encephalitis d. Kinder, Deutsch. med. Woch., 1884, p. 714.
[3] Schmidt: Deutsch. med. Woch., 1892, xviii, 703.
[4] Fürbringer: Deutsch. med. Woch., 1892, no. 3, p. 45.
[5] Königsdorf: Deutsch. med. Woch., 1892, no. 9, p. 182.
[6] Goldscheider: Charité Annalen., 1892, xvii, 139.
[7] Büchler: Arch. f. Psych., 1892, xxiv, 730.
[8] Oppenheim: Deutsch. med. Woch., 1895, xxi, 85.
[9] Brie: Allg. Ztschrift. f. Psych., 1896, liii, 604; Neurol. Centralbl., 1897, xvi, 2.
[10] Oppenheim in Nothnagel: Spec. Path. in Therapie, ix, 1 th., 3 Abth. 1.
[11] Hochhalt: Pest. med. Chir. Presse, 1897, xxxiii, 796.
[12] Fischl: Jahrb. f. Kinder., 1899, xlix, 58.
[13] Friedmann: Arch. f. Psych., 1898, 1899, xxi, 846.
[14] Nonne: Festschrift Wilhelm Erb., etc., 1900, 1.

## FLIES AND TUBERCULOSIS.*

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PREVIOUS OBSERVATIONS.

Spillman and Haushalter [1] found tubercle bacilli both in the intestinal contents and the excreta of flies in a hospital ward.

Hofmann [2] demonstrated tubercle bacilli in the intestinal contents in four of six flies caught in the room of a recently fatal case of phthisis; fly specks scraped from different parts of the room also showed tubercle bacilli. Flies were fed on tubercular sputum and the presence of tubercle bacilli observed in their excreta. Of three guinea pigs inoculated with the intestines of these flies only one developed tuberculosis. Inoculation of specks which had dried for six to eight weeks gave a negative result.

* From the Pathological Laboratory of the Massachusetts General Hospital. J. H. Wright, Director.
Read before the clinical meeting of the Medical Board, Dec. 2, 1904.
[1] Spillman and Haushalter: Dissemination du bacille de la tuberculose par les mouches. Comp. rend. 1887, t cv, no. 7, pp. 352, 353.
[2] Hofmann: Die Gefahr der Weiterverbreitung der Tuberculose durch unsere Hausfliege. Jahresb. d. Gesellsch. f. Nat. u. Heil. in Dresd. 1887–8, pp. 145–147.

Celli[3] states without details that Alessi, under his direction, fed flies on tubercular sputum. Two rabbits developed tuberculosis after inoculation into the anterior chamber of the eye with the dejecta of these flies.

Hayward[4] has recently confirmed the presence of virulent tubercle bacilli in the excreta of flies fed on tubercular sputum.

Thus far, therefore, it may be considered established that tubercle bacilli may appear in the stools of flies which have recently ingested tubercular sputum. Celli and Hayward obtained tuberculosis of experimental animals by inoculation of fresh dejecta, while Hofmann succeeded in one of three injections with the intestines and failed with specks which had dried for six to eight weeks.

## PERSONAL OBSERVATIONS.

### *I. Flies and Tubercular Sputum under Artificial Conditions.*

In August, 1904, my interest was aroused in the possible dissemination of tubercle bacilli through flies by their feeding on sputum under examination.

*A. Feeding experiment: apparatus.* — Three glass jars were inverted over a piece of window glass. They were raised three quarters of an inch above the glass plate and the intervening space closed with fine wire netting.

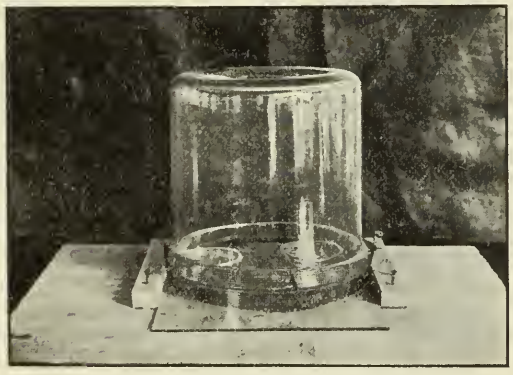


FIG. 1. — Glass jar for confining flies.

*Flies and tubercular sputum.*—Thirty House flies were confined in one of the glass jars (Fig. 1). Many clean cover glasses and a small glass dish containing sputum with about ten tubercle bacilli to each microscopic field were placed on the bottom of the cage. The flies were allowed to feed on this sputum between Aug. 10 and 13, 1904.

*Death of the flies.* — Within three days, twenty-six of the flies were dead. The four remaining flies were very inactive.

Control I: Six flies were confined in a second similar jar and fed on non-tubercular sputum. They were all found dead on the bottom of the cage within two days.

Control II: Six flies were confined in a third similar jar and fed on water, sugar and meat. Two of these died within two days. The remaining four were still alive after one week, when the experiment was discontinued.

The short duration of the life of the flies fed on tubercular sputum is not due, therefore, to tubercle bacilli, but to some other constituent of the sputum.

*Tubercle bacilli in the fly.* — Paraffin sections were made from many of the flies fed on tubercular sputum. Tubercle bacilli were found in the intestinal contents of all. No invasion of other parts of the body could be determined.

*Tubercle bacilli in the specks: time of appearance.* — Examination of the cover glasses placed on the bottom of the cage showed that the bacilli appear in the stools within at least eighteen hours after the ingestion of the tubercular sputum.

*Number of tubercle bacilli disseminated.* — Examination of many specks on the cover glasses showed that the number of bacilli in each microscopic field had increased from about 10 in the original sputum to 150 in the specks. Each speck contained from 3,000 to 5,000 bacilli. About 2,000 specks had been deposited by the 30 flies within three days, thus from 6,000,000 to 10,000,000 tubercle bacilli had been transferred from the sputum to the inner sides of the cage during this period.

*Morphology of the bacilli in the specks.* — When the bacilli in the specks were compared with those in the original sputum, it was seen that they were much larger, both in length and diameter and showed some evidence of apparent branching.

*Virulence of the tubercle bacilli in the specks.* — At the completion of the feeding experiments, the glass jar containing the specks was placed on a table in the middle of an unused room of the laboratory. This room (floor, 18 x 18; height, 20 feet) is lighted by two windows with a northern exposure. The direct rays of the sun do not reach it at any season of the year. A board

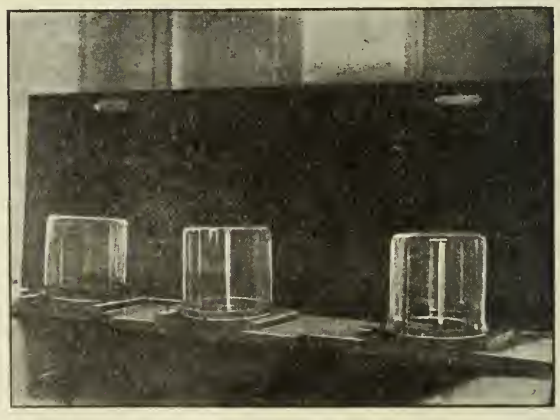


FIG. 2. — The relation of the specks to the lighting of room. Drying experiment.

three feet high was placed between the glass jar and the windows (Fig. 2) to protect the jar from strong diffuse daylight.

Guinea pigs were each inoculated with one hundred fly specks scraped from the cage at intervals of

[3] Celli: Transmissibilita dei germi patogeni mediante le dejectione delle mosche. Bull. d. Soc. Lancisiana d. Osped. di Roma. 1888, Fasc. 1, p. 1 (quoted from Nuttall. The Johns Hopkins Hosp. Rep., vol. viii, 1900).

[4] Hayward: The fly as a carrier of tuberculous infection. N. Y. Med. Journal and Phila. Med. Journal, Oct. 1, 1904.

one, eight, fifteen, twenty-eight and fifty-five days. The first inoculation was made subcutaneously, the others into the peritoneal cavity. The animals were killed after five to seven weeks. Tuberculosis was produced by the inoculated material in the first three animals, showing that virulent tubercle bacilli were present in the specks for at least fifteen days. The pigs were negative after this interval.

The pig inoculated with the specks which had dried for only one day showed generalized tuberculosis. A gradual diminution in the extent of the process was observed. The pig killed after fifteen days presented large isolated tubercular lesions of the spleen and of two lymph glands: one in the gastro-hepatic omentum, the other in the anterior mediastinum. Tubercle bacilli were demonstrated in the lesions.

The above experiment is thought to show that fly specks contaminated by tubercle bacilli may be a source of danger by direct transfer to the human subject, as in the ingestion of infected food, for at least fifteen days after their deposit, if exposed only to diffuse daylight in the interior of a room. Previous observers have shown that tuberculosis can be produced in animals by feeding them on infected material. As this has been already established (see below) it was not thought necessary to feed the infected fly specks to animals, but merely to determine their virulence and its duration.

The far greater frequence of tuberculosis of the lungs in the human subject and a mass of experimental data (Cornet [5]) indicate that the usual contagion of tuberculosis is not by the ingestion of infected food, but by the drying and distribution as dust of infected material through the air.

It was next of interest, therefore, to try to determine whether infected fly specks play any part in this indirect and more common infection by contamination of the surrounding air.

*B. Inhalation experiment: apparatus.* — A glass cylinder (18 x 2 inches) was closed at either end by wire netting, tacked to a rim of cork. One end of this tube was closely fitted to a hole in the side of a wooden box. The inner opening of this hole into the box was also closed by wire netting, leaving a space of one-half inch between this and the netting closing the end of the glass cylinder. The box ($8\frac{3}{4}$ x 9 x 12 inches) was closely fitted with a glass cover and its sides sealed by pasting paper about it. A stiff rubber tube connected with a water vacuum apparatus [6] (Eimer and Amend) was led through the side of the box opposite the entrance of the glass cylinder (Fig. 3). The air in the box was exhausted by this means so that a constant slow current passed through the cylinder into the box and out the rubber tube at the other side. The direction of the air current was readily shown by blowing smoke toward the free end of the glass cylinder. An attempt was made merely to keep a gentle flow of air through the cylinder into the box.

[5] Cornet: Spec. path. u. Ther. Nothnagel. xiv Bd. 2. II Abth.
[6] Suggested by J. H. Wright.

Twenty-three flies were confined in the glass cylinder, with tubercular sputum. They deposited, between Aug. 17 and 19, a large number of specks on the inner surface of the tube. During these two days all but four of the flies had died. These survived only twenty-four hours longer.

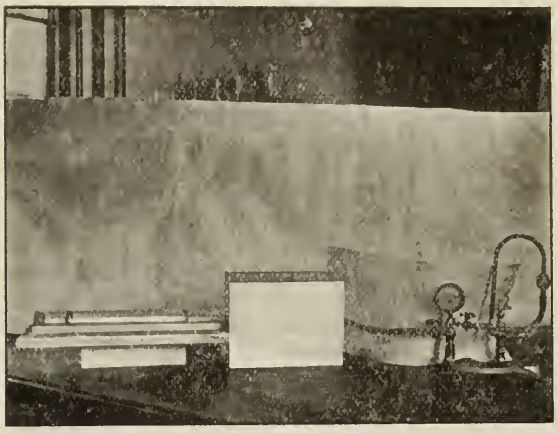


Fig. 3. — Inhalation experiment. Pig confined in box for eight days.

On Aug. 19, a young and healthy guinea pig was placed in the box and a slow current of air drawn through the glass cylinder into the box by means of the vacuum apparatus. The pig was confined here for eight days. The apparatus was kept in the same room and under the same conditions as in the feeding experiment. (Experiment A.)

Twelve weeks were allowed to elapse before this animal was killed. At the autopsy, not a trace of tuberculosis could be found in any part of the body. Microscopic examination of sections from different parts of the lungs revealed no lesions.

Cornet [7] has shown that guinea pigs can readily be infected by dust from tubercular material. Of forty-eight guinea pigs exposed in a room to dust shaken from a contaminated carpet, tuberculosis was produced in forty-seven.

From the above experiment (Experiment B) there is no evidence of the spontaneous liberation of tubercle bacilli from the fly specks, even when swept by a gentle current of air. It is probable, however, that when mechanically disturbed infection of the air would occur as in Cornet's carpet experiment.

### *II. Flies and Tubercular Material under Natural Conditions.*

I have frequently observed the eagerness with which flies feed on sputum even when other food is accessible. Their dejecta frequently soil the walls and cloud the windows of unscreened rooms. During the fly season, I have counted many thousand fly specks on windows which are frequently washed. In their migration from one kind of food to another, they must deposit great numbers of specks on food. If they eat

[7] Cornet: *l. c.* p. 61.

of tubercular material and later alight on food stuffs intended for human ingestion, they may deposit on them great numbers of tubercle bacilli. If these infected specks are unexposed to sunlight or strong diffuse daylight, they may maintain their virulence, as the above experiment (Experiment A) has shown, for at least fifteen days. If the specks are exposed to the direct rays of the sun they probably lose their virulence much more quickly. Mitchell and Crouch,[8] for example found that tubercular sputum, placed in direct sunlight failed to infect guinea pigs after thirty-five hours. If preserved in the dark, they may remain infective for a much longer period than fifteen days.

Tuberculosis may readily be produced in animals, experimentally, by feeding them on food infected with tubercle bacilli (Baumgarten,[9] Fischer,[10] Dobroklonski [11]). In these animals, the tubercular lesions are in the cervical lymph glands, the intestines, the mesenteric glands, the liver and more rarely the lungs (Baumgarten[12]). By analogy, primary tuberculosis of the intestines or the mesenteric lymph glands in man may be regarded as due to the ingestion of infected food. Many such cases have been reported among others by Demme,[13] Ollivier,[14] and Wyss.[15] In such infections I have no doubt that flies play a part.

Cornet readily produced tuberculosis of the lungs and bronchial glands in guinea pigs by dust from his infected carpet. If undisturbed, spontaneous liberation of tubercle bacilli from fly specks is unlikely, even when they are exposed to a current of air. (Experiment B.) If mechanically agitated, however, aerial infection probably occurs, as with dried tubercular sputum.

### CONCLUSIONS.

1. Flies may ingest tubercular sputum and excrete tubercle bacilli the virulence of which may last for at least fifteen days.

2. The danger of human infection from tubercular fly specks is by the ingestion of the specks on food. Spontaneous liberation of tubercle bacilli from fly specks is unlikely. (Experiment B.) If mechanically disturbed, infection of the surrounding air may occur.

As a corollary to these conclusions, it is suggested that

3. Tubercular material (sputum, pus from discharging sinuses, fecal matter from patients with intestinal tuberculosis, etc.) should be carefully protected from flies lest they act as disseminators of the tubercle bacilli.

4. During the fly season, greater attention should be paid to the screening of rooms and hospital wards containing patients with tuberculosis and laboratories where tubercular material is examined.

5. As these precautions would not eliminate fly infection by patients at large, food stuffs should be protected from flies who may already have ingested tubercular material.

[8] Mitchell and Crouch: Journ. of Path. and Bact. vi, p. 14.
[9] Baumgarten: Cent. f. kl. med. 1884, no. 2.
[10] Fischer: Archiv. f. exp. Path. u. Pharm. Bd. xx.
[11] Dobroklonski: Archiv. f. m. exp. 1890, p. 253.
[12] Baumgarten: *l. c.*
[13] Demme: quoted from Cornet, *l. c.*, p. 100.
[14] Ollivier: quoted from Cornet, *l. c.*, p. 100.
[15] Wyss: quoted from Cornet, *l. c.*, p. 100.

## INNOCENT CASES REPORTED AS DIPHTHERIA.

BY HIBBERT WINSLOW HILL, M.D., BOSTON,
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THAT true cases of diphtheria occur, not seen by a physician, or being seen, escaping correct diagnosis, or being recognized, failing to be reported as diphtheria, is unquestionably true, although the actual number or percentage of cases thus escaping registration cannot be determined. Conversely, many cases diagnosed as diphtherai are undoubtedly really innocent, and even of those reported as diphtheria, a very appreciable percentage are not diphtheria.

This latter percentage can be determined, under bacteriological control, in two ways. The following figures give the results of applying these methods to the bacterial results obtained by the Boston Board of Health laboratory.

*First method.* — The physician's diagnosis at the time of taking the first culture for diagnosis was " diphtheria " in 1251 cases (1898–1900). Of these, the bacteriological report was positive in 785 cases, an average of 62% of positive clinical diagnoses confirmed, or about 38% in error.

*Second method.* — When cases bacteriologically positive for diagnosis come to be examined later on for release (soon after the disappearance of the membrane, usually), from 40% to 50% of the cases (469 cases out of 1,010 [1901–1902]), yield positive cultures for release. On the other hand, there were 1,020 cases (1901–1902) reported as diphtheria without any culture positive for diagnosis. When these cases came to be released by culture, 473 should have shown positive cultures on the above stated grounds, had the whole number been originally true diphtheria. As a matter of fact, only 298 cases proved positive for release, corresponding, therefore, with about 636 originally positive cases, and leaving about 384 which were probably negative throughout, or about 38%. The physician would, therefore, appear to be right, by either method of calculation, in only about 62% of those cases which he calls diphtheria without cultural aid. (This second method of calculation was suggested by J. F. Broderick, clerk in this laboratory.)

It is because of such considerations that the New York City Board of Health will not accept a report of diphtheria unless accompanied by a positive culture; if the physician does not take a culture, a medical inspector is sent to take one. Similarly, the Boston South Department refuses to accept a clinical diagnosis of diphtheria for admission, except in cases very obviously developed to the hospital standard. Dr. McCollom believes that cultures should be taken more freely in all such cases than at present, notwithstanding that the profession in Boston are amongst the foremost in this country in the use of bacteriological methods in diagnosis.

## REMARKS ON THE JURISPRUDENCE OF CIVIL MALPRACTICE, BASED PRINCIPALLY ON THE DECISIONS RENDERED BY FRENCH COURTS.

BY CHARLES GREENE CUMSTON, M.D., BOSTON.

(Concluded from No. 23, p. 627.)

The magistrate then, after having recalled that the defunct was afflicted with fatty degeneration of the heart, as shown by the medico-legal experts, at the time the medicine was administered, added: "Was there ignorance on the part of the accused in not discovering this condition of the heart? It is recognized that the disease in question may escape the notice of the most distinguished physicians. Now, it would be a monstrous act to declare a man guilty of insufficient ability for not having discovered a condition that the most capable do not always find. It has been decided that a man is not held to apply in the accomplishment of his task an extraordinary degree of knowledge, but only the normal amount."

This English jurisprudence is in all points similar to the French, as will be seen by comparing it with the decision rendered at Dalloz which runs as follows: "There are fundamental rules in the science of medicine, and truths which are unanimously recognized and reign as axioms. Nobody who professes the art can fail to uphold the same, . . . etc." In the doctrine of French jurisprudence the same ideas are to be met with, and Max-Lecomte says: "Physicians are liable for damages committed in the practice of their art when these mistakes are proven, independent of the medical doctrines, and based upon the rules of prudence and common sense to which the exercise of every profession is subjected." Among French physicians this opinion is also sustained; and Briande and Chaudé state that "the courts should admit either civil or penal liability of the physician when he has given evidence of an ignorance in the most elementary procedures of his art," etc. And the same is upheld by Brouardel, Vibert and Legrand du Saule.

It is evident that one cannot expect a marked degree of ability from every physician or a penetrating mind that not every one can possess or a scientific aptitude which only belongs to those that Nature has endowed with great intelligence and an absolutely exceptional power for work. In a case for malpractice tried in Paris, the court rendered a decision in which this idea was upheld, as follows: 'The court does not consider that the defendant, Dr. R., has been lacking in the proper degree of diagnostic knowledge, and consequently has not been the means of exposing L. (the plaintiff) to those perils which a more experienced practitioner might have avoided or dispersed." This decision, as far as I can learn, is in accord with a number of similar ones rendered in the United States.

We believe that on general principles the court is not in a position to criticise the manner in which a remedy was administered, or the skillfulness with which an operation has been executed, but only on the single point, namely, to know if the physician against whom the charge is brought is ignorant of those things which every physician should know. In order to remain within the just limits, says the eminent Denis Weil, "one should start with the idea that the physician, from his diploma, is legally presumed to possess a known dose of capacity, a minimum of knowledge which is the *raison d'etre* of his privilege. This point having been ascertained, the court resorting to the usual expert system should, if ordered to settle its verdict, simply examine whether or not the conduct of the physician is compatible with the minimum of capacity implied by the diploma."

Very often, especially in surgical operations, the injury inflicted on the patient is not due to ignorance on the part of the operator, but to a moment of vertigo, a forgetfulness of himself, produced by the difficulties of the operation, by the dangers to which his patient is exposed, or by the fear on the part of the operator that he is not acting with sufficient rapidity to save the life which is confided to his care. When the situation is perilous during an operation it is necessary to act quickly, and a false movement whose consequences may be fatal is in most instances quite excusable. In these supreme moments one should take seriously into consideration human weakness, and not expect from a man those things which are far above his strength; and as an operating surgeon I would impress upon my legal friends present that to remain without pity when facing human suffering and to preserve both calmness and *sang-froid* when one feels that the human life confided to your care is escaping from your grasp is possible only among very few surgeons. Every physician, no matter how cold blooded, will some day or other fall a victim to the weakness of human nature; and it should be recognized that, in general, the emotion is all the greater and dominates the mind of the physician with more intensity in direct relation to the amount of devotion possessed by him.

We would offer as a general rule that there is no liability on the part of a physician in cases where the error or the operative accident is due to the condition of mind of the operator when justified by the conditions arising during the operation. We may be considered as making a serious concession in the question of liability, and that we thus allow numerous physicians, guilty of imprudence, negligence or gross error, to escape just punishment. This, however, we believe not to be the case, because when a physician is called upon to perform an operation of such gravity that death may result, several people are always present at the time, usually physicians and nurses, whose testimony will easily enlighten the court as to the condition of the mind of the operator, on the point as to whether or not he remained master of himself or if from emotion he lost his head.

The difficulty for the court is the appreciation of the acts of the physician; but the expert testimony will show whether mistakes in practice have occurred, and the testimony will show whether the physician may be held liable or not. If

certain acts of a physician are without doubt gross mistakes, as for example opening of an artery which is left without being tied, or the removal of an organ necessary for life, there are many others which will provoke a discussion among experts, and if a perfect accord is not arrived at, it would be better practice, in our opinion, for the court to pronounce against the liability of the accused, or at least submit the case to a new set of experts.

In obstetric practice how many unfortunate outcomes are the result, not only of the inexperience of the attending physician, but also a profound ignorance of the practice and science of this all-important art. Labors, it is true, oftentimes are complicated, necessitating serious operative interference, and nearly always surrounded by unforeseen mishaps and accidents. Besides, they are of incontestable difficulty, and usually it is not the physician, but fatality, that holds in its grasp success or death. Now, although the judge should take into serious consideration these points, it is nevertheless true that he should be severe when it is shown that ignorance on the part of the physician is the cause of the mishap. In France the abuse of violent means has always been considered as a serious mistake, and likewise severe rupture of the perineum, etc., have been held as instances of civil malpractice. There have been cases on record, both in this country and abroad, in which, by rupture of the vagina during labor, the intestines have come through the rent and have been mistaken for the head of the child, resulting in death to the mother from rupture of the gut by the traction exercised upon it. Nevertheless, many eminent physicians have declared that this mistake should not be considered reprehensible, because they hold that the intestine and fetal head may resemble one another so closely that even a very competent operator might not detect the difference. It is related by Toulmouche that experts consulted in an affair of this kind declared that " even a very experienced physician might, under certain circumstances, mistake loops of intestine for the head of the child," and he goes on to say that " by introducing the hand into the vagina a mass of intestine has been mistaken for the fetal head. The nervous exhaustion and fatigue of the operator may be the cause for such mistakes."

Violent tractions, resulting in fatal consequences for the mother, unfortunately occur too frequently. The famous Tardieu relates that during the month of August, 1839, a student who represented himself as a physician went to deliver a woman in labor for three hours, pulled upon the uterus until the organ was entirely separated from the body, leaving only one of the tubes, both ovaries and a portion of the broad ligaments.

In 1862, a physician, summoned for a labor, tore away the arm of the child by a violent traction, and thus rendered more difficult the delivery by three physicians who later on operated. According to their report, the act of the physician constituted a fact in contradiction to all rules of the art and ordinary common sense, and this violent maneuvre, having produced internal contusions, had contributed in prolonging the illness of the mother. Consequently, the Tribunal of Nantes, basing its decision on the opinion of the experts, condemned the defendant.

The fact of not having recognized a post-partem hemorrhage has been considered as a case of negligence by the French courts, as follows: " Since the physician has committed the double error by prescribing cold drinks, and another still more serious, in not recognizing the occurrence of the hemorrhage, and especially from the fact that he did not remain with the patient," [3] etc.

This leads me to narrate one of the most tragic, and at the same time perhaps the most ardent, trials for malpractice that has ever been heard. The facts of the case are briefly as follows:

On the 11th of September, 1897, Dr. L., living at Charonne, was requested in the night to deliver Mrs. F. He took with him a pair of forceps, the only instrument in his possession, to proceed to the obstetrical operation, and arrived at the house of Mrs. F. whom he found attended by a midwife.

The patient had had five previous labors, but the present one presented very great difficulty. Dr. L. vainly applied the forceps three times, the use of which, according to the testimony of those present at the operation, he was not familiar with, and obtaining no result the doctor declared that there was no other way of going on excepting by perforating the child's head. The doctor arranged for the operation of craniotomy, but he did not own any of the usual instruments employed for this operation. After having ascertained that the heart sounds of the child were no longer audible he tried to use the points of his forceps which was too short, and having asked the husband for an instrument, the latter gave the doctor a mattress needle, which he thought he could use. With the aid of this needle, which had not been rendered aseptic, he perforated the head of the child and, with a large scissors, which he applied on the child's head, the skull was perforated by hammering it in. After this, Dr. L. was not long in delivering the body. He then left the mother, believing to have successfully performed a very difficult operation.

Mrs. F. soon showed symptoms of peritonitis, and was taken to the hospital where she died three days later. Dr. L. was sued as the direct and involuntary cause of this death. The experts appointed by the court concluded that the death was due to a peritonitis resulting from a double perforation of the bladder; that this double perforation had been made by a pointed instrument such as the needle used by Dr. L.

The court concluded that (1) Dr. L. was inexperienced in the practice of obstetrical operations, and in the use of the forceps. (2) That he did not call another physician when he found himself in the presence of an operation as serious as craniotomy and which he had never performed. (3) That he had given evidence, in performing craniotomy, of a carelessness and manifest ignorance of those things that every professional man should

[3] Tribunal correct, Seine. 11 avril 1852.

know, because after having introduced the mattress needle, L. did not direct it either with the hands or the fingers, and that, consequently, he had been unable to prevent the disorders which had been produced in the organs of the woman.

In spite of the opinion of Professor Pinard, who declared that the perforation in the bladder could have been produced by splinters of bone, and that Dr. L. must have directed the needle, because if he had not done so the autopsy would have shown lesions in the vaginal sac, nevertheless Dr. L. was found guilty and sentenced.

The result of the trial caused much feeling in the lay press and medical circles. It must be admitted that the court was not only extremely rigorous, but that it went beyond the limits of its power as regards medical liability. In the first place, on what testimony could it base its opinion that Dr. L. handled the forceps badly? Simply on that given by people, honest without a doubt, but whose competence was quite insufficient to be of any value whatsoever.

Secondly, the court considered it a very serious mistake on the part of the doctor not to have called another physician. Did he have the time? Dr. Magyrier, called as an expert, declared at the trial that Dr. L. was guilty of this dilemma: either not to perform the operation, and the woman would die, or to perform it under particularly difficult conditions, thus offering the only chance of saving the life of the patient. And even supposing that Dr. Magyrier and the other experts should have declared that Dr. L. had time to call in another physician, the fact that he believed that he did not have a minute to lose would have been on his part an error in prognosis, the appreciation of which is not within the competency of the courts, and cannot give rise to the question of liability.

And lastly, the most serious charge made against Dr. L. was the carelessness of which he showed proof in the performance of craniotomy. In the first place, he had not rendered his needle aseptic. Now, we believe, that asepsis or antisepsis is a purely scientific question, and a court is not in any position to declare that a physician was right or wrong, to follow or not to follow the aseptic or antiseptic technic. Dr. L. had not directed the needle with either his hands or his fingers, and this had for a result, according to Drs. Socquet and Magyrier, perforation of the bladder and fatal peritonitis. It should be pointed out that the experts were not unanimous in their opinion, and Professor Pinard declared that it was not established that the perforation of the bladder had been produced by the mattress needle, and that, on the other hand, it appeared most probable that Dr. L. had directed it in its course.

The court should have taken into consideration the difficulties presented by the operation for a young physician who did not have the necessary instruments, for the nervous strain under which it was impossible for him not to be, and lastly, basing itself on the conclusions of the experts, who said that the operator had not proceeded " with all desirable prudence and skillfulness," to acquit Dr. L. It preferred, contrary to the jurisprudence established up to that time, to pronounce itself on purely scientific questions and on the skillfulness with which an operation had been performed. From this resulted a judgment that the Court of Appeals of Paris hastened to reverse. In a decision rendered on March 4, 1898, it acquitted Dr. L. and made *nil* all the charges that the lower court had made against the defendant. As to the lesions found at autopsy, the court declared with reason that they were the result not of an operative error, but of an operative accident.

It would appear that in matters surgical the mistakes would be more visible, and that the rôle of a magistrate destined to appreciate them would be easier; but here again one cannot surround oneself with too many precautions, and the best expert testimony should be consulted. Tourdes says: " In surgery the results are tangible, and nevertheless it is often difficult to appreciate whether or not an error has been committed, whether it has produced complications and whether it has rendered the operator liable for malpractice. One should distinguish between a gross mistake and an unfortunate case. A surgeon, ordinarily most capable, may have a moment of weakness. Who would dare to undertake a perilous operation, the last hope for the patient, if the slightest deviation of the scalpel, aggravating the peril, should give rise to lawsuits?" In 1835, Dr. Beaude wrote as follows in the *Gazette des Tribunaux:* " Can one believe that it is an easy matter to give an opinion on a case of surgery when all is consummated, when the act is accomplished? Who would be able to state what the situation of the patient and the surgeon was, what were the exigencies of the moment and what dangers the surgeon believed to have set aside in practicing those very mutilations whose traces alone now afflict you?"

Laparotomy, that not forty years ago was considered so dangerous that it was only reserved for hopeless cases, is to-day a most ordinary operation. Nevertheless, numerous cases in which the physician is liable for malpractice, due to gross error committed during a surgical operation, are not infrequent, but which time will forbid discussing. The question of anesthesia could also be discussed with profit, but would carry us far beyond the intended limits of this paper, and having ended with the question of civil malpractice as understood in France, we would resume the question of the jurisprudence as follows: In principle, the physician, like any other citizen, is liable for his acts, but his liability has limits; and with Dupin we may conclude "that the physician and the surgeon are not indefinitely liable, but they are sometimes; they are not always, but one cannot say that they never are."

We do not dispute the fact that in applying rules that we have developed in this paper, it might sometimes happen that a physician having by his negligence committed an injury might escape justice. The most perfect law can only allow the punishment of mistakes which are both

evident and certain. It would be unjust should it punish a presumed mistake, one which is suspected but which cannot be established by facts, because although it allows the punishment of the guilty it would also have a most odious result, namely, to strike honest and devoted members of the medical profession. Medicine has its source in the most noble sentiments of the human heart and represents all that there is noble in our moral nature. As the conscience becomes more enlightened, instinctive compassion for the suffering of others becomes more marked, it expands and transforms into a moral and religious idea, namely, that of duty, whose highest and purest expression is the love of man for his fellow beings, in charity, and in devotion to his fellows.

Tradition shows that among the primitive people religion and medicine were confounded, and Christ himself cured the sick and resuscitated the dead. Christianism founded religious corporations devoted to the treatment of the sick; it created hospitals and multiplied in every imaginable way institutions for giving medical assistance. The most obscure physician incessantly comes in contact with things which strike the vulgar with terror. Contagion, infection, the miasms of epidemics are the dangers that he braves, not once by chance and under the observation of the world, but every day, obscurely, without any hope of reward or distinction. Death menaces at every hour him who disputes its victims. It menaces him in silence by the sick bed, and again threatens him brutally, when under the balls of the battlefield he comes to dress the wounds of the enemy. But the physician does not withdraw, and yet he knows all this, because although he goes there with his life, he also carries his honor with him, and the honor of the physician is precisely his devotion to humanity.

One calls upon the devotion of the physician in all its forms, and everywhere he responds to the call, gives his work and is everywhere prodigal with his science and his life. The world and the public finds this so natural, because it has become so rooted in custom, that, with the aid of ingratitude, liberality and devotion on his part have finally ended in seriously compromising the professional future. To-day society demands long studies, serious guaranties of scientific attainment which are by no means gratuitous, as well as practical capacity. To-morrow it will summon this physician and will accept his devotion in all its forms. What makes the beautiful profession of medicine so noble is, above all, the moral value that goes with it, and this value is independent of any official position. No matter what position one holds in medical hierarchy, one may be proud of the services rendered and of his moral dignity. It belongs to the modest practitioner who with difficulty crosses the snowy mountains to reach the sick bed just as much as to the fashionable physician who rolls in his carriage over the streets of the great cities.

The medical fraternity is the symbol of legality, and places in the same ranks the dignity of the physician of the poor and that of the physician of the rich, because everywhere where medicine is exercised it is at the service of humanity at large.

It is in his own conscience that the physician should always look for strength and courage, and it is here that he will find the most powerful stimulant for sustaining him everywhere and forever at the height of his mission. If he succeeds, the practice of his profession will reserve for him the greatest and the most noble recompenses. To preserve the head of a family, a mother for her children, a child to his parents; to give health to the workman who has only his arms to sustain his family and keep it from misery; to bring to light a child whose life is disputed by death,— all these are intimate joys for him who has a medical conscience and which compensate the many trials of life. To cure disease and preserve health is the essential aim of medicine. To attain this end, to realize this mission, the practice of medicine can only follow one general direction, and that is to employ what is useful and do away with everything which is harmful. The essence of medicine resides in this one thing, and it is to this end that all art and all practical tendencies of medical science aim.

## Medical Progress.

### REPORT ON PEDIATRICS.

BY THOMAS MORGAN ROTCH, M.D., AND JOHN LOVETT MORSE, M.D.

#### PSEUDO-ASCITES.[1]

While free fluid in the peritoneal cavity is ordinarily recognizable with ease, other conditions may cause similar symptoms. Dr. L. Tobler has described under the name of "pseudo-ascites" a condition which is dependent on the presence of fluid in a distended small intestine with an elongated mesentery. The affection was observed in children between two and one-half and nine years of age, and especially in girls. It is characterized by gradual increase in the size of the abdomen, in connection with continued, intermittent or recurrent diarrhea, lasting for months or years. The child, which may likewise be rhachitic, becomes debilitated and emaciated. It may exhibit also enlarged lymphatic glands or tuberculosis of the bones or lungs. There is, as a rule, no fever, and subjective symptoms are usually wanting, or there may, from time to time, be complaint of abdominal pain.

As a rule, the abdomen itself is distended, its cutaneous covering stretched, shining or scaly, the umbilicus obliterated, the veins distinct. In the standing posture the abdomen is not rarely pendulous, forming at times a transverse fold at the symphysis, and frequently the resistance is increased in the lower portions. Variations in the state of the abdomen take place, and distention may be replaced by relaxation, with a sense of doughy resistance in the hypogastrium, and at times a splashing sound may be appreciable. Undulation may be present in either event, the most distinct and shortest wave impulse being obtained when the area of dullness is considerable and symmetrical and the tension

of the abdominal walls is marked. The impulse is not appreciable above the level of dullness as it is in the presence of true ascites. The percussion-dullness varies in extent, position, outline and mobility in individual cases and in the same case at different times.

The condition must be differentiated, especially from tuberculous peritonitis. In both the physical signs develop gradually, but the latter is likely to be attended with fever, severe persistent pain, and uninterruptedly progressive emaciation, while in the former the signs are variable, with remissions and exacerbations. Pseudo-ascites is further characterized by diarrhea, the stools being numerous, often copious and presenting catarrhal features, while the dejections of tuberculous peritonitis are few and thin. Although the physical signs are suggestive of the presence of fluid free in the peritoneal cavity, such a condition is not found on operation or at autopsy. The peritoneum is, as a rule, entirely uninvolved, and solid and cystic tumors are wanting. The phenomena are best explained by the presence of fluid in portions of the intestinal tract, whose tone is impaired as a result of catarrhal conditions, and which are at times displaced downward in conjunction with elongation of the mesentery.

### ANEMIA INFANTUM PSEUDO-LEUCEMICA.[2]

After reviewing the literature hastily, Lehndorff reports a fatal case in a baby of eighteen months. There was marked enlargement of both liver and spleen, with all the symptoms of a severe progressive anemia. There was marked oligochromemia, the hemoglobin falling as low as 10%. There was very marked diminution in the number of red corpuscles, with marked variation in their size and shape, and polychromatophilia, while many of them showed granulations. Nucleated cells were nearly as numerous as white corpuscles. Normoblasts were from five to eight times as numerous as megaloblasts. Nuclear figures were common. The white corpuscles varied between 15,000 and 40,000, and showed marked polymorphism. The large mononuclear cells and transition forms were especially increased. Mast cells were very rare. Myelocytes were usually not numerous, but at one time reached 12%.

The autopsy showed nothing macroscopically characteristic of leucemia. Microscopic examination, especially of the liver and kidneys, showed pictures which were entirely identical with those which are usually seen in myelemia. The spleen and lymph glands were comparatively much less affected, however, than the liver and kidneys, the myeloid transformation in them being very slight. Striking, also, was the absence of pigment and of siderosis.

He concludes that, with the exception of a few cases, most of those reported have absolutely nothing to do with the disease, and that the most varied pathological conditions have been described under the name of anemia infantum pseudo-leucemica. He thinks that in connection with the well-known clinical picture, the characteristic condition of the blood — severe anemia, numerous nucleated red corpuscles, especially megaloblasts, nuclear figures, polymorphous leucocytosis of moderate grade with a variable percentage of neutrophilic myelocytes — makes a pretty definite symptom complex.

He then calls attention to the fact that there are no accurate investigations of the morphology of the red marrow in infancy, either under normal conditions or in disease, especially in leucemia, and that the diagnosis is therefore rendered much more difficult. He states that the occurrence of foci of myeloid tissue in the various organs may be regarded as an embryonal reversion, and that the less developed the organism, the more easily the blood-forming function may be awakened in the various organs. An unknown noxious agency, as, for example, severe rhachitis or congenital syphilis, injures severely the hematopoetic apparatus. Myeloid foci may then develop in the various organs as the result of the reaction of the system.

He concludes that "anemia pseudo-leucemica" may be isolated as a well characterized symptom complex, and that in all probability it represents myelogenous leucemia in infancy, the clinical course and pathological anatomy being modified through the anatomical peculiarities and perhaps also through the concurrent diseases of this period. He thinks, however, that it is too early to give up the present name.

### THE BLOOD IN CHOREA MINOR AND TIC CONVULSIF.[3]

Schaps examined the blood several times in each of eleven cases of chorea in children between six and seventeen years of age. He found usually, but not always, a slight or medium leucocytosis. In individual cases the number of the leucocytes varied considerably without any evident cause. In four of the cases there was an increase in the number of eosinophilic cells, and in four others an increase in the number of lymphocytes. The red corpuscles were counted in four cases and no marked variation from the normal found. Supposing that the anomalies found in the blood in chorea were due to the infectious nature of the disease, he attempted to confirm this by examining the blood in several cases of tic convulsif. He hoped to find differences which would be of value in diagnosis. In two of the three cases which he examined, however, there was a leucocytosis present. In both, moreover, there was a lymphocytosis. He suggests that as both diseases are accompanied by more or less violent muscular action, that the blood changes may have a mechanical cause. He concludes that, at any rate, neither a leucocytosis nor a lymphocytosis alone is proof of the infectious nature of a disease.

### EOSINOPHILIA IN AN INFANT NURSED BY A MOTHER AFFECTED WITH TAPEWORM.[4]

An infant, which was normal at birth and gained regularly for a time, began to lose weight, strength and color when about two months old.

After a few weeks the milk and blood were examined. The milk showed nothing abnormal. The blood contained 17% of eosinophiles. The mother's blood contained 8% of eosinophiles. Examination of the mother's feces showed the presence of *tenia mediocanellata*. Two weeks after the removal of the worm, the eosinophiles in the infant's blood had fallen to 2½%.

### THE ELEMENTS OF TISSUE CALCIFICATION AND THEIR RELATION TO RHACHITIS.[5]

This paper begins with a long experimental study on both children and animals with regard to the absorption of calcium. The experimental part should be read in the original, as it is not suitable for abstraction. He shows that both living and dead animal tissues have the power to take calcium salts out of solution. This power is not limited to bone and cartilage. The calcium is not held by any "vital" function of the cells or in chemical combination. The combination must be mechanical as the result of an affinity of the body tissues for calcium ions. Experiments with rhachitic bone and cartilage show that their ability to hold calcium is the same as that of normal bone and cartilage. Rhachitis is, therefore, not due to a diminished supply of calcium or to a diminution in the power to absorb calcium. His experiments and others' also prove that rhachitis and pseudo-rhachitis produced by giving food in low calcium are different processes, and hence arguments as to the nature of rhachitis based on the assumption that the two processes are the same are unsound.

In the second part he takes up the literature of the calcification of tissue and draws the following conclusions from his study of the literature. A formative impulse, apparently originating in the bone (and cartilage) cells at a certain stage of their development, causes a progressive change of a certain portion of the surrounding tissue, as the result of which this tissue acquires a specific (originally at any rate mechanical) affinity for the calcium salts of the blood and of the tissue fluids. This portion is at first saturated with calcium salts in solution which are precipitated and go into combination with the tissues.

In rhachitis the calcium salts are stored in insufficient quantity or are imperfectly fixed because the specific affinity is lacking. The reason of this is an incomplete metaplasia of the tissue. Absolute proof of this is, however, undoubtedly lacking, but it is imaginable that there is a functional disturbance in the life of those cells whose active principle (somewhat in the nature of an autolytic ferment) should exert a transforming action on the surrounding tissues.

The generally recognized therapeutic action of phosphorus upon rhachitic processes is in accordance with this conception, as it is well-known that the use of phosphorus incites to a marked degree destructive processes in the normal body which may be included in the autolytic group.

### NORMAL PERIODICITY OF THE GAIN IN WEIGHT OF CHILDREN.[6]

Karnitzky reports his observations on his own five children who were well and developed normally. At the beginning of the period of observation, which lasted between three and four years, the oldest child was twelve and one-half years old, the youngest, four years old. During a year of this time all the children were weighed daily, in the morning. All the children showed a regular periodicity in their development. Three periods could be distinctly recognized. First, a marked increase in the weight curve in the autumn, from August to the middle of November, or the end of December; second, a moderate increase in weight from the end of December until the end of March, or the beginning of April; and finally, a diminution in the weight from the end of March or the beginning of April to the end of June or July. This same regularity in the variation in the weight was manifest in the three other years in which the weighings were not quite so frequent. Karnitzky is certain that his observations show that the variations in development were not accidental, but due to the influence of the time of year.

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(*To be continued.*)

## Reports of Societies.

## AMERICAN DERMATOLOGICAL ASSOCIATION.

TWENTY-EIGHTH ANNUAL MEETING, HELD AT NIAGARA FALLS, N. Y., JUNE 2, 3, 1904.

(Concluded from No. 23, page 633.)

### EXHIBITION OF LANTERN SLIDES ILLUSTRATING CERTAIN HISTOLOGICAL FEATURES OF SKIN DISEASES.

DR. JOHN A. FORDYCE of New York.

SECOND DAY, FRIDAY, JUNE 3.

### GENERAL DISCUSSION: AFFECTIONS OF THE MUCOUS MEMBRANES IN RELATION TO SKIN DISEASES.

DRS. JOHN A. FORDYCE of New York City and MARTIN F. ENGMAN of St. Louis.

DR. FORDYCE, in his paper, stated that our knowledge of mucous membrane affections which were associated with skin diseases, aside from certain observations on the mucous membrane of the urethra and vagina, had been chiefly obtained from a study of the lesions which were met with in the mouth, nose and upper air passages. Clinical observation, confirmed by autopsies in certain cases, had taught us that the mucous membrane of the gastro-intestinal canal, as well as that of the upper air passages, might be implicated at the same time, before, or after the cutaneous affection.

Because of their abundant vessel and nerve supply, the mucous membranes were prone to first reflect the

action of the poison of the acute exanthemata, or any other toxic agent in the general blood-stream which acted on the neuro-vascular apparatus or the vessel walls. Furthermore, on account of anatomical and vascular differences, the clinical course and symptomatology of mucous membrane affections might differ in a marked degree from similar skin eruptions.

As regarded the diagnosis of mucous membrane lesions in general, the usual rules which applied to purely cutaneous ones, often failed. There was less color contrast on account of the more translucent nature of the epidermic covering; vesicles, bullæ and pustules did not long exist as such; papular lesions were less sharply defined and more easily eroded; infiltrations readily ulcerated and became infected, and squamous types underwent modification by reason of the moisture of the epithelial cells. We might have to confirm our belief in the existence of a certain disease of these structures by the coincidence of the skin eruption, or by a process of exclusion. For example, few would care to diagnose lichen planus or lupus erythematosus of the mouth independent of the existence of the suspected disease on the skin.

The author then discussed, in turn, lupus erythematosus, lichen planus, leucokeratosis, psoriasis, precancerous keratosis, lupus and syphilitic lesions of the mucous membranes.

Dr. Martin F. Engman, in continuing the discussion, divided the affections included in his paper into 1. Those diseases which affected both the mucous membranes and the skin by direct local auto-inoculation from one to the other. 2. Those diseases which affected both the skin and the mucous membrane through general systemic involvement. (*a*) The action upon the skin and mucous membranes of toxins metabolically produced in the system, with or without the aid of micro-organisms or other known agents; (*b*) The formation of emboli of micro-organisms in the skin and mucous membranes.

Under the first division, the author discussed eczematoid dermatitis; bullous impetigo; secondary invasion of the buccal mucous membrane from the skin, and the skin from the mouth; condyloma or acanthomata, which he said were frequently associated with seborrhoic dermatitis of the mucous membrane, though they were probably due to a special infection; fungi; parasites and various toxins. Under the second division he discussed urticaria, pemphigus, lupus erythematosus, lichen planus, pigmentary diseases, erythema multiform, impetigo herpetiformis, lupus, xanthoma and infections by gonococci.

Dr James C. White of Boston said that although Drs. Fordyce and Engman had mentioned some thirty or forty dermatoses which were reflected either primarily or secondarily on the mucous membranes, it was strange that such conditions were not still more common. In certain cutaneous affections the skin was involved universally and to an intense degree, and yet the mucous membranes remained absolutely free from any sympathetic manifestations whatever. The speaker referred to the frequency with which erysipelas had its origin in the nasal cavity, and was due to the habit of forcibly removing scales and crusts from the mucous membrane of the nose. He also mentioned a a form of acute inflammation of the lower lip and extending a short distance into the cavity of the mouth, which was not infrequently observed in the late summer and autumn, and was the result of eating corn off the cob.

Dr. Hyde said the occurrence of an erysipelatoid flush extending to the face as the result of picking the nose was quite common, but that it was the cause of true erysipelas he strongly doubted. He had never seen it produce typical erysipelas, but rather a pseudo-erysipelas.

Dr. Gilcrist said that an epithelioma not infrequently developed at the site of syphilitic plaques on the tongue, and surgeons were inclined to blame the dermatologist for not recognizing this condition earlier.

Dr. Henry G. Anthony of Chicago cited a case which illustrated the fact that clinically it was sometimes difficult to determine when epitheliomatous changes had commenced in these plaques.

Dr. Frank H. Montgomery called attention to the fact that in a large percentage of cases, lupus vulgaris began in the nasal mucous membrane.

Dr. William T. Corlett said that in certain cases of eczema of the upper and lower lips he attributed the eruption to the habit of sucking or moistening the lips.

Dr. Shepherd emphasized the importance of a radical operation in epithelioma of the tongue.

Dr. Pusey in discussing leukoplakia of the tongue, stated that he was entirely in accord with what had been said regarding the dangerous character of these lesions. The number of epitheliomata that developed in them was very large.

### LICHEN PLANUS VERRUCOSUS.

Dr. Augustus Ravogli of Cincinnati: The author stated that it was only an anomaly of the lesions of lichen which, on account of an increased infiltration, developed to such an extent and so unevenly as to deserve the name of lichen verrucosis. The lesions usually appeared in those parts where a stasis was caused by difficulty of circulation. In the lesions of lichen hypertrophicus the blood vessels were primarily affected, and not only an infiltration had taken place, but also an interstitial hemorrhage. The collagenous tissues had greatly increased and the elastic elements similarly decreased. The hypertrophic condition of the epidermis was the result of the hypertrophy of the derma. As to treatment, local applications were necessary. Formaldehyd had produced satisfactory results.

Dr. Zeisler said he had practically given up the use of arsenic in the treatment of lichen planus, and had come to look upon this old time remedy as very unreliable in this affection. He had found the protoiodide of mercury much more reliable. In at least half a dozen cases, the x-rays had given him excellent results in the hypertrophic form of the disease.

Dr. Hyde agreed with Dr. Zeisler that in the routine treatment of lichen planus, the internal use of mercury was preferable to arsenic, and that it should be combined with the local use of the x-rays.

Dr. Engman thought the hypertrophic form of lichen planus was not rare, particularly in women with poor circulation. Histologically, all types of the disease were vascular in character. The speaker said he favored the internal use of mercury, and in order to avoid local irritation he laid special stress upon the use of an anti-pruritic salve.

Dr. Stelwagon said he still employed arsenic with much confidence in the treatment of lichen planus. In many of the chronic cases, the disease was markedly improved and its extension limited by heroic doses of the drug.

### AN INQUIRY INTO THE ETIOLOGY AND NATURE OF TOXIC ERYTHEMATA.

Dr. J. F. Schamberg of Philadelphia: The writer said that the cutaneous manifestations of the erythema group of skin diseases were so protean and varied that a satisfactory classification appeared well nigh impossible in the present state of our knowledge. If the

cutaneous features of this group were varied, what must be said of the almost infinite variety of causes that gave rise to them. A classification based upon etiological considerations would appear to be beset with even greater difficulties. It would seem possible, however, to correlate certain facts in connection with the causation of these phenomena which might tend towards generalization and simplification rather than analysis and differentiation. The following classification of causes was tentatively suggested and discussed: 1. Bacterial and protozoic toxins. 2. Ptomaines. 3. Leucomaines and their metabolic poisons. 4. Drugs.

DR. ANDREW P. BIDDLE of Detroit referred to the frequency with which eruptions followed the injection of diphtheritic antitoxin, and stated that efforts made to ascertain the cause of these eruptions had thus far proven fruitless.

DR. RAVOGLI called attention to the importance of the vasomotor nerves as a possible factor in the production of toxic erythemata.

The following officers were elected for the ensuing year: President, Dr. William T. Corlett of Cleveland; vice-president, Dr. Frank H. Montgomery of Chicago; secretary and treasurer, Dr. Charles J. White of Boston; member of council, Dr. John A. Fordyce of New York. It was decided to hold the next meeting of the Association in New York City, Dec. 28, 29 and 30, 1905.

## Recent Literature.

*A Manual of Fever Nursing.* By REYNOLD WEBB WILCOX, A.M., M.D., LL.D. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1904.

Dr. Wilcox offers in this volume the substance of lectures on the subject of fever nursing delivered to the nurses of St. Mark's Hospital, New York, in 1903–4. The book contains much more than its title implies, inasmuch as it discusses the symptomatology and general clinical course of various diseases, as well as the methods of caring for these conditions. This is wholly in accord with the modern method of lecturing to nurses, which have come to be rather dissertations on medical topics than details of care of the patients. It is, therefore, merely to be regretted that Dr. Wilcox has not extended the title of his volume to signify more accurately what the text as a matter of fact contains. The book is certainly of value, and may be read with much profit by nurses and elementary students generally.

*How to Cook for the Sick and Convalescent.* Arranged for the Physician, Trained Nurse and Home Use. By HELEN V. SACHSE. Second edition, revised and enlarged. Philadelphia: J. B. Lippincott Company. 1904.

*Practical Dietetics with Reference to Diet in Disease.* By ALIDA FRANCES PATTEE. Second edition, revised and enlarged. New York: 1904.

These two small volumes have a somewhat similar aim. Each has reached a second edition. In the first volume some seventy recipes have been added to those contained in the first edition, and the attempt is made to place the preparation of food on as exact a basis as is the prescription of medicine. The classification of recipes for ready reference is placed at the beginning of the book and is to be recommended. The remainder of the volume is taken up with directions as to the cooking of food.

The second volume, somewhat unfortunately bound so far as appearance is concerned, is a book very like the one to which we have just alluded, in its general make-up. In addition, however, to the details of recipes, a section is devoted to diet in disease wherein definite conditions are taken up with the proper dietary prescriptions for each. This should prove useful, particularly to the nurse.

The tendency to devote more attention than hitherto to diet as a means of treatment is certainly worthy of encouragement. Such volumes as the foregoing help toward that end.

*The Urine and Clinical Chemistry of the Gastric Contents, the Common Poisons, and Milk.* By J. W. HOLLAND, M.D., Professor of Medical Chemistry and Toxicology, Jefferson Medical College, Philadelphia. Seventh edition, revised and enlarged. Philadelphia: P. Blakiston's Son & Co. 1904.

This is merely a laboratory manual consisting of 172 pages. A variety of subjects is touched upon, but the greater part of the book is devoted to the urine. The subject matter is, however, so brief that it cannot be considered more than a guide to laboratory work. It is probable that the book is found most useful in the classroom of the author.

*A Textbook of Quantitative Chemical Analysis.* By J. C. OLSEN, A.M., Ph.D., Professor of Analytical Chemistry in the Polytechnic Institute of Brooklyn. Formerly Fellow of the Johns Hopkins University. New York City: D. Van Nostrand & Co. 1904.

This is a comprehensive treatise on quantitative chemical analysis by gravimetric, electrolytic, volumetric, and gasometric methods. The book contains seventy-two laboratory exercises giving the analysis of pure salts, alloys, mineral and technical products.

The author has prepared the work primarily for the use of his students and it has been admirably done. The practical exercises are well prepared, and the text is clearly written and remarkably free from typographical errors. Obsolete and new methods, which have not come into general use, have been omitted. The chapter on stoichiometry is especially good and it will serve to aid those who find it difficult to solve the arithmetical problems which are consequent upon quantitative analysis.

There is no doubt of the value of the work as a textbook, and we take pleasure in recommending it to the professional chemist and the student as a work of reference.

*Beri-Beri: Its Symptoms and Symptomatic Treatment.* By Percy Netterville Gerrard, M.D. 8vo. pp. x, 95. With seven diagrams. London: J. & A. Churchill. 1904.

*Beri-Beri: Its Symptoms and Symptomatic Treatment; Being Extracts from "An Essay on Beri-Beri."* By Percy Netterville Gerrard, M.D. 12mo. pp. viii, 53. London: J. & A. Churchill. 1904.

The author of the above essay was formerly surgeon to the district gaol in Kwala Lumpor in the Federated Malay States, and there had wide experience with this "pest *par excellence* of the Malay Archipelago and peninsula," tabulating for study in this little book two hundred and thirty-seven cases. After a brief account of the cardinal symptoms of the disease, the writer gives a vivid description of the various types; wet, mixed, dry, rudimentary, acute, pernicious and spasmodic forms. The pernicious form may prove fatal in a few hours, and the disease in every form is a disease of usually unpleasant surprises. The rudimentary forms may get well for a time, but, unless the victims remove from the country where beri-beri is endemic, they have successive attacks, which may become acute. Strychnine and mercury have proved prejudicial in the treatment. The author believes the disease to be microbic in origin and submits some suggestive and interesting observations of his own upon certain bacteria found in some cases. The details of treatment are clear and full. The work will prove of much value to all who have to deal with tropical diseases. The smaller work is simply a portion of the larger, omitting various tables and theoretical discussions, but retaining the clinical portion.

*Text-book of Nervous Diseases and Psychiatry.* By Charles L. Dana, A.M., M.D. Sixth revised and enlarged edition. 8vo. pp. xii, 690. With 244 illustrations and three plates in black and colors. New York: William Wood & Co. 1904.

With the exception of a few new illustrations and some brief additions and omissions, the sections upon nervous diseases show little change in this new edition. The change in the title indicates the addition of about seventy pages upon diseases of the mind, which embraces the chapters on general paralysis and certain neurasthenic states which were already treated of in the previous editions. In these few pages the author has succeeded in giving a description of the various forms of mental disease which is superior to many of the more ponderous treatises. After a consideration of psychology and the general etiology, pathology, symptomatology and treatment, he gives the first place to a consideration of the minor psychoses under the heading of phrenasthenia, wherein are included the various morbid fears and obsessions. The emphasis placed upon these important mental states and their distinction from the more pronounced forms of mental disease is one of the striking merits of this section. The following chapters treat of dementia precox, melancholia and mania, paranoia, confusional insanity, general paresis, and the psychoses of senility. In these the writer follows Kraepelin in the main, but not in the slavish manner so often noted, and in more than one instance he dissents wisely from Kraepelin's doctrines, notably in the chapter on melancholia. The work has long held the rank of the best of the shorter treatises on nervous diseases; it can add the further title of the best brief treatise on mental disease.

*Case Teaching in Surgery.* By Herbert L. Burrell, M.D., and John Bapst Blake, M.D. Philadelphia: P. Blakiston's Son & Co. 1904.

The case method of teaching was first advocated in this Journal in January, 1900. Since that time case-books on neurology and medicine have been published, and now a book containing seventy-five selected cases in surgery appears. The compilers point out many advantages of the method, such as the boundless amount of material it affords for study, the variations of common diseases it may illustrate, the unique cases it may present, and the insight which it gives the instructor into the students' defects and abilities. Emphasis is laid on the importance of the method in requiring the students to be active and productive rather than passive and receptive. Dr. Blake contributes an explanatory note telling how he uses the method.

The records of cases are stated briefly. They occupy only the left-hand pages; the right-hand pages are left blank for student notes on diagnosis, prognosis and treatment. Still other matters need to be settled in Case 13, page 34: "Male; 59; married; laborer." "Vaginal examination negative save for torn perineum."

*The Essentials of Chemical Physiology.* By W. D. Halliburton, M.D., F.R.S., Fellow of the Royal College of Physicians; Professor of Physiology in King's College, London; Author of "Textbook of Chemical Physiology and Pathology." Fifth edition. London and New York: Longmans, Green & Co. 1904.

The fact that this little book has reached its fifth edition is evidence of its popularity. It is merely what its name implies, — the essentials of chemical physiology, and should not be mistaken for the more comprehensive work on this and allied subjects by the same author. This edition is remarkable for numerous changes and additions which materially improve the book. We regret, however, that certain subjects have not been given a place, — for example, the directions for the quantitative determination of the lactose in milk. In most respects the work is up to date, and undoubtedly it will continue to be received with favor by teachers and students.

THE BOSTON
# Medical and Surgical Journal.

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## THE MICROCOCCUS RHEUMATICUS.

DR. JAMES M. BEATTIE, working in the pathological laboratory of Edinburgh University, has recently published a statement in the *British Medical Journal* bearing on the subject of the etiology of rheumatism. His work is confirmatory of a communication published in January, 1903, in the same journal by Beaton and Walker, who described the microscopic and cultural peculiarities of an organism which they named Micrococcus rheumaticus. Dr. Beattie has repeated and in great measure confirmed their work. He worked with organisms, one of which he obtained from the synovial membrane of a girl having acute rheumatism and recovered from the vegetations of the endocarditis occurring in a rabbit. The other culture was borrowed from another investigator, and the characters of the two are shown to be essentially identical. The details of the microscopic and staining characters may be obtained from the original article. It is our purpose merely to draw attention to the fact that work promising much is being done on the question of the etiology of the obscure class of affections going under the general heading of rheumatism. Dr. Beattie is inclined to think that the organism with which he has been working is absolutely distinct from the streptococci and that pus is not produced by it. It has been maintained that this micrococcus is not the cause of acute rheumatism, but presumably is merely a streptococcus causing the terminal affection. This Dr. Beattie thinks he has shown not to be the case, and that there is good reason to think that the organism is specific in the causation of acute rheumatism. His own statements on the fact are summarized in the following paragraph:

"Even if we admit that the organism can produce suppuration, though I feel considerable doubt on this point, yet ordinarily it does not give rise to pus, but causes in rabbits non-suppurative polyarthritis, endocarditis, etc. These conditions have not been produced by inoculation of what we ordinarily call streptococci. We do not claim that because this organism produces endocarditis therefore it is the causal organism of morbus cordis. What, however, we do claim, is that it can be isolated from cases of typical acute rheumatism; that it can be grown outside the body, there showing characters which are in some respects specific; that in inoculation in animals it produces a combination of lesions which are similar to those of acute rheumatism in the human subject, sometimes specially affecting the joints, sometimes specially the heart, sometimes producing chorea, sometimes producing a combination of these conditions, and that from these lesions the organism can be recovered in pure culture."

We are glad to call attention to this work, indicating as it does a further step in the elucidation of the rheumatoid affections which hitherto have been so baffling in their etiology. Naturally, work of such a character needs repeated confirmation from various laboratories before it may be finally accepted.

## THE PROTOZOON OF SCARLET FEVER.

INSPIRED by Mallory's work, published in 1903, Dr. Charles W. Duval has been carrying out investigations on the protozoön of scarlet fever, publishing his preliminary report in the *University of Pennsylvania Medical Bulletin* for November. It will be remembered that Mallory described certain protozoön-like bodies in the skin of patients dying from scarlet fever, and in the course of his description of the subject mentioned the fact that certain forms occurred in the lymph vessels and spaces of the corium beneath the epidermis as well as between the epidermal cells. Dr. Duval's experiment was based on the fact that if these bodies which lie free in the intercellular lymph spaces were stages in the life cycle of a protozoön they might be drawn into the contents of a vesicle artificially produced.

An opportunity was offered, through the Board of Health and Charities of Philadelphia and through the Bureau of Health, to make a study of scarlet fever occurring at the Municipal Hospital. Cells were studied found in serum which had been taken from vesicles rapidly produced, and in all, eighteen cases were the

subject of study. As a result, the protozoön-like bodies were found in five cases and during the height of the eruption. These bodies, in the majority of instances, were identical with those described by Mallory in the skin, varying in size from two to four microns. They presented forms of definite structure and distinct staining reactions. In three cases the spherical segment forms were found. In one of the cases, which subsequently died on the fifth day of the disease, histological study of the skin showed foci of protozoa completely corresponding with those found in the serum before death. Serum of normal individuals, studied with reference to the existence of protozoa, gave negative results, as well as the contents of vesicles artificially produced on chemically injured skin, nor were the bodies in serum from artificial vesicles produced in other acute exanthemata.

The technique of producing the vesicles was through the use of strong ammonia, which raises a blister in from three to ten minutes without undue pain or discomfort. By taking a piece of sterile absorbent cotton about 2 cm. in diameter, saturated with the reagent and applied closely to the skin selected, it is possible to produce with ease the experimental vesicles. In from two to five minutes the cotton is removed and sterile vaseline is applied. The vaseline is allowed to remain until the vesicle is fully formed, a period of five or six minutes. Vaseline is then removed by xylol, and the contents of the vesicle may then be withdrawn. The serum is clear and free from red blood cells and leucocytes. This Dr. Duval regards as more satisfactory than the ordinary histological examination of the skin, inasmuch as the protozoa are better preserved and undistorted.

It is announced that a full report of this work will appear in the *Archiv fur Pathologische Anatomie*. It will be awaited with much interest, and is certainly of significance in relation to a valuable, but so far as we are aware, hitherto unconfirmed discovery.

## FLIES AS DISSEMINATORS OF TUBERCULOSIS.

In another part of this issue we publish a significant piece of work by Dr. F. T. Lord on the subject of the possibility of the transmission of tuberculosis through the agency of flies. Dr. Lord does not claim for this work absolutely complete originality, although the idea was suggested to him before he had seen any other investigations upon the subject. Previous studies of the bacteria-carrying power of flies have been made, but none of them, we believe, have gone so far as Dr. Lord's in demonstrating the possible menace which these widely prevalent insects may be in relation to the general health of the community. That Dr. Lord's results are of much significance there can be no question. Just how far, however, the facts he has demonstrated may be significant in the dissemination of the disease remains to be worked out more completely in the future. This no doubt may be accomplished now that our attention is directed in so forcible a fashion to the fact that flies may be and, in fact, are carriers of the infection, provided they be given the opportunity to ingest the bacteria.

## THE BRIGHAM HOSPITAL FUND.

The fund left by the late Peter B. Brigham for "a hospital in the city of Boston for the care of sick persons in indigent circumstances, within the County of Suffolk," which has accumulated since the testator's death and which is now supposed to amount to about five million dollars, is in the hands of an extremely competent and judicious board of trustees. At present the ultimate disposition and practical usefulness of this fund is tied up and restrained by legal processes brought in the courts in the name of a disappointed and distant relative. Two decisions have been given against the claims of this plaintiff, one in the Circuit Court and another still more recently in the Court of Appeals. As we understand it, under certain contingencies, an appeal may be taken to the United States Supreme Court; or under certain other contingencies suits may be brought against the trustees in the name of certain other distant relatives. The realization of the fruition of this fund by any sick persons in indigent circumstances may still be remote. In the meantime, before their absolute control of the fund is assured, there seems to be a disposition to instruct the trustees in the daily press as to the intentions of the testator now long dead and as to the proper discharge of their functions and responsibilities.

If these trustees need such instruction, which may be doubted, why not wait until the courts have finally placed them in a position where they are free to act, and where any class of sick persons in indigent circumstances can be benefited by Mr. Peter B. Brigham's good intention in any way? In regard to the report of an unholy alliance between the trustees of the Brigham

Fund and the Harvard Medical School, we are permitted to publish a report to the Hospital Corporation and a letter from the trustees to a committee of the Corporation of Harvard College, which show what the present situation actually is. These will be found on another page of this issue.

## MEDICAL NOTES.

SCHOOLHOUSES — SANITARY AND UNSANITARY. — The last bulletin of the Vermont State Board of Health contains a discussion of this subject which shows that the doctors in the small towns and rural districts of that state are intelligently awake to its importance.

A MEMBER OF THE AUXILIARY CONGRESSIONAL COMMITTEE. — Dr. R. H. Fitz has accepted an appointment by the American Medical Association as a member of the National Auxiliary Congressional Committee of the American Medical Association.

THE CLEVELAND MEDICAL LIBRARY ASSOCIATION. — At the annual meeting of the Cleveland Medical Library Association, Dec. 10 last, Dr. George Ben Johnston of Richmond, Va., read a paper upon "The Medical Men Contributed to the United States by the State of Virginia," a subject upon which he is particularly fitted to speak.

RETIREMENT OF PROFESSOR NAUNYN. — It is announced that Professor Naunyn has resigned his position as professor of internal medicine at Strasburg after a service approaching forty years. It is desired that his students send their names and addresses to Zschocke, Lessingstrasse 31, Strasburg, i. E., in order that an appropriate address may be presented him signed by his former pupils.

INTERNATIONAL MILITARY MEDICAL STATISTICS. — As a supplement to the annual report of the Surgeon-General of the Army for the year 1904, a supplementary pamphlet has been issued dealing with international military medical statistics for 1903. The tables used are those agreed upon at the meeting of the International Commission for the Unification of the Medical Statistics of Armies held at Budapest in 1894, and later modified somewhat. These tables, ten in all, supply an enormous number of facts regarding the army, its diseases and various matters relating to its efficiency.

ROCKEFELLER INSTITUTE. — The Rockefeller Research Laboratory has so far progressed that its corner stone was laid last week. This foundation, it may be remembered, began with an initial endowment of $200,000, which has since been increased to upwards of a million dollars and the likelihood of more to follow as its need is demonstrated. The ceremony consisted in the laying of the corner stone by Dr. Simon Flexner, Chairman of the Governing Board of the Institution, assisted by Drs. T. M. Pruden, L. Emmett Holt and C. A. Herter. The public ceremony of dedication will be held when the building is completed. The location of this building is on a tract of land along the East River in New York extending from 65th to 68th Street and back from the river to Avenue A.

### BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon Dec. 14, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 66, scarlatina 26, typhoid fever 11, measles 6, small pox 0.

BEQUEST TO SHARON SANATORIUM. — By the will of the late Col. William A. Tower of Lexington, the Sharon Sanatorium receives $1,000.

A CENTENARIAN. — It is announced that Mrs. Abigail C. Hunt has recently died in Fairfax, Vt., at the age of one hundred and one years and seven months.

APPOINTMENT OF SURGEON-GENERAL OF THE STATE OF MASSACHUSETTS. — Governor-elect Douglas has appointed Dr. William H. Devine as surgeon-general on his military staff.

NEW FLOATING HOSPITAL. — Plans for the new floating hospital are not yet completed, but sufficient has been done to show in general the dimensions of the new boat. It will be of steel, 170 feet in length, with a beam of 46 feet. The vessel will have five decks arranged for the details of the work, the upper decks naturally being devoted to the patients. It is expected that on the awning deck there will be space for the care of two hundred out-patients. The general arrangement will insure much more complete hospital care than was possible on the old boat.

### NEW YORK.

FELLOWSHIP IN PHYSICAL RESEARCH. — At a meeting of the trustees of Columbia University held Dec. 5, it was announced that Edward D. Adams had made a gift of $50,000 for the foundation of a fellowship in physical research in memory of his son, Ernest K. Adams. The gift is

accompanied by a valuable collection of scientific apparatus to be allotted to the physical, electrical and psychological laboratories of the university.

New York Academy of Medicine. — Drs. C. L. Dana and T. Mitchell Prudden are the candidates for president and vice-president, respectively, of the New York Academy of Medicine voted on Dec. 15.

Large Damages. — On Dec. 8 Clarence E. Vreeland of Newark was awarded $35,000 damages by a Hackensack (New Jersey) jury in a suit brought against the company owning the trolley line between Hackensack and Newark. In an accident on the cars of the company Mr. Vreeland received spinal injuries which rendered him a cripple for life. This is said to be the largest amount of damages ever awarded in a trolley car accident.

Temporary Pavilion at Bellevue Hospital. — At a meeting of the Board of Estimate and Apportionment held Dec. 9, an emergency resolution was passed for the expenditure of $15,000 for the erection of a temporary pavilion on the grounds of Bellevue Hospital. This action was taken in consequence of the representations of Dr. Brannan, president of the board of trustees of Bellevue and Allied Hospitals, who reported that all the hospitals under the direction of the board were already crowded to their capacities, and that some increased accommodation for the exigencies of the winter was absolutely necessary. At the same meeting an appropriation of $50,000 for the expenditures of the Health and Police Departments in connection with the " General Slocum " disaster last summer was also passed.

Mortality in November. — It is very seldom that the mortality in the city in the month of November exceeds that of October, but it is to be noted that this year the October mortality was exceptionally low. The increase was principally in the diseases of the respiratory organs and kidneys. It will be seen, however, that the death-rate was lower than in November of last year. The mortality reported represented an annual death-rate of 16.62, as against 15.81 in the month of October, and 17.26 in November, 1903. Among the diseases which showed an increased fatality were the following: The weekly average of deaths from diphtheria and croup increased from 26.75 in October to 31.5 in November; the weekly average from scarlet fever, from 7.25 to 10.25; from measles, from 4.75 to 6; from pneumonia, from 68.5 to 124.25; from broncho-pneumonia, from 59 to 76; from acute bronchitis, from 22.5 to 29; from pulmonary tuberculosis, from 147.5 to 154.5; from cancer, from 48.75 to 60.25; from Bright's disease and nephritis, from 98.75 to 120; and from organic heart disease, from 87.75 to 96.25. During the month of October no deaths were reported from influenza. In November the weekly average of deaths from this disease was 4.25. Among the diseases in which there was a decreased mortality were the following: The weekly average of deaths from epidemic cerebrospinal meningitis declined from 12.75 to 10.75; from typhoid fever, from 21.25 to 17.5; from diarrheal diseases, from 92 to 43.5; and from diarrheals under two years of age, from 84.75 to 35.5. The corrected death-rate for the month, excluding non-residents and infants under one week old, was 15.81.

## Miscellany.

### THE BRIGHAM HOSPITAL FUND.

REPORT TO CORPORATION OF HOSPITAL.

Boston, Oct. 27, 1902.

The committee appointed at the meeting held May 22, 1902, to consider a location for the hospital to be built by the Corporation, present the following report:

The committee have taken under consideration as many as forty proposed locations within the limits of the city of Boston. The most desirable section of the city, within the limits of which the hospital site should be, is, in the opinion of your committee, that comprising Roxbury, Longwood and Jamaica Plain. Part of this district is close to the center of the city's population and at the same time land values are comparatively low. It is convenient of access for both patients and doctors, and is in the general direction of the city's growth. In addition, neither the City Hospital nor the Massachusetts General Hospital are near enough to this section to give it adequate service. Of the locations offered in this vicinity your committee have examined all or nearly all personally. Your committee have finally selected for recommendation to the full board, a location on what is known as the Francis lot, now owned by Harvard College, at the corner of Huntington Avenue and Francis Street in Longwood, close to Roxbury.

The offer made by the college gives the hospital the choice of any part of about fifteen acres which will adjoin the new Harvard Medical School. The price named is cost to the college, about sixty cents per square foot, but it has been the desire of the college that conveyance of the land be coupled with an agreement or alliance between the hospital and the medical school whose new buildings will be located on another part of the same lot.

Your committee have given much thought to this matter of an alliance, and have sought interviews and made inquiries wherever there appeared a chance of assistance. Particularly important was a meeting held with two representatives from Harvard College, Dr. Henry P. Walcott and Dr. Arthur T. Cabot, and also three representatives of the Harvard Medical School, Dr. J. C. Warren, Dr. Henry P. Bowditch and Dr. William L. Richardson. Dr. Walcott opened the conference by stating the reasons in favor of an alliance

between your board and Harvard College. This statement, in the opinion of your committee, was a very able and convincing one. It was followed by a general debate, in which all the gentlemen in the room took part. After very full and free interchange of views on both sides, it resulted in your committee asking them to submit, in writing, such a proposition as they were prepared to make, for the sale of land and such other views as they wished to present to us.

On a subsequent day your committee met in conference with the resident physician of the Boston City Hospital, Dr. G. H. M. Rowe. His advice was asked in regard to the general subject of location for the proposed hospital, and also in regard to the management of the hospital, so far as the proposed alliance with Harvard College might affect it. Dr. Rowe approved the location on the Francis lot, but was very frank in giving his decided opinion that the hospital should be kept entirely independent of any agreement with organizations for medical instruction. On the other hand, he was equally frank and decided that an alliance with the Harvard Medical School, which left the hospital entirely independent in its conduct of its own affairs, was most desirable.

On June 27, 1902, the proposition from Harvard College, referred to above, was received from a committee of that corporation addressed to Mr. Cochrane. The communication accompanies and is made a part of this report.

After most careful deliberation, the conclusion reached is that your committee do not recommend any purchase of land where an agreement or an alliance is in any sense incident thereto. The best interest of the hospital, and indeed the duty of the members of this corporation in charge of this trust, will be, in the opinion of your committee, to retain absolute independence.

Your committee recognize, however, the advantage of a location next a medical school, and, further, that many times joint action by hospital and school is desirable for both.

Accordingly, your committee recommend an offer to Harvard College subject, of course, to a favorable result of the pending suit of which the board had familiar knowledge, to purchase about ten acres of the Francis lot at the price named, but without restriction or accompanying agreement or alliance. At the same time with transmitting this offer, if the board shall approve it, it is recommended that the president state the position which this board takes with reference to the desired alliance. A draft of such a letter containing both the offer and the statement, is appended to this report.

The conclusion reached as to the size of the lot which the hospital may require, namely ten acres, is based not upon what may probably be necessary for use, but rather upon the desire of your committee that the corporation should have, both for present plans and for further possible extensions, an amount of space which shall be sufficient beyond peradventure.

ALEXANDER COCHRANE, HENRY S. HOWE,
EDMUND D. CODMAN.

LETTER TO CORPORATION OF HARVARD COLLEGE.

BOSTON, Nov. 1902.

To Dr. Henry P. Walcott, Arthur T. Cabot and Charles F. Adams, 2d, Esq., *Committee of the Corporation of Harvard College:*

*Dear Sirs,* — The members of the corporation of the Peter Bent Brigham Hospital have reached a decision on the proposition contained in your communication of June 27, 1902, and I am now authorized to reply as follows:

In the event that the trust funds in our hands shall not be substantially reduced by the claims asserted against them by the heirs of Peter B. Brigham and when those claims shall be disposed of by the final adjudication of the courts, we will accept a conveyance of about ten acres of the Francis lot and will pay therefor its cost to Harvard College, with interest at the rate of 4% added. We shall expect the right to take, if we so elect, light, heat and power for any buildings we may erect on the premises supplied to us from your plant at cost to you and the use of your scientific laboratories without charge.

So far as the charitable purposes of this trust shall in our opinion permit, we hereby declare our desire to promote the objects of your medical school by seeking advice from its Faculty, and by giving careful consideration to its nominations in making appointments to our medical staff, and by permitting access for students to the hospital.

Except for the purchase of the land subject to the defeat as above stated of all claims of the Brigham heirs, we do not enter into any agreement or contract in any sense, but we are ready, if you so desire, to spread this letter upon our records.

We are prepared to pay for the land at once upon receiving an agreement from the college to convey the same to us upon a final adjudication of the Courts adverse to the claims of the Brigham heirs or, in the event that those claims shall be established to a substantial extent, that the college will repay to us the money with interest at 4% per annum.

## CASUALTIES IN ACTION IN TIBET.

MAJOR WIMBERLEY of the Indian Medical Service reports in the *Indian Medical Gazette* a certain number of casualties occurring in action which passed through his hands while serving with the Tibet mission force during Colonel Younghusband's expedition. The variety of wounds is somewhat curious, owing to the varied nature of the arms in the hands of the Tibetans. The prompt and permanent healing of very serious injuries is also of interest, and this must have been due in a measure to the pure air at high elevations, as well as to skilful treatment and the nature of the bullet wounds. Of the 15 killed, 13 were due to gunshot wounds, 1 each to multiple sword cuts and to fracture of the skull from a stone. Of the 68 wounded, 51 were due to gunshot wounds, 10 to sword cuts, and 7 to stones hurled by the enemy. Several of the gunshot wounds were from large bullets weighing three and four pounds.

From a number of cases reported somewhat in detail, a few are appended:

"A man of the Bengal Sappers and Miners was shot right through the neck at Pahla on May 26 by some small, high-velocity projectile, apparently from a Mauser pistol. So far as could be made out, the bullet must have passed between the pharynx and the vertebral column. A first field dressing was applied on the spot. When removed, only a small scab was found on either side, and the man was discharged to duty about a week later, complaining only of slight stiffness in the neck. This was a case which illustrates the wonderful way in which a modern projectile will pass through vital parts without doing any damage. It also shows how well such wounds do when the first original dressing is let alone. But let me add a note

of experience with regard to these first field dressings. It is this: Throw away all the guttapercha waterproof tissue supplied. The drier such wounds are kept the better."

"A Havildar of the Bengal Sappers and Miners was sitting cooking his food in the Gyantse Post, with his back to a substantial protective traverse made of logs and stones. A large *jingal* bullet weighing four pounds — a "Big William" as it was generally known in Gyantse — passed through the traverse, grazed the inner side of his left forearm and adductor surface of his left thigh, and finally buried itself in the ground just between his legs. The skin showed extensive bruising, and finally a large area on the inside of the thigh sloughed, leaving a large, shallow ulcer."

"A Tibetan interpreter with the British force went into Lhassa contrary to orders one night, on a private enterprise. News was brought in next day that he was lying cut to pieces in a Tibetan house in the city. A cooly with an escort was sent for him and he was brought back to camp in the afternoon. He had been lying in a filthy Tibetan house for over sixteen hours after he had been wounded, covered with dirty blankets, and with his wounds bound up with nondescript Tibetan rags.

"He was found to have received no less than ten sword cuts, most of them very severe, and must have lost pints of blood. Of two long scalp wounds, both grooving the skull deeply, one had divided the left temporal, which started spouting when the wounds were being cleaned, and had to be tied; another cut went clean through the left radial, another opened the right wrist joint, and so on. And yet a week later, nearly all the wounds had healed by first intention, and he was walking about, quite cheerful."

## COMMEMORATIVE NOTES ON SAMUEL W. ABBOTT, M.D.

Mr. Editor: In accordance with a vote of this board I send you herewith for publication a copy of the commemorative notice of its late secretary, Dr. S. W. Abbott, which was read at the last board meeting and will appear in the annual report.

Respectfully yours,
John W. Bartol,
*Acting Secretary.*

Samuel Warren Abbott, M.D., was appointed Health Officer of the State Board of Health, Lunacy and Charity on Dec. 2, 1882. Upon the reestablishment of the Board of Health in 1886 he was elected secretary and executive officer of the board. Throughout all these years and until his death on Oct. 22 he was the able, devoted and untiring officer of a service to which he gave with enthusiasm the best years of his life. His capacities in the preparation and discussion of vital statistics were everywhere acknowledged by the masters of the subject, and there was no department of public hygiene which had so great an attraction for him; but he neglected none of the essentials in the administration of the laws for the protection and promotion of the public health.

He gave his early years to the perilous service of his country in time of war, and spent his later years in an equally determined struggle for the safety of the lives of his fellow men.

## RECORD OF MORTALITY

For the Week ending Saturday, December 3, 1904.

| Cities. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid Fever. | Cerebro-spinal Meningitis. |
| New York . . | 3,908,644 | 1,350 | 298 | 20.37 | 20.22 | 2.22 | 1.25 | .96 |
| Chicago . . . | 2,021,086 | 450 | 98 | 23.77 | 14.22 | 2.89 | .66 | .22 |
| Philadelphia | 1,407,968 | 426 | 98 | 23.47 | 16.19 | 3.52 | 1.87 | — |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 167 | 38 | 25.57 | 17.96 | 1.19 | 1.19 | .60 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | — | — | — | — | — | — | — |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 51 | 17 | 13.73 | 15.69 | 5.88 | — | — |
| Boston . . . | 617,950 | 230 | 59 | 23.91 | 17.82 | 1.74 | 3.48 | .87 |
| Worcester . . | 136,925 | 28 | 9 | 10.71 | 10.71 | — | — | 7.14 |
| Fall River . . | 119,349 | 39 | 15 | 30.76 | 17.75 | — | — | — |
| Lowell . . . | 104,402 | 30 | 10 | 20.00 | 10.00 | 10.00 | 3.33 | — |
| Cambridge . | 100,998 | 14 | 5 | 28.56 | 28.56 | 7.14 | — | — |
| Lynn . . . . | 73,875 | 25 | 4 | 16.00 | — | 4.00 | 4.00 | — |
| Lawrence . . | 72,348 | 29 | 9 | 17.24 | 10.34 | 3.44 | — | — |
| Springfield . | 72,020 | — | — | — | — | — | — | — |
| Somerville . | 70,413 | 18 | 6 | 16.67 | 38.88 | — | 11.11 | — |
| New Bedford | 68,863 | 24 | 8 | 20.83 | 29.16 | 4.16 | 4.16 | — |
| Holyoke . . . | 50,538 | 12 | 3 | 16.67 | 8.33 | — | — | — |
| Brockton . . | 46,601 | 8 | 0 | 12.50 | — | — | — | — |
| Newton . . . | 39,310 | 9 | 1 | 11.11 | 22.22 | — | — | — |
| Haverhill . . | 39,061 | 8 | 5 | 37.50 | 12.50 | — | 12.50 | — |
| Malden . . . | 37,205 | 8 | 1 | 25.00 | 12.50 | — | — | — |
| Salem . . . . | 37,188 | 15 | 1 | 6.67 | — | — | — | — |
| Chelsea . . . | 36,499 | 14 | 3 | 14.28 | 21.42 | — | — | — |
| Fitchburg . . | 36,335 | 10 | 1 | 10.00 | 10.00 | — | — | — |
| Taunton . . . | 34,577 | 10 | 2 | 30.00 | 10.00 | — | — | — |
| Everett . . . | 30,209 | 8 | 3 | 25.00 | — | — | 12.50 | 12.50 |
| North Adams | 29,201 | 4 | 2 | — | 25.00 | — | — | — |
| Quincy . . . | 26,798 | 4 | — | — | 25.00 | — | — | — |
| Gloucester . | 26,121 | 13 | 4 | 15.40 | — | — | — | 7.70 |
| Waltham . . | 25,797 | 7 | — | 42.90 | 14.30 | — | — | — |
| Brookline . . | 23,576 | 7 | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | 5 | — | 40 00 | 40.00 | — | — | — |
| Medford . . | 21,956 | 6 | 2 | 16.67 | 33.33 | 16.67 | — | — |
| Chicopee . . | 21,692 | 6 | 3 | 66.67 | — | 16.67 | 16.67 | — |
| Northampton | 20,314 | 7 | 1 | 28.60 | — | — | 14.30 | — |
| Beverly . . . | 15,807 | 7 | 1 | 28.60 | 14.30 | — | 14.30 | — |
| Leominster . | 15,711 | 2 | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 3 | 1 | — | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | 1 | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 2 | 1 | — | — | — | — | — |
| Newburyport | 14,478 | 3 | 0 | — | 33.33 | — | — | — |
| Woburn . . . | 14,315 | 5 | — | — | 20.00 | — | — | — |
| Melrose . . . | 13,819 | 7 | 2 | 28.60 | 14.30 | — | — | — |
| Westfield . . | 13,809 | 4 | — | 25.00 | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 4 | 0 | — | — | — | — | — |
| Revere . . . | 13,609 | 5 | 1 | 20.00 | 60.00 | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 3 | 3 | 33.33 | — | — | — | — |
| Southbridge . | 11,716 | 6 | 3 | 100.00 | — | 33.33 | — | — |
| Watertown . | 11,575 | 4 | 1 | — | — | — | — | — |
| Weymouth . | 11,350 | 5 | 1 | — | — | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,103; under five years of age, 720; principal infectious diseases (small pox, measles, scarlet fever, cerebrospinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 657; acute lung diseases 543, consumption 368, scarlet fever 16, whooping cough 10, cerebrospinal meningitis 21, small pox 2, erysipelas 8, puerperal fever 7, measles 12, typhoid fever 48, diarrheal diseases 85, diphtheria and croup 78.

From whooping cough, New York 4, Chicago 3, Philadelphia 1, Boston 1, Fall River 1. From scarlet fever, New York 10, Chicago 3, Boston 2, Taunton 1. From cerebrospinal meningitis, New York 13, Chicago 1, Baltimore 1, Boston 2, Worcester 2, Gloucester 1, Everett 1. From erysipelas, New York 2, Philadelphia 5, Gardner 1. From small pox, Chicago 2.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending Nov. 19, the death-rate was 16.6. Deaths reported 4,866; acute diseases of the respiratory organs (London) 175, whooping cough 46, diphtheria 78, measles 143, small pox 5, scarlet fever 54.

The death-rate ranged from 5.01 in Hornsey, to 25.4 in Coventry; London 16.9, West Ham 15.0, Brighton 12.4, Southampton 13.4, Plymouth 20.6, Bristol 15.6, Birmingham 18.3, Leicester 13.3, Nottingham 14.5, Birkenhead 15.9, Liverpool 21.0, Wigan 21.6, Bolton 18.4, Manchester 19.5, Salford 15.3, Halifax 15.0, Bradford 15.9, Leeds 15.9, Sheffield 14.8, Hull 20.5, Newcastle-on-Tyne 22.0, Cardiff 10.9, Rhondda 15.8, South Shields 22.3.

## METEOROLOGICAL RECORD.

For the week ending December 3, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S.. 27 | 29.94 | 26 | 32 | 21 | 80 | 82 | 81 | N W | N W | 2 | 9 | C. | C. | 0 |
| M. 28 | 30.13 | 22 | 28 | 16 | 77 | 56 | 66 | N W | N W | 14 | 12 | F. | C. | T. |
| T.. 29 | 30.03 | 32 | 49 | 15 | 62 | 81 | 72 | S | S W | 10 | 12 | O. | O. | T. |
| W. 30 | 29.86 | 46 | 54 | 38 | 82 | 63 | 72 | S W | W | 8 | 10 | O. | C. | .08 |
| T.. 1 | 29.91 | 34 | 38 | 30 | 59 | 45 | 52 | W | S W | 14 | 12 | F. | C. | 0 |
| F.. 2 | 30.27 | 24 | 22 | 17 | 54 | 44 | 49 | W | N W | 8 | 12 | F. | C. | 0 |
| S.. 3 | 30.38 | 20 | 24 | 15 | 75 | 71 | 73 | N | N | 14 | 8 | O. | C. | 0 |
| ☞ | 30.07 | | 37 | 22 | | | 66 | | | | | | | .08 |

* O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for week.

## OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE FOR THE EIGHT DAYS ENDING NOVEMBER 30, 1904.

CARTER, H. R., surgeon. Relieved from duty at Baltimore, Md. Nov. 28, 1904.

MCINTOSH, W. P., surgeon. Bureau letter of Oct. 24, 1904, granting Surgeon McIntosh leave of absence for twenty-five days from Nov. 8, 1904, amended to read eighteen days. Nov. 30, 1904.

GRUBBS, S. B., passed assistant surgeon. Granted leave of absence for twenty-one days from Dec. 18. Nov. 30, 1904.

COLLINS, G. L., assistant surgeon. Granted leave of absence for five days from Nov. 16, 1904, under paragraph 191 of the regulations.

HUNTER, W. R., acting assistant surgeon. Granted leave of absence for fourteen days from Nov. 25. Nov. 26, 1904.

SAFFORD, M. V., acting assistant surgeon. Granted leave of absence for five days from Nov. 25, 1904, under paragraph 210 of the regulations.

TAPPAN, J. W., acting assistant surgeon. Granted leave of absence for twenty-three days from Oct. 24, 1904, on account of sickness. Nov. 30, 1904.

MACDONALD, JEANNETTE, medical inspectress, San Francisco Quarantine. Granted leave of absence for eighteen days from Dec. 10. Nov. 26, 1904.

HANRATH, F. R., pharmacist. Granted leave of absence for twenty-seven days from Oct. 25. Nov. 25, 1904.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY THE WEEK ENDING DECEMBER 10, 1904.

WHEELER, W. W., surgeon. Detached from the "Philadelphia," ordered home, and granted sick leave for three months.

SEAMAN, W., passed assistant surgeon. Detached from the "Wabash," and ordered to the Navy Yard, Boston, Mass.

C. D. BROWNELL, surgeon. Detached from the "Amphitrite," Dec. 20, and ordered to the "Iowa."

URIE, J. F., surgeon. Sick leave extended three months from Dec. 9, 1904.

## SOCIETY NOTICE.

BOSTON MEDICAL LIBRARY MEETINGS. — The Boston Medical Library in conjunction with the Suffolk District Branch of the Massachusetts Medical Society will hold a meeting on Wednesday, Dec. 21, 1904, at 8.15 P.M., at the Library, 8, The Fenway. Program: Nephritis: Medical Treatment, Dr. Franz Pfaff. Surgical Treatment, Dr. Paul Thorndike. The Prognosis of Nephritis from the Standpoint of Life Insurance, Dr. Frank Wells. Discussion, Drs. Henry Jackson, John L. Morse, J. W. Elliot and John Bapst Blake. Light refreshments at the end of the meeting.

GEORGE G. SEARS, M.D., *Chairman.*
E. A. LOCKE, M.D., *Secretary.*

## RECENT DEATH.

HENRY SMITH BABBITT, M.D., M.M.S.S., died in Dorchester, Dec. 10, 1904, aged seventy-eight years.

## OPERATIONS: BOSTON CITY HOSPITAL.

The following operations will be done and cases shown in the amphitheater of the Boston City Hospital on Dec. 16, from 10 A.M. until 12.30 P.M.: Cholecystectomy; Radical Cure of Umbilical Hernia; Nephrotomy for Renal Calculus; Plastic operation for Exstrophy of Bladder; Fissure of Anus.

## APPOINTMENT.

DR. CHARLES HARRINGTON has been appointed Secretary of the Massachusetts State Board of Health.

## BOOKS AND PAMPHLETS RECEIVED.

De l'Anémie Ankylostomiasique des Mineurs. Par le Dr. A. Manouvriez. Reprint. 1904.

A Manual of Practical Medical Electricity. The Röntgen Rays, Finsen Light, Radium and Its Radiations and High-Frequency Currents. By Dawson Turner, B.A., M.D., F.R.C.P., Ed., M.A.C.P. Lond. Fourth Edition, Revised and Enlarged. Illustrated. New York: William Wood & Co. 1904.

Neurology in Philadelphia from 1874 to 1904. By Charles K. Millls, M.D. Reprint.

A Treatise on Obstetrics. For Students and Practitioners. By Edward P. Davis, A.M., M.D. Second Edition. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1904.

Clinical Lectures and Essays on Abdominal and Other Subjects. By H. D. Rolleston, M.A., M.D. Cantab., F.R.C.P. Philadelphia: P. Blakiston's Son & Co. 1904.

A Text-book of Physiological Chemistry for Students of Medicine and Physicians. By Charles E. Simon, M.D. Second Edition, Revised and Enlarged. Philadelphia and New York: Lea Brothers & Co. 1904.

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# Original Articles.

## TWO CASES OF CHRONIC PEMPHIGUS OF THE MOUTH.*

BY JOHN W. FARLOW, M.D., BOSTON.

Under the name of pemphigus were formerly grouped a variety of different diseases of the skin in which eruptions of bullæ were present. Further experience has shown that many of the cases should be excluded from this designation, and the name pemphigus is now applied (according to Morrow, "Dermatology" Vol. 3, page 205), to "an eminently chronic disease of the skin, characterized by successive eruptions of variously-sized bullæ, without any primary inflammation, running an indefinite, atypical course, and often ending fatally."

Grouven, in the *Archiv für Dermatol.*, Vol. 55, page 88, says: "Chronic pemphigus is a disease characterized by the repeated development of elevations of the epidermis of the skin or the epithelium of the mucous membranes. On the latter, bullæ are seldom seen, because the easily macerated covering bursts very early."

There are occasionally acute forms, in which, also, the mucous membranes are frequently invaded, and dysphagia, from lesions of the mouth and throat, may be the cause of death. It is a rare disease, occurring, perhaps, in the proportion of 1.5 per 1,000 skin diseases.

I will first give a short account of two cases which came under my care and then discuss, in a more general way, the appearances which have been found in other recorded cases together with the differential diagnosis and treatment.

Miss A., twenty-two years of age, was seen by me about ten years ago, and was under observation for several months. Her general health was good and there was no family or personal history bearing on the case. For nearly a year before consulting me she had complained of blisters forming in the mouth, generally on the gums near the teeth. They appeared from time to time, were quite painful and interfered with eating. I found the membrane at the seat of the eruption was whitish, loose and easily detached, leaving a tender, raw surface. Some of the spots were of the size of a cherry stone, and others were larger. They were confined to the gums near the front teeth and the inside of the cheek. There was nothing found abnormal elsewhere in the mouth or throat. Various sedative and astringent washes were used, and in a short time the eruption would diminish only to return again as before. This was the story during the entire time she was under my care. Examination of the teeth and gums by excellent dentists gave no clew to a cause, examinations of the urine for various mineral poisons were negative, and bacteriology threw no light on the case. I showed her at a meeting of the Boston Society for Medical Improvement and also to a number of dentists, but no hint was forthcoming as to the nature of the case; and when I went away on my vacation the same crops of blisters were continuing to appear. When I returned from a three-months holiday I lost sight of my patient, and could not blame her for giving me up. I have not heard from her since, but I can show you a water color drawing of the front of the mouth, in which the whitish, loose mucous membrane is well shown.



**Figure shows detached, white membrane on gums near upper front teeth.**

My second case served to throw light on case number one and made clear to me the obstinate, chronic, recurring nature of the malady.

Mrs. B., about fifty-five years of age, was seen by me in July, 1897. For a good while, without known cause, blisters had appeared on the lips, gums and inside of the cheeks. She said there was not much pain for about a year, but the blisters were getting much worse. The urine had been acid and she had taken alkaline treatment. There was no trouble with the teeth. I found slightly raised, reddish swellings with raw surfaces on the gums near the upper, left, front teeth, very much as in my former case, although the color was not whitish. There was no trouble with the rest of the mouth or the throat. July 30, the gums seemed better, but there was tenderness of the membrane at the seat of the former eruption, which interfered with eating, and she preferred bland, liquid food. On Sept. 12, she was much better generally, but the inside of the cheek and under the right side of the tongue were very sore. On Oct. 17, an eruption of blisters appeared inside the right, lower, alveolar process. These were at first reddish and soon lost their covering and became raw and tender. These crops of blisters had appeared from time to time in spite of treatment directed towards the mouth and the general condition. The coverings of the blisters were redder than in the other case and did not show so much of the white, loose detached membrane, but the two cases were otherwise very similar in appearance and behavior.

Later she went to Europe and was under the care of a number of eminent dermatologists and other specialists, but all to no purpose. A few days ago I received a letter from her Boston oculist, in which he says, "Mrs. B. has been under my care for the last five or six years. She went abroad three years ago and was treated by several specialists in Paris, and returned a good deal worse than when she went. A year ago last winter she went to California, where she had an attack of ulceration of the cornea. She returned to Boston last spring having practically lost the sight of the right eye. She spent last winter in California and I hear that her health is better. She

* Read at the annual meeting of the American Laryngological Association, June 4, 1904.

has been taking increasing doses of arsenic, and when I last saw her the buccal mucous membrane was improved. It is strange to say that the ulceration of the mouth has not left the cicatricial bands that one would expect to find."

I have just received a note from an eminent New York dermatologist, who says: "Mrs. B. has been under my care, more or less, for about a year with pemphigus of the buccal cavity and eyes. The blisters in the mouth have been controlled by the use of arsenic, etc., which, however, she has often had difficulty in taking. Before the treatment she would have as high as six or eight blisters during the day, but for several periods when under treatment she would often go a number of days without having one. The larynx has never been affected, so far as I know, and there have never been any cicatrices or adhesions from any of the buccal lesions."

A week ago, after I had finished this paper, I saw Mrs. B. again. She told me that the blisters in her mouth had been almost entirely on the gums and the roof of the mouth, and occasionally there had been some far back on the palate, where she could barely reach them with the finger, and even beyond. There had also been blisters in the nose, chiefly on the septum, with pain, crust formation and obstruction to breathing. The nose had been free from trouble for a good while. At one time she suffered from similar eruptions in the vagina. She is entirely blind in one eye, and the other eye is giving her a great deal of anxiety. She now remembers that about twenty-five years ago she had an eruption on the lower leg and foot, the nature of which was not evident to the dermatologist whom she consulted. She has since been told that this may have been pemphigus of the skin.

For about a year she has taken arsenic, one half a grain a day, and thinks the blisters in the mouth are, to a great extent, kept under control by it.

Such cases are very uncommon in New England, according to my experience. In looking over the records of the Boston City Hospital I found the case of a woman, thirty-two years old, with chronic pemphigus of the legs and body. There were also blebs and ulcerations of the inside of the mouth. After a stay of several weeks in the hospital she was discharged "relieved." Dr. J. C. White, Professor of Dermatology in the Harvard Medical School, and in charge of the Clinic for Diseases of the Skin at the Massachusetts General Hospital for many years, writes me that he has seen but two cases of real bullous lesions of the mouth unaccompanied by disturbances of the integument before or afterward. In the few cases of real pemphigus of the skin which he has seen the mouth has been affected in a small percentage only.

Dr. L. H. Miller [1] describes the case of a man seventy-two years of age who was under observation for twenty months. On the inner side of the cheek, opposite the second molars, on other parts of the mouth and on the epiglottis were white patches which could be stripped up like false membrane and bled on removal. This eruption appeared and disappeared from time to time without regard to treatment.

Dr. J. H. Bryan, at our twenty-first annual meeting, described a case where there was a white membrane on the epiglottis and later on the gums just below the incisor teeth. Dr. Jonathan Wright, from examination of the laryngeal membrane, considered it pemphigus. He had previously seen and assisted in the diagnosis of Dr. Miller's case. Dr. Bryan thought it was to be differentiated from diphtheria, tuberculosis, syphilis, herpes and the effect of acids and alkalies. Treatment was of but slight benefit.

In the *Journal of Laryngology*, March, 1904, is described a case shown for diagnosis by Mr. Creswell Baber. A man, sixty-nine years of age, was seen in September, 1903. He had noticed roughness inside the cheeks for three or four months. Early in August he first noticed extensive white spots in the mouth and throat. Mr. Baber found numerous white patches of varying size and shape on the sides of the tongue, inside of the cheeks, on the gums, soft palate, and a similar condition in the larynx. These membranes were easily detached, and left a red, abraded, bleeding surface. The epiglottis was thickened and had white patches on it, and the cords were red and abraded. There was some dysphagia, but no dyspepsia. The case had apparently improved somewhat under treatment. Sir Felix Semon thought it a case of phempigus. He said such cases were very rare, but in this instance the appearances were so characteristic that it was hardly possible to mistake it for anything else. The diagnostic difficulty was due to the short vitality of the bullæ, which lasted only a few hours. The only thing that could make one doubtful was the appearance of the inside of the mouth, but cicatrization was not uncommon in cases of pemphigus of mucous membranes. This was particularly characteristic when the disease affected the conjunctiva, causing the condition known as "essential shrinking of the conjunctiva." In these cases the patient might become totally blind. In the nose, adhesions and total obstruction might occur. The fact that there was no external manifestation was not in the least proof against the diagnosis. This was the fourth case he had seen. In the first two the affection was entirely limited to the mucous membrane. In the third case, which showed a condition internally exactly like Mr. Baber's patient, there was also pemphigus of the skin.

In the *Journal of Laryngology*, August, 1904, Mr. Baber described the further course and termination of the case. About the middle of January bullæ of various sizes broke out on the skin, everywhere except on the face. The throat affection, which at the onset of the pemphigus on the skin seemed to improve, subsequently progressed *pari passu* with the latter. Large doses of arsenic were of no service. He died of exhaustion in March, 1904. There was no eye affection.

Dr. J. C. Symonds also spoke of two cases which he had shown, one of which had the conjunctival form as well as patches on the pharynx and epiglottis. In the other case there were no bullæ, but curious, white patches, which came and went.

An occasional result of the pemphigus erup-

[1] N. Y. Med. Jour., July 3, 1897.

tion is the formation of adhesions between the mucous surfaces of the fauces. Avellis, in *Münch. Med. Wochenschr.*, No. 10, 1900, says that three cases of such adhesions have been reported, to which he adds a fourth, in which the soft palate and the posterior pillars were so united to the posterior pharynx that only a very small opening into the postnasal space was left. By the use of hard rubber bougies the opening was dilated, the adhesions separated and prevented from returning. He states that such adhesions have to be differentiated from those of syphilis, scleroma, lupus and diphtheria.

According to Dr. Brocq,[2] the study of the mucous membrane manifestations of pemphigus has assumed considerable importance in recent years, thanks to the numerous works of oculists and laryngologists. The known cases can be divided into two great classes: (1) Eruption on mucous membrane and skin at the same time. There exist recorded cases in which the bullæ have remained confined to the mucous membrane for many years and have finally involved the skin. These cases establish an insensible transition between the first and second groups. (2) Here the lesions are confined to the mucous membrane alone and are found in the mouth, nose, pharynx, larynx and conjunctiva.

Dr. A. Thost [3] says: " Pemphigus of the mucous membrane of the mouth, pharynx and larynx is a rare affection which coincides nearly always with pemphigus of the conjunctiva, and which attacks, ordinarily, cachectics or very old persons and is never accompanied by pemphigus of the skin." (This last statement is quite contrary to the testimony of others.) " The affection is characterized by the appearance of irregular, white patches, formed by an elevation of the epithelium, giving rise to bullæ of short duration, quickly replaced by whitish islets of detached epithelium. When there is contact between the parts affected there can form adhesions, as in the conjunctiva, the nose, pharynx and the anterior commissure of the vocal cords. In the nose there may be epistaxis, sneezing and crust formation. The characteristic features of chronic pemphigus of the mucous membrane are:

" (1) Affection exclusively of the mucous membrane.

" (2) Universal participation of the ocular conjuctiva, which tends to form synechiæ.

" (3) Tendency to proliferation and adhesion of mucous surfaces.

" (4) Chronic evolution without fever.

" (5) Treatment of no avail.

" (6) Cachexia and dystrophy, cutaneous and muscular."

Dr. G. Trautman in his work " Zur differential Diagnose von Dermatosen and Lues," Wiesbaden, 1903, cities four kinds of cases of pemphigus, with extensive bibliography:

" (1) Skin eruption primary, that of mouth, etc., secondary.

' (2) Coexisting skin and mouth, etc., eruptions.

" (3) A large number of cases of primary eruption on mucous membrane and secondary on the skin. In one case the skin eruption did not appear until eighteen years after the beginning of the buccal lesions. In another there was closure of the mouth for eighteen years from the contraction of mucous membrane of the cheeks. Kaposi in over three hundred cases of pemphigus had never seen contraction of the mucous membrane of the mouth.

" (4) Many cases of mucous membrane eruption alone, one of twelve years' and one of twenty-seven years' duration.

" The places of predilection are the tongue, cheeks, lips, hard and soft palate, uvula, pharynx, epiglottis and arytenoids, and it takes usually a descending course. Generally there are no intact bullæ seen, but grayish white, macerated membrane, loose, whitish deposit, flat, red erosions, granulating surfaces, also circumscribed erosions with a covering of thin pus or a tenacious, thick membrane, which can become confluent and persistent; at times thickening of separate organs, as the epiglottis and vocal cords. Ulceration and deep loss of substance are occasionally seen. There are usually no enlarged lymph glands. It is very obstinate to treatment."

O. Chiari, in his book, " Krankheiten des Rachens," says that " Pemphigus pharyngis is nearly always in adults and appears as on the skin. In the throat, as well as in the mouth, the benignant form seems to be very rare, as only a few authors mention its ending in recovery. But cases of many years' duration have been observed. The reason why the eruption in the mouth so seldom heals lies in the maceration by the saliva and mucous and in the presence of numerous bacteria. On that account, in most cases, after a longer or shorter time, the mucous membrane of the mouth becomes to a large extent excoriated or ulcerated, so that chewing and swallowing are interfered with; consequently, pemphigus of the mouth generally assumes a malignant character. It begins in the mouth with either blisters or an epithelial thickening. Blisters, bullæ, appear if the exudation follows quickly and to a large amount. If the exudation takes place more slowly and in lesser quantity, the epithelium becomes infiltrated and cloudy. If the exudation coagulates, a whitish or whitish-gray deposit forms, which has a strong resemblance to diphtheritic membrane. The bullæ become quickly macerated, so that they cover over the excoriated places like folded, rolled-up deposits. The mucous membrane in the neighborhood is often unchanged; sometimes thickened, here and there loosened and tending to bleed. In rare cases the first eruption can be accompanied by fever, but usually the patients are troubled only by salivation and difficulty in chewing and swallowing. After rupture of the blisters there remain circumscribed, excoriated places, which either become covered with epithelium or show a thin, purulent, or even a thick, membranous deposit. It is possible for the primary eruption to heal and the whole process

[2] La Pratique Dermatologique, vol. 3, p. 771.
[3] Monatschr. f. Ohrenheilk., 1896, Nos. 4 and 5.

be at an end. But nearly always a recurrence takes place after a longer or shorter interval. If these recurrences are infrequent and at long intervals, the process can still go on to a cure. But generally the later recurrences follow quicker and quicker, so that the old eruption is not healed before the new one begins, and the mouth and throat are more or less completely deprived of epithelium, and the individual, by failure of nutrition, goes on to death from exhaustion. The process is generally fatal in less than a year, but can persist for three or more years. Complete recovery is very rare. Very exceptionally there are deeper ulcerations, or the formation of marked granulations on the excoriated places, or it may lead to a contraction of the entire mucous membrane of the mouth, as is observed in the conjunctiva. Not so very uncommon is an extension to the larynx, with formation of bullæ, excoriations, or edema, which may lead to dangerous stenosis."

According to Chiari, " The diagnosis is easy where there is pemphigus of the skin, and even when it is primary in the mouth the characteristic course of the disease is not difficult to differentiate, but it may be confused with diphtheria, stomatitis mercurialis, or epidemica, soor, tuberculosis, condylomata, herpes, erysipelas and cauterizations. Diphtheria is generally in children, begins with fever and does not last as long as pemphigus with its recurrences. The membrane is seldom in the mouth, but in the fauces. Angina mercurialis is seldom seen alone, and forms on the tonsils erosions, grayish white deposits or mostly superficial ulcers and is generally accompanied by stomatitis mercurialis. Angina ulcero-membranacea is an unusual form of stomatitis confined to the tonsils, and causes ulcers with dirty coverings. The above heal on removal of the cause. Soor is almost always in nursing children. Tuberculosis causes characteristic ulcers of the throat and is generally associated with laryngeal and pulmonary disease. Syphilitic papules never form so extensive excoriations as pemphigus, and there are no bullæ. Herpes is characterized by small, watery vesicles surrounded by a red areola, and the resulting ulcers are also small. They sometimes, however, become covered with membrane, which can become confluent over a larger surface. Erysipelas can, in rare instances, form large bullæ in the throat, but it is an acute disease with a typical course. Cauterizations with acids, alkalies, hot water, steam, etc., can cause large blisters, but generally there are excoriations or deep extensive necrosis of tissue with various colored sloughs. The history and course are unlike pemphigus."

In spite of the alleged case of diagnosis, the fact remains that uncertainty and mistakes in regard to the nature of the affection have been very common when there was no external manifestation to furnish a clew. It is much easier to understand with what sort of a disease we have to deal when we have the patient under observation for a number of months or years and have tried the effect of syphilitic and other remedies than it is to form a correct idea of the serious nature of the case when seen for the first time and there are only lesions in the front part of the mouth of uncertain character and when the important fact of recurring lesions in spite of treatment is not yet developed.

Many cases have been considered as irregular forms of syphilis, but my two cases seemed to me more like examples of recurring herpes. But I now see that the detached pieces of white, loose epithelium with the tender and bleeding underlying surface, especially when so rebellious to treatment and so prone to recur, gave a picture quite unlike herpes. Typical bullæ are much more likely to be found on the epiglottis than in the mouth.

When ulcerations and synechiæ appear on the conjunctiva they are a great aid to diagnosis. Several writers lay stress on the absence of enlarged lymphatic glands. In studying the cases there is noticed the usual absence of the eruption from the tonsils, an important point when considering the diagnosis from syphilis and tuberculosis. The adhesions between the mucous surfaces of the fauces and the pharynx require a very careful study into the past history of the case in order to rule out very similar specific lesions.

The question naturally presents itself whether these cases of recurring, bullous eruption of the mucous membrane without involvement of the external skin strictly belong under the title of true pemphigus. It seems to me that they do, because the eruption and course of the disease are the same whether the skin is affected at the same time or not, and also because the eruption may be confined to the mucous membrane for many years to appear later on the skin. It is also perfectly possible for cases which have shown, up to the present time, no external manifestations, to develop bullæ on the skin at some near or more remote future time. The obstinate nature of the internal and external eruptions as regards treatment has a certain value in placing them in the same category.

As regards prognosis, Neumann, Mikulicz and others consider that the primary or early appearance of pemphigus on the mucous membranes is a most important sign of malignant form of the disease. Rosenberg, in his book on Krankh. der Mundhöhle, etc., says the prognosis is unfavorable, as, in consequence of weakness (from difficulty in eating, etc.), a fatal termination comes generally in one or two years.

I do not see that the recent recorded cases of oculists and laryngologists prove the truth of this gloomy prediction. All agree that it is a serious and often fatal disease, but its duration seems certainly longer than one or two years in most cases. It is a serious matter to tell a patient of middle age, in fair health, that a few recurrences of blisters of the mouth point to very possible blindness and a fatal termination inside of two years. I do not see that the facts surely justify such a statement. I have quoted Thost as say-

ing that the disease ordinarily attacks cachectics or very old persons, in whom the disease would naturally run a malignant course, but I have found so many exceptions to this statement of the kind of person affected that I feel that his experience may have been different from that of many other writers.

As regards treatment, a most important point is to keep the teeth, mouth, nose and throat clean by proper alkaline and antiseptic washes in order to prevent secondary infection of the erosions and other lesions. It may be necessary to use some local anesthetics in case the pain is sufficient to interfere with eating and thus cause weakness. Cocaine, orthoform and morphine are of value for this purpose. The lesions themselves can be painted with nitrate of silver of varying strengths, iodine preparations, etc., but my own experience did not furnish satisfactory results. For internal treatment arsenic has some strong advocates. Dr. Bulkley of New York is quite earnest in his recommendation of large doses. As to other drugs, there is a great difference of opinion and no enthusiasm or encouragement that any of them have a surely beneficial action in retarding the progress of the disease. The general nutrition should be attended to very carefully, especially where there are painful lesions in the mouth or throat.

In Krieg's "Atlas der Kehlkopfkrankheiten," Stuttgart, 1892, are some excellent colored plates showing pemphigus of the mouth.

## LEPROSY.*

BY THEOBALD SMITH, M.D., BOSTON.

The occasional appearance of imported leprosy in our midst, the difficulty of knowing how to deal satisfactorily with it, and the frequent errors in diagnosis made before the true nature of such cases is recognized, may serve as an excuse for bringing up this somewhat foreign subject.

Leprosy may be regarded as one of the most ancient of maladies which has maintained itself up to the present. Though rare in highly civilized countries, it is quite well established in South America, Africa and Asia. Even in Europe there are persistent foci in Russia, the Balkan States and in Norway. Occasionally a slight tendency toward greater diffusion is noticed, as in Eastern Prussia in 1896 from the Russian provinces. The great diffusion and prevalence of leprosy throughout Europe in the Middle Ages and its equally remarkable shrinkage and gradual disappearance after the fourteenth century are unique facts in epidemiology. It seems scarcely credible that there were 19,000 leprosies in Christendom, and that in France alone there were 2,000. The disappearance of the disease is ascribed to the stringent measures applied toward lepers, which consisted either in casting them out of communities and making them vagrants, or else in confining them in special hospitals. In the middle of the past century the theory that the disease is inherited rather than caught was promulgated and defended by two Norwegians, Danielsen and Boeck. The clinical history certainly tended to favor this view, but the discovery of the lepra bacillus in 1879 and 1880 by Hansen and by Neisser gradually put an end to this theory, although as late as 1894, Dr. J. C. White of Boston still considered it necessary, in view of the persistent prevalence of the theory of heredity, to vigorously defend the theory of infection. In England some authorities believe that the consumption of fish stands in some relation to the disease.

The causal relation of the Hansen bacillus has been firmly established by examinations made in many parts of the world on different types of the disease. The disease is not readily transmitted, however, and prolonged exposure, as in family life, seems necessary to successful infection. Yet even in the family infection does not always follow. Koch mentions a mother who nursed and lost a husband and four sons during a period of twenty years, but remained free herself. Hansen states that none of the children of the one hundred and seventy Norwegian lepers who migrated to this country became diseased. This apparent hesitancy of the lepra bacillus to invade a new subject must not shut our eyes to the fact that we have an infectious disease to deal with, and one peculiarly offensive because of its prolonged duration and tendency to extreme mutilation of the body. The rapid diffusion of the disease in the Middle Ages, and in the Hawaiian Islands in the last century, indicates that perhaps some variety of this species of bacillus differing slightly from the one encountered to-day was responsible, and that some slight variation in the character of the bacillus may in part repeat the history of former centuries if our negligence permits it. Personal hygiene is not so highly developed in the densely crowded portions of our cities as to stand in the way of a spread if other conditions are favorable.

It is well known that leprosy appears under two clinically quite distinct types, the tuberculous and the anesthetic. To this a third, the so-called mixed or intermediate type, has been added. The anesthetic type, which is marked chiefly by lesions of the nervous system, is the type prevalent in those countries where leprosy has been endemic for long periods of time. The tuberculous is the more common type in foci of recent origin.

In the anesthetic type bacilli are scarce in the lesions. In the tuberculous type they are, as a rule, abundant. Within recent years attention has been drawn to the lesions of the nasal mucous membrane and to the presence of large numbers of bacilli in the discharge from the nose as a possible source of infection. Thus Sticker gives the following statistics obtained by an examination of patients in Calcutta, India. Of 57 cases of tubercular leprosy 55 showed bacilli in the secretions from the nose. In 68 cases of nerve leprosy, 45 had demonstrable bacilli in the nose. In 28 cases of the mixed type, 27 were discharging

* Kindly written by Dr. Theobald Smith, to take the place of his article on the same subject, read at the July meeting of the Association of Massachusetts Boards of Health.

bacilli from the nose. Kolle examined a large group of cases in the leper hospital of Cape Colony with the following results: Lepra bacilli were found in the nose in all of 45 cases of tubercular leprosy, in 22 out of 30 cases of the mixed type, and in only 21 out of 62 of the anesthetic type.[1] These figures suffice to show that the large number of lepers are discharging bacilli even in those stages of the disease in which ulcers of the skin are absent.

A disease which propagates itself so very slowly, and which makes itself known only in rare, isolated instances, does not create apprehension, and hence preventive measures are usually neglected. We have been told that lepers in the past have moved freely about in our country, using public conveyances and even Pullman cars without hindrance. It seems to us that every leper should be under the constant, vigilant care of public health authorities, and that some action should be taken by the general government which will bring the lepers of the country together in some lazaretto or home where they will be humanely treated, where they may enjoy the society of their kind, and perhaps do useful work. No state is at present in position to deal satisfactorily with these cases, as each has perhaps but one, or at most a few cases within its borders. In all the states there may be not over 100. In 1894 Hyde stated that up to that time 560 cases had been reported in our country.

The success of segregation in leper homes supported by the government is shown in the experience of Norway. There the admission to leper hospitals was at first voluntary, although every inducement was made to have the lepers leave their home. When they remained with their families they were compelled by law to occupy separate beds, and if possible, separate rooms. Clothing and eating utensils were to be kept separate from those of the rest of the family. All dressings for wounds were to be burned. If these measures are neglected the patient is transferred to a leper home. This relatively mild treatment has been signally successful in gradually reducing the number of cases. In 1856 there were 2,870 lepers; in 1900 only 577.

Though it may seem harsh and unnecessary to segregate and isolate those afflicted with a disease which incapacitates so little at first, and which seems so feebly contagious, the history of leprosy, imperfect as it is, bids us protect the family and the public at large, and this can be done most humanely by providing for the lepers a well-equipped hospital under the auspices of the national government, where the patients may be treated and the disease studied from the most advanced standpoint. This would relieve the various states of the burden of establishing and duplicating what would necessarily be unsatisfactory institutions on account of the few to be cared for, and create a center of information concerning this exotic malady.

[1] In a case of tubercular leprosy, quarantined in this state, we found last summer large numbers of acid-fast bacilli, some in the form of the characteristic balls or so-called glabi, in the swabs from the nose.

## CHRONIC GASTRIC ULCERS. HOUR-GLASS DEFORMITY OF THE STOMACH. REPORT OF A CASE SUCCESSFULLY OPERATED.

BY CHARLES L. SCUDDER, M.D., BOSTON,
*Surgeon to the Massachusetts General Hospital.*

A CASE OF HOUR-GLASS STOMACH AND STENOSIS OF THE PYLORUS. DYSPEPSIA FOR TEN YEARS. LOSS OF WEIGHT. OPERATION, GASTROGASTROSTOMY AND GASTRODUODENOSTOMY. COMPLETE RELIEF OF SYMPTOMS.

MARY C. MCK., thirty-eight years old; married. Hospital No. 137,601. East Medical Record 607, page 100.

This patient had influenza ten years ago. Since that time she has had more or less trouble with her stomach, complaining of dyspepsia and indigestion. The 25th of January, 1904, she was in a Marine Hospital in the West. She was given x-ray treatment for "ulcers in the stomach." Three weeks previous to entering the hospital here she noticed a beginning x-ray burn in the epigastric region. She is able to keep nothing upon her stomach and is being nourished by nutrient enemata. She complains of a great burning sensation in the pit of the stomach, which is relieved by vomiting. A few days ago she vomited two tablespoonfuls of blood. She has lost about twenty pounds in weight during the past four months. Her bowels move once a week without medicine. The percussion of the gastric area finds the lesser curvature of the stomach two inches above the umbilicus and the greater curvature three inches below the umbilicus.

June 6, 1904, operation was undertaken because of the persistent vomiting and evident obstruction. On opening the abdomen an hour-glass deformity of the stomach was found. At the pylorus were the adhesions occasioned by an old ulcer. A little to the pyloric side of the middle of the stomach was seen and felt a mass of cicatricial tissue constricting the stomach into two unequal parts, a smaller pyloric portion and a larger cardiac portion. The pylorus would not admit the little finger and only the tip of the forefinger could be made to pass with difficulty from one portion of the stomach to the other through the constricting area. These obstructing portions were evidently cicatrices of old and recent ulcers. There were no glands to be seen or felt. A gastrogastrostomy and a gastroduodenostomy were done. Both of these operations were facilitated by the use of rubber covered clamps, which prevented hemorrhage and the escape of stomach or intestinal contents. The mucous membrane removed from the stomach and intestine showed nothing abnormal. The bacteriological report upon the stomach and intestinal contents from the Pathological Laboratory showed a scum of colonies of colon-like and other bacilli. No micrococci were seen.

The patient recovered satisfactorily from the operation. There was apparently no shock, the temperature did not rise above 99° F. She made an uninterrupted recovery, being able to take with relish whatever food was proper for her, before she left the hospital. Immediately following the operation the patient was nourished by enemata of milk, egg and salt solution every eight hours. Salt solution was given also by rectum to relieve thirst. At the end of three days water was allowed by mouth. Upon the fifth day liquids, including broths, were taken. At the end of about a week soft solids were relished. The patient was up in eighteen days and went home, looking and feeling well and gaining in weight.

"Hour-glass stomach" is the term applied to an anomaly of form of the stomach. The stomach is narrowed at one part so that the cavity of the

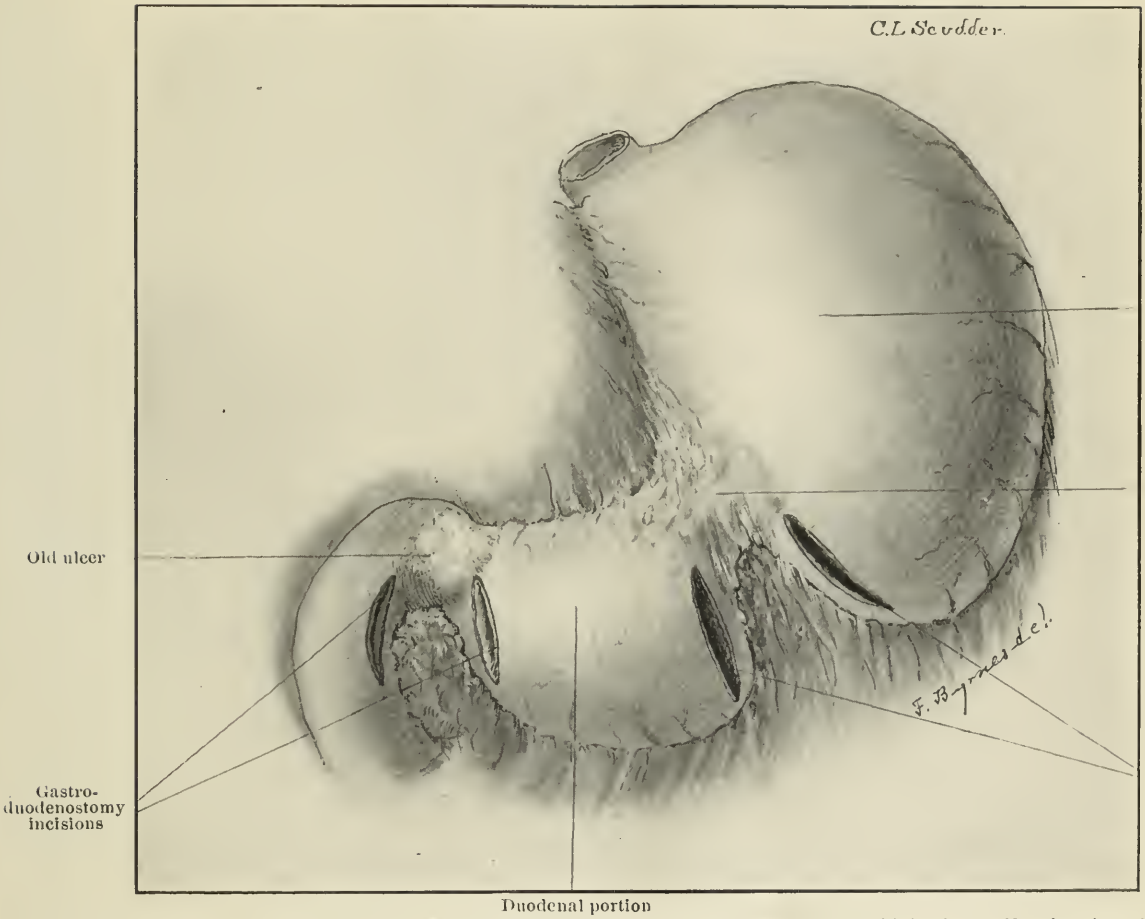



FIG. 1. — Hour-glass deformity of the stomach and pyloric stenosis occasioned by multiple ulcers. Note location of cicatricial parts; the two portions of the stomach; the incisions for Wölfler's gastrogastrostomy and Kocher's gastro-duodenostomy.

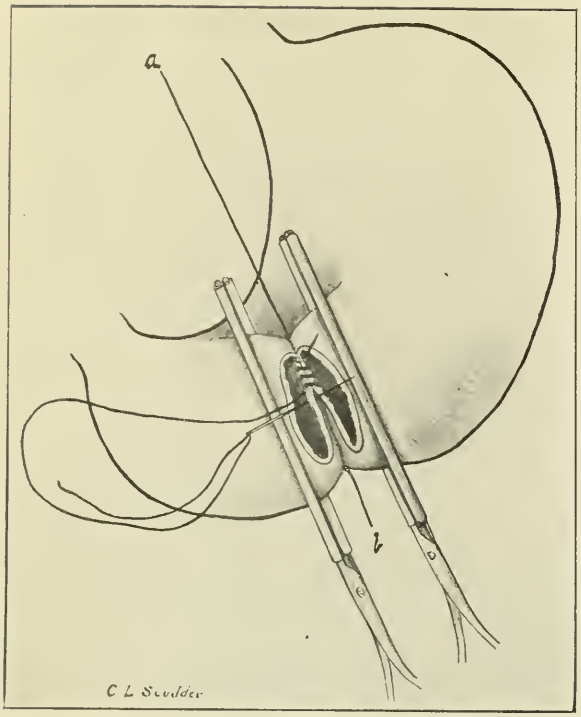



FIG. 2. — Showing the gastrogastrostomy being done after Wölfler's method and by the use of clamps. Note the traction sutures of the first or peritoneal suture (*a*, *b*) and the through-and-through suture being taken.

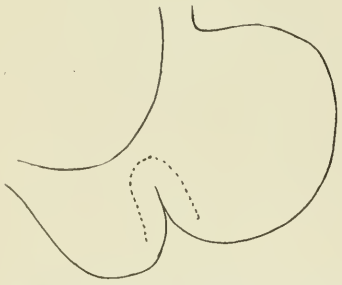


FIG. 3. — Hour-glass deformity of stomach. Gastrogastrostomy by a Finney incision. Note dotted line of incision.




FIG. 4. — Hour-glass stomach. Gastrogastrostomy by a Finney incision. Note incision made, solid lines of gaping edges of incision; peritoneal suture line dotted. The lines *x* and *y* are to be approximated.

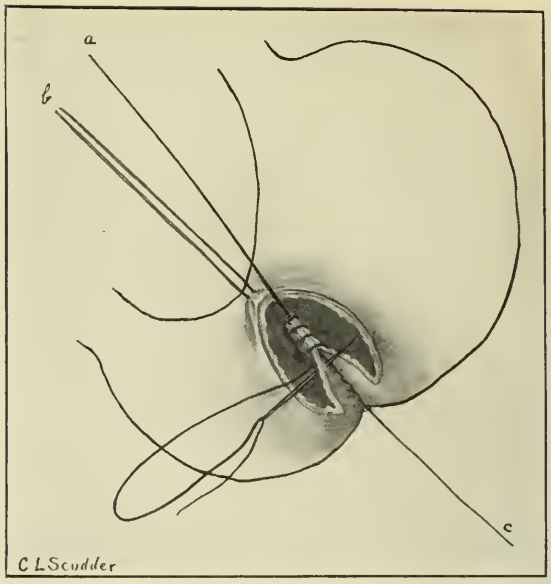



FIG. 5. — Hour-glass deformity caused by ulcer of the stomach. Gastrogastrostomy by a Finney incision. Note: Traction sutures upward (*a*, *b*) and peritoneal traction suture downward (*c*); the through-and-through suture is being taken.

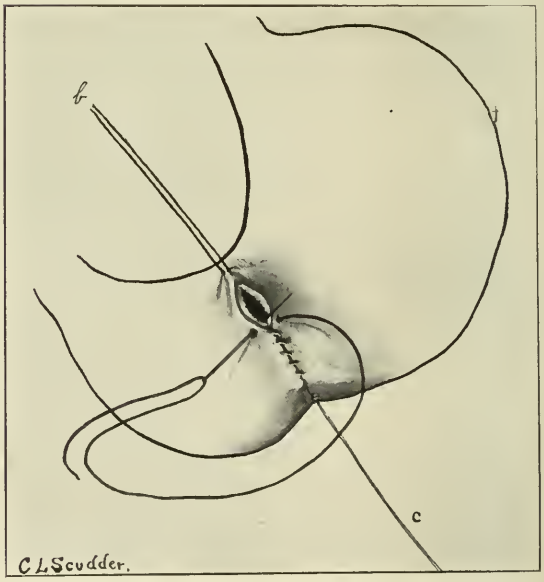



FIG. 6. — Hour-glass deformity caused by ulcer of the stomach. Gastrogastrostomy by a Finney incision. Note: Traction suture (*b*) upward and peritoneal traction suture (*c*) downward: needle completing through and-through suture. The peritoneal suture, begun below the traction suture (*b*), is continued down over the line of the completed through-and-through suture and secured by tying to the long peritoneal traction suture (*c*). This completes the operation by the Finney incision.

organ is divided into two more or less distinct parts, a cardiac and a pyloric portion. (See Fig. 1.) The constriction is commonly due to the cicatricial tissue about an old ulcer or to carcinoma or to perigastric adhesions from various causes. The usual cause of hour-glass stomach is chronic gastric ulcer. Hour-glass stomach should be regarded as one of the sequelæ of gastric ulcer.

Moynihan [1] in a most attractive paper has pointed out that the congenital origin of hour-glass stomach is extremely doubtful. He finds in his analysis of the reported cases of congenital hour-glass stomach no case, unless that of Mr. W. F. Brook,[2] which will stand upon careful examination. All the reported cases of congenital origin are probably acquired instances.[3]

The symptoms associated with hour-glass stomach are the symptoms of chronic gastric ulcer plus stasis of stomach contents. These symptoms will vary with the physical conditions present depending upon the degree of dilatation of either pouch, upon the narrowness of the opening between the two pouches, upon the patency of the pylorus and upon the adhesion of the stomach to the parts about.

There are several signs of importance in making the diagnosis of hour-glass deformity. *Moynihan's* sign is the following: If the stomach be percussed and then distended with air and after twenty or thirty seconds percussed again, the resonant area will have increased on the cardiac end of the stomach but will remain the same over the pyloric end of the stomach, demonstrating a constricting part.

If a tube is passed and the stomach is washed with a known quantity of water, upon measuring the return water there will be found to be a loss corresponding to the water which has passed through the constricting part into the pyloric pouch. This is *Wölfler's* first sign.

If the stomach is washed until the wash water returns clear — a sudden gush of foul cloudy fluid may occur from the pyloric pouch demonstrating a separation between the two parts. This is *Wölfler's* second sign.

A succussion splash is obtained, the stomach tube is passed, the stomach is emptied apparently and still a succussion splash can be obtained. This has been described by *Jaworski* and has been called "paradoxical dilatation." Upon distending the stomach with gas or air a bulging on the cardiac side is visible and evident to percussion. This bulging gradually subsides as the air passes to the pyloric loculus.

As the gas passes from one side to the other of the constricting part the stethoscope will detect a bubbling sound. *Eiselsberg* pointed out the importance of these latter two signs.

Obviously the treatment of hour-glass stomach is surgical. The conditions found upon opening the abdomen must determine the operation chosen. In the case here recorded a chronic ulcer existed at the pylorus in addition to the one causing the deformity of the stomach. This narrowing of the pylorus necessitated relief and was accomplished by a gastroduodenostomy. The hour-glass deformity was relieved by a gastrogastrostomy after Wölfler's method. (See Fig. 2.)

Bardeleben [4] in 1889 did a gastroplasty upon an hour-glass stomach with recovery of the patient. This is probably the first recorded case of this procedure. Kruckenberg in 1892 [5] did a gastroplasty with an excision of the ulcer. The patient recovered and was relieved.

The first gastrogastrostomy for hour-glass stomach was done by Wölfler [6] in 1894, with recovery of the patient. This operation of Wölfler has remained one of the best procedures and is practically a lateral anastomosis. Watson [7] of Boston in 1895 performed a gastrogastrostomy successfully by an original and unique method, and in the case reported the method proved satisfactory. Because of recent improvements in operative technique the procedure suggested by Watson is now unnecessary.

Gastroenterostomy between either one or both pouches is sometimes indicated.

Dilatation of the constricting part may be a wise step as is suggested by Robson [8] and Moynihan when the constriction is so far toward the cardiac orifice as to preclude the possibility of effectively making any anastomosis between the two portions of the stomach. A gastroenterostomy at the same time, perhaps, will asist in the healing of the ulcer.

A partial gastrectomy may wisely be done in a cetain few of these cases of deformity from old ulceration. By partial gastrectomy the ulceration and its surrounding infiltration may be completely excised and an end to end anastomosis made or a closure of duodenum and stomach accomplished and a gastroenterostomy done.

Kammerer describes a procedure which he has followed, somewhat like Finney's gastropyloduodenostomy, in a case of hour-glass deformity of the stomach. (See Figs. 3, 4, 5, 6.)

Robson uses the bone bobbin in making a gastrogastrostomy, thinking thus to secure greater accuracy of adjustment and less likelihood of leakage and an immediately patent orifice.

As in all operations upon the stomach and intestine, operations upon the hour-glass deformity of the stomach should be performed with especial cleanliness, hemostosis and efficiency of suture. Mouth, stomachic and intestinal asepsis are very important and should be secured if possible. This will necessitate some three or more days' preparation. It seems to me that this internal asepsis is just as important as is the asepsis of the skin, the external asepsis.

It may not always be possible to secure complete asepsis internally but an attempt to secure it will be rewarded by better results. Internal asepsis is one factor which will contribute to satisfactory results in stomach and intestinal surgery. Care of the nose, mouth and teeth, thorough emptying of the stomach and intestine, and a sterile diet are the steps to be followed in securing asepsis.

It may be impossible to as completely empty the pyloric pouch previous to operation as one empties the non-deformed stomach. The use

therefore at operation, when possible, of carefully adjusted rubber covered clamps will prevent the soiling of the peritoneum by the escape of any stomachic contents. The hemostatic value of the rubber covered clamp is great.

The improvement in the general condition of the patient following the relief of the obstruction in an hour-glass deformity of the stomach is rapid and very considerable. If the deformity is due to carcinoma the improvement will not, of course, be permanent.

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## THE DECREASE IN THE DEATH-RATE OF CONSUMPTION.*

BY LESTER C. MILLER, M.D., WORCESTER, MASS.

IN the midst of strenuous endeavor toward the attainment of a well defined object, it is not without profit to occasionally review the work done, take account of stock and estimate the profits. It may be that what has been accomplished so gradually as to seem of small importance may, in the aggregate, assume large proportions. Courage for greater endeavor may be acquired from such a review, and perhaps methods may be improved.

It was with some such idea in mind that I undertook the task of reviewing such literature on the subject of tuberculosis as dealt with the work done toward its extinction. Treatment of any kind not directed toward the decrease or prevention of the disease I did not study. It is the result of my reading that I ask you to consider to-day.

I quote freely from many writers, often without giving their names. The discussion is not intended to be exhaustive, but rather suggestive and to provoke discussion. It is the purpose, then, of this paper to show:

(1) The decrease in the death-rate of consumption as given in the vital statistics of several countries and from other available sources of information.

(2) The significance of the decrease in the death-rate.

(3) The chief causes of this decrease, with a discussion of the more modern investigations into the modes of infection.

The value of vital statistics for purposes of comparison is often questioned. It is well understood that imperfect, ignorant, or even false death returns are made. Some sections of this country give more accurate returns than other sections. The Census Bureau has taken this into account, and has attempted to eliminate mistakes as much as possible, by comparing the returns of their own census takers with the returns from the cities and towns themselves. For the sake of still greater accuracy they have compiled by themselves the returns from certain states and from a large number of cities, whose systems of reporting vital statistics are the same or nearly the same as that used by the United States. These states and cities taken together are called the registration area. Nearly all the United States statistics I quote are taken from this area. The registration area of 1900 comprised about one third of the total population of the United States.

The total number of deaths reported as due to consumption in the whole United States during 1900 was 109,750, of which 53,626 were males, and 56,124 were females. The ratio of deaths from this disease to 1,000 deaths from all known causes was 109.9. In 1890 the corresponding ratio was 122.3. In 1900, in the registration area, the same ratio was 106.3 to every 1,000 deaths from all known causes. Much more valuable statistics are figured on the death-rate from consumption per 100,000 of population. In 1890 the death-rate from this disease was 245.4 per 100,000 of population; in 1900 the rate was 187.3, a decrease of 58.1 deaths in ten years.[1]

It is interesting to compare these figures with those for the same years in England and Prussia. In England the death-rate from consumption has been declining since 1838, when it stood at 380 per 100,000 of population, down to the present time. In 1890 the rate was 238 per 100,000 of population; in 1900 the same ratio was 190. At the present time it is much lower than that, somewhere about 130 per 100,000 of population.[2] In the tuberculosis death returns of Prussia is included all forms of tuberculosis. Up to 1887 there was little if any diminution in the death-rate from tuberculosis. That, too, in Koch's country, and for six years after the discovery of the tubercle bacillus. But in 1887 the drop in the Prussian death-rate began, and has continued comparatively steadily to the present. In 1890 the death-rate was 280 per 100,000 of population; in 1900 the rate was 210 per 100,000. The drop in the death-rate in Prussia has been much more rapid than in either the United States or England.

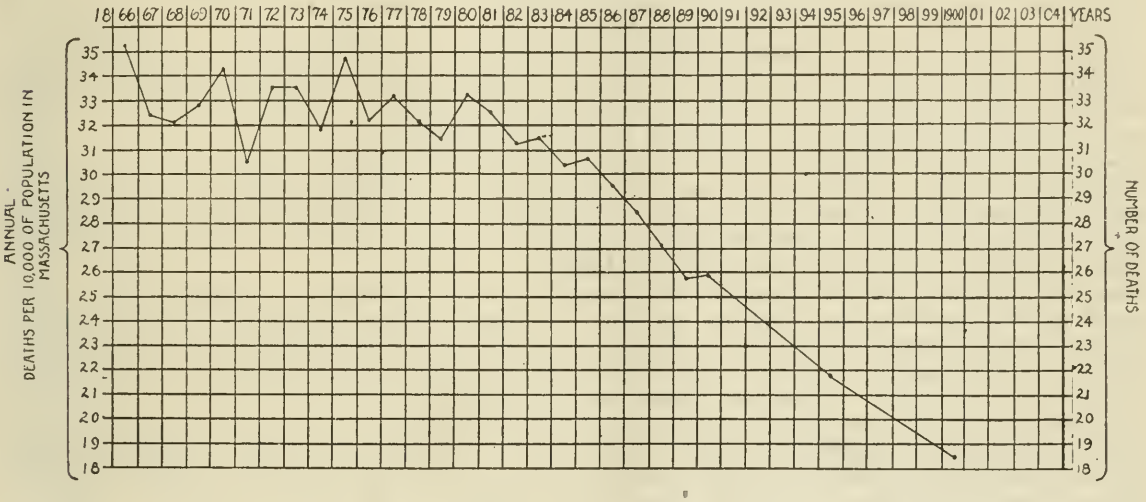
In order to bring the subject nearer home I have looked up the statistics for Massachusetts back to 1866. These I have arranged in the form of a chart based on the death-rate per 10,000 of population (see chart). It is instructive to note that our own death-rate began to drop about 1881–82, the year of the discovery of the tubercle bacillus. From then to the present the drop has been steady, from 1880, when the death-rate was 33.2 per 10,000 of population, to 1900 when it was 18.5 per 10,000, a decrease in twenty years of 14.7 for every 10,000 of population.[3] That means, if the record could be the same for the next twenty years, the death-rate from consumption would be 3.8 per 10,000 of population in 1920.

A similar chart, prepared by Hillier to show the English and Prussian death-rate, is equally promising. According to that chart the death-rate in Prussia will reach the zero mark in 1927.

* Read before The Worcester District Medical Society, Oct. 12, 1904.

In England the zero will not be reached for twenty years more, or about 1947.[4]

In order to bring these statistics more clearly before our minds, let me summarize them. As Hillier says, "compared with the annual death roll from tuberculosis in the British dominions alone the losses in the South African war were a bagatelle." At the present death-rate in the United States in four years 125,000 more persons die of consumption than died from all causes during the four years of our Civil War. It has the largest mortality record of any disease; pneumonia alone approaches it.




These are the facts which should urge us to every endeavor to stamp out the disease. For our encouragement we have a decrease in the death-rate which is not only large, but with each succeeding decade has been more marked.

As already shown, the decrease in 1900 in the United States was 58 per 100,000 of population; in England it was 48, in Prussia, 70, and in Massachusetts 74 less than in 1890. In the United States two factors must enter into all considerations of the possibility of reducing the death-rate from tuberculosis — first, our large colored population; second, foreigners who make their homes here, and their children either born here or brought here while very young.

The largest death-rate from consumption has always been among the colored people (nearly three times that of whites). The District of Columbia has the largest death-rate, according to population, from this disease of any state, and this is due, without doubt, to the large number of negroes living there.[1]

The next largest death-rate is among foreigners or immigrants and the children of foreign-born mothers. The reasons for this are not hard to understand. People from different climates, with different customs, possibly not the best physically of their race, come here and try to live, eat, drink, dress and expose themselves to the weather as they have been accustomed to do at home; add to these poverty, and the result is often disastrous for the individual. It is inevitable if the parents suffer that the children should be weakened and succumb easily to tubercular infection.

In spite of these two serious drawbacks to a low death-rate, we have decreased our death-rate approximately as fast as they have abroad, and we are fast equalling them in our efforts to stamp out this disease. None the less, I do not anticipate so rapid a decrease in the next twenty years. In the first place the past twenty have been house-cleaning years. We have gradually learned the power of cleanliness to save lives that before were wasted for lack of protection. Fresh air and food have accomplished much toward cures in incipient cases, and delayed death in other cases. The last twenty years, then, have been a crusade against filth, and because filth abounded the years show a fine record. There is still filth enough to occupy us for some time to come. It does not seem to the reader, however, that the next twenty years can make as good a record in figures, unless something radically new of a curative nature is discovered. But it is not too much to expect that by the latter half of this century the disease will die out as a result of the destruction of infectious material.

### CAUSES FOR DECREASE.

We come now to the consideration of the really important part of this subject. It is plainly evident that we have less consumption than twenty years ago. Why?

It seems to the reader the reasons may be summed up in the one word, education. Different observers give various reasons, but when we examine these explanations we find they are practically all a result of a better knowledge of the conditions under which tuberculosis thrives and an attempt to change those conditions.

An observer in England considers the decreased death-rate from tuberculosis there to be the result: (1) Of "generally improved sanitary conditions and food standards among the working classes;" (2) to the "segregation and isolation afforded by chest and general hospitals."

The same observer attributes the phenomenal decrease in the death-rate in Prussia to three causes:

(1) "The discovery of the tubercle bacillus, and the spreading of the knowledge of the infectious character of phthisis."

(2) "The greatly improved general condition of the working classes brought about by the operation of the Workman's State Insurance Laws."

(3) "The establishment of sanatoria," although at the time he wrote this was too recent a movement to have had much effect.[4]

Professor Koch is quoted as stating that the chief factor in his opinion has been the knowledge of the infectious character of phthisis and the precautions gradually brought into practice even among the lower classes in Germany against it. He thinks, however, that from a preventive point of view neither England nor Germany has as yet provided to a sufficient extent "the most essential of all institutions — the institution for advanced cases." [5] He says further: "Early cases of tuberculosis, where tubercle bacilli occur in the sputum, are a danger, but the danger from them is trifling compared to the danger arising from the advanced and fatal cases." He goes on: "In all other infectious diseases we attack infection at its source. Cases of smallpox, of leprosy, of diphtheria, of plague, are isolated, but cases of tuberculosis in their last stages, the most deadly stage of the most deadly disease of all, are still allowed throughout Europe to spread further infection broadcast in the midst of their already destitute families. This fact does not yet seem to be learned; when it is, and when we have these homes for the hopeless cases adjoining every city, then tuberculosis will pass from the midst of us."

## INFECTION.

In spite of careful investigations into the infectiousness of tuberculosis, the study of cases known to have been contracted from relatives, and the more frequent cases which are not so easily traceable to any certain source of infection, but are more or less reasonably considered to be the result of association with tubercular persons, there are writers of note who doubt the wisdom of classing tuberculosis as an infectious or contagious disease. They split hairs over the words, and prefer communicable as more in accord with the facts.

West says: "Being a germ disease, phthisis is in the nature of things infective, *i. e.*, communicable; that it should also be infectious in the common acceptation of the term is also possible, but does not necessarily follow. Whether it really is infectious or not cannot be assumed, but must be settled by evidence and not by presumption."[7] He believes that the inhalation of particles of dried sputum is the ordinary mode of infection in man. He quotes the experiments made by different investigators to determine the infectiousness of dust, of sputum in a moist state, and of the breath without sputum. Finally he discusses the question of "whether phthisis is catching — that is to say, whether it is communicable from the sick to the healthy." He says, "The question narrows itself to this. What evidence have we that phthisis may be conveyed to a healthy person by the inhalation of the breath of a phthisical patient? The bacilli have been found, it is true, in the air expelled, but careful observation has shown that they do not exist in the air as such, but in the particles of sputum thrown into it by coughing." [8]

It is rather difficult for one, whose ideas of infection, contagion and communicable are not narrowed down to the inhalation of a patient's breath, to treat these statements of even so eminent a writer as Dr. West, seriously. It seems to the reader that the admission of the possibility of contracting the disease from the dried particles of sputum is sufficient evidence that the disease is infectious, or, if you prefer, communicable.

Because he cannot demonstrate as clearly as might be possible in a case of smallpox, that infection in a given case was due to association with a given person who had the disease, Dr. West concludes:

(1) "That, though a communicable disease, phthisis is either not at all, or else in a very limited sense, contagious, and that the risk of direct infection from the sick to the healthy is very small."

(2) "That inhalation is probably the common mode of infection, and that indirectly through infected dust with which the air is laden." [9]

Flugge and Heyman conducted a series of experiments to determine the mode and danger of infection from consumptive persons. They collected the spray thrown out by coughing from numbers of patients, and found that some of the drops contained tubercle bacilli; that this injected intraperitoneally into guinea pigs gave positive results in many cases. (In one experiment four out of nine pigs were found to be infected.) A more interesting experiment was to "fix Guinea pigs with their heads facing the patients at a distance of 20 to 45 cm. every other day for three hours. Out of twenty-five pigs two died in four weeks, two in seven weeks, one in two months, and one in four months (six in all), all showing symptoms of inhalation tuberculosis."

Flugge, basing his opinion on these and other experiments made with dried sputa, maintains that while tuberculous dust derived from pulverized sputa is a source of infection, the cough-sprayed minute drops of a consumptive patient in an advanced stage are even more so. And this he affirms because experiment has shown that the quantity of sputum dust which under ordinary circumstances is pulverized small enough to float and be capable of inhalation is very small. [14]

Professor Koch condemns strongly the placing of other cases side by side with those of advanced consumptives in a general hospital. But considers the danger much greater in a "small confined room where the bacilli, virulent and minute, continue to be sprayed into the atmosphere."

Cornet, in the volume on Tuberculosis, Nothnagel's Practice, gives his own experiments on the modes of invasion. It would seem as though he has tested every possible avenue of entrance to the body. He concludes from his experiments that, "Tubercle bacilli, which have invaded the organism, regularly develop at the site of invasion or in the next set of lymph glands (law of localization). . . . Tubercle bacilli are capable of penetrating a macroscopically uninjured mucous membrane, in rare cases even the skin, especially if they are brought into close contact therewith by inunction. . . . All the organs [he tested] showed tuberculous changes if brought into suitable contact with the organism."

"The theory of a special predilection on the part of the lung for tuberculous poison finds no experimental confirmation. . . . The degree of frequency depends not upon an inherent peculiarity of the organ, as the expression predisposition would seem to indicate, but upon external conditions; it is controlled by the distance of the organ from the site of infection, and upon the mode of infection." [10]

The writer explains the difficulty of demonstrating the source of infection in most cases when the infection occurs naturally. This is due to the long period of time which elapses after the infection before the disease manifests itself. "It is this circumstance which makes plain why the infectious nature of tuberculosis was so long a matter of dispute." [11]

Cornet, while emphasizing the infectiousness of pulmonary tuberculosis under favorable circumstances, and the need for preventive measures, just as clearly shows how slight the danger of infection may be, provided proper precautions are taken. He says, "that the statement every man lives to some extent in a community of the tuberculous is without foundation." He also declares that statements concerning the number of persons infected at some time by tubercle bacilli which conclude that at least a third of the race is tuberculous are fallacious, founded upon erroneous deductions from statistics. [16]

"The chances of association with the tuberculous vary according to age — the child from one to five years evidently comes into direct contact only with its parents, its relatives, and the domestics. If these are healthy the child itself runs no risk of infection."

"From the sixth to the fifteenth year during which the child goes to school, the circle becomes widened so as to embrace the other children of the same class, numbering 30 to 40, and the teacher. . . . There is only one tuberculous individual in nearly 1,000 living children of the age of five to fifteen years, and this one individual imperils only his immediate environment, *i. e.*, 6 to 8 children."

"From the twentieth to the thirtieth years the extent of an individual's acquaintanceship will vary enormously according to the occupation and sex; but as a rule the number of persons with whom we come into close and continuous contact will hardly be found to exceed 8 or 10. . . . According to one table there is on the average one tuberculous individual among about 85 males and 109 females, ranging in age from twenty to sixty years; but this one case is a source of great danger only to his immediate neighbors."

"The exposure to infection is, therefore, less general than is ordinarily supposed; it is false to premise, as is done in almost every debate upon tuberculosis, that every person comes into frequent contact with the tuberculous, and would long since have been infected if the disease were really so transmissible." [17]

This question of infectiousness has naturally claimed the attention of the boards of health of our large cities.

Dr. Biggs believes in boards of health exercising supervision over, not only the ordinarily accepted infectious diseases, but over such diseases as are to a greater or less extent preventable; this supervision to be of such a character as not to annoy the patient or his friends. He gives the rules of the new code of the New York Board of Health relating to the infectious diseases. This subdivides infectious diseases into three classes:

(*A*) "Contagious (very readily communicable), — Measles, rubella (rotheln), scarlet fever, variola (smallpox), varicella (chicken pox), typhus fever, relapsing fever.

(*B*) "Communicable, — Diphtheria (croup), typhoid fever, Asiatic cholera, *tuberculosis* (of any organ), plague, tetanus, anthrax, glanders, epidemic cerebrospinal meningitis, leprosy, infectious diseases of the eye, puerperal septicemia, erysipelas, whooping cough.

(*C*) "Indirectly communicable (through intermediary host), — Yellow fever, malaria." [18]

This classification gives the board such authority as it needs to properly supervise the diseases named. In this classification, however, there is no splitting of hairs over the words, infectious, contagious and communicable. All the diseases are infectious, all are communicable, varying only in the degree.

## SUMMARY.

(1) Statistics of tuberculosis show conclusively a marked decrease in the death-rate during the last twenty years. For the countries whose statistics were available, it is not too much to expect that tuberculosis will die out in this century.

(2) The most careful investigators are agreed that tuberculosis is directly communicable from one person to another. They consider the dried sputum a source of danger, but the spray from a coughing, sneezing patient in the last stages of consumption they consider a much greater source of danger. They consider a hospital for the consumptive poor when in the last stage to be a necessity if we are to prevent the spread of the disease most effectively.

(3) With proper precautions the danger of infection from a consumptive may be reduced to almost nothing.

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## PULMONARY CONGESTION AS A CAUSE OF SUDDEN DEATH.*

BY W. W. MINER, M.D., WARE, MASS.

I HAVE met with severe and extensive congestion of the lungs in post-mortem examinations of three persons who died suddenly. They were not considered, by those associated with them, to be in any danger of the approach of death. One of them was a young man in vigorous health, one an elderly man in fair condition, and one a strong man who had a severe cold but was walking about as usual. Three hours later his dead body was found at the foot of a stairway where he had fallen. There were no ante-mortem symptoms noticed in two of these cases that attracted any particular attention. The strong young man, however, said he did not feel well after felling some small oak trees, and he dropped dead while leading his horse homeward with the fuel he had cut down and loaded on his wagon. I certified that in these cases the cause of death was congestion of the lungs, not being able to find any other sufficient cause, and the autopsies in each case showed to me ample cause of death in the remarkably congested condition of the lungs, which had been of very short duration.

CASE I. Francis K., seventy years of age, on Nov. 30, 1900, was found dead lying on a sofa in a sitting room at the house of an acquaintance when the family arose in the early Sunday forenoon. He had passed the night on the sofa with some covering over him in a cold room. Together with the man and woman in whose house he was found, he had been indulging in intoxicating liquors on the previous evening. The woman had a badly bruised and swollen face and was in a semi-stupid condition. An autopsy was held. He had contused places on the right side of his forehead, also a contused spot over nasal bones of triangular shape, one third of an inch in diameter, with dried blood on it. The skin was dried and stiff on bridge of nose. There was another contused spot on skin of nose, one-third inch in diameter. There was no blood in the interior of the nostrils.

His pericardium contained one-half an ounce of fluid of normal quality and the pericardial cavity was normal. The heart was normal and each cavity contained a very little dark blood; the valves and coronary arteries were normal.

The pulmonary pleural membrane was very firmly adherent to the costal pleura on both sides of the thorax at the upper portion and had whitish patches of thick fibrous character. The upper lobes of the lungs on both sides were extensively and firmly adherent to the walls of the chest and were of a grayish color and contained several calcareous nodules, giving evidence of some former chronic inflammatory or tubercular disease. There were no suppurating foci in the lungs and no accumulation of grayish gelatinous material or yellowish mucus, so that it was not considered that there was an active tubercular or destructive process going on in the lungs. The greater part of the lungs were uniformly dark and congested and the tissues and air passages of the lungs were thoroughly occupied by darkish fluid blood, giving evidence of acute pulmonary congestion which was considered by those present to be the cause of death.

The spleen was small. The venous system of the small intestines was congested. The liver was of normal size, but showed fatty degeneration. His right kidney was smaller than normal and had a cyst at its apex containing one and one half ounces of fluid and showed fatty degeneration. The left kidney appeared normal. The bladder was thickened and held about six ounces of urine.

CASE II. Michael P., twenty-three years of age, on Sept. 18, 1903, dropped dead in the road while leading a horse which was drawing a load of four-foot long pieces of oak wood fuel from the region where it had just been felled and cut into lengths by this young man. He was of Polish birth, strong and vigorous, and no suspicion of previous disease or disability was entertained by his brother with whom he was boarding. He had been discharged from employment in a factory a day or two before for some slight misconduct and was apparently quite anxious to earn his board and offered to go to his brother's lot and procure some fuel which was then a scarce article. His axe, judging from the cut surface of the wood, was not in the best condition of sharpness for the work of cutting green oak trees. Two young men joined him where he was cutting, and after a while he said he was not feeling well and would go home. They assisted him to some extent but did not realize in the least that his death was impeding.

At the autopsy nothing abnormal was found in the condition of his brain and its blood vessels or in the pericardium or heart. The cavities of the heart were nearly empty. Both lungs were throughout very deeply congested and of dark bluish red color externally and presented the character of severe congestion on section of different portions. No other lesion of the lungs was present. His face did not show any lividity or his surface generally. His bladder was contracted. His kidneys were congested, otherwise normal, and the weight of both was fourteen ounces.

His stomach contained about eight ounces of partly digested food and was largely liquid in character. There were streaks of congestion and hemorrhagic effusion in the walls of the stomach but the general appearance of the lining of the stomach was normal. The spleen and liver were found normal. There was nothing in the character of the stomach contents that excited any degree of suspicion. His mouth and fauces were in normal condition. There was nothing in his general appearance that justified any idea of poisoning or of any pre-existing disease. The congested condition of his lungs was considered the cause of his death and was thought to be the result of his anxiety to earn his board by the amount of fuel he could bring home. The physical effort required, with the poor condition of his axe, made such an amount of over-exertion as to cause pulmonary congestion and death.

CASE III. Eugene B., thirty-seven years of age, was found dead at the foot of a cellar in May, 1904. His head was bent forward on his body which had apparently

* Read at the annual meeting of the Massachusetts Medico-Legal Society, June 7, 1904.

fallen headlong the length of the stairs and it was at first thought probable that a fracture of the neck was the cause of his death. His wife said he had been having a severe cold for several days previous and he had not gone to his work but was walking about everywhere, ate pretty well, was a drinker, and his condition did not impress itself on his wife as being worthy of any special attention. She left home about 3 P.M., when her husband was working about the yard, and when she returned about supper time, her husband was found to be absent. His body was discovered at 7 P.M., by a lady living in the same building who searched for him.

After careful examination no fracture of the neck could be found. There was nothing obtained by external inspection that pointed to the cause of his death. He was said to be in the habit of going on sprees in the use of intoxicating liquor and it was feared that the last rites of the church at his funeral would be denied.

An autopsy was arranged for, at which it became evident that the congested condition of his lungs was the cause of his death. His lungs had only one area of about three inches in diameter which had anything of the normal grayish color. His heart contained a moderate amount of dark clotted blood; no other indication of abnormal condition of heart or pericardium. His pleural cavity showed some amount of fluid effusion. His stomach showed something of the effect of alcoholic liquors. His liver was enlarged and of the fatty, nutmeg variety. His kidneys showed some fatty degeneration. There was not that amount of evidence of pleuro-pneumonia which would be looked for in one who had been known to have been suffering from that disease. It was considered that his vital powers had been debilitated by his habits of work and use of liquors and that an attack of la grippe had rendered him susceptible to the congestion that terminated his life so suddenly.

In order to assure myself as to whether this source of sudden death had been recognized by others as occurring, especially after violent exertion, I inquired of Dr. M. H. Davitt, a veterinary surgeon who had studied with Dr. Salomon in the U. S. Government Department of Animal Industry, if he had known this condition being found in horses at post-mortem, and he informed me that it was not infrequent and was found not only in animals which had been overdriven, but also in those which were quartered in damp, dark or unhealthy stables, which might cause debility and inability to resist attacks of disease. I have not found very much in the works I have consulted bearing on the occurrence of this cause of sudden death in the human being. I, therefore, desire, with your consent, to present some extracts from a volume on veterinary medicine which was brought to my attention.

Dr. William Robertson, F.R.C.V.S., and late principal of the Royal Veterinary College of London, in his textbook entitled " A Textbook of the Practice of Equine Medicine," says in treating of pulmonary congestion or pulmonary apoplexy as occurring in horses as follows:

"*Nature and Causation.* — Congestion of the lungs, or engorgement of the vessels of the pulmonary tissue by unnatural collection or detention of blood there, may occur in the horse and all animals as a precursor and accompaniment of inflammation in pulmonary structures; also in other local or general diseased conditions, as in some cardiac affections, enteric diseases, arthritic inflammations and in some special epizootics.

" In addition, however, congestion or collection to repletion of blood in the pulmonary vessels occurs as an independent or distinct condition, which is that to which we now chiefly refer, and which we mean to indicate when not qualified by any accompanying term explanatory of its origin or association. When of an acute character and accompanied with capillary hemorrhage, it is sometimes spoken of as a pulmonary appolexy.

" This state of hyperemia or hemal engorgement is recognized as: (1) Acute or active; (2) passive or mechanical. The former is the manifestation which we most frequently encounter and most readily recognize. *Active congestion* in the horse is most frequently the result of (1) increased cardiac action, without or apart from relative resisting power in pulmonary vessels; (2) all agencies which at other times or with other subjects develop bronchial or common catarrh. *Passive congestion* is encountered under conditions associated with retarded venous circulation or depressed heart-action, as in mitral and some other cardiac disturbances, and in general exhaustion attendant on some fevers and debilitating diseases.

"*Anatomical Characters.* — The after-death appearances appreciable by the eye in the lung tissue of horses which have fallen victims to a serious invasion of pulmonary congestion, are perfectly characteristic.

" There is distention and general engorgement of the pulmonary vascular system with dark fluid blood, with occasionally irregularly distributed circumscribed hemorrhagic effusions from rupture of minute and capillary vessels. The lungs are swollen — pulmonary edema — of a dark color; the crepitant character which so distinguishes healthy lung tissue is not gone but diminished. It feels to contain more liquid than air. Although heavier than natural, its normal elasticity and spongy texture are not so much destroyed that it will not float in water, in this respect differing from the consolidation of pneumonia, the condition of red hepatization to which in many respects it bears a resemblance. This state of splenization of lung structure, as the result of pulmonary engorgement has been called from its resemblance in physical character to the spleen, has, when excised, a dark red color, with occasional spots of a deeper hue marking the points of blood effusion, and from the cut surface there is an oozing of bloody serous liquid mingled with mucus, and rendered frothy from the entanglement of air.

"The entire structure is from the engorgement and distention rendered more friable than natural, less so, however, than in the more advanced stage of hepatization. The lining membrane throughout the entire tract of the air tubes, particularly the bronchi, is heightened in color, and covered with frothy mucus. In no parts do we find effusion, save of serous material; the char-

acteristic plastic exudation of inflammatory action being as yet undeveloped.

" In the examination after death of animals which have died from pulmonary congestion, a mistake very commonly made by non-professional observers is to regard the dark-colored friable condition of acute engorgement, with its softened, damp appearance tending to putrescence, as indicative of a diseased condition of some time standing; whereas we know that the opposite is the direct conclusion to be drawn from these conditions. Darkness of color, with softness and liquidity of texture, without the presence of organized or plastic and organizable exudate, may be accepted as the condition of pulmonary congestion, a state which may develop itself in any animal previously apparently healthy, in less than an hour. Both sides of the heart, but particularly the right with the large vessels proceeding to and from it, are more or less full of dark-colored, rather viscid but not coagulated blood.

" The cases of congestion which have terminated fatally connected with *other diseased conditions* — passive congestion chiefly — *rarely present* so *characteristic lesions of the hyperemic state* as those which are the result of over-exertion in perfectly healthy animals. The lung tissue is in these not so dark in color, more crepitant, with a greater quantity of frothy mucus in the air tubes; while from the state of the minute bronchi in particular, we are disposed to believe that a certain amount of capillary bronchitis is very often associated with these attacks."

Professor Osler, in his "Practice of Medicine" makes this statement regarding pulmonary congestion: " The occurrence of an intense and rapidly fatal congestion of the lung following extreme heat or cold or sometimes violent exertion, is recognized by some authors. Renforth, the oarsman, is said to have died from this cause during the race at Halifax. Leuf has described cases in which, in association with drunkenness, exposure and cold, death occurred suddenly, or within twenty-four hours, the only lesion found being an extreme, almost hemorrhagic, congestion of the lungs. It is by no means certain that in these cases death really occurs from pulmonary congestion in the absence of specific statements with reference to the coronary arteries. Several times in sudden death from disease of these vessels I have seen great engorgement of the lungs, though not the extreme grade mentioned by Leuf. I have no personal knowledge of cases such as he describes."

Butler, in his work on "Diagnostics of Internal Medicine," refers to pulmonary congestion as of two forms, active and passive. He says under the heading of active congestion: " In the great majority of cases, active hyperemia is a symptom or associated condition in connection with certain pulmonary diseases, such as bronchitis, pneumonia, tuberculosis, or pleurisy. In certain instances it is possible that it may occur as a primary and independent affection, which may quickly disappear or be followed by edema, or, in rare cases, by reason of its intensity, terminate in death. This condition results from drunkenness and exposure to severe cold or great heat, or from violent exertion.

" The symptoms are rapid breathing, cough, blood-tinged frothy sputa, somewhat harsh respiration, with fine moist rales, and an absence of fever, unless some febrile or inflammatory condition coexists. The diagnosis of this condition, aside from pulmonary edema and abortive pneumonia, must be made with caution."

Brouardel advises caution in determining pulmonary congestion as the orgininal cause of sudden death.

## New Instrument.

### A DEVICE FOR GREATER ACCURACY OF DILUTION IN THOMA-ZEISS PIPETTES.

BY A. D. DRAPER, M.D., BOSTON.

In counting leucocytes and red cells by means of the Thoma apparatus I have many times thought that a more accurate method of drawing the diluting fluid to the proper mark would be most acceptable, and I therefore have devised the contrivance represented below.




It consists of an ordinary hypodermic syringe with a screw thread on the piston rod, to which has been added a " knurled " nut (A) to enable the operator to very gradually raise the piston; a metal tube (C) which is reamed at one end to receive the white or red pipette, the other end having a thread cut in it to screw on to the syringe, and lastly a rubber tube (B) which fits snugly over both pipette and metal tube, making a tight joint and holding the former in place.

This device has proved in my experience to be much more accurate than the rubber tube and suction, the dilution being regulated to a nicety; and in addition the objectionable features of cleansing and drying are eliminated; and finally the possible risk of infection from the rubber tube is abolished.

## Clinical Department.

### REPORT OF CASES FROM THE SURGICAL SERVICE OF THE CHILDREN'S HOSPITAL, BOSTON, MASS.

SECOND SERIES.

BY DRS. H. L. BURRELL, H. W. CUSHING AND J. S. STONE.
REPORTED BY DR. J. S. STONE.

#### TUBERCULOUS ULCERATION OF THE LOWER ILEUM. PERFORATION. PERITONITIS. OPERATION. DEATH AT THE END OF FIVE WEEKS.

A BOY, aged fifteen months, was admitted to the medical service of the Children's Hospital on May 6, 1903.

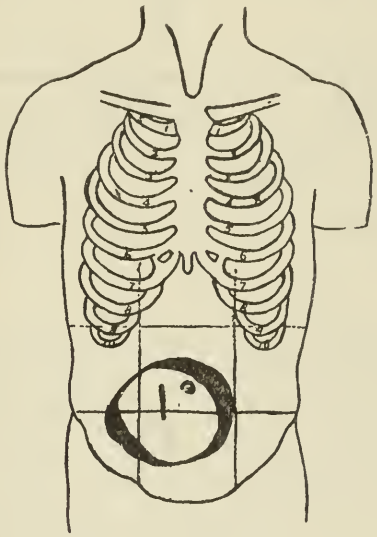
The family history was good except that one aunt had died of consumption and another child had died of convulsions when three weeks old. The child had never been sick till two months before entrance. He had been breast fed for eight months, afterward having bread and milk, oatmeal and egg.

Seven weeks before entrance he caught cold and had a cough ever since. During this time he lost flesh and color. A month before entrance the mother noticed tenderness of the abdomen when the child was touched or moved. Since then the abdomen had grown slowly but steadily larger. The child had taken food well, having vomited once, a week before entrance. The bowels had been regular till two weeks before entrance; after that they had been constipated. Every afternoon the child had become feverish. The abdomen had grown more tender. The child had lain on the side with the knees drawn up. The cough, the constipation, the abdominal tenderness and swelling were the symptoms for which the mother sought relief.

*Physical Examination.* — Well developed and nourished; expression, bright; skin and mucous membranes, pale; mouth and throat, normal; respiration, not notably fast. A rosary and slightly open fontanelle were the only signs of rickets. The lymphatic glands were not enlarged. The lungs were normal. The heart was normal, except for a soft, systolic murmur over the whole precordia, loudest in the second left interspace The pulse was regular, of good tension and volume. The abdomen was markedly distended and tympanitic throughout. It was tender, but nothing abnormal was felt, though it was too tense for satisfactory examination. The greatest resistance was on the left side at about the level of umbilicus. It seemed to be muscular. The blood examination showed hemoglobin 80%, and a leucocytosis of 26,300.

After admission the abdomen remained tense. Most of the time the child sat up in bed bent forward. The amount of pain increased. The child grew worse. The temperature was usually subnormal in the morning and high later in the day. The leucocytosis increased to 53,000. The iodophilic reaction became marked.

On May 13, a week after entrance, the child was transferred to the surgical service. The child was pale; the expression pinched and anxious. Respiration was shallow. The abdomen was greatly distended. There was marked dullness in the right flank and in the lower umbilical and right iliac regions. The rest of the abdomen was tympanitic. There was marked muscular spasm, greatest in the region below and to the right of the umbilicus. A resistant mass could be felt extending from the right hypochondrium downward and inward to a point an inch above the umbilicus, and then downward and to the left until it gradually disappeared. About half an inch inside the anterior superior spine on the right another mass could be felt extending downward and inward parallel to Poupart's ligament until it became gradually lost. Connecting these two areas could be traced less distinctly the borders of the area of greatest resistance. The outline of the mass is indicated in the diagram. The edges could be felt most plainly where the shading is heavy. There was dullness over the mass except that the center was tympanitic.

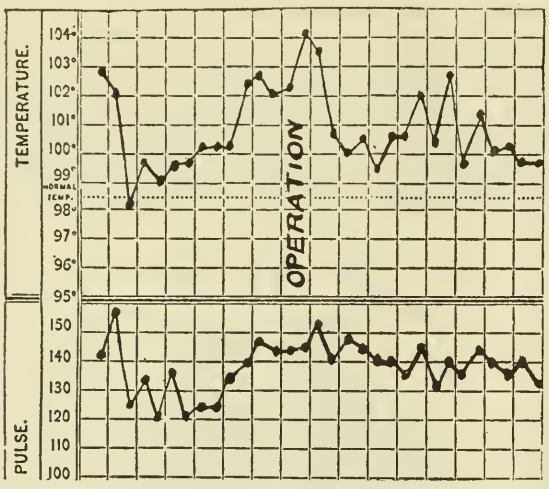


Tuberculous ulceration of lower ilium.

The diagnosis made was peritonitis, probably general, originating in the right iliac fossa, probably from the appendix.

The child was operated upon at once. Under ether the mass could be felt somewhat more distinctly than before but no further light was thrown on the diagnosis. An incision an inch and a half long was made just inside the outer border of the right rectus, the upper end of the incision being at the level of the umbilicus. The rectus was retracted and its posterior sheath was found to be edematous. This was cut through carefully. The underlying peritoneal fat and the peritoneum were very edematous. The dissection was carried down carefully, until there was a gush of about four ounces of brownish yellow liquid feces and considerable gas. It was thought that the bowel might have been opened but on enlarging the incision a firmly walled off cavity was found, surrounded as far as could be seen by coils of small intestine. The finger passed directly inward came at a depth of an inch and a half to a loop of small intestine running transversely. In the upper side of this was a round perforation about the size of a lead pencil. The edges of this were clean cut, slightly pouting, and made up of the swollen congested intestinal wall. The finger could be passed directly backward and slightly downward into a pocket among the folds of the mesentery. Another pocket led upward immediately above the perforation. No enlarged glands were felt. The peritoneum which could be seen was red and congested. There was comparatively little fibrin, the adhesions were firm, the amount of pus was relatively small compared with the amount of feces which came out from the cavity.

Feces and a few particles of undigested food were freely discharged during the operation. The cavity was wiped out and gauze wicks were inserted into each of the pockets mentioned and down to the perforation. On account of the swelling, the friable condition of the bowel, the firmness of the adhesions, and the depth of the seat of perforation, no attempt was made to close it.




Tuberculous ulceration of lower ilium.

The child stood the operation well and made a good recovery from ether. The Widal reaction was negative after operation and again three weeks later. For two weeks after operation the child improved a little. The temperature dropped promptly to 100. The pulse and respiration dropped somewhat. Milk and lime water were given by mouth in small amounts. Rectal enemata were depended upon chiefly to keep up the nutrition. The improvement, however, was only temporary. There was a very free fecal discharge from the wound, often formed, though at other times, loose and containing much mucus. At the end of two weeks the child began to go down hill again. The enemata were not retained and were abandoned. The child did not take food well, and changes in the diet made but temporary difference in this respect. After three weeks the discharge from the wound consisted practically entirely of well-formed, well-digested feces. After an interval the enemata were renewed but they were not retained after a few days.

The loss in flesh and strength went on more rapidly. At the end of five weeks signs suggesting an inhalation pneumonia developed. The respiration jumped up from 40 to 60. A week before the pulse had risen from 120 to 160. The child continued to fail and died on the thirty-ninth day after operation.

When the child ceased to gain after operation the advisability of further interference was carefully considered. The increasing weakness seemed to be due much more to the disease which caused the intestinal perforation than to inanition resulting from deficient absorption from the intestine. It was thought that the perforation was low down in the ilium; first, because the feces which escaped were formed; and second, because there was no digestion of the skin or other tissues about the wound. The location of the perforation in the right iliac fossa in a transverse fold of small intestine was also consistent with this belief. Suture of the edges of the perforation was thought useless because of the friable condition of the bowel. A radical resection in the presence of the firm adhesions and numerous pockets seemed impossible because of the poor condition of the child. An intestinal anastomosis seemed to offer no hope of bettering the disease.

As a full autopsy was not permitted, an examination was made through the wound. There was no digestion of the tissues about the wound, but they were distinctly friable. The abscess cavity was found to extend on the right as far as the anterior superior spine, downward behind the bladder into the pelvis and in front of the intestines, on the left as far as the anterior superior spine. Deep in there were pockets off the abscess cavity extending among the folds of the mesentery. On the right a pocket reached up toward the liver just to the right of the gall bladder. The abscess cavity was lined everywhere by thick, fine adhesions between the folds of intestines. They were broken with great difficulty. Elsewhere the whole peritoneal cavity was obliterated by chronic peritonitis. There was no free fluid anywhere except in the abscess cavity. The intestines were not distended but were normal in size, and except for the obliterating peritonitis no gross lesions were seen. The cecum and ileo-cecal valve lay posteriorly to the abscess cavity. The appendix, which lay immediately below the head of the cecum, was coiled in an S-shape just outside the iliac vessels. It was normal. The lowest coil of the ilium just above the ileo-cecal valve ran first transversely, then turned upward, and back on itself to the right. In this second fold at a point about four inches above the ileo-cecal valve was a perforation which involved about two thirds of the lumen of the gut opposite to the mesenteric attachment. The size of the perforation varied with the position in which the gut was held but obviously it was nearly as large as the lumen of the gut. Below this perforation and above the ileo-cecal valve the gut was congested and thickened. In this thickened bowel were three areas in which the intestinal wall was extremely thin, soft and very red. These were evidently ulcers which had not yet perforated. The mesenteric glands were much enlarged. Above the perforation the ileum showed no gross lesions aside from those incident to the obliterating peritonitis. The sigmoid flexure made up the posterior wall of the abscess cavity on the left. The top of the ascending loop was firmly bound down posteriorly at a point just below the left kidney. The descending loop and descending colon lay outside of and in front of this and made up the left side and posterior wall of the pocket of the abscess on that side. The spleen was normal in size and appearance, the kidneys were congested but otherwise showed no gross lesions, the liver showed nothing aside from the perihepatitis, chiefly in the region of the gall bladder. The pancreas was normal. The stomach was normal. The peritoneum about the stomach had not been entirely obliterated; it was found comparatively normal. The omentum was thickened and closely adherent to the small intestines just below the transverse colon. There was some pus in the pockets, especially toward the liver, but liquid and solid feces seemed to be the chief contents of the main part of the abscess cavity. The lower ileum, the ileo-cecal valve, appendix and head of the cecum were removed entirely and pieces of the spleen, liver, left kidney, and some of the mesenteric glands were also removed for examination. The report of the pathologist, Dr. Mallory, showed tuberculosis of intestine, peritoneum and mesenteric lymph nodes.

In looking back on the case, the pathological conditions proved to be substantially what they were thought to be during life. The very widespread obliterating peritonitis was not suspected. When first admitted to the hospital the symptoms suggested strongly a tuberculous peritonitis. The perforation led to symptoms which suggested

appendicitis. The operation corrected this mistake. The suspicion of typhoid fever with perforation was then very great and was eliminated only by the subsequent course of the disease and the continued absence of the Widal reaction. An acute inflammatory perforation of the small intestine, it was thought, would probably have tended to heal spontaneously if the abscess cavity was drained. Finally by elimination the diagnosis was made of tuberculous ulceration of the lower ileum with perforation and localized peritonitis.

The reluctance to attempt surgical interference after the first operation was more than justified by the post-mortem findings. The extent of the firm adhesions about the walled-off abscess cavity would have made intestinal resection practically impossible. The obliterating peritonitis, which was not diagnosed, would have made operative relief impossible.

The only surgical measure which could have saved the child's life would have been a resection of about eight inches of the ileum immediately above the cecal valve. This, if done at the onset of the trouble, would in all probability have entirely removed the source of the disease. A careful examination of the bowel would have shown the areas of ulceration. In this particular case the tuberculosis was thought to be primary in the peritoneum rather than in large ulcers within the ileum. Had the surgeon found the ulceration in the course of an operation early in the course the temptation to regard the condition as typhoid fever and to close the abdomen would have been very strong indeed.

(*To be continued.*)

## Medical Progress.

### REPORT ON PEDIATRICS.

BY THOMAS MORGAN ROTCH, M.D., AND JOHN LOVETT MORSE, M.D.

(Concluded from No. 24, page 660.)

#### THE NORMAL VARIATIONS IN TEMPERATURE DURING THE FIRST YEAR.[7]

Jundell's investigations, based on more than three thousand examinations during the first year of life, showed a constant and gradually increasing amount of variation in the daily fluctuations of the temperature. These fluctuations were very slight during the first days of life, amounting to about .1° C. At the end of the first month they averaged between .25° C. and .30° C.; at the end of the second month, between .30° C. and .37° C., and at six months they reached the average of .57° C. From two to five years the average was .95° C., that is, somewhat greater than in adult life.

It is evident, therefore, that the usual assumption of great irregularity of the temperature in the first year is not justified. The temperature varies within narrower limits than has been supposed. It cannot be denied, however, that the temperature during the first year is more easily and more strongly influenced by outside influences than in adults. His observations show, however, that these fluctuations are not so great in healthy, well-cared-for children as has been commonly believed. It is evident, moreover, that the heat regulatory mechanism can accomplish more in healthy, normally developed children, even in the first days of life, than has been assumed.

#### THE RELATIONSHIP BETWEEN SEROUS PLEURISY AND TUBERCULOSIS IN CHILDHOOD.[8]

Baginsky's article in the *Leyden-Festschrift* is the only one dealing with this subject in childhood. Nathan saw 73 cases of idiopathic serous pleurisy in ten years. Fourteen of these had a direct tubercular family history; 52 had no such history. Other tubercular foci were found in but two cases. One of these had tuberculosis of the skin, the other clinical tubercular peritonitis. In the latter case a guinea pig injected with fluid from the pleura showed no signs of tuberculosis. Two and one half years later the child was well in every way and showed no evidences of tuberculosis. The sputum was examined in three cases, in none of which were tubercle bacilli found. The fluid was examined microscopically for tubercle bacilli in fourteen cases, in none of which were they found. Cultures were made in four cases, which were sterile in every instance. Animal experiments were made in ten cases. One of these children had a family history of tuberculosis. The guinea pig injected with the exudate from this child died after three months and showed extensive tuberculosis. The child was well a year later, but showed slight signs at the right apex which were not necessarily tubercular in origin. In the nine other cases the results were absolutely negative. Thirty-seven of these cases were seen at intervals of from one to ten years after the pleurisy, the average interval being four and one-third years. Only three showed evidences of tuberculosis. Two of these had tuberculosis of the lungs, and one tuberculosis of the hip. In two of the others tuberculosis was suggested.

He concludes, with Baginsky, that pleurisy, in children at least, does not stand in nearly so close a relationship to tuberculosis as has been assumed by many authors.

#### AN EPIDEMIC OF WHOOPING COUGH IN A WARD FOR PREMATURE INFANTS.[9]

During the time of the epidemic there were in the ward 44 premature babies, the oldest of which was six months, and 14 babies of the nurses, the oldest of which was ten months, and the others from one to six and one-half months old. Only 1 of the 44 premature infants had a true whooping cough; 3 of the others had slight coughs of short duration, which were not at all characteristic and in all probability were not whooping cough. Ten of the nurses' children contracted the disease,

and 7 of them had pulmonary complications. On account of the conditions in the ward, the exposure of the nurses' children was pretty thorough and constant. The premature infants, however, after the disease was recognized, were not directly exposed, but were nursed by the same women. The receptivity of the premature infants was therefore very slight. It was much greater among the infants of the nurses; those who escaped were among the youngest. It was noticeable that a number of infants who had not contracted the disease in spite of constant exposure, did contract it later when their resistance was lessened by slight indispositions. These young infants bore the disease better than older children usually do, and suffered less in their general condition.

Judging from these figures, it seems that the new-born are less susceptible to whooping cough than older children. These figures also seem to show that early infancy does not necessarily carry with it an unfavorable prognosis in whooping cough.

### THE IDIOPHILE AND GLYCOSURIC REACTION IN WHOOPING COUGH.[10]

Crisafi found a marked idiophilia in 80% of cases of whooping cough. The idiophile granules rarely occurred in the lymphocytes, more often in the eosinophiles and chiefly in the polynuclear neutrophiles. He found that glycosuria occurred very rarely in whooping cough.

### THE OPEN-AIR TREATMENT OF BRONCHOPNEUMONIA COMPLICATING WHOOPING COUGH.[11]

The death-rate in the Edinburgh City Hospital from whooping cough for the eight years ending in 1900 was 18.1%. The principal cause of death was complicating bronchopneumonia. Seventy-one per cent of the cases of bronchopneumonia complicating whooping cough died. Many remedies for whooping cough were tried in the effort to reduce the mortality. Belladonna seemed to be of some service. Most of the other drugs seemed to act as depressants. The treatment was then changed by keeping the children in the open air in a sheltered position, with the cots uncovered, for six hours daily, providing it did not rain. At night, on rainy days and in the winter, the patients were kept in a large airy ward with the windows open. The chief contra-indication for the open-air treatment was laryngitis. The good effects noted were increase of appetite and general strength, and diminution of irritability and cyanosis. The death-rate in the cases of bronchopneumonia was reduced one half after the outdoor treatment was begun.

### ERYTHEMA CONTAGIOSUM.[12]

Under the name of "erythema contagiosum," Escherich has recently described cases of a disease which, in many ways, resembles the eruptive fevers of childhood. The name was first given to the disease by Stricker of Giessen, but Escherich states that he has observed it for a good many years, first at Graz, and later at Vienna. It would appear that the disease was at first confounded with German measles. The disease has an incubation period of from six to fourteen days, and appears in children who are subjectively well in the form of an intense redness and turgescence of the cheeks, which is often quite sharply limited by the naso-labial line, thus resembling erysipelas. Less frequently the eruption on the face is in the form of flecks or gyrate patches. In most cases there are also present on the forehead, the region of the ears, and on the extremities, scattered patches of bluish-red erythema which sometimes coalesce. The eruption lasts from six to eight days, and then gradually fades, first on the face, then on the extremities. There is no desquamation, and unpleasant sequelæ are not observed. From time to time there have been described in this country epidemics of atypical eruptive fevers, usually considered to be atypical German measles. It seems likely that the disease which Escherich describes may exist in this country, and it behooves the general practitioner, who is most likely to meet with such cases, to be on the lookout for it.

### THE LIMITS OF THE ASSIMILATION OF SUGAR IN CHILDHOOD.[13]

He studied thirty-three children, from one month to thirteen years of age. His investigations showed that the limit of the assimilation of grape sugar in childhood is not influenced by the body weight, by the general condition of nutrition, or by diseases such as tuberculosis, syphilis, rickets, or anemia, but that, on the other hand, it is dependent on age. The limit of assimilation gradually increases with age, so that at the end of the first decade it has reached that of adults.

### OBSERVATIONS CONCERNING THE CONTAGIOUSNESS OF MEASLES.[14]

Freund had an opportunity of observing an epidemic of measles in the Breslau Asylum for Children, which contained children of all ages. It was evident that the susceptibility to measles is very slight during the first year, because no child under nine months contracted the disease, although there was abundant opportunity for infection. It seemed to make no difference whether the children were breast or artificially fed. He concludes from his observation of two cases that measles may be contagious as long as fourteen days after the appearance of the eruption.

### THE ALBUMIN CONTENT OF WHEY.[15]

Grulee prepared his whey with powdered rennet in the proportion of one grain to the quart. The whey was filtered through paper and to the filtrate acetic acid and ammonium hydroxid were added. The liquid was boiled until sedimentation was complete. The albumin was washed and dried repeatedly at 105° C. until the weight was constant. The average amount of albumin found in 24% of the examinations was .5013;

the lowest was .2929, the highest, .6616. He thinks that this percentage of albumin, which is much lower than that found by other observers, may be explained by the character of the rennet used or by the method of examination. He thinks that the difference in the method of examination would, in all probability, not account for the difference in the results. He thinks that the liquids used in the preparations of liquid rennets may inhibit the action of the rennet, and that with powdered rennet a much greater action is obtained.

He concludes that the kind of rennet used is the most important factor in the preparation of whey, inasmuch as it is responsible for the amount of casein curdled.

### ON THE DIMINUTION OF CITRIC ACID IN MILK AS THE RESULT OF HEATING.[16]

Obermaier first calls attention to the supposed influence of sterilized milk in the development of scurvy. He states that when raw milk is substituted for heated milk in this disease the symptoms are relieved and that, even if the heated milk is continued and fruit juices are given, the same result is attained. He states that the one substance which is present both in raw milk and in the juice of fruits, and which is the curative agent in scurvy, is most probably citric acid. In order to determine whether the inferiority of heated to raw milk could be attributed to a diminution of citric acid, he submitted milk to varying degrees of heat, and found a loss of citric acid which increased progressively with the temperature at which the milk was heated. Thus, a milk heated for fifteen minutes at 75° lost 4.13% of its citric acid; one exposed to the same time to 100°, 14.47%, and one at 120°, 22.7%. It is probable that in raw milk citric acid exists in the form of a soluble citrate of calcium, and that this salt is oxidized by heat and precipitated in the form of the feebly soluble tricalcic citrate. He concludes by remarking that a temperature below 70° is preferable to sterilization which does not leave a sufficient quantity of assimilable citric acid in the milk.

### THE ACTION OF FORMALDEHYDE UPON MILK.[17]

Trillet, suspecting that the addition of formaldehyde to milk made it less digestible, studied the comparative digestibility of the casein of pure milk and of milk to which various quantities of formalin had been added. The peptic digestion of the casein of milk to which formalin had been added left a residue 5% or 6% greater than that from pure milk. When the casein separated from milk by pressure was treated directly with formalin, the weight of the residue was increased as much as 30%. He put dried casein into a vessel above another vessel containing formic aldehyde. He found that the solubility of this casein in alkaline solutions diminished steadily, so that after twelve hours it was completely insoluble, and pepsin no longer acted upon it. This property of formaldehyde to diminish the digestibility of the albuminoids of milk is sufficient of itself to contra-indicate its use. Moreover, an accumulation in the organism to such a substance as the result of its daily use certainly ought not to be without danger.

### ABSORPTION OF ALBUMINOIDS IN ALIMENTARY CANAL OF NEW-BORN.[18]

This experimental and clinical research shows that albumin foreign to the body, introduced into the alimentary canal, is absorbed comparatively unmodified. It can be detected again in the blood by means of the biologic test. The age limit up to which time this is possible was the seventh day of life in the experiments reported. When a very large amount was introduced, it could be detected in the blood even in somewhat older subjects. The experiments with puppies, kittens, rabbits, etc., were conclusive, and the eighth day was invariably the limit. In infants the age limit seems to be a trifle later. In case of a gastro-intestinal affection, inducing lesions in the alimentary canal, the absorption can occur likewise at a later age. The research further established that albumin thus absorbed induced the production of an antibody. This suggests that the administration of foreign albumin to a normal new-born infant, or to an older infant suffering from some gastro-intestinal trouble, is liable to do harm as it passes unmodified into the blood and starts the specific reaction on the part of the organism.

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## Reports of Societies.

### THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated Meeting, October 10, 1904.

The President, T. E. Satterthwaite, M.D., in the Chair.

Major J. L. Powell, Surgeon, U. S. Army, read a paper on

MOSQUITOES AND MALARIA,

in which he gave the results of a series of investigations during the past summer at Fort Hamilton, N. Y., as embodied in a report which he had recently made to the Government. There had been quite a large number of cases of acute malarial fever among the troops stationed there, and mosquitoes were also abundant, but it was a fact that, notwithstanding the most diligent search, only a single specimen of the anopheles

variety was ever found. At the same time, there were conditions about the pest and in its vicinity which had formerly been regarded as sources of malaria, and he could not but believe, from this experience, that there were means other than the anopheles mosquito by which the poison was conveyed to the human system.

Dr. JOHN V. SHOEMAKER of Philadelphia read a paper on

TROPICAL MALARIA.

During and immediately after the Spanish-American War Dr. Shoemaker had an opportunity of observing some of the more severe forms which malaria exhibits in the tropics as it occurred among the soldiers brought to the Medico-Chirurgical Hospital. With the recognition of the plasmodium and the knowledge of its transmission by the mosquito, he said, our conceptions of malarial infection in its different forms have been rendered much more exact. We have also gained an immensely important advantage in the possession of absolute scientific tests for diagnosis.

The study of the plasmodium in its various phases has enabled us to devise the classification based upon purely clinical phenomena. The malarial paroxysm coincides with the sporulation of a group of the parasites contained within the red blood corpuscles. If the plasmodium is present in various stages of development, the discharge of the spores and toxins is irregular. Accordingly, the typical periodicity of symptoms is disturbed, and the fever assumes a remittent or continuous type. This was illustrated in Dr. Shoemaker's more severe cases. Most of them were distinguished by the severity of the symptoms and the irregular course of the fever. All were accompanied and followed by extreme prostration. According to the histories, many of the cases began more or less insidiously; in others the chill figured as a prominent initial feature. Sometimes, but not always, the fever was followed by profuse sweats. One interesting case displayed a chill every morning and every afternoon for two weeks, each chill being succeeded by fever and sweats. One patient went to sleep at night with a violent headache and awoke to find himself in a cold sweat which was followed by a chill and fever, a reversal of the ordinary succession. In many instances there was such a blending of succeeding paroxysms with the febrile rise and fall, that the record approached that of a continuous fever.

Several cases were accompanied by acute bronchitis. In a considerable proportion gastro-intestinal symptoms were marked; nausea and vomiting were common, and some of the men complained of much abdominal pain. Diarrhea or dysentery was met with in some instances; diarrhea in the beginning of the case, followed by constipation, was observed in many of the patients. In most of the cases the spleen was more or less enlarged; in some there was tenderness over the spleen without much increase in the size of the organ. In several of the cases there was a discoloration of the skin, varying from a sallow hue to the deepest jaundice, and testifying to the alteration of the hemoglobin by the malarial parasite and its liberation from the red cells. In many there was a decided diminution in the secretion of urine, which contained bile-pigment and was high colored. In several instances there was albuminuria and in one, hematuria. In two cases which bore a close resemblance to yellow fever the men lay in a state of stupor attended with low delirium. Many of the cases exemplified the great tendency to recurrence in this variety of malarial fever. After a defervescence of ten days to two weeks, the symptoms would return and run a similar course.

As there were being brought into the hospital at the same time about five times as many typhoid as malarial patients, it was necessary to be extremely careful in framing the diagnosis. Fortunately for accuracy we are no longer dependent solely upon clinical observation. The presence, on the other hand, of the Bacillus typhosus and the evidence of Widal's test, and, on the other, the detection of the malarial parasite, suffice to settle the diagnosis respectively for typhoid fever or malaria. The cases in which the skin was so discolored were distinguished from yellow fever by the longer continuation of high temperature and, above all, by the presence of the plasmodium malariæ in the blood. It is a happy circumstance that out of the three diseases, malaria, typhoid and yellow fever, in two we are in possession of absolute and scientific tests which certify to the differential diagnosis.

In the treatment quinine was the main reliance. In the worst cases, where the vomiting was so incessant that the drug could not be retained by the stomach, it was given by the rectum in suppository. As a rule, a five or ten grain quinine suppository was employed every two or three hours according to the severity of the symptoms, the endeavor being made to anticipate the paroxsym by the introduction into the system of as large an amount of the drug as possible. In cases with constipation, small, repeated doses of calomel, placed upon the tongue, produced movement of the bowels and at the same time served to allay the gastric irritability. When diarrhea was present, equal quantities of quinine and salol (usually five grains of each) were combined with good effect. When nervous symptoms were prominent, cannabis indica or monobromated camphor was combined with the quinine. If the bowel was irritable, an enema of starch water and laudanum was employed before the suppository was inserted. When the fever was high, the patient was sponged. Notwithstanding the profound malarial intoxication in some of the cases, happily none had a fatal termination. The principal points in this series, Dr. Shoemaker said in conclusion, were the gravity of the cases, the very marked and prolonged debility which the disease produced, resemblance of some to yellow fever and of others to typhoid, the diagnostic value of the scientific test, and the efficacy of quinine administered in the form of suppositories when the stomach is intolerant.

COL. VALERY HAVARD, Assistant Surgeon-General, U. S. Army, read a paper entitled:

IS MORTALITY NECESSARILY HIGHER IN TROPICAL THAN IN TEMPERATE CLIMATES?

It is a fact, he said, that mortality has been in the past and still is much higher in tropical climates. But is it because of the inherent and necessary effect of meteorological conditions and therefore inevitable, or is it perhaps mostly the result of the violation of sanitary laws, and therefore preventable? The statement of Cullimore that the mortality is greatest within the tropics and gradually decreases by a regular progression as we advance northward (from 40 per 1,000 from the equator to the 20th degree of latitude, to 20 per 1,000 from the 60th to the 80th degree) is open to so many exceptions that it is almost entirely useless as a practical guide to the study of the vital statistics of any country. The health of cities is the resultant of many factors, of which latitude is only one, and, in Dr. Havard's opinion, not the determining one. It is as yet impossible to state what should be the minimum mortality attainable by modern sanitary science. Taking, as a basis, the death-rate of the city of New York, 18.18 per 1,000 in 1903, we find that in Manila since the American occupation (1900–1903, inclusive) the rate has been 45.18. That of last year was 40.85,

showing an improvement. The rate for Havana during the decade preceding the Spanish-American War was 36. In the City of Mexico it is commonly about 40, while in India it often rises above 100.

During the year 1902 our army was almost equally divided between the United States and the far East. While at home the mortality from disease was only 5.66 per 1,000, in the Philippines (Filipino troops deducted) it was 20.85, or nearly four times as large, and for Filipino troops, 22.59. In 1903 medical officers in the Philippines had learned how to contend against the diseases which beset them, and the mortality fell to 11.14 for American and 18.17 for Filipino troops. It is in war time that disease mortality runs beyond all bounds in the tropics, owing to the rapid dissemination of epidemic infection among large bodies of men. Thus during our little war with Spain, the death-rate of 71 was reached in the month of September, 1898. The highest rates from disease in tropical warfare during the second half of the nineteenth century were noted among French troops in the Soudan in 1888–89, when out of each 1000 men, 280 died, and in Madagascar in 1895, when, to quote one of their surgeons, "everybody was sick and 50% died." In both of these expeditions the mortality appears to have been chiefly caused by malarial infection. It must, therefore, be recognized and admitted that up to the present day there has been a greater liability to sickness and death in the tropics.

As to the physical or meteorological elements of a hot climate capable of affecting health, they are chiefly two: (1) Great and continued heat. (2) A high degree of humidity. In the tropics the amount of sweat is enormously increased, the effects of which are a diminution of the total amount of blood and a decreased arterial tension. The urine is also much reduced, as well as the output of urea. In consequence of the excretory function of the kidneys being diminished, more work is thrown upon the liver. Skin and liver are thus liable to be more or less congested, while the lungs are depleted. As, furthermore, tropical air, through heat expansion, contains less oxygen than that of colder latitudes, the result is decreased metabolism. It is an obvious fact, however, that less oxygen is needed in the tropics, since the calorific process is much less active. The atmospheric humidity of tropical islands, though often great, does not always exceed that of our Southern Atlantic coast, and is sometimes less. High humidity prevents free evaporation of perspiration and must more or less interfere with the process concerned in heat generation and the active destruction and renovation of tissues, upon which depends bodily and mental vigor. Owing, however, to the constant air movements on tropical islands, this decreased evaporation is less than is generally supposed; so that, for instance, the average summer of Havana is less oppressive than that of Washington and all our southern cities.

The great central physiological condition of human health in the tropics is that the production of bodily heat shall be kept down within certain limits. Nature helps by diminishing the proportion of oxygen in the atmosphere, and we should assist by reducing the food, especially the calorifacient articles of diet. We may further assist by avoiding violent exercise and very active mental work. The result of this necessary tropical régime is a reduction not only of heat but also of nervous energy. By the use of a little prudence and discretion the body may be maintained in a state of normal equilibrium, but the loss of energy is chiefly felt by the mental faculties. Thus, the North American or European going to the tropics will generally find it easier to avoid deterioration of body than sluggishness of mind. In this connection it may be mentioned incidentally that the keen desire for meat in warm countries, which is a matter of common observation, may arise from a need in the economy for a food easiest of assimilation and capable of generating energy with the least possible heat, if it so happen that the two processes can be dissociated.

Another important effect of heat and moisture is a great increase and multiplication of bacteria, especially of saprophytes, so that decomposition of all organic matter is more rapid and complete. While the part played by saprophytes in reference to human health is rather ill-defined, it is not unlikely that they are more beneficial than hurtful. They are doubtless responsible for unpleasant odors, but it remains to be shown to what extent, if any, decaying animal or vegetable matter, however, objectionable to our olfactories and our esthetic sense, is a cause of disease. Pathogenic bacteria are abundantly generated in the tropics, but so they are in temperate climates. The cholera spirillum and Bacillus pestis develop as readily on the banks of the Thames and the Seine as those of the Ganges, when given a fair chance. Even leprosy was in past centuries as common in Europe as it now is in Asia. The micro-organisms of typhoid fever and pneumonia are much more at home in temperate or even cold climates than in the tropics. The amoeba of dysentery, however, seems to require a constant high temperature. As to the mosquito, that bloody enemy of the human race, we find it everywhere, increasing in number and bloodthirstiness as we go northward and rendering life unbearable during the short summer in Alaska and within the Arctic circle. There is probably not a single state in the Union where the anopheles cannot be found. Even the mosquito responsible for filariasis is not uncommon in our country. It would seem that the stegomya of yellow fever does not extend very far north, but probably far enough to make possible an epidemic in any of the larger cities of the United States.

Dr. Havard then took up the principal diseases of the tropics, which are responsible for the high mortality, and endeavored to show to what extent they were preventable by the application of the modern laws of hygiene. The report of the Board of Health of Manila for the year ending in April, 1904, he said, would afford a convenient text. In spite of the best efforts of the skilled sanitarians composing the board, the death-rate still remains about 40, and evidently conditions exist there over which the authorities have but little control. There is a very high mortality among infants, the chief cause of death being assigned as "convulsions," and with a view to reduce this the board has prepared a popular circular giving rules for the care of the new-born and the feeding of infants, a copy of which is sent to the parents of every child whose birth is reported, and another copy handed by the priest to every mother who brings her child to be baptized. It is expected that the education of the masses and their relief from utter poverty will, in time, materially diminish this unnecessary sacrifice of infantile life. In Havana, where the great bulk of the population is white and of a higher grade of intelligence than in Manila, the infant mortality is lower than in New York. The disease causing the largest number of deaths both in Manila and Havana is tuberculosis; yet, as indicating that the climate is less at fault than sanitary conditions, we find among the Americans and Europeans living in Manila, about 9,000 in number, only 9 cases during the year, or just 1 per 1,000. Among the troops in the Philippines in 1902 the rate was 1.27, while it was only 0.50 among soldiers at home; but in 1903, the figures were reversed, 0.26 in the Philippines and 0.86 in the

United States, the greater ratio at home being partly accounted for by the repatriation of invalided tuberculous patients. The air cure for tuberculosis is easiest, most practicable, and should be most successful in the tropics, but unfortunately there exists in Cuba and all other old Spanish colonies a deeply-rooted prejudice against night air, which is believed to be deadly. With the dissemination of proper knowledge among the people, there should be a better chance of reducing the death-rate from this disease to the minimum in Havana than in New York. One would naturally suppose that where phthisis is so abundant, other lung diseases would be common, but such is not the case; showing once more, the specific distinctions of pulmonary tuberculosis. Next to tuberculosis, cholera was until recently responsible for the greatest number of deaths in Manila, but this like other water-borne diseases, is easily preventable, and the board of health has succeeded in extirpating it, so that the reports for March and April of this year do not show a single case.

Dysentery is one of the most dreaded of the endemic diseases of the Philippines, not only because of its mortality of 1.18, but also on account of its tendency to become chronic and inveterate. This disease cannot be so easily checked as cholera, but an uncontaminated water supply would undoubtedly soon put an end to it. In Cuba dysentery is hardly known, only three or four deaths from it occurring during the year in Havana. Beri-beri is a common disease in certain parts of the tropics, causing almost as many deaths in Manila as dysentery. For the most part it attacks natives of poor constitution and undermined vitality. It is unquestionably preventable, but until its mode of production and propagation is better known, no entirely successful result can be expected. Yellow fever was once the scourge of the West Indies and South America. American intelligence and energy, during our occupation of Cuba, showed how easily that dreaded infection can be checked, controlled and then completely extirpated. Malarial fever, in all its protean forms, is common in all warm countries, producing a mortality of 0.93 per 1,000 in Manila, although not a single death among Americans and Europeans. Considering the great mortality of malarial fever in the tropics, especially as seen in various military expeditions, it would seem that the plasmodium parasite possesses there a degree of virulence unusual in northern countries. The positive results obtained by the use of mosquito bars, as well as door and window screens, in this country, Cuba, Italy, the Philippines and other places, demonstrate that the prevention of malarial fever, whether mild or pernicious, is a comparatively simple problem. Certain facts appear to indicate that we have in the tropics one or more non-malarial and still unrecognized types of fever. Bubonic plague produced a mortality of 0.49 in Manila, but only one death from it occurred among Europeans and Americans. Typhoid fever was formerly considered a disease of white races and of temperate or cold climates, but later experience has shown that tropical and semi-tropical countries are also liable to become infected. Its victims, however, are mostly foreigners, natives enjoying a large amount of immunity from it. The prevention of smallpox is simply a matter of vaccination in the tropics as elsewhere.

Both in the Philippines and Cuba diseases of the nervous and circulatory systems are a considerable cause of mortality. While in Cuba Dr. Havard was struck with the number of people suffering from arteriosclerosis, a fact for which he was unable to offer any explanation, but as there were only 18 admissions for diseases of the heart and blood vessels, and not a single death among our 3,274 soldiers in Cuba and Porto Rico during the year 1902, the climate could hardly be considered an important factor. Hepatitis and hepatic abscess are generally the result of dysentery, and will disappear with it. Leprosy is still too common among the natives of tropical and semi-tropical countries. That it could readily be reduced by strict isolation, and in time completely eliminated, there can be no doubt. As its parasite is also common in Europe and in our southern states, ankylostomiasis, or bookworm disease, can scarcely be considered a tropical affection. The "sleeping sickness" of Africa is produced by inoculation with its parasite through the bite of a fly, and is, therefore, amenable to the same means of prevention as malarial fever. Bright's disease and acute nephritis, as well as cancer, are more prevalent in New York than in warm countries, and of diphtheria, scarlet fever and measles it may be said that they are a negligible quantity in the tropics.

From what has been said it would appear that the high death-rate of the tropics (aside from the great infant mortality characteristic of all semi-civilized populous countries) is due to endemo-epidemic diseases whose cause and mode of propagation are now pretty well understood and which, therefore, are to a large extent preventable. As a final conclusion, is it not warrantable to say that the climate plays but a secondary rôle in the health of any country; that mortality is chiefly dependent upon the character, intelligence and knowledge of its inhabitants, of their understanding of the laws of hygiene and the extent to which they apply to their own special conditions? In other words, human health in any country is not according to its climate but according to its degree of civilization and the quality of its government. For the ten years previous to 1898 the death-rate in Havana, as has been stated, was 36 per 1,000. When the Americans occupied it ordinary hygienic measures were at once applied and enforced, and means devised to provide work and food for the poorer classes with the result that, notwithstanding the absence of any sewerage system, the mortality fell to 24 in 1900 and to 21.20 in 1902, remaining about the same in 1903 under the Cuban Republic. The writer was inclined to believe that when Havana has carried out its intention of constructing a complete modern sewerage system, its rate of mortality will speedily fall below that of New York, and that if the Cuban Republic continues to govern itself with prudence and justice Havana will become the favorite winter resort of North Americans. The fact that during the year 1902 the death-rate among the United States troops in Cuba and Porto Rico was only 3. 36, while among those in the States it was 5.66, shows that in these tropical islands as soon as American sanitarians had had time to get the prevalent diseases under control and guard the men from unsanitary influences, the ratio of mortality fell below that of the United States. While the death-rate of Manila is still very high (about 40), during the past year the rate among the American element of the population, which is principally composed of adult males, was only 9.05, and among the Spanish, consisting of the usual admixture of men, women and children, 15.45.

Dr. H. W. Wiley, Chief of the Bureau of Chemistry, U. S. Department of Agriculture, contributed a paper on

PROPER DIET FOR THE TROPICS.

Experience has shown, he said, that with a change of environment the character of the food must also be changed. If it were true that the activities of the human family were the same in all climates, then the quantity of food necessary to furnish energy would be practically the same from the equator to the poles.

In point of fact, human activity is greater in the temperate zones than it is at either the tropics or the poles, and hence the amount of food used up as energy is greatest in the temperate zones. The great variant in food is that part of it which is necessary to furnish heat. As the quantity of food for furnishing heat is largest at the polar region and smallest at the equator, tropical foods should be less of a heat-forming character than those used in the temperate zones, and, especially, those used in the polar regions. The kind of food, *par excellence*, which furnishes heat is represented by the fats and oils, which differ somewhat from the carbohydrates in that the latter are active both in building tissue and in furnishing heat and energy. As the amount of radiation or loss of heat by radiation is less in the tropics than in either of the other zones, the oils and fats should form only a moderate portion of the diet in the tropics. Furthermore, as the degree of activity is usually less by reason of the character of the climate there, the quantity of matter necessary to repair waste tissue is evidently less in the tropics, and hence the quantity of nitrogenous food should be less in tropical than in temperate climates.

It so happens that nature provides very abundantly in each zone the character of food which is best suited for that region. Thus, in the tropics the indigenous fruits supply most freely the character of food which seems best suited to the nourishment of the people. A fruit diet, as is well known, is one in which nitrogenous and fat elements are reduced practically to a minimum, while sugar and starch are far more abundant. The Bureau of Chemistry has lately taken up a study of many of the tropical fruits, and a table showing the analysis of a number of the most common of these was presented. The principal oil food of the tropics is found in the cocoanut, and their chief starchy food is derived from the cassava in some of its numerous varieties. The prevailing characteristic of the natural food of the tropics is found in the excessive quantity of sugar which they contain, or, as in the case of cassava, of starch. The amount of protein is very small, and the amount of oil is, with the exception of the cocoanut, not marked. On the whole, it appears that the natural tropical food is one composed of a large excess of carbohydrates, in which sugar predominates. The using of food suitable to the environment is one of the conditions necessary to the preservation of health, and those who go from temperate to tropical climate should be impressed with the desirability of gradually changing the character of diet from the highly nitrogenous one which is characteristic of the temperate zones to the highly carbohydrate diet which is characteristic of the tropics.

## Recent Literature.

*Textbook of Human Physiology.* By L. Landois. Tenth revised and enlarged edition. Edited by A. P. Brubaker, A.M., M.D. Translated by August A. Eschner, M.D. Philadelphia: P. Blakiston's Son & Co. 1904.

The editor and the translator have performed important services in bringing to English readers a new edition of Landois' admirable textbook, as previous editions have been for several years out of print. Although some of the newest work in physiology is not to be found in this volume, its characteristic features are so desirable as to commend the book highly. These features are, the statement of pathological variations appended in every section to the description of the normal physiological processes; the description of the methods of clinical investigations; a brief outline of the development of the knowledge expounded in each section, and a summary of the comparative physiology. The reader thus has the subject in its historical and biological setting, with references to pathological and clinical bearings. To one acquainted with the earlier editions of Landois the omission of the references to original investigations on which statements are based seems a mistake, but this defect must be regarded in the presence of other excellencies as slight.

*A Textbook of Operative Surgery, covering the Surgical Anatomy and Operative Technique involved in the Operations of General Surgery.* Written for students and practitioners. By Warren Stone Bickham, Phar.M., M.D., Assistant Instructor in Operative Surgery, College of Physicians and Surgeons, New York; Late Visiting Surgeon to Charity Hospital, New Orleans, etc. Second revised edition. Octavo of 984 pages, with 559 illustrations, entirely original. Philadelphia, New York and London: W. B. Saunders & Co. 1904.

The first edition of this excellent book, a review of which was published in the Boston Medical and Surgical Journal (vol. cl, p. 21), has been exhausted in six months. This fact speaks emphatically for the manner in which it has been received. In the present edition the character of the work has been little changed except to correct certain typographical errors and to introduce a few minor changes in the text. The book is intended to present surgical anatomy and operative technic. Both the operations of general and special surgery are considered. The details are very fully given. The subject matter has been systematically presented while its arrangement and plan of classification makes it very convenient for reference. The character of the illustrations is excellent and one is frequently impressed by the efficient manner in which they supplement the text.

The book is a valuable contribution to the literature of operative surgery. It represents a vast amount of careful work and technical knowledge on the part of the author. This edition impresses one with this fact fully as much as its predecessor did. As a student's book it is thorough, interesting and unusually complete. For the surgeon in active practice or the instructor of surgery it is an unusually good review of the subject.

News from London says: The official return shows that fewer lives were lost at sea in 1903 than in any year in the last twenty-five. The lives lost in 1903 were 624, of which 599 were sailors and 25 passengers. The annual average for the last twenty-five years is 1,613 lives. — *American Medicine.*

THE BOSTON
# Medical and Surgical Journal.

THURSDAY, DECEMBER 22, 1904.

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## A PLEA FOR BIOLOGY.

AMONG the many illuminating addresses recently delivered at the Congress of Arts and Sciences in St. Louis, Dr. Jacques Loeb in his remarks on the recent development of biology, published in *Science*, enters a strong plea for the wider recognition of the importance of this subject. However much one may disagree with Dr. Loeb's philosophical and physiological doctrines in detail, it is clear that he represents a strong influence and that his utterances are always worthy of attention. We are inclined to think that, like most men who accomplish definite results, he at times in his enthusiasm for his own chosen field of research does scant justice to other lines of investigation which to the ordinary mind are equally significant. Speaking, for example, of the fact that representatives of the mental sciences often reproach adherents of the natural sciences because of their materialistic tendencies, he writes:

> The struggle against superstition is entirely carried on by the natural sciences, and especially by the applied sciences. The nature of superstition consists in a gross misunderstanding of the causes of natural phenomena. I have not gained the impression that the mental sciences have been able to reduce the amount of superstition. Lourdes and Mecca are in no danger from the side of the representatives of the mental sciences, but only from the side of scientific medicine. Superstition disappears so slowly for the reason that the masses as a rule are not taught any sciences. If the day comes when the chief laws of physics, chemistry and experimental biology are generally and adequately taught we may hope to see superstition and all its consequences disappear, but not before this.

This is a radical statement which is unlikely to gain universal assent. It does injustice to the great class of painstaking workers who are attempting, and we believe with success, to analyze the laws of mind with the same conscientiousness that Dr. Loeb and his colleagues are studying what he is pleased to call the natural sciences as distinguished from the mental sciences. We have no desire to question the wide influence which biological methods, broadly applied, have accomplished in reducing the world to rationality, but the fact should not be lost sight of that this same rationalizing tendency appears among the students of the purely mental sciences as well.

What Dr. Loeb goes on to say in a subsequent portion of his address is worthy of close consideration. He recognizes the fact that physics and chemistry have developed with surprising rapidity during the past few years, whereas biology, as ordinarily interpreted, has had no such phenomenal development. He believes, however, that this difference in fertility of discovery arises, in part at least, from the present organization of the biological sciences. He thinks, therefore, that biology should be more generally recognized through special provision in our universities. His remarks on this subject are as follows:

> General or experimental biology should be represented in our universities by special chairs and laboratories. It should be the task of this science to analyze and control those phenomena which are specifically characteristic of living organisms, namely, development, self preservation, and reproduction. The methods of general biology must be those of chemistry, and especially those of physical chemistry. To-day general or experimental biology is represented in our universities neither by chairs nor by laboratories. We have laboratories for physiology, but to show how little interest physiologists take in general biology I may mention the fact that the editor of a physiological annual review excludes papers on the development and fertilization from his report, as, in his opinion, this belongs to anatomy. On the other hand, anatomists and zoologists must give their full energy to their morphological investigations and have, as a rule, neither the time for experimental work nor very often the training necessary for that kind of work. Only the botanists have kept up their interest in general biology, but they of course pay no attention to animal biology. In working out this short review of the development of biology during the last century I have been impressed with the necessity of our making better provisions for that side of biology where, in my opinon, the chances for the great discoveries seem to lie, namely, *general* or *experimental* biology.

This statement of the case no doubt corresponds entirely with the facts. The situation is but one of many presenting itself for solution in the immediate future. The amplification of

the sciences, the specialization which many have already attained, and the importance of covering the field completely, must from time to time necessitate readjustments of curricula which on the whole will represent the existing state of knowledge. That biology, as broadly understood both in its theoretical and applied aspects in connection with medicine, will come to have a wider recognition as time goes on is unquestioned. Vigorous addresses such as this of Dr. Loeb will do something toward hastening the day.

## POISONING BY WOOD ALCOHOL.

Requests have been received lately from several sources for a brief and clear statement in regard to poisoning by wood alcohol and its treatment. The fact that a number of deaths have resulted recently from drinking cheap and factitious whiskey serves to emphasize the importance and great danger of using methyl (wood) alcohol as an adulterant.

Wood alcohol is used primarily as a solvent, but it can be employed in place of ethyl (grain) alcohol wherever the latter is called for or specified. Within recent years advantage has been taken of its solvent properties, and it has been substituted for grain alcohol in the preparation of flavoring extracts, tinctures, Jamaica ginger, bay rum, cologne water, witch hazel, as well as for all kinds of official, domestic and proprietary remedies until now its use has grown to alarming proportions. The chief reason for this seems to be the expense. Wood alcohol is free from tax and sells for about fifty cents per gallon, while grain alcohol is taxed and sells for about $2.60 per gallon. Furthermore, because of the inexpensiveness of wood alcohol it is sought by those who desire a cheap debauch and its results are frequently disastrous. It is also in demand for drinking purposes where ethyl alcohol cannot be obtained. For example, in Indian Territory where the sale of grain alcohol is prohibited by the government the yearly number of deaths from drinking wood alcohol is comparatively large. In the purified or deodorized form, and sold under the names "Columbian spirits," " colonial spirits " and " eagle spirits," its taste and odor are not as disgusting as in the unpurified article. It can, therefore, be added to a preparation containing a small amount of grain alcohol without ready detection. Upon this basis it is used to adulterate whiskey, and the results we know. Poisoning may occur as the result of inhalation of the vapor of wood alcohol. This occasionally occurs in manufactories where this form of alcohol is used very extensively as a solvent; it is, therefore, the custom in such factories to admit a great deal of fresh air to the work rooms in order to prevent accidents. Symptoms of poisoning have been known to follow the absorption of methyl alcohol through the skin; for example, after bathing, sponging, or rubbing with it, and after the applications of methylated liniments.

Methyl alcohol is distinctly a poison. The symptoms are, first, mild intoxication, later, followed by severe headache, marked pallor, gastric pain, gastro-intestinal irritation, retching, dilated pupils, partial or complete blindness, paralysis of the legs, dyspnea, delirium, unconsciousness, stertorous breathing, collapse and death. But recovery may follow, particularly if the dose has been small and the individual is capable of resisting the action of the poison for a number of days. An almost constant feature of this form of poisoning is the toxic amblyopia — retro-bulbar neuritis — which, if the patient survives, usually results in partial or total blindness. A cystitis is very apt to follow this form of poisoning. It is not uncommon to find this affection among those who work day after day in the vapor of methyl alcohol. The fatal dose is probably between four and eight ounces. Complete nerve atrophy (optic nerve) has been known to follow the ingestion of from two to five drams. But wood alcohol or preparations containing it are generally taken in much the same way as preparations of grain alcohol, *i.e.*, in small amounts and at frequent intervals, so that it usually happens that a pint or even a quart of the fluid has been taken and with a fatal result. The fatal period is from a few hours to three days, depending on the quantity taken. If recovery ensues, it is generally not complete for several weeks or months.

The post-mortem appearances are as follows: Rigor mortis is usually present; skin very pale but sometimes livid; marked congestion of the mucous membrane of the stomach and duodenum; ecchymoses may also be found dotting the mucous surfaces of these organs. The vapor of wood alcohol is often perceptible in the stomach contents. The liver and spleen congested and very friable. The kidneys are congested, showing pin-point hemorrhages. The bladder is congested and an odor of wood alcohol is in the urine as in the bladder. The brain is edematous; the blood dark and very fluid. The pathological changes which result in death in these cases are not known, although rapid nerve degeneration is probably

a potent factor. In some instances there is paralysis of respiration long before the heart ceases to beat, but this is not the invariable rule. It is, therefore, obvious that we must look to the pathologist for more reliable data as to the immediate cause of death. In some cases of poisoning by methyl alcohol it has been found that formates appear in the urine as a result of the decomposition of methyl alcohol in the body, and that they are excreted very slowly. Since sodium formate has been found to be eight times more toxic than methyl alcohol, and that formates are slowly eliminated, we have a probable explanation of the prolonged action of a single dose and the fatal action of large doses of wood alcohol.

The treatment should consist in washing out the stomach, if possible, in order to remove any unabsorbed alcohol. Strychnine should be given subcutaneously in order to counteract as far as possible the depressing effect of the alcohol. The surface temperature must be maintained by the use of heaters or hot packs and by rubbing. Cold applications to the head, and rectal injections of hot coffee are useful. In the mild cases cathartics and enemata may be given; also potassium iodide in increasing doses. The latter acts favorably in cases of partial blindness. There is no known antidote for methyl alcohol.

We have pointed out some of the dangers of the use of wood alcohol, and we take this opportunity of encouraging more vigorous action by boards of health in regard to the sale of methyl alcohol and its use in pharmaceutical preparations, whiskey, flavoring extracts, etc., which, on account of this form of adulteration, place the lives of individuals in jeopardy.

## THE NOBEL PRIZE IN MEDICINE.

THE annual award of the Nobel prizes to "men who work for the interests of humanity" is an international recognition of distinguished service. This year the prize in medicine has been bestowed on Prof. J. P. Pawlow, the St. Petersburg physiologist. The brilliant discoveries of Professor Pawlow and his students, like the discoveries of the other recipients of the prizes in science this year, Lord Rayleigh in physics and Sir William Ramsay in chemistry, have been the rewards of extreme exactness and carefulness of method. It has been the contention of Professor Pawlow that although the ordinary "acute" experiment in physiology, carried out at one sitting, may be useful in studying some of the functions of individual organs, it is not likely to give insight into the complicated interrelations of the parts which make up the total organism. He has obtained his remarkable results in the study of the digestive glands by applying to physiology the methods of the surgeon. Operations destroying existing relationships between organs or establishing new relationships have been performed on animals, and the animals then restored so far as possible to their normal condition and carefully observed. It was by the use of the surgical method that Minkowski discovered the internal secretion of the pancreas. And in the Physiological Institute in St. Petersburg are all the modern arrangements for aseptic surgical operations, preparation rooms for animals and for operators, a separate operating room, a bandaging room, and recovery cabins for after treatment. With surgery as his aid in the study of function Professor Pawlow entered a realm already traversed by such distinguished physiologists as Claude Bernard and Heidenhain, and proved that many of its marvels had hardly been noticed.

The lectures on "The Work of the Digestive Glands," delivered to medical men in 1897 and in 1902, summarize the results obtained by the Pawlow school. These lectures have been translated from Russian into French, German, and recently into English, and they form as suggestive and illuminating a body of scientific research as a man interested in the advance of medicine can find to read.

It is impossible in a short space to do more than to hint at the remarkable interrelations found to exist between different parts of the alimentary canal. The importance of appetite and other psychic factors in preparing the digestive secretions, not only of the mouth but of the stomach, for the work before them; the effect of the acid chyme in causing the flow of pancreatic juice; the peculiar excitants, such as fat, which start the flow of the bile; the action of the bile in tripling the energy of the fat-splitting ferment of the pancreatic juice, and the action of the succus entericus in activating the proteid-splitting ferment, trypsin, — these are a few of the conspicuous interacting mechanisms, demonstrated by Professor Pawlow and his students, which make the course of digestion an orderly process. Quite as remarkable as these interrelationships are the extraordinary adaptations of the digestive secretions to the nature of the food ingested. That an intelligent and economical manager would make the secretion suitable to the food might be expected, but that the digestive glands possess

this power is a marvellous feature of the bodily economy left for Pawlow and his school to prove definitely for the first time. All who know the work of the Russian physiologist will commend highly the award of the Nobel prize this year in medicine.

## METHYLENE BLUE IN MALARIAL FEVERS.

The use of methylene blue in malarial fevers was first suggested by Guttmann and Ehrlich in 1891 who were led thereto by the observations of Celli and Guarnieri who were struck by its staining properties in connection with the living malarial parasites. Since then other clinical investigators have tested its effects, especially abroad, with somewhat variable results. Some cases thus treated at the Johns Hopkins Hospital in 1892 seemed to indicate that the parasite might acquire a tolerance of this drug.

Dr. Horatio C. Wood, Jr., reports [1] a number (six) of cases of malaria at the Philadelphia Hospital last summer treated with methylene blue, and also sums up from the literature 425 cases reported in sufficient detail, and reaches the conclusion that in the medicinal methylene blue, as distinguished from the dye, we have an antiperiodic which rivals quinine in power, and which is, in many cases, to be preferred to that alkaloid on account of its freedom from unpleasant by-symptoms; that if not equal to quinine in power it is, at least, far superior to any other drug at present known. The impression seems to be that in cases where quinine precipitates hemoglobinuria methylene blue may be used to advantage. It does not produce the dramatic immediate cessation of the malarial paroxysm which often follows the exhibition of quinine, but this is thought to be explicable by the observations of Iwanoff (1901) that, whereas the younger forms of the plasmodium are especially susceptible to the action of quinine, it is the older forms which are prone to succumb to methylene blue. A combination of the two drugs is therefore suggested.

In his cases Dr. Wood gave methylene blue in doses of 2 or 3 gr. every three hours for a week or ten days and then gradually stopped it. He emphasizes the importance of a continuance of the treatment over a period of several weeks, and suggests that the failure to regard this precaution has been the cause of many of the relapses recorded.

[1] Therapeutic Review, November, 1904.

## SECRETARY OF THE STATE BOARD OF HEALTH.

We announced last week the appointment of Dr. Charles Harrington to succeed the late S. W. Abbott as secretary of the State Board of Health. For many years Dr. Abbott had filled this responsible position in a most satisfactory manner, adding much to the high reputation which this board of health has always maintained. It will be many years before the statistical studies and painstaking investigations on matters of health which came from Dr. Abbott's pen will be forgotten. Naturally, it is a somewhat difficult matter to fill the position of so experienced a public official. That this, however, has been satisfactorily accomplished in the appointment of Dr. Harrington cannot be doubted by any who know his work. Dr. Harrington's previous training, his knowledge of hygiene, embodied in a textbook on the subject, and his wide practical experience with matters of health, together with his fearless denunciation of fraud and deceit in matters relating to the welfare of the community, admirably fit him for his new duties as secretary of the board. Dr. Harrington was formerly chemist to this board, and for fifteen years has done excellent work in connection with the Boston bureau of inspection of milk. For many years he has been connected with the Harvard Medical School, first as instructor, and for several years past as assistant professor of hygiene. He will continue to discharge his duties in connection with the medical school, but will unite his teaching and research with the further work of the board of health. The state is to be congratulated upon this choice, and we have no doubt the reputation of the board of health will be amply maintained through his appointment.

## MEDICAL NOTES.

National Mosquito Extermination Society. — The progress of medicine is illustrated by the fact that the second annual meeting of a society bearing the above name was held last week in New York. The program was of much interest, contributed to by men of prominence both here and abroad.

Deaths at Advanced Ages. — The Board of Health for the Philippines states that the century mark had been passed by two persons who died during the month of August, — Mauricia Francisco and Juan de los Santos, whose ages were given as one hundred and twenty, and one hundred and nine years, respectively. No attempt was

made to verify these ages. The report justly adds that any statement with reference to ages of more than one hundred years should be taken with due allowance in the absence of documentary proof.

EXAMINATIONS FOR PANAMA CANAL. — The United States Civil Service Commission announces an examination to be held Jan. 18, 1905, for a surgeon, physician, pharmacist, hospital interne and trained nurse to serve under the Isthmian Canal Commission.

Each applicant for the Isthmian Canal Service will be required to submit to the examiner, on the day he is examined, a recent photograph, not more than three years old, of himself, which will be filed with his examination papers, as a means of identification in case he receives an appointment. An unmounted photograph is preferred. The date, place, and kind of examination, the examination number, the competitor's name, and the year in which the photograph was taken should be indicated on the photograph.

The age limit for both surgeon and physician is from twenty-five to fifty years, with salary ranging from $150 to $250 a month. The examinations cover fundamental branches of medicine, including tropical diseases. It is desired that only surgeons of wide experience and good training be appointed, hence stress is laid upon practical experience. The highest salaried positions will be given only to those who have had extensive hospital experience and are familiar with tropical diseases. A somewhat rigid examination is also required for those applying for the position of hospital interne and trained nurse, whether male or female. The examinations are open to all citizens of the United States complying with the requirements.

### BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon Dec. 21, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 28, scarlatina 25, typhoid fever 15, measles 9, smallpox 0.

TRUSTEES FOR THE LONG ISLAND ALMSHOUSE AND HOSPITAL. — The following trustees for the pauper institutions department have been appointed by Mayor Collins to take the place of the former board which resigned last March: Miss Frances R. Morse, Mr. Bernard J. Rothwell, Mr. William J. Sullivan, Miss Maud E. Rockwell, Mr. William Prentiss Parker, Dr. James B. Cherry, and Mr. Walter Hunnewell. During the interim the institution has been under the charge of Hon. John B. Martin of the penal institutions department.

### NEW YORK.

GRADUATION OF NURSES. — At the second annual graduating exercises of the training school for nurses of the Lincoln Hospital and Home, situated in the Borough of the Bronx, held on December 15, nine young colored women were graduated. The principal address was made by Professor Ware of Atlanta University.

SOCIETY OF MEDICAL JURISPRUDENCE. — At the annual meeting of the Society of Medical Jurisprudence, held December 12, Dr. Carl Beck was elected President. The following physicians were elected members of the board of trustees: Drs. E. F. Brush, C. A. Van Ramdohr, E. J. Palmer and W. N. J. Steberg. The paper of the evening was by Wm. B. Hornblower, Esq., on "Insanity as Affecting the Law of Torts."

FUNDS FOR THE METHODIST EPISCOPAL HOSPITAL. — At a meeting of the board of managers of the Methodist Episcopal Hospital, Brooklyn, held Dec. 16, it was announced that the managers had succeeded in raising the fund of $300,000 necessary to secure to the hospital the gift of $125,000 from Mr. and Mrs. William Halls, Jr., and that a further effort would be made to raise an additional $200,000. The institution is better known as the Seney Hospital, having been founded by George I. Seney in 1881.

PREVENTION OF TUBERCULOSIS. — The committee on the prevention of tuberculosis of the New York Charity Organization Society and the National Association for the Study and Prevention of Tuberculosis are about to publish jointly a Directory of Institutions and Societies dealing with tuberculosis, an illustrated volume of 270 pages. In it the attempt is made for the first time to present definite information of all the organized work on this subject which is being done in the United States and Canada. The book is divided into the following six sections: (1) Sanatoriums, hospitals and camps; (2) Special Dispensaries; (3) The Tuberculous Insane; (4) Tuberculous Prisoners; (5) Municipal Control of Tuberculosis; (6) Association for the Prevention of Tuberculosis (including societies, committees and state commissions). In the section on sanatoriums are introductory articles by Drs. Edward L. Trudeau of Saranac Lake and Lawrence F. Flick of the Henry Phipps Institute in Philadelphia; and in that on Dispensaries, one by

Dr. Edward O. Otis, Superintendent of the Boston Dispensary. Dr. J. B. Ransom of Clinton Prison, N. Y., writes of the care of tuberculous patients in penal institutions, and Dr. H. A. Macdonald, lately Superintendent of the Manhattan State Hospital, Ward's Island, N. Y., of the tuberculous insane; while Dr. H. M. Biggs of the New York Health Department gives a description of a municipal system for the control of tuberculosis.

Revocation of Milk Permit. — On account of the general unsanitary conditions in an Orange county dairy, and because of the illegal use of formaldehyde as a preservative, the Health Department has revoked the permits of the Metropolitan Milk and Cream Company, which for the last twenty years has been doing business at Jefferson Market. Evidence was obtained by special inspectors of the department who are now visiting the country districts from which New York receives its principal milk supply.

Heretofore the procedure has been to destroy impure milk and fine the dealer. The Metropolitan Company, however, was not taken into court. The revocation of its permits absolutely and at once puts a stop to all its operations, and these cannot be resumed unless it shall be able to secure a new license.

City held Liable for Explosion. — By a decision of the Court of Appeals on December 13, reversing the dismissal of the complaint and granting a new trial in the case of Solomon Landau against the City of New York, the city is held liable for an explosion of fireworks at a political demonstration in Madison Square in 1902, when eighteen persons were killed and nearly two hundred injured. It is stated that the claims which have been filed with the comptroller by persons injured and the relatives of those killed by the explosion amount to $1,719,290.

American Extermination Society. — The National Mosquito Extermination Society, which has decided to change its name to the American Extermination Society, held its second annual meeting at the New York Aquarium and the Brooklyn Institute of Arts and Sciences on December 14 and 15. Among the papers read were the following: "Diversities among New York Mosquitoes," by Dr. E. Porter Felt, New York State Entomologist; "Public Health and Marine Hospital Service," by Dr. Walter Wyman, Surgeon General; "Methods of Examination and Dissection of Mosquitoes for Parasites," by Dr. M. J. Rosenau, director of the hygienic laboratory at Washington; and "What New York City is Doing and Might Do towards Mosquito Extermination," by Dr. Bramley, for Health Commissioner Darlington.

Conference of State Sanitary Officers. — The fourth annual conference of State Sanitary officers was held in Albany on December 15 and 16. Dr. Daniel Lewis, State Commissioner of Health, presided and over four hundred officers were in attendance. Among the papers read were one on food adulteration by Dr. H. W. Wiley, chief of the Bureau of Chemistry, U. S. Department of Agriculture, and one on the present status of the law relating to compulsory vaccination of school children by deputy attorney-general Church. Having referred to the recent decision of the Court of Appeals in the Viermeister case and other decisions, Mr. Church remarked: "It will be seen from the above that compulsory vaccination for school children has become an established fact in this state and has the sanction of our highest court." It was necessary, however, he said, to distinguish between public schools and schools not of that character, as the only authority which the local boards of health had to exclude pupils from private schools was in case of epidemics.

## Miscellany.

### CONDITIONS OF NEW YORK SUBWAY.

A meeting of the Advisory Board of Health was held on December 12, to discuss conditions in the new subway, at which Drs. Janeway, Kinnicutt, Jacobi, Loomis and other prominent physicians were present. No fault was found with the air of the subway, but it was the consensus of opinion that a different flooring (of cement or asphalt) must be provided in place of the present roadbed composed of broken stone. This is regarded as likely to prove a source of infection from germs, as it is practically impossible to prevent spitting and the throwing of cigarettes and cigar stumps into it. A smooth, hard roadbed could be readily kept clean. Professor Chandler has now published a supplementary report to the Board of Health, in regard to carbon dioxide in subway air. The conclusion she arrives at are as follows: "These results fully confirm my previous analyses, and it thus appears: First, that the air of the subway is not deficient in oxygen, and, second, that the air is not contaminated with carbon dioxide. The analyses show that the average increase in the carbon dioxide in the air of the subway is 1.37 parts in 10,000, which we may assume to be due to respiration and combustion, there being a little of the latter in the subway. This increase is of absolutely no consequence, and does not in any way render the air less healthful or suitable for respiration."

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DECEMBER 10, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid Fever. | Cerebro-spinal Meningitis. |
| New York . . | 3,908,644 | 1,357 | 369 | 21.59 | 21.29 | 2.28 | 1.40 | 96 |
| Chicago . . . | 2,021,086 | 512 | 121 | 23.04 | 16.60 | 2.93 | 1.36 | — |
| Philadelphia | 1,407,968 | 453 | 114 | 20.30 | 19.86 | 3.75 | 1.54 | — |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 198 | 50 | 16.67 | 16.67 | — | 3.53 | — |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 400,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | — | — | — | — | — | — | — |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744] | 55 | 14 | 21.81 | 5.45 | 3.63 | — | — |
| Boston . . . | 617,950 | 197 | 42 | 15.23 | 20.30 | 1.01 | 3.55 | — |
| Worcester . . | 136,925 | 33 | 7 | 12.12 | 6.06 | — | — | 6.06 |
| Fall River . . | 119,349 | 26 | 11 | 26.92 | 19.23 | 15.38 | 3.85 | — |
| Lowell . . . | 104,402 | 25 | 8 | 24.00 | 4.00 | — | — | — |
| Cambridge . | 100,998 | 31 | 4 | 19.35 | 19.35 | 3.22 | 3.22 | — |
| Lynn . . . . | 73,875 | 14 | 3 | 7.14 | 28.57 | — | — | — |
| Lawrence . . | 72,348 | 15 | 5 | 20.00 | 33.33 | — | — | 6 67 |
| Springfield . | 72,020 | 16 | 2 | 12.50 | 6.25 | — | — | 8 33 |
| Somerville . | 70,413 | 24 | 4 | 29.16 | 8.33 | — | — | — |
| New Bedford | 68,863 | 28 | 11 | 14.28 | 21.42 | — | — | — |
| Holyoke . . . | 50,538 | 10 | 4 | 10.00 | 20.00 | — | — | — |
| Brockton . . | 46,601 | 11 | 3 | 27.27 | 18.18 | — | — | — |
| Newton . . . | 39,310 | 4 | 1 | 50.00 | — | 50.00 | — | — |
| Haverhill . . | 39,061 | 11 | 5 | 36.36 | 9.09 | 9.09 | 9.09 | — |
| Malden . . . | 37,205 | 6 | — | 16.67 | — | — | 16.67 | — |
| Salem . . . . | 37,188 | 18 | 1 | — | 16.67 | — | — | — |
| Chelsea . . . | 36,499 | 14 | 0 | 14.28 | — | — | — | — |
| Fitchburg . . | 36,335 | — | — | — | — | — | — | — |
| Taunton . . . | 34,577 | 14 | 3 | 14.28 | 14.28 | — | — | — |
| Everett . . . | 30,209 | 5 | 1 | — | — | — | — | — |
| North Adams | 29,201 | 8 | 1 | 12.50 | — | — | — | — |
| Quincy . . . | 26,798 | — | — | — | — | — | — | — |
| Gloucester . | 26,121 | — | — | — | — | — | — | — |
| Waltham . . | 25,797 | 10 | 1 | 10.00 | — | — | — | — |
| Brookline . . | 23,576 | 6 | — | — | — | — | — | — |
| Pittsfield . . | 22,870 | 8 | — | 12.50 | — | — | — | — |
| Medford . . | 21,956 | 5 | — | — | 20.00 | — | — | — |
| Chicopee . . | 21,692 | 6 | 3 | — | 16.67 | — | — | — |
| Northampton | 20,314 | 4 | 2 | — | — | — | — | — |
| Beverly . . . | 15,807 | 3 | — | 33.33 | — | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 4 | 1 | — | — | — | — | — |
| Adams . . . | 14,745 | — | — | — | — | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 5 | 1 | — | 20.00 | — | — | — |
| Newburyport | 14,478 | 6 | 1 | 16.67 | 16.67 | — | — | 16.67 |
| Woburn . . . | 14,315 | 7 | 3 | — | 14.30 | — | — | — |
| Melrose . . . | 13,819 | 1 | 0 | — | — | — | — | — |
| Westfield . . | 13,809 | 8 | 2 | — | — | — | — | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 3 | 0 | — | — | — | — | — |
| Revere . . . | 13,609 | 4 | 2 | — | — | — | — | — |
| Framingham | 12,974 | 6 | 2 | — | 16.67 | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 2 | — | 50.00 | — | — | — | — |
| Southbridge | 11,716 | 3 | 3 | 100.00 | — | 33.33 | — | — |
| Watertown . | 11,575 | 0 | — | — | — | — | — | — |
| Weymouth . | 11,350 | 4 | 0 | — | 25.00 | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 3,180; under five years of age, 805; principal infectious diseases (small pox, measles, scarlet fever, cerebro-spinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 642; acute lung diseases 589, consumption 355, scarlet fever 23, whooping cough 8, cerebrospinal meningitis 19, small pox 2, erysipelas 13, puerperal fever 8, measles 13, typhoid fever 51, diarrheal diseases 73, diphtheria and croup 76.

From whooping cough, New York 4, Chicago 3, Philadelphia 1. From scarlet fever, New York 14, Chicago 2, Philadelphia 3, Baltimore 1, Boston 2, Somerville 1. From cerebrospinal meningitis, New York 13, Worcester 2, Lawrence 1, Somerville 2, Newburyport 1. From erysipelas, New York 9, Boston 2, New Bedford 1, Haverhill 1. From small pox, Chicago 1, Philadelphia 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending Nov. 26, the death-rate was 17.3. Deaths reported 5,075; acute diseases of the respiratory organs (London) 228, whooping cough 53, diphtheria 73, measles 120, small pox 2, scarlet fever 48.

The death-rate ranged from 9.3 in West Bromwich, to 24.8 in South Shields; London 16.8, West Ham 19.9, Brighton 18.6, Southampton 16.7, Plymouth 17.8, Bristol 18.2, Birmingham 22.8, Leicester 20.2, Nottingham 17.0, Birkenhead 17.7, Liverpool 21.6, Wigan 22.4, Bolton 13.9, Manchester 20.6, Salford 20.7, Halifax 14.5, Bradford 13.9, Leeds 15.1, Hull 16.2, Sheffield 17.9, Newcastle-on-Tyne 19.9, Cardiff 14.8, Rhondda 18.3, Hornsey 12.8, Coventry 14.8.

## METEOROLOGICAL RECORD.

For the week ending December 10, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. | Thermometer. | | | Relative humidity. | | | Direction of wind. | | Velocity of wind. | | We'th'r * | | Rainfall in Inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily mean. | Daily mean. | Maximum. | Minimum. | 8.00 A.M. | 8.00 P.M. | Daily mean. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | 8.00 A.M. | 8.00 P.M. | |
| S.. 4 | 30.24 | 26 | 35 | 16 | 68 | 49 | 58 | W | N W | 5 | 15 | C. | C. | 0 |
| M.. 5 | 30.16 | 26 | 32 | 19 | 63 | 100 | 82 | W | N W | 10 | 6 | F. | N. | .12 |
| T.. 6 | 30.02 | 28 | 33 | 23 | 75 | 43 | 59 | N W | W | 9 | 7 | C. | C. | .12 |
| W.. 7 | 29.64 | 31 | 38 | 24 | 78 | 71 | 75 | S W | W | 12 | 15 | O. | C. | 0 |
| T.. 8 | 29.49 | 26 | 29 | 22 | 76 | 87 | 82 | S W | N W | 5 | 9 | O. | C. | .03 |
| F.. 9 | 29.88 | 25 | 11 | 18 | 77 | 58 | 68 | N W | W | 12 | 12 | O. | C. | T. |
| S.. 10 | 29.97 | 18 | 8 | 13 | 63 | 56 | 60 | N W | N | 10 | 12 | O. | O. | T. |
| ☞ | 29.91 | | 27 | 19 | | | 69 | | | | | | | .27 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for week.

## RECENT DEATH.

CHARLES K. LAW, M.D., of Jersey City, N. J., died on Dec. 13, from peritonitis. He was thirty-six years of age, and was graduated from the medical department of the University of New York in 1893.

## OPERATIONS: BOSTON CITY HOSPITAL.

The following operations will be done and cases shown in the amphitheater of the Boston City Hospital on Dec. 23, from 10 A.M. until 12.30 P.M.: Radical Cure of Inguinal Hernia; Appendectomy; Supra-pubic cystotomy — vesical calculus; Wiring of tibia; External urethrotomy; Varicocele; Amputation of fingers; Appendectomy.

## BOOKS AND PAMPHLETS RECEIVED.

A Text-Book of Histology. By Frederick R. Bailey, A.M., M.D. Illustrated. New York: William Wood & Co. 1904.

Text-Book of Human Physiology, including Histology and Microscopical Anatomy with Especial Reference to the Practice of Medicine. By Dr. L. Landois. Tenth Revised and Enlarged Edition. Edited by Albert P. Brubaker, M.D. Translated by Augustus A. Eshner, M.D. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1904.

Department of Health, City of Chicago. Vital Statistics of the City of Chicago for the years 1899 to 1903 inclusive.

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, Neurology, Pediatrics, Obstetrics, Gynecology, Orthopedics, Pathology, Dermatology, Ophthalmology, Otology, Rhinology, Laryngology, Hygiene, and Other Topics of Interest to Students and Practitioners. By Leading Members of the Medical Profession throughout the World. Edited by A. O. J. Kelly, A.M., M.D. Vol. iii. Fourteenth Series. Illustrated. Philadelphia: J. B. Lippincott Company. 1904.

A Text-Book of Quantitative Chemical Analysis by Gravimetric, Electrolytic, Volumetric and Gasometric Methods with Seventy-two Laboratory Exercises, giving the Analysis of Pure Salts, Alloys, Minerals and Technical Products. By J. C. Olsen, A.M., Ph.D. Illustrated. New York: D. Van Nostrand Company. 1904.

Concerning Haemagglutinins of Bacterial Origin and Their Relation to Hyaline Thrombi and Liver Necroses. By Richard M. Pearce, M.D., and Charles K. Winne, Jr., M.D. Reprint.

Saunders' Question-Compends, No. 20. Essentials of Bacteriology, being a Concise and Systematic Introduction to the Study of Micro-organisms. By M. V. Ball, M.D. Fifth Edition, thoroughly Revised by Karl M. Vogel, M.D. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

Saunders' Question-Compends, No. 21. Essentials of Nervous Diseases and Insanity, their Symptoms and Treatment. By John C. Shaw, M.D. Fourth Edition, thoroughly Revised by Smith Ely Jelliffe, M.D., Ph.D. Illustrated. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

A Simple Method of Cultivating Anaërobic Bacteria. By Burt Ransom Rickards, S.B. Reprint.

## Original Articles.

# THE ULTIMATE RESULTS OF CAUTERIZATION OF THE LOWER TURBINATE, WITH THERAPEUTIC SUGGESTIONS BASED UPON HISTOLOGICAL FINDINGS.

BY J. L. GOODALE, M.D., BOSTON.

The object of the following paper is to give the results of a histological examination made into a series of cases which had been previously cauterized for swelling or hypertrophy of the lower turbinates, and which had reported later with a recurrence of nasal obstruction. This subject is of importance for us to-day, especially for the reason that it represents a large class of cases which come under the observation of the practitioner. While cauterization of the nasal tissues is now practiced much less frequently than formerly, yet it is still indiscriminately employed by many physicians, and with not always satisfactory results. Although a large percentage of cases showing enlargement of the lower turbinate are relieved by cauterization, yet in certain instances improvement does not follow. In another class of individuals, nasal breathing becomes free, and remains so for a period ranging from several weeks to several months, when aid is again sought for a return of the symptoms. Furthermore, in certain instances evidence shows that after cauterization the nose fails to perform its function properly of moistening the inspired air, and these patients complain subsequently of excessive dryness in the nose and throat. This is particularly the case in persons who have been liberally cauterized during the hay fever season. After the first frost, the excessive secretion ceases, and in the course of the winter, progressively increasing dryness of the nose and throat appears. It has seemed to the writer that the indications for the use of cauterization in the nose, and the limits of its usefulness, were insufficiently understood, inasmuch as the only knowledge at hand was obtained from clinical investigation.

The following series of cases is selected from a large number of hospital and private patients who had in the past been cauterized for congestion or hypertrophy of the lower turbinates, and who had reported later at varying intervals, with a return of the symptoms. It was considered desirable, in order to afford the patient more permanent relief, to remove a portion of the enlarged tissues in the cauterized area, and in its immediate vicinity. This removal was done with nasal scissors, and was confined to the mucous membrane and the soft tissues immediately beneath. The excised tissue was placed immediately in Zenker's fluid, or in a saturated solution of corrosive sublimate. The most satisfactory method for demonstration of the fibrous tissue was found in Mallory's triple stain, which gives exceedingly beautiful pictures. In connection with this, staining by hematoxylin and Congo red was employed for the purpose of demonstrating the nature of the glands, whether mucous or albuminous. Paraffin sections are stained in the customary way in either aqueous alum hematoxylin, or in Delafield's hematoxylin, washed several hours, then stained in $\frac{1}{10}$ to $\frac{1}{4}$% Congo red for one to five minutes, washed in 95% alcohol to remove excess of stain, dehydrated in absolute alcohol, cleared in xylol and mounted.

As I have recently shown,[1] the glands of the nose are of two kinds, the mucous and the serous, the distinguishing feature being the presence of secreting capillaries in the latter, and their absence in the former. Until recently, a confusion of opinion had existed as to the nature of these glands, certain observers, as Koelliker [2] and Stoehr,[10] maintaining that both mucous and serous glands existed in the nose; others, as Schiefferdecker,[3] believing that only mucous glands were found. Those who upheld this latter view assumed that all the glands in the nose were capable of secreting mucus. Glands which presented, on examination, no mucus, were assumed to be in a state of rest. Retzius [4] and E. Müller,[5] followed later by Fuchs-Wolfring,[6] have shown for the larynx and trachea that both serous and mucous glands exist. The mucous gland when in a state of activity is readily recognizable, while the mucous gland at rest is indistinguishable from the serous or albuminous one, except by the presence in the serous gland of secreting capillaries. These secreting capillaries are fine tubules imbedded in the cementing substance, between the cells, which run from the lumen of the gland, to its periphery. The mucous gland does not possess these capillaries, and one is thus able in suitably stained specimens to distinguish between the two types.

In addition to the glands of the mucous membrane, another arrangement contributes to the formation of nasal fluid. This is found in the canals or canaliculi which penetrate the basement membrane. These canals were first seen by Heiberg, who found them also in the larynx and trachea. Later they were found by Chatellier in hypertrophic nasal mucous membrane, but were not seen with certainty in normal tissues. Schiefferdecker has found them also in normal mucous membrane. According to this writer, they are readily recognizable under moderate enlargement, although smaller than the capillaries, and require no especial preparation, although they are naturally more distinct when the basement membrane is completely stained. The basement membrane is found only in the region of the ciliated epithelium.

The canals penetrate the basement membrane, and end free under the epithelium. Usually they run obliquely, and at times present a continuation between the lower epithelial cells to a higher place which narrows above to a point. The epithelial cells pass smoothly over the peripheral opening, and send nowhere a prolongation into it. Where the canaliculi lie close to each other, they are found separated by at least two to four epithelial cells. They are, however, distributed irregularly without especial reference to other

structures. In the canals themselves, and also immediately above and below their openings, one finds frequently leucocytes which have wandered from the adenoid layers below, and have migrated into the epithelium. The prolongations of the connective tissue cells which lie under the basement membrane often penetrate into the canals, at times as far as the epithelium, and the darkly stained processes of the cells are readily recognizable in the canals. These canals are more readily recognized in hypertrophic nasal mucous membrane, and are here wider and are connected by transverse canals, so as to present, at times, a branching network. It is also easy to see here the relationship of these canals to the underlying connective tissue. In the latter, the adenoid layer is markedly developed, and one sees numerous thin strands of connective tissue rising obliquely towards the surface. These strands are separated by light spaces which contain numerous leucocytes, and pass directly into the canaliculi. The rows of leucocytes extend likewise directly into these latter.

The above-described light spaces in the adenoid layer are to be considered as markedly dilated channels, but whether in direct communication with the lymph spaces is uncertain. According to our previous knowledge, it is not probable. The fluid contained in these channels may therefore have a different character from lymph. Probably we have here to do with a fluid containing but little albumin, inasmuch as after hardening in Zenker's solution or in alcohol, one does not find evidence of coagulation in the spaces.

With regard to the significance of these basement canals it is in the first place unquestionable that they permit the passage of leucocytes through the epithelium to the surface.

Schiefferdecker believes that there is a continual passage outwardly of the fluids contained, and that the chief significance of this stream of fluid is to keep the surface of the ciliated epithelium moist. The fluid, therefore, on the surface of the mucous membrane, according to this view, must be composed of a mixture of glandular secretion, the secretion of the goblet cells and the fluid coming out through the basement canals. Schiefferdecker at the time of these observations, however, was unable to find serous glands in the nose, and regarded all the glands as purely muciferous.

CASE I. Patient, fourteen years of age, came with marked hypertrophy of left lower turbinate, which was cauterized with chromic acid. Two weeks later there was apparent, on examination, a moderate diminution in the size of the cauterized tissues, a small portion of which was excised.

On histological examination, the specimen shows a loss of epithelium on the free surface, although the basement membrane is still preserved. In places, new epithelial cells of a pavement type are found, particularly in the depressions and invaginations of the surface. Immediately below the rete mucosa, the most striking alteration is seen to consist in a marked formation of connective tissue, with relative diminution in the size and number of the venous sinuses and of the glands in the vicinity. Many of these latter appear to have suffered compression, the lumen of the efferent duct being nearly obliterated, while the cells of the glands show little or no secretion. In the deeper portions of the tissues the mucous glands and the sinuses show no notable change from that which one would expect in simple hypertrophy. In each collection of gland cells, about half the alveoli are composed of cells showing mucous degeneration of their cytoplasm, while the remainder are of the albuminous type. The canaliculi which normally are found in the basement membrane between the cells, and permit the passage of fluid from the deeper tissues to the surface, are no longer seen in the cauterized area.

CASE II. The patient, a woman of sixty, presented a marked hypertrophy of the middle and lower turbinates, probably of many years' duration. Repeated cauterizations of the lower turbinate had given no permanent relief to the symptoms of nasal obstruction. The lower turbinates, at the time of my examination, exhibited a general enlargement, most marked anteriorly, of the tissues covering the bone, which was itself apparently not enlarged. The surface of the turbinates yielded but slightly on pressure with the probe, and the mucous membrane was slightly reddened, smooth, and showed anteriorly irregular whitish lines of scar tissue, corresponding evidently with regions of previous cauterization. A portion of the lower turbinate was excised.

Histological examination of the specimen from the cauterized area showed a transformation of the superficial epithelium into cells of the pavement type. The basement membrane shows no canaliculi. Below the basement membrane there is a marked dilatation of the venous sinuses, presenting almost the appearance of an angioma. These are surrounded by compact fibrous tissue. The glands in the vicinity have largely disappeared, but traces of their former existence may be seen by small aggregations of glandular cells, showing little or no mucous secretion, with nearly complete obliteration of the gland ducts. The impression is produced upon the observer in this case of a marked persistence of the venous sinuses, which in spite of the cauterizations were sufficient to cause repeated swellings.

It seems probable that while the destructive applications were effectual in destroying the function of the columnar ciliated epithelium, and of the glands, little change was produced in the walls of the venous sinuses, except, perhaps, to cause irregular constrictions and consequent dilatations in the vicinity.

CASE III. The patient was a physician forty years of age, who for several years had been addicted to the use of cocaine, taken originally for blocking of the nose. During this time he had been repeatedly cauterized without permanent relief. The mucous membrane covering the lower turbinates showed a marked pallor, with irregular scars anteriorly, and considerable swelling, moderately firm in pressure with the probe. A portion of the mucous membrane and underlying soft tissue covering one turbinated bone was removed.

Examination shows histologically a transformation of the superficial epithelium into cells of the pavement type, from four to ten layers in thickness, resembling closely that which one would expect in atrophic rhinitis. There are no canaliculi in the basement membrane. Immediately below the compact layer of fibrous tissue of the rete mucosa and submucosa, there is found a marked increase in the size and number of the glands. These are closely aggregated, and occupy the greater portion of the field. The glands are made up chiefly of mucous cells, with dilated ducts, filled with mucus. Here and there in the deeper portions of the glands are found groups of cells of a serous type, as shown by the presence of secreting capillaries. The hypertrophy

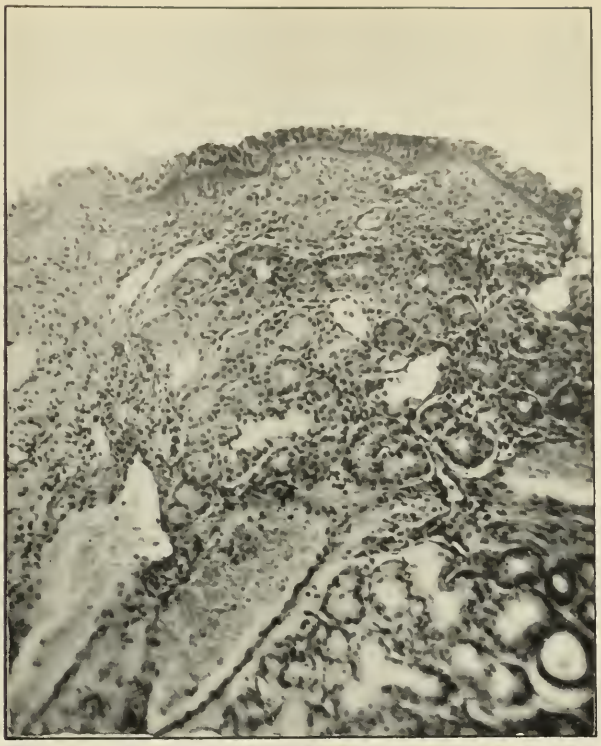


FIG. 1. — Lower turbinate, 125 diameters, hematoxylin and Congo red. The specimen is from a case of hypertrophic rhinitis, which had received no previous local treatment. The columnar epithelium is seen to cover a well-defined basement membrane, below which are situated numerous glands and venous sinuses.



FIG. 2. — Lower turbinate, 125 diameters, hematoxylin and Congo red. The specimen is from a case of hypertrophic rhinitis, which had been previously repeatedly cauterized by chromic acid. A dense, pavement epithelium is seen to have replaced the columnar, ciliated epithelium, and the basement membrane has nearly disappeared. Below the mucous membrane, the glands have been obliterated, and the venous sinuses markedly reduced, the field being occupied by a dense, new-formed fibrous tissue.



Fig. 3. — Lower turbinate, 125 diameters, hematoxylin and Congo red. The specimen is from a case of hypertrophic rhinitis, which had been repeatedly cauterized superficially. The center of the field is occupied chiefly by dilated, glandular ducts, the orifices of which have been more or less completely occluded by cicatricial contraction. In this case the cystic dilatation of the ducts is a considerable factor in bringing about renewed swelling of the parts.

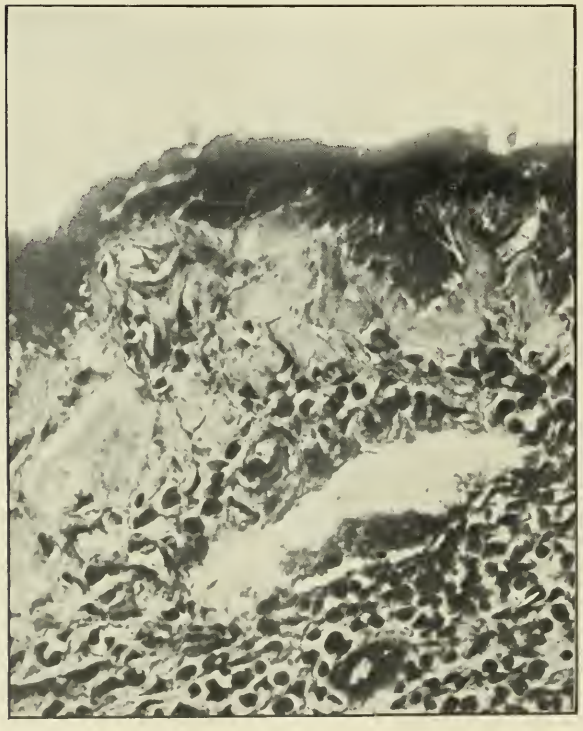


Fig. 4. — Lower turbinate, 375 diameters. Portion of mucous membrane removed from a case of hay-fever, showing clinically marked pallor and swelling with free watery secretion. The canaliculi of the basement membrane are seen to be increased in number and size, many of them containing emigrating leucocytes.

in this instance is evidently of a glandular form, and in spite of repeated cauterizations there has been no diminution in the amount of the tissue below the surface epithelium. Whether the predominance of the glands and of the mucous cells is due to the influence of cocaine or to the manner of cauterization is uncertain, but it seems in any event probable that the dilatation of the efferent ducts is dependent upon constriction of the orifices, resulting from the contraction of cicatricial tissue. Contrasted with the preceding case, the action of the cauterizations appears to have been more superficial, causing no loss of glandular tissue, but on the other hand more extensive alteration of the mucous membrane.

Case IV. This patient had been repeatedly cauterized one year previously, with chromic acid, for hypertrophy of one lower turbinate, and had returned for renewed obstruction. The turbinate now shows a white stellate cicatrix, anteriorly, corresponding to the area of cauterization, in the vicinity of which there is smooth hypertrophic mucous membrane. A portion of this cauterized area was removed, together with some of the tissue in the vicinity.

Histological examination shows over the cauterized region an epithelium consisting of four or five layers of cells of a pavement type, which pass rapidly into cells of the ordinary columnar, ciliated form, covering the summits of irregular mammillations. Immediately under the pavement epithelium there is a compact, dense layer of fibrous tissue, representing the rete mucosa and submucosa, below which are seen numerous glands, showing marked dilatation of their lumen. In the vicinity are seen several ducts, dilated to ten or twenty times the normal size, filled with mucus and lined with pavement epithelium. The glands show no infiltration of the cells in the vicinity, but are surrounded by dense strands of fibrous tissue. We have evidently here to do with a contraction of the orifices of the ducts by the fibrous tissue near the surface of the epithelium, with an enlargement of the ducts immediately below. That there has been pressure on the walls of the ducts from accumulation of their contents is rendered probable by the transformation of the columnar epithelium, which normally lines them into pavement epithelium. In the basement membrane no canaliculi are found.

In this case, we have a more marked development of the stage shown in Case III, namely, renewed swelling of the parts from dilatation of the lumen of the glands and their ducts. Similarly the cauterization exerted its effect chiefly upon the mucous membrane, and caused no actual loss of glandular tissue.

Case V. The patient, twenty-five years of age, was cauterized six months previously for hypertrophy of the right lower turbinates, which now shows a thin, white scar, covering the anterior end. There is considerable soft swelling in the vicinity. A portion of this was removed.

Histological examination shows over the cauterized area cells of the squamous type, overlying an area of dense, fibrous tissue, which extends downward for a distance of 4 mm. No canaliculi are found in the basement membrane. In the area of fibrous tissue there are no glands observable, but a small number of compressed ducts, lined with squamous epithelium, showing only here and there a central lumen. This area is traversed by a few small blood vessels, but nowhere by venous sinuses. In the immediate vicinity of this fibrous area, one comes upon numerous large, closely aggregated glands, separated by a delicate fibrous reticulum, and by comparatively small, thin-walled, venous sinuses. The glands in this region are chiefly of the mucous type, showing only here and there alveoli with serous cells. In this instance the cauterization has evidently penetrated deeply, and caused marked destruction of the more superficial glands and venous sinuses. In the region adjoining the cauterized area, the new hypertrophy is evidently due to an increase in the number of the mucous glands. There is no evidence here of compression of the glands by occlusion of their orifices.

Case VI. The patient, a man thirty-two years of age, had had chromic acid applied for swelling of the right lower turbinate, one month ago. There is now no evident scar over the cauterized area, which appears moderately enlarged, reddened, yielding moderately on pressure.

Examination of a portion of the tissue from the cauterized area shows the epithelium to consist of five or six layers of the cells of the squamous type, below which is an increased amount of fibrous tissue, sending down irregular, thickened bands between the collections of glands and between the venous sinuses. No canaliculi are found in the basement membrane. The glands in this region show an increased compactness of the alveoli, and exhibit but little mucous secretion. Close examination renders it probable, nevertheless, that the majority of these glands are of the mucous type, and not the serous, since only a few contain secreting capillaries.

In this instance, we see the effect of a single, comparatively superficial cauterization of the mucous membrane of the lower turbinate. Little has apparently been accomplished beyond a change in the character of the mucous membrane and the production of a certain amount of new connective tissue immediately beneath.

We may summarize the histological phenomena of the preceding cases as follows:

(1) Caustic applications to the nasal mucous membrane may cause a loss of the columnar, ciliated epithelium, with a replacement of this by cells of a squamous type.

(2) Such applications may cause an obliteration of the canaliculi in the basement membrane.

(3) Immediately below the cauterized mucous membrane, new connective tissue may be formed, which extends downward to a depth dependent upon the intensity of the trauma.

(4) The contraction of the tissues which is observed clinically to follow caustic applications is due to the contraction of this new-formed connective tissue, and the consequent compression both of the lymph sinuses, and of such cavities as the lumina of blood vessels and glands.

(5) Repeated superficial applications of caustics tend to the formation of connective tissue immediately beneath the epithelium, which by its contraction may constrict the lumen of the ducts of the glands, and lead to cystic dilatation of the latter. This phenomenon may, as in Cases III and IV, contribute to a subsequent return of the nasal obstruction. Such applications become progressively of less avail, owing to the relatively impervious barrier presented by the pavement epithelium and compact fibrous tissue immediately beneath.

Taking the preceding phenomena as a guide for clinical practice, let us determine which of the changes may be considered beneficial and which harmful to the physiological functions of the nose.

A distinct benefit may in the first instance be regarded as accruing from the contraction of a relaxed mucous membrane. The term relaxation is here employed to denote those conditions found chiefly in the lower turbinate, and to a less extent on the septum posteriorly, characterized by a smooth swelling of the mucous membrane, dimpling on pressure, and contracting noticeably on the application of cocaine or adrenal extract. Such conditions consist histologically in proliferation of the mucous membrane together with an enlargement of the lymph spaces and venous sinuses. Where such relaxations or congestions produce intermittent alternating nasal stenosis, the proper application of a caustic to the lower turbinate anteriorly may be recommended.

Secondly, in conditions characterized by excessive secretion of mucus from the posterior nares, where, with healthy sinuses, we find on posterior rhinoscopy relaxation of the mucous membrane of the septum, or of the lower turbinates, we may on theoretical grounds expect a diminution in the amount of discharge to result from caustic applications, if so made as to obliterate a definite number of canaliculi and of glands in the affected parts. This improvement may be repeatedly observed in suitable cases.

Third, in vasomotor rhinitis, the removal of anterior obstructions in the nose is indicated for the following reason: During nasal inspiration a negative pressure[9] occurs in the nasal passages, the amount of which is in inverse ratio to the freedom with which air is able to enter the anterior nares. This inspiratory rarefaction is thus greater in the presence of a partial anterior obstruction such as a spur or collapsed alæ, or enlarged lower turbinate. Such an abnormal diminution in air pressure must cause a heightened flow of fluid, both of blood and of lymph, into the tissues immediately behind the obstruction, with the result of adding to the severity of the vasomotor symptoms. On the other hand, the restoration of anterior patency would theoretically lessen the lymphatic and vascular distention in the nasal mucous membrane and would influence beneficially the symptoms under consideration. This hypothesis is supported by clinical experience in a large number of cases. In vasomotor rhinitis of moderate severity, one often finds that the removal of anterior obstructions affords marked relief to the symptoms, and on these grounds a caustic application, properly made, to the relaxed mucous membrane of the lower turbinate anteriorly may be recommended.

We now turn to a consideration of the injurious effects which may be produced by caustic applications to the nasal mucous membrane. As we have seen, the most conspicuous alterations are superficial and extend downward in progressively diminishing intensity.

In the first place, the destruction of the ciliated epithelium, over the cauterized area, represents the impairment of an important function of the nose, namely, the expulsion by the cilia of inspired foreign particles from the mucous membrane.

Secondly, the obliteration of the canaliculi in the basement membrane prevents the normal outward flow of fluid intended to moisten the surface of the epithelium. As I have elsewhere shown,[1] the largest portion of the aqueous vapor given off by the nasal mucous membrane comes through these canaliculi of the basement membrane. Their obliteration will, therefore, be followed by a corresponding failure of the inspired air to receive its normal amount of moisture. It will thus be seen that caustic applications to the nasal epithelium will be followed by a distinct diminution in the amount of water imparted to the inspired air. The dryness of the nose and throat, of which hay fever patients complain, who have received much caustic treatment, may be attributed largely to the loss of canaliculi in the basement membrane.

Another injurious effect proceeding from caustic applications is the secondary enlargement of the tissues due to cystic dilatation of the ducts of the glands which may result from stenosis of their orifices.

Below the mucous membrane the alterations induced consist essentially in a more or less complete obliteration of the blood vessels, lymph channels and glands, with their replacement by connective tissue. Such changes are likely to influence the amount of heat imparted to the inspired air and the amount and character of glandular secretion.

A diminished blood supply would result in a lessening of the warming power of the nasal mucous membrane, but this is not likely to be as sufficiently pronounced as to prove more than a theoretical detriment to the individual. So far as glandular secretion is concerned, there is probably already an excess, and a diminution is likely to prove beneficial rather than harmful.

Having now reviewed the immediate and remote alterations produced in the nasal tissues by cauterization, we are in a position to determine the proper mode of making such applications. In the first place, if the object is to contract a relaxed or distended mucous membrane, we should endeavor to reach the submucous and deeper layers where the lymph spaces and blood vessels are chiefly situated, producing at the same time the minimum amount of disturbance to the mucous membrane itself. This result is best attained by deep linear applications, as narrow as possible, of chromic acid, or of the galvano cautery, or by submucous cauterization, which is an admirable and most effective method. On the other hand, if we seek to diminish the amount of nasal fluid, as in certain forms of excessive post-nasal secretion, we may advantageously sacrifice a certain number of canaliculi in the basement membrane by broad, superficial applications to a definite area of the septum and lower turbinates posteriorly.

Finally, in the event of recurrence of enlargement after cauterization, we should remember that a more impervious and resistant mucous membrane probably exists, together with a proportionately greater amount of connective tissue

than originally was present, and that consequently each subsequent cauterization is less likely to bring about contraction of the parts. Under such circumstances, it is probably best to dispense with further cauterizing and proceed immediately to the excision of a definite amount of obstructive tissue.

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## STANDARD RECORDS OF THE LEUCOCYTES IN NORMAL BLOOD FOR REFERENCE IN CLINICAL WORK.

BY HENRY F. HEWES, M.D., BOSTON.

One of the chief purposes for which the examination of the blood is utilized in clinical work is the determination of the presence or absence of the condition of leucocytosis, its extent and type.[1]

For this complete determination it has been, until recently, almost universally the custom to employ two methods of examination: (1) The count of leucocytes by the blood counting apparatus to determine the *existence* or non-*existence* of the leucocytosis or, technically speaking, of an actual increase in the number of leucocytes; (2) the differential count of a stained specimen to determine the *type*. With recent advances, however, it has been found possible and much labor saving to make the determination of both points the existence and the type, of the condition, by the employment of the latter method, the examination of a stained specimen alone.

By this custom it is possible to do all the work with one method, and this the same method by the use of which most of the other important facts for which blood examination is utilized in diagnosis, as the presence of malaria, or of the Leukemias and Pernicious Anemia are determined.

The method of determination as to leucocytosis by the examination of a stained specimen consists of the counting of the number of leucocytes in a given number of microscopic fields of the specimen under examination, one or two hundred fields, and the comparison of the record with standard records of normal blood examined in a similar manner. If the number present exceeds the normal averages we have a leucocytosis.[2] If leucocytosis is present its extent may be judged by the extent of the count over the normal figures.

Given that, we have a leucocytosis as evidenced by this finding of a leucocythemia, its type may be determined by a differential count on the same specimen.[3]

The advantage from the point of view of practical work of doing the leucocyte work entirely by this study of the stained specimen in this manner must, I think, be clear to everybody.

For the successful introduction and use of such a method it is first necessary to have a thorough test of the accuracy of the method by control experiments.

If it is demonstrated by such experiments that the method gives indication in regard to the number of leucocytes present in a given case approximating in accuracy those of the method of the count of corpuscles by the blood counting apparatus or sufficient to settle in the case the question of the existence or non-existence of a leucocytosis, the usefulness of the method is proven.

There remains then (after the above proof), necessary for the use of the method in general work, simply a set of standard records showing (1) the normal findings, and the variations in these determined by the application of the method to a considerable number of normal individuals, and (2) the correspondence between given figures obtained by this method and those of the white count, so that not only the existence but the extent of a given leucocytosis may be determined by the method.

To make these necessary tests of the accuracy of this method of leucocyte determination and also to obtain a set of standard figures similar to those described for my own use in clinical work I have for two years been conducting an investigation upon a considerable number of normal individuals.

The individuals utilized were all young men students at the Harvard Medical School.

Thirty individuals in all were studied, ten from each of three classes at the school.

In each case there were made from specimens of blood (taken at one time) a count of the number of leucocytes per cubic millimeter by the Thoma-Zeiss apparatus, a count of the number of leucocytes in two hundred fields of a good stained specimen, and a differential count of two hundred leucocytes.

In the first set of investigations (10 men) the blood was taken at 11 A.M., in the second set (10 men) it was taken at 4 P.M., in the third set (10 men) records were made from blood of the same individuals taken at both 11 A.M. and 4 P.M.

[1] In defining the meaning of the term leucocytosis, I follow the teaching of Ehrlich. A leucocytosis is an increase in the total number of any of the recognized forms of leucocyte in the blood over the normal number of this leucocyte. Thus the presence of 1,000 eosinophiles in an individual whose normal limit of these cells was 500, means a leucocytosis of eosinophiles — the presence of 10,000 ventrophiles where the normal maximum was 7,500, means a leucocytosis of neutrophiles, etc.

[2] The finding of an increase in the total number of leucocytes over normal is always, of course, a leucocytosis of one or another type.

[3] It must be borne in mind that it is possible to have a leucocytosis without a total increase of the number of leucocytes above the normal limits. This is a rare occurrence, save with the eosinophile leucocytosis. Here, owing to the normally small numbers of these cells, we may have an increase of 50% in eosinophiles in the blood without forcing the white count over the maximum normal limits of 14,000. Such a leucocytosis can be discovered by the differential count.

For the study of the stained specimens a Leitz microscope with one-twelfth immersion lens, and a No. 3 eye-piece was used. The microscopic tube was pushed in to the limit.

In the count by fields of a stained specimen, those specimens were selected where the spread was of such a thickness that the red corpuscles did not overlap each other and yet lay evenly in the fields keeping their normal contour and showing their pale central areas. In several cases both thin and thick spreads were counted.

In the differential counts the classification of the leucocytes published by me in the *Boston Journal of Medical Sciences*, February, 1898, dividing the leucocytes into the three color varieties, Basophiles, Neutrophiles and Oxyphiles (Eosinophiles) was used.

The records of the cases may be seen in the following tables:

| | | Leucocytes per cubic millimeter of blood, Thoma-Zeiss count. | Leucocytes per 100 fields of stained specimen (average of 200 fields). | Differential count, per cents. from count of 200 leucocytes. | | | |
|---|---|---|---|---|---|---|---|
| | | | | Basophiles. | Neutrophiles. | Oxyphiles. | Mast cells. |
| 11 A.M. | 1 | 6,200 | 41 | 38 | 62 | 0 | |
| | 2 | 7,000 | 48 | 40 | 58 | 1.5 | 0.5 |
| | 3 | 7,200 | 45 | 38 | 61 | 1 | |
| | 4 | 8,100 | 54 | 37 | 52 | 1 | |
| | 5 | 8,400 | 52 | 36 | 60 | 3 | 1 |
| | 6 | 9,000 | 60 | 37 | 61 | 2 | |
| | 7 | 9,300 | 59 | 22 | 75 | 3 | |
| | 8 | 10,100 | 68 | 35 | 62.5 | 2 | 0.5 |
| | 9 | 11,000 | 74 | 34 | 65.5 | 0.5 | |
| | 10 | 11,500 | 70 | 40 | 59 | 1 | |
| | 11 | 9,800 | 67 | 32 | 67.5 | 0.5 | |
| | 12 | 10,200 | 70 | 40 | 69 | 1 | |
| | 13 | 11,000 | 74 | 35 | 63 | 1.5 | 0.5 |
| 4 P.M. | 14 | 12,200 | 80 | 34 | 64 | 3 | |
| | 15 | 12,600 | 84 | 23 | 74 | 2 | 1 |
| | 16 | 12,600 | 80 | 31 | 63 | 6 | |
| | 17 | 13,100 | 87 | 38 | 61 | 0.5 | 0.5 |
| | 18 | 13,200 | 84 | 45 | 54 | 1 | |
| | 19 | 14,200 | 90 | 43 | 56 | 0 | 1 |
| | 20 | 14,800 | 88 | 39 | 60 | 1 | |
| | 21 | A.M. 7,300 | 44 | 31 | 68 | 1 | 0 |
| | | P.M. 12,000 | 84 | 34 | 66 | 0 | 0 |
| | 22 | A.M. 8,000 | 56 | 24 | 75 | 0.5 | 0.5 |
| | | P.M. 12,000 | 80 | 21 | 78 | 0 | 0 |
| | 23 | A.M. 8,200 | 51 | 35 | 61 | 3 | 1 |
| | | P.M. 12,400 | 86 | 29 | 70 | 0.5 | 0.5 |
| | 24 | A.M. 8,300 | 54 | 49 | 50 | 1 | 0 |
| | | P.M. 12,300 | 80 | 44 | 54 | 1 | 1 |
| | 25 | A.M. 9,200 | 55 | 46 | 53 | 1 | 0 |
| | | P.M. 10,000 | 66 | 49 | 50 | 1 | 0 |
| | 26 | A.M. 10,200 | 73 | 30 | 68 | 1 | 1 |
| | | P.M. 14,000 | 87 | 26 | 73 | 1 | 0 |
| | 27 | A.M. 10,400 | 66 | 35 | 62 | 2.5 | 0.5 |
| | | P.M. 13,600 | 82 | 38 | 59 | 3 | 0 |
| | 28 | A.M. 11,500 | 70 | 45 | 52 | 2.5 | 0.5 |
| | | P.M. 14,800 | 84 | 43 | 53 | 3 | 1 |
| | 29 | A.M. 12,000 | 81 | 32 | 65 | 3 | 0 |
| | | P.M. 12,600 | 81 | 38 | 56 | 6 | 0 |
| | 30 | A.M. 18,100 | 117 | 23 | 74 | 3 | |
| | | P.M. 15,600 | 98 | 30 | 67.5 | 1.5 | 1 |

A study of this table gives definite and conclusive evidence in regard to the first point under investigation, the accuracy of the method of counting by fields in a stained specimen for determining approximately the number of leucocytes, or for purposes of clinical study, the existence or non-existence of a leucocytosis.

As you see, the records of such count by fields correspond with an accuracy quite sufficient for purposes of diagnosis with the records of the count by the Thoma-Zeiss apparatus, the smaller and greater figures in both columns corresponding in every proportion, in fact with an evenness quite remarkable, considering the roughness of the method. That is, from these results the main fact as to the accuracy of the method in the hands of an experienced student may be considered proven.

In regard to the second point of investigation, the establishment of a set of standard records of normal blood studied by this method, for comparative use in clinical work the results give the following finding:

The figures obtained by the study of stained specimens of blood of a considerable number of normal individuals examined at two definite periods of the day, the mid-forenoon and the mid-afternoon, indicate that the number of leucocytes as counted in microscopic fields of a definite size of the stained specimen vary from a minimum of 41 in 100 fields, or 0.35 per field in the forenoon, to a maximum of 90 or 0.9 per field in the afternoon, as the actual number of leucocytes per cubic millimeter counted by the white counts in the same individuals vary from a minimum of 6,200 in the forenoon to a maximum of 14,800 in the afternoon. In the records of 30 individuals the number falls below 50 in but four cases, all forenoon records. It rises above 85 in six cases, all afternoon records.

The limits for forenoon records are from 41 to 81, two cases only running over 70.

The limits of afternoon records are from 66 to 90, but two cases running below 70.

A standard normal rule for use in clinical work as taken from these results would, therefore, read as follows: *In an estimation of the leucocytes by the method of the count by fields of a stained specimen the number of leucocytes lies as a rule in normal blood during the twelve day hours, between* 40 *and* 90 per 100 *fields, the higher numbers occurring regularly in the afternoon. A record exceeding* 90 *per* 100 *fields in a good specimen at any time of day is, therefore, suggestive of a leucocytosis. A record of* 100 *leucocytes or one per field, is a certain indication of leucocytosis. A record of over* 80 *in a forenoon count is suggestive of leucocytosis, and indicates a further investigation in an afternoon count.*

As to the question of the actual number of leucocytes per cubic millimeter represented by a given count of a stained specimen a study of our table indicates that a record of 50 leucocytes per 100 fields, or 0.5 per field, is equivalent to about 8,000 leucocytes per cubic millimeter (from 7,500 to 9,000) a record of one per field is equivalent to about 16,000 per cubic millimeter (15,000 to 17,000).

Too exact computation on these lines must not

be attempted, but the table records certainly indicate that such computation will bring us within 2,000 of the actual count, a result quite accurate enough for a diagnosis of the existence or non-existence of a leucocytosis and approximately of its extent.

The result of this investigation then indicates that in this method of the count of leucocytes by fields in a stained specimen of blood for the determination of the existence of the condition of an increase in the number of leucocytes (a leucocytosis) in a given case, we have a method of great practical use in medicine. The records obtained from this investigation will serve for standard records for the normal, for all work done by this method where microscopic fields of the same size used here are employed. They are, of course, of no such value except under such a condition. To fit himself for the application of this rapid method of blood examination in his practice, each man should make a set of records from the examination of specimens of normal blood with his own microscope, thus correcting his technique, and standardizing his microscope. In this way he will obtain a set of standard normal records for his own use.

There are some further points brought out by this investigation which should be noted as of some value in the study of the leucocytes. The first is the variation in the number of leucocytes in an individual during the day.

As can be seen by a review of the table the number of leucocytes is almost invariably (one exception only being found) higher in the mid-afternoon than in the mid-forenoon in the same individual. As a rule this increase in the afternoon record over the forenoon was, in my records, from 3,000 to 4,000.

This point and its cause or causes has been fully investigated by other workers. I call attention to its demonstration in my results simply for the importance of the observation in connection with clinical work. In determining the presence of slight degrees of leucocytosis in our cases, we must bear this fact in mind. Thus a record of 90 leucocytes per 100 fields in blood taken in the afternoon may be perfectly normal, while in a morning specimen it may indicate a leucocytosis.

A second point to which I wish to call attention is the records of the differential counts.

These records show the normal proportions of the various forms of leucocytes as judged by this study of 30 normal individuals at different periods of the day to be as follows:

| | | |
|---|---|---|
| Basophiles | Lymphocytes, Large mononuclear cells, Transitional cells, | 21 to 49% |
| Neutrophiles, | | 52 to 78% |
| Oxyphiles (eosinophiles), | | 0.5 to 6% |
| Mast cells, | | — to 1% |

In regard to the relation of the differential counts to the actual counts as studied by these records, it can be stated definitely that there is in normal conditions no definite variation in the character of the differential count corresponding to a variation in the number of the corpuscles per cubic millimeter, or between the forenoon and afternoon. That is, the same man may have identical differential counts in two specimens of his blood in which the actual count varies 3,000 to 5,000 per cubic millimeter, as in cases 27, 21, 26, 24. No definite high proportion of neutrophiles or low proportion of basophiles as an associate of the higher leucocyte counts, or of low neutrophile and high basophile proportion with low counts, can be determined.

Whether this finding has any bearing upon the practice of determining the existence of a leucocytosis in stained specimen by finding a high per cent. of neutrophiles, I cannot say. This can be determined only by carefully controlled investigation of specimens of leucocytosis blood along these lines. In my own experience such a method, though accurate for marked cases of leucocytosis, often gives inaccurate results in mild degrees of the condition, especially cases of neutrophile leucocytosis, that is in cases with 16,000 to 24,000 leucocytes. It is to be utilized only for the determination of oxyphile leucocytosis where it is not unusual to have an actual increase of oxyphiles associated with a total number of leucocytes of normal dimension.

## AN IMPROVED METHOD OF END TO LATERAL INTESTINAL ANASTOMOSIS. A NEW MATTRESS STITCH.*

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After two years of research upon the animal and upon the cadaver, with a view to simplifying gastro-intestinal technic, certain useful improvements have been worked out. The new technic has been used over and over in the writer's course in Experimental Intestinal and Gastric Surgery until further trial seems unnecessary. A series of four papers will be published in this journal illustrating changes in technic, the first article appearing in this number under the above title.

After resection of the ileo-cecal valve, and certain other operations, it is desirable to implant the cut end of the small intestine into the side of the colon. A lateral anastomosis is very effective; but it requires the closure of the two blind ends. An operation is described below which joins the end of the small intestine to the side of the large. The old method of joining the two at a right angle, using the gastro-enterostomy technic, is defective, because it creates a stricture at the joint. It will be seen that, by trimming the entering end of the ileum obliquely, the anastomosis will be made at an acute angle with the colon, while the size of the anastomotic opening will be larger than the caliber of the ileum. This decreases the danger of stricture formation at the site of the suture.

* First paper of series.

The open intestine to be implanted is first split along its free border for about 1½ inches, and the corners, which project, are trimmed down with scissors, so that an oblique opening is left with edges rounded out at the mesenteric border. The reason for rounding the edges instead of cutting them straight is that it allows more tissue for sewing at the mesenteric border. The receiving intestine is opened on its free edge for about two inches, and, the distal end of this cut is fastened by a mattress stitch to the mesenteric border of the entering bowel. Guides are now

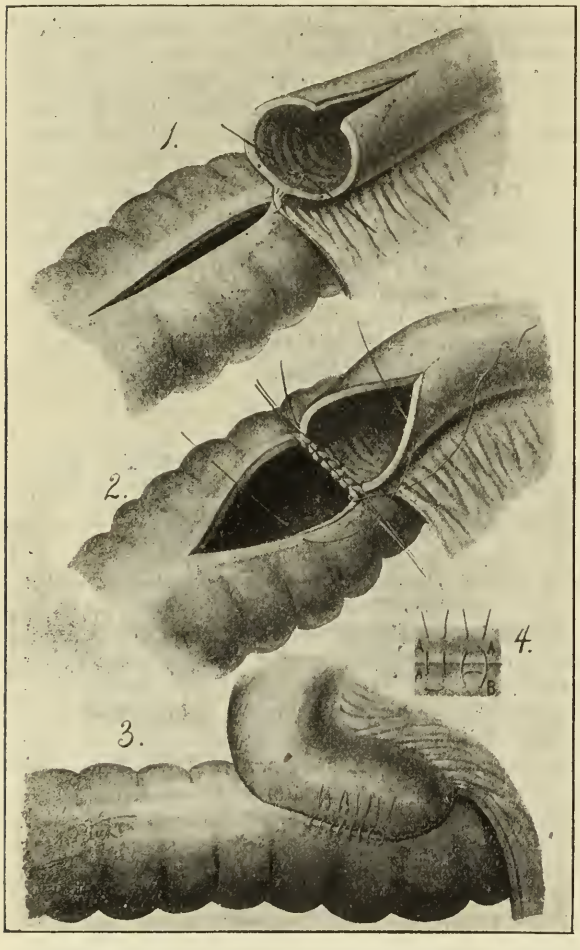



FIG. 1. — Shows method of application of first mattress stitch. Dotted line on small intestine indicates line at which corners will be cut off. Small dots on edges of large and small bowels show points where first two guides are placed.

FIG. 2. — The first mattress stitch has been tied and the first two guides pulled tight. The mesenteric third of the circumference of the small intestine has been approximated to a symmetrical portion of the edges of the cut into the colon, by an over and over stitch. The third guide has been loosely introduced to show the correct position.

FIG. 3. — Suture nearly completed, sero-muscular layers being approximated by new mattress stitch.

FIG. 4. — Old mattress *A* brought to *A*. New mattress *B* brought to *A*.

placed, with the ends left inside in such a way that they will invert the cut edges and expose the mesenteric third of the entering bowel side by side with a symmetrical portion of the cut edges of the receiving bowel. This portion of the circumference is, usually, hard to approach, but, upon tightening the guides, the remainder of the circumference falls away and allows easy introduction of the first layer of stitches. This layer is a continuous over-and-over, No. 0 chromic stitch which starts from one guide and goes directly across to the other, piercing all coats. When the second guide is reached, other guides are placed on the sides at regular intervals to assist in accurately matching the cut edges. When the free ends of the dorsal cuts are reached they are altered to make them fit one another, and the suture continued around to the opposite side, where it is tied to the long end left at the beginning of the stitch.

The second step is the introduction of an interrupted sero-muscular stitch. The mattress stitch is very valuable for this purpose, but the original Halstead stitch has the disadvantage of not rolling in the peritoneum when it is tied, thus losing the most important quality of the Lembert stitch. The writer has modified the mattress stitch by placing the loop near the cut edge. This rolls the protruding edges down and approximates the peritoneum without the necessity of tucking in. This change might be applied to both sides of the stitch except for the objection that it places the knot between the apposed peritoneal surfaces.

The technical details which may be considered original in the above operation are the following:
(1) Method of trimming the invaginating gut.
(2) Method of placing first layer of stitches.
(4) New mattress stitch.

## BACTERIAL COUNTS OF BOSTON'S MILK SUPPLY.

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ON April 29, 1904, the following regulation in regard to the milk supply was adopted by the Boston Board of Health: "No person by himself or by his servant or agent, or as the servant or agent of any other person, firm or corporation, shall bring into the City of Boston for purposes of sale, exchange or delivery, or sell, exchange, or deliver any milk, skimmed milk, or cream which contains more than 500,000 bacteria per cubic centimeter or which has a temperature higher than 50° F."

To secure the enforcing of this regulation, the Boston Board of Health in April, 1904, authorized the preparations for making the necessary bacteriological counts, etc., the results of these counts being placed in the hands of Dr. Charles Harrington, Chief of the Bureau of Milk Inspection, for use in the notification, prosecution, etc., of cases of infringement.

The month of May was used in procuring and standardizing the necessary apparatus and in general preparation for the summer's work. The method decided upon after consideration of those employed in about fifteen laboratories throughout this country was as follows: For media, 1½% nutrient agar (B. C.), 10 cc. to a tube,

reaction plus 0.7. The collection outfit was devised anew and consists of a case for carrying the samples made of copper with double walls interlaid with ½-inch felting. This case is divided into three compartments: the central one for samples, the other two for ice. When iced and closed, a constant temperature of 34° F. is maintained. The samples are carried in sterilized test tubes, the compartment holding eight racks of four tubes each. A smaller case was also made holding but three racks. These racks are made from copper tubing as suggested by one of us. (H. W. H.) Holes in the partitions of the case allow the ice water to circulate around the bottoms of the tubes. The use of the test tubes for carrying samples was suggested by S. C. Keith. For collecting, glass pipettes are used. These are carried in a detachable copper case, adapted for sterilizing, divided into two compartments, the upper for fresh sterile pipettes, the lower for the pipettes after use.

For plating the samples, the agar, after being melted, is kept in a water bath between 40° and 45° C. until needed. In order to bring down the actual number of colonies in a plate to a countable figure, a standard dilution of 1 to 10,000 is used. For dilution water, square eight-ounce bottles marked at 100 cc. are used. This water is sterilized in the autoclave under 15 pounds steam pressure for twenty minutes at a temperature of about 250° F. Two bottles are used for each sample, giving a dilution of 1 to 10,000 with 1 cc. of milk. Each dilution is shaken 25 times for thorough mixing, as is also the sample. A sterile pipette marked to contain 1 cc. and calibrated in the laboratory is used at each stage, three being required for each sample. After expelling the milk into the first bottle, the pipette is rinsed to the 1 cc. mark in the dilution water; 1 cc. from the first dilution bottle is transferred to the second dilution bottle; then 1 cc. from the second dilution bottle is transferred to the petri dish. The agar is then carefully added, mixed with the diluted milk in the plate and allowed to harden.

The plates are incubated in a saturated atmosphere at 37° C. for twenty-four hours. The colonies in a saturated atmosphere are not only more numerous, as shown by Whipple, than in a dry atmosphere, but also larger and therefore more easily counted; 37° C. is used in preference to room temperature because the latter requires more time for satisfactory development of the colonies, and is also so variable as to give no standard for the comparison of results. The twenty-four-hour incubation is used in preference to the forty-eight-hour because, though the latter shows a slightly higher average count, the counts are not sufficiently higher to materially change the report. One thousand consecutive plates incubated at 37° C. and counted at twenty-four and forty-eight hours gave the following results:

Six hundred seventy-nine or 68% showed an increase in the number of colonies at the forty-eight-hour count.

In 195 or 19.5% the count remained the same; 126 or 12.6% showed a decrease.

Seven hundred ninety-nine or 80% of these plates had counts below 100.

The average twenty-four-hour count on these plates was 15½; the average forty-eight-hour count 18¼.

One hundred ninety-three or 19% had between 100 and 1,000 colonies averaging at the twenty-four-hour count 275, and at the forty-eight-hour count 283.

Eight plates, about 1%, had over 1,000 colonies each, averaging 1,287 at the twenty-four-hour and 1,334 at the forty-eight-hour count.

Only 13 plates changed their relation to the legal limit, 9 going from below to above 500,000 and 4 decreasing.

In many plates, the count is lower with the forty-eight-hour incubation on account of small colonies becoming obscured in the growth of larger ones. There are also more spreaders.

This annoying difficulty with spreaders, frequently met with even in the twenty-four-hour plates, we now overcome by the use of earthen-ware petri covers suggested by one of us. (H. W. H.)

Spreading seems to be caused principally by water condensing on the petri-covers and agar. The dry porous earthenware covers absorb this condensation water, still leaving the atmosphere saturated, as proven by the large size of the colonies. Organisms having an inherent tendency to spread from unusual motility are not prevented from spreading by this method.

*Counting.* — A box, a child's slate, a reading glass and a " lumber counter " are used.

The box is 6 x 6 x 5 inches, with open bottom, glass front, and a four-inch circular opening in the top, painted black within and without, except the glass front.

The slate has a circle cut in the surface, 4½ inches in diameter, divided into 10 equal segments, the lines filled with red lead.

The reading glass is a common four-inch lens magnifying about two diameters.

The petri dish is placed over the circle on the slate and uncovered. The box fits over the circle, the reading glass over the box, thus protecting the plate, keeping a constant focus and setting both hands of the operator free.

A slight pressure of the thumb for each colony seen, on the lumber counter, accurately adds and records the count. As the dilution is 1 to 10,000, the actual count must be multiplied by 10,000 to obtain the number of bacteria in 1 cc. of the milk.

Having thus briefly outlined our laboratory methods for the collection and examination of milk samples, it is of interest to consider the milk itself, those who deal with it, and the various processes it goes through before reaching the consumer:

Boston's milk supply comes from dairy farms situated all over New England. It is impossible for each of these farms to be directly under our supervision, yet to secure a clean milk supply, these producers must be induced to procure clean milk.

Clean dairymen, clean cattle, clean barns, clean

utensils, clean handling and proper cooling are necessary.

Reform in these directions can be most readily accomplished through the dealer, who, being fined for dirty milk, will be forced either to educate his dairymen, regularly inspect the milk and handle it in a proper manner himself, or leave the business.

Dealers may be divided into five classes:

First: The large contractor who deals in milk by the train load, controlling the buying in districts situated along his line of road, and selling to stores, restaurants and milk pedlers as well as direct to consumers.

Second: The small contractor who collects one or two car loads from some particular town or section, selling to stores, restaurants, milk peddlers and direct to consumers.

Third: The independent dairyman, owning a dairy farm in or near the city, and selling direct to the consumers.

Fourth: The milk peddler who purchases a certain number of cans each day from the contractor, selling to stores, restaurants and direct to consumers.

Fifth: The store or restaurant buying from the contractor or milk peddler and selling direct to consumers.

Beginning the first of June, samples have been taken continually. Most of these samples have been secured from the milk as it arrives in the city. Such samples as have been taken from stores show that the average storekeeper has yet to learn how to properly care for milk. This part of the work will soon receive more attention.

This table shows temperature of samples taken in June, July, August and September.

| Month. | Number of Samples Taken. | Between 30° and 40°. | Between 40° and 50°. | Between 50° and 60°. | Between 60° and 70°. |
|---|---|---|---|---|---|
| June | 539 | 2.25% | 68 % | 27.75% | 2 % |
| July | 620 | 1.50% | 49 % | 38.50% | 11 % |
| August | 626 | 4 % | 39 % | 47.25% | 9.75% |
| September | 609 | 8 % | 43 % | 43.50% | 5.50% |
| Totals | 2394 | 4 % | 49.25% | 39.50% | 7.25% |

This table shows number of samples taken, with results, for June, July, August and September.

| Month. | No. of Samples Taken. | Below 100,000. | Between 100,000 and 500,000. | Between 500 000 and 1,000,000. | Between 1,000,000 and 5,000,000. | Above 5,000,000. | Unaccountable Spreaders. | Below Law-Limit. | Above Law-Limit. |
|---|---|---|---|---|---|---|---|---|---|
| June | 539 | 49 % | 23 % | 7.5 % | 13 % | 5.5% | .2 % | 72 % | 26 % |
| July | 620 | 29 % | 33 % | 12 % | 15 % | 10.5% | .5 % | 62 % | 37.5 % |
| August | 626 | 46 % | 31 % | 9 % | 11 % | 2.5% | .5 % | 77 % | 22.5 % |
| September | 609 | 45.5% | 30.5 % | 10.5 % | 12 % | 1.5% | | 76 % | 24 % |
| Totals | 2,394 | 42 % | 29.75% | 9.75% | 12.75% | 5 % | .75 % | 71.75% | 27.50% |

The greater part of the milk is brought to the city in 8½ quart cans, but in some cases cans holding over 20 quarts are used for special purposes. When the milk reaches the contractor, it is supposed to be from six to eighteen hours old. A few contractors deliver this milk at once to the consumer; the majority, however, after mixing, store it in ice until the following morning. Milk should be cooled at once after milking. Rushed warm from the dairies and allowed to stand for hours at some country depot, then thoroughly cooled on the cars, it often reaches the city with a temperature of 40° F. and a bacterial count of several millions. Occasionally a contractor with an extra supply of milk on hand will keep some over to the third day before being delivered, and on the evening of the fourth day it is sold in the tenement districts.

The contractor takes more care of the milk which is to be bottled for family trade than of the rest of the milk, and it is safe to say that if the same solicitude were shown for all the milk as for that used for the family trade, there would be very little milk coming to the city that would not be within the present standard. There are a number of places in the City of Boston where carloads of milk arrive in which it would be difficult to find a sample containing over 500,000 bacteria per cc. Since this care can be and is taken for a certain portion of the milk, why should it not also be extended to the rest?

*Mixing the milk* is a custom generally followed, as it furnishes a fairly standard supply from day to day; the law has, in fact, forced this by requiring a certain standard of fats and solids. Some dairies mix the milk before putting it into cans in order that every can may show an average product. Some milk is mixed or even pasteurized in the towns where it is collected before being sent to the city. The milk peddler who purchases of the contractor, taking his supply directly from the cars, usually has a mixing room and ice chest connected with his stable. The contractor himself mixes the milk in large quantities, keeping a separate mixer for the family trade. The milk is usually strained as it is poured into the mixer; variations are seen in this from no strainer at all to several thicknesses of cheesecloth or cotton. In summer, millions of flies hover around some of these mixing rooms. Indeed, when the cans are opened dead flies from the farms are sometimes found in them.

*Tasting* is a necessary part of the program for the detection of the poor milk, poor, that is, from the standpoint of taste, which must be set aside. The methods are many — one man asserts that by lifting the can and taking a sip, the sense of smell is also educated to detect poor milk. Some

sip the milk from a ladle. A spoon is frequently used, the only cleansing it receives being on the visit to the mouth between cans. Licking the under part of the stopper is a practice generally followed, the stopper being then thrown into a box, the mixed milk drawn off into the emptied cans, and the dirty stoppers again inserted. It is said that one milkman arranges his cans in a row, removes the stoppers, inserts a finger with great dexterity into each can and thence to his mouth in rotation. In one place, the largest cans are tasted by dipping in the hand instead of a ladle. It is easy to see how a taster with diphtheria in his throat, or typhoid on his hands, might infect a whole community. So long as these methods are allowed, only healthy men should be permitted to taste milk, but the methods should be changed. In want of a better device, a supply of common wooden tongue depressors would do, carried in a double box; the clean on one side, the used on the other. These could be bought at a trifling cost and easily cleansed. One man has suggested the use of paraffine straws. Most of the tasters spit also. To see tasters spitting the milk from the mouth in the midst of the open cans, even though care is taken not to spit into the same, is not an agreeable spectacle for the prospective consumer.

*Pasteurization* is carried on by but few Boston contractors, and even by them not for their whole supply. The milk is in the pasteurizing machine about four minutes, and passes through three processes. First, it is heated to about 165° F., then cooled by ice water, and finally cooled by brine. Milk keeps much longer after this process because most of the bacteria are thus destroyed. However, a milk kept sweet by cleanliness and cold is much to be preferred to a pasteurized supply filled with lifeless organisms and their by-products. One contractor wishing to show what interest he took in furnishing a bacteria-free supply of milk to his patrons showed a report from a bacteriologist stating that the milk before going through the pasteurizing process at his plant in a distant town contained 7,000,000 bacteria per cc.; after the process but 4,000. Consider for a moment the condition this milk was allowed to reach before pasteurization was used to prevent further development.

*The milk can* may be held responsible for many high counts. Some milk cans, each time the milk is emptied from them, are thoroughly cleansed and sterilized before being sent back to the producer, but as a rule this is not true. Such a can usually has the following history: purchased new it is kept for a while on the car for family trade and is carefully attended to, but as age advances it gives way to brighter and better looking cans, and takes its place among the store cans. The farmer cleans it with hot water as best he can. He does not mind the dents in the side, for the dented can holds less milk. When the can is filled with warm milk, the bacteria lodged in inequalities, broken seams, etc., multiply rapidly, the spring water in which the can is usually set not cooling the milk sufficiently to prevent bacterial growth. After the early morning ride to the stations and a wait on the station platform, the milk is cooled in the car on its journey to the contractor, where it arrives say about 10 A.M. If still sweet, to the taster's tongue, the milk is poured into the mixer, and the empty uncleaned can filled with the mixed milk and stored in ice until early the following morning, when it is delivered to the storekeeper. He disposes of the milk during the day, returns the empty dirty can the following morning to the contractor, who, without cleaning, ships it to the farmer and the round begins again. To furnish clean milk, some contractors have two lines of cans — one for the farmer sent back the morning it is received and reaching him with what milk is left in it perfectly clean and sweet; the other set receiving the mixed milk and being sent to the customers. These cans are carefully cleansed and sterilized each time they return. The contractor finds but little sour milk when the cans are thus cared for, and the inspector finds but few bacteria.

*The milk can stopper* deserves a few words in passing; being generally of wood, it absorbs the milk sooner or later into its pores, becomes filled with bacteria, and if not properly cleansed with boiling water each time it is used, readily infects the fresh milk. Split one of these old stoppers and you will see how the milk has penetrated the pores of the wood. The wooden stopper fits the can tightly, and if properly cleansed has no superior while sound, but the places where it is properly cleansed are few. Metal stoppers of the same material as the cans are now used to some extent. This is a step in the right direction.

Some of the contractors seem anxious to do what they can to furnish a pure milk supply. Dairymen are learning the two C's — Cleanliness and Cold. The outlook is favorable. We expect the time will soon come when it will be difficult to find amongst Boston milk dealers milk containing more than 500,000 bacteria per cc.

## ISOLATION METHODS AND PRECAUTIONS IN CONTAGIOUS DISEASE.*

BY F. P. DENNY, M.D., BROOKLINE, MASS.,
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Textbooks and the instruction received in the medical school seem to help us but little when we have our first practical experience in the isolation of a case of contagious disease. With varying degrees of knowledge of the principles involved, each physician works out for himself some of the details of isolation, and as a result our methods vary a great deal. Dr. A lays great stress on taking certain precautions which Dr. B, an equally good man, neglects; on the other hand, Dr. B carries out some measures which Dr. A considers unnecessary. The laity are quick to recognize these differences in our practice, as they are much more apparent than differences in therapeutic methods, and by this

* Read at a meeting of the Norfolk District Medical Society, Jan. 26, 1904.

lack of uniformity we often injure each other and the good name of the profession.

It has seemed, therefore, that it might be profitable for us to spend an evening discussing and comparing methods, suggesting to each other ways in which infection may be spread from a contagious case and the precautions that should be taken. What I have to say is in the nature of an introduction to such a discussion. It is hoped that it will serve to remind you of other and better methods which you yourselves are in the habit of employing and of which you will give us the benefit in the discussion to follow.

In considering what precautions to take in a contagious disease we must always keep in mind the nature of the infectious agent and the manner in which it is disseminated.

*Diphtheria.* — The Klebs-Lœffler bacilli are given off chiefly in the secretions of the nose and throat. These secretions are very profuse, as a rule, in the acute stage, and we often see patients with profuse discharges from the nose, and drooling from the mouth out over the pillow. They are apt to cough a good deal and in so doing spray the secretions to a considerable distance from them. The number of bacilli given off from some of these cases is very great, and the immediate surroundings of the patient must become very thoroughly infected. In a bit of diphtheritic membrane the bacilli may live a long time (several months), but when the bacilli are in a thin layer exposed to light and dryness they lose their virulence much sooner. According to good authorities, before the secretions can have become sufficiently dried and pulverized to float as dust in the air, the bacilli will probably have lost their virulence, so that there is comparatively little danger of the aerial transmission of the bacilli to other parts of the house. Our precautions, therefore, should be chiefly taken to guard against the infection being carried out by persons leaving the room or on objects taken out.

*Scarlet Fever.* — We know much less about the nature of the infectious agent in this disease. Dr. Mallory has recently found protozoan-like bodies in the skin of four cases, to which he has given the name *cyclaster scarletinalis*.[1] Whatever the relation of these bodies may prove to be, clinical observation has shown beyond much question that the infection is in the secretions from the nose, throat and ear, in the epidermis, and probably also in the urine and feces. The infection is more persistent than in diphtheria and seems to stick longer to rooms and objects; hence it is more important to limit the dissemination of the infectious material.

It is generally thought that scarlet fever is much more contagious than diphtheria on account of the scales of epidermis which are supposed to fly about through the air during convalescence. To how great an extent this takes place it is impossible to say, but the disease does not seem to be as contagious as it would be if this took place to any considerable extent. It was found on investigation that there was no increase in the number of cases of scarlet fever in the immediate vicinity of the South Department of the Boston City Hospital.[2] Personally I believe that the danger of the aerial transmission of scarlet fever has been overestimated.

*Mixed infections.* — Associated with the Klebs-Lœffler bacilli in diphtheria there is often also an infection with other bacteria, the most important of which are the streptococci; and in scarlet fever it is the rule to have a mixed infection with the streptococci. One object of isolation in these diseases may be to guard against the dissemination of these pyogenic bacteria, especially if there are surgical or puerperal cases about, and the personal precautions which the physician takes in visiting a contagious case should not only have as their object to guard against carrying away the specific organisms of the disease, but also to avoid transmitting the streptococci.

### ISOLATION METHODS.

I shall consider isolation methods only in diphtheria and scarlet fever, the two diseases in which we most often wish to carry out strict isolation at home.

As soon as the diagnosis of these diseases is even suspected, certain precautions should be taken at once. The patient should be confined to one room, from which all susceptible persons are excluded, and all eating utensils, handkerchiefs, towels, etc., should be boiled after use. These precautions should be taken in every case of sore throat in a household where there are children.

When the diagnosis has been confirmed there are many things to be arranged for by the physician. There is the room to be selected and prepared, the nurse to be engaged, and if it is diphtheria, antitoxin must be given to the patient and to each member of the household. The domestic and social plans of the family have to be suddenly changed and there are innumerable questions arising which the physician is called upon to decide. The establishment of a proper quarantine in a private house is a very time-consuming affair, but it is time well spent; it saves a great deal of trouble and annoyance later, and makes the subsequent care of the case much more satisfactory.

The *selection*, *preparation* and *care* of the patient's room should next be considered, but as these important details are more often described in textbooks, I shall pass them over here and merely say that, in the selection of the room the most important factors to be considered are, remoteness, the presence of sunlight and the location of the bathroom. One cannot have a satisfactory strict quarantine unless there is a bathroom for the exclusive use of the nurse and patient. If possible there should be a room for the nurse adjoining the patient's room. The ideal conditions are to have the two bedrooms and bath all connecting, but a satisfactory ar-

[1] Journal Medical Research, January, 1904.

[2] Boston City Hospital, Medical and Surgical Reports, 1897, p. 7.

rangement also is to have the three rooms at one end of a hall. In the bathroom there should be a small gas stove or some other arrangement for heating a boiler in which articles may be sterilized.

It is a practice with many nurses to hang a sheet across the door of the patient's room, which may or may not be kept wet with a disinfectant. Personally I do not think this sheet accomplishes much, because, as already stated, there is probably slight danger of the aerial transmission of these two diseases. Currents of air which might blow infected particles of lint or epidemis along the floor will also blow up the sheet. If used at all the sheet should be long and weighted with a sandbag or something of the sort.

Dr. Harrington [3] has called attention to the strong currents of air which often blow under a closed door, and suggests that a sandbag should be placed along the sill to prevent this.

Across the hall, just outside the sheet (if one is used), or outside the door of the patient's room, there should be drawn a chalk line or an imaginary line to represent what may be called "the *neutral line*," which is never to be crossed by those in the household outside the quarantine and by the nurse only after she has taken special precautions. At this neutral line there should be a small table, preferably with a large tin waiter on it.

After quarantine is once established there must necessarily be an exchange of certain articles with the rest of the house, and whatever is to go out of the room must be put on the table in a sterile condition. In a short personal experience in being quarantined at home I found that the articles which have to go out of the room may be divided into four classes: (1) Soiled clothes for the laundry; (2) dishes, eating utensils, etc.; (3) food refuse; (4) combustible waste.

*Soiled clothing for the laundry* may be boiled and then the whole boiler is put on the table at the neutral point. When the water has cooled those outside take the clothing out, being careful not to touch the handles of the boiler by which the nurse had lifted it. Another method is to have the clothing done up in sheets wet in corrosive sublimate or carbolic acid, and then carried to the laundry where it is immediately put into boiling water. The immediate boiling of clothing has the disadvantage that it fixes stains in the clothes so that they will not wash out. This may be avoided by soaking them first for two hours in a cold solution of carbolic acid, 3 parts; soft soap, 2 parts; cold water, 100 parts.

Most of the *dishes and eating utensils* used by the patient should be kept in the room, but it is often desirable to send back some of the dishes, especially those on which the food is served. These should be boiled and then put on the table while in the boiler, just as described above for clothes.

All the really soft *food refuse* may be put into the watercloset, while the solid part may be done up in newspapers and disposed of with the combustible waste; or all the food refuse may be thrown into a covered receptacle containing chloride of lime, which is emptied daily.

The *combustible waste* consists chiefly of papers, rags, etc., which can be burned in the open fire if there is one, or it may be done up carefully in several layers of newspaper by the nurse who puts the package on top of another fresh paper which has been spread on the top of the table by some one outside of quarantine. The person outside then wraps up the bundle in the fresh newspaper without touching the nurse's package and the whole may then be taken down to the furnace or kitchen stove and burned.

*Exercise for the nurse.* — The nurse should have an opportunity to get out of doors every day. This is easily arranged if there are two of them, but with only one it is difficult, especially if the patient is a very small child. Sometimes if a member of the family will stay just outside the room the child will be satisfied and remain quiet for the hour that the nurse is away. Before going out the nurse should change her dress, wash and disinfect her hands, and put on overshoes while passing through the house.

### Precautions to be taken by the physician in visiting a case of contagious disease.

There is some danger of the transmission of these diseases by a third person, but it is probably not very great. A great responsibility rests upon us, however, to take every reasonable precaution to reduce the danger to a minimum. For the sake of brevity I have written out some of the precautions in the form of rules. Most of them seem too simple and self-evident to mention here, but all of them are points which I have either found myself neglecting or seen others neglect.

(1) While making a visit do not sit down or lean up against anything. It should be possible to make a visit without coming in contact with anything except with the hands in examining the patient and with the soles of the shoes on the floor.

(2) After having touched the patient or objects in the room remember that anything that the hands touch will in turn be infected; for example, do not put the hands in the pocket to take out watch, pencil, or thermometer, and do not go to the bag to get out the stethoscope, corrosive tablets or drugs without first disinfecting the hands. In visiting any patient for the first time, where it is known that there is a rash or a sore throat, it is a good rule always to get out the corrosive tablets from the bag before going near the patient.

(3) In examining the throat stand so that it is possible to step to one side if the patient coughs or gags. In difficult cases this cannot be done.

(4) At the end of the visit disinfect the hands; do not first wash them in a small amount of water, as this may serve to wash some of the organisms from the smooth surface of the skin to the under surface of the nails, where the disinfectant will not readily reach them. It is better to first rinse

[3] Boston Med. and Surg. Journ., CXLI, No. 25, 1899, p. 617. For the subject of "Disinfection in the Sick Room" the reader is also referred to this article of Dr. Harrington's.

the hands in a stream of running water or immerse at once in the disinfectant.

(5) Do not use any towel which the nurse has handled or which might have become infected in any way. If there is no towel that can be trusted let the hands dry in the air.

(6) In going out do not touch any door handle which could have been infected.

Each one needs to watch himself carefully during a visit in order to avoid making mistakes; even then we shall make some; but if we are only conscious of our mistakes, if we know when we have come in contact with infected objects, or when the patient has coughed on us, then it is easy to guard against carrying the infection to others.

It is especially important that we physicians should set a good example in taking precautions; for if we are careless during the short period of our visits it cannot be expected that the nurse and others will keep up their precautions day in and day out during the long weeks of quarantine.

A cotton *gown* or long coat may be worn in visiting a contagious case and is often a great protection, especially where difficult throat examinations have to be made. Unless a gown is properly cared for it may be worse than useless. The ideal way is to have the gown sterilized each time after use, and when this is not done it should be hung carefully so that the inner surface cannot come in contact with the infected outer surface. I remember once visiting a contagious hospital in order to see the building and was given a gown to put on which was taken out of a wardrobe in which there were four or five other gowns all bunched up together. For the sake of politeness I put on the gown although I felt there was more danger of getting infected from the gown than from the air of the ward.

*Disinfection of the physician's clothing, etc.* — If we have reason to believe that our clothes have been infected we should do something more than give them a rest of twenty-four hours. They may be disinfected with formaldehyde gas in a small closet or cabinet, or they may be hung out in the sun and their position frequently changed so that all infected surfaces will be exposed to the direct rays of the sun. The direct sunlight has a very rapid action and is one of the most convenient and reliable disinfectants that we have. We are apt, however, to overestimate the efficiency of simple airing without the direct sunlight, and trust too much, for example, to a walk in the open air to get infection out of our clothing. If our clothes have been infected from organisms floating as dust in the air of the room,— a very remote possibility, I believe,— then currents of air are doubtless efficient to remove a large part of such infection. If, however, the clothing has been infected by minute particles of secretion sprayed out by the patient, or by contact with infected objects, then currents of air will have little effect.

We should be very careful not to get the inside of our gloves infected. The moisture of the hand and the absence of light furnish conditions favorable to the long life of pathogenic organisms.

It is sometimes desirable (and often a great satisfaction) to be able to disinfect with formaldehyde gas such small articles as gloves, stethescope, or the whole bag and its contents. The following device which I have found very convenient and efficient can be arranged by any physician in a few minutes. An ordinary tin cracker box of suitable size is raised up on four small bottles, or other objects, so that an alcohol lamp or gas flame can be put beneath. On the bottom of the box at one corner a formaldehyde pastile is put and close to it a piece of moist sponge or some wet cotton. The objects to be sterilized should be put into the box so that all infected surfaces are exposed to the gas and without touching the bottom of the box near the pastile. The box cover being closed and sealed with adhesive plaster, the lamp is lighted. The flame should be very small ($\frac{1}{2}$ to 1 inch), and should be directly beneath the pastile. After fifteen minutes the pastile will be volatilized and the lamp may be removed, but the box should stand sealed for at least two hours. The usual method of volatilizing the pastile with the lamp inside the box has the disadvantage that the lamp sometimes goes out on account of deficient oxygen and by that method also the air is drier. In this method the moist sponge or cotton being heated by the flame raises the humidity and so increases the disinfectant action of the formaldehyde. In some experiments made with this method test objects inside the fingertips of gloves were disinfected.

### PRECAUTIONS TO GUARD AGAINST THE TRANSMISSION OF INFECTION BY MEANS OF FOOTWEAR.

The floor of a room occupied by a contagious case is almost certain to be infected, as particles of secretion coughed out by the patient have been found to settle on the floor, and scales of epidermis also find their way there. Wright and Emerson [4] found diphtheria bacilli on the shoes of three nurses in the diphtheria ward of the Boston City Hospital. It seems well to consider how great is the danger of contagion being spread by the feet of those leaving an infected room.

Mr. Nyhen and I have been making a few simple experiments along these lines. We have put cultures of *bacillus prodigiosus* on different parts of the soles of our shoes, and then by means of gelatin plates, made at varying intervals, we have determined how long the bacilli would remain on the shoes while we were attending to our regular business. The growth was put on moist and also in a dry powdered form. The results of these experiments which are reported elsewhere [5] may be very briefly summarized as follows:

In thirty-seven tests where the *soles* were inoculated and where plates were made after inter-

[4] Wright and Emerson. Centralblatt für Bakt. 1894, xvi, 412.
[5] Jour. Mass. Association of Boards of Health. Vol. xiv, No. 2, May, 1904.

vals varying from one to three hours, the bacilli were found in thirteen (35%).

In twenty-two tests with the bacilli on the under surfaces of the *heels* for a similar length of time, the plates were positive in twelve (55%).

In twenty-six tests where the *instep* was inoculated and plates were made after intervals varying from one hour to nine days the results were positive in fifteen (58%).

In fifteen tests with the bacilli on the lower edge of the *side of the sole*, eleven were positive after intervals varying from one to seventy-two hours (73%).

These experiments show that infectious material even when dry will cling to the sole of the shoe and so may be carried long distances. It will be carried longer if, as may sometimes happen, the side of the sole or instep is infected.

It seems probable that infectious organisms are disseminated to some extent by the feet of those leaving the immediate vicinity of a contagious case, although it is not likely that disease is often spread by this means, because there are comparatively few opportunities for the infection to get from surfaces to which it may be carried by the feet to the mucous membranes of susceptible persons. There must be some danger of a physician carrying contagion in this way if he goes directly to the nursery or rooms in another house where children play on the floor.

In any case where a very strict quarantine is considered necessary, precautions should be taken to guard against infection being carried to the rest of the house by the feet of those going out from the room. These precautions are not troublesome or time-consuming. The soles of the shoes may be wet with a disinfectant on leaving the room, or overshoes may be put on before entering and taken off and left at the neutral line on leaving.

## A CASE OF SUSPECTED HOMICIDE PROVED TO BE SUICIDE BY STRYCHNIA.*

BY F. J. CANEDY, M.D., SHELBURNE FALLS, MASS.

Roland Dyer, the subject of this history, was the son of parents too shiftless to care for their own offspring, and at the age of twelve years he was bound out to a farmer in Ashfield to earn his board and clothes.

He first becomes of interest to a medico-legal society two years later, on the afternoon of Sept. 23, in a little country schoolhouse on the outskirts of the town of Ashfield, where he is kept after school and reprimanded by his teacher for conduct unbecoming a gentleman toward a girl schoolmate. He then starts for home, some distance away, in company with another boy, whom he tells while on the road that if his father (meaning Mr. Wiley, in whose family he lives) knows of this affair, he will kill him, and that he is going to commit suicide by taking strychnine. He said that he had tried it once, but had taken too much, so that it made him sick and he threw it up.

Our next knowledge of him is from Mrs. Wiley, who says that he came in from school about five o'clock, changed his school clothes for overalls and went out to rake up rowen near the barn, Mr. Wiley being at work in the same field, some distance away, on the other side of the barn, but in sight of the boy. Mr. Wiley says that soon after the boy went to work, and before he had raked up a small cock of rowen, his twelve-year-old daughter, who had been in school that day, but not the girl connected with the punishment the boy had received from his teacher, came out and told him what had happened at school, upon which he started to go down to speak to the boy. In doing this he passed on the other side of the barn, so that for a very short time (he thinks less than a minute) the barn was between them, and when he came out on the other side the boy had disappeared, and the next time he saw him his body was found lying in the woods three fourths of a mile away, a month later.

About two hours later, between seven and eight o'clock in the evening, Mr. Wiley appears at the office of Dr. Fessenden of Ashfield, associate medical examiner in my district, some four and a half miles from the Wiley farm, and tells his story in rather an excited manner. He brings with him a pewter mug having some traces of a white powder in the bottom, which he states he found under a lounge in his kitchen, and a small cork which he found lying on the kitchen floor, and he says that a small vial of strychnine which he obtained from a drug store in the spring to kill crows in the cornfield had disappeared from a shelf in the cellar way where it was kept. He further states that upon the boy's disappearance they instituted search for him, blew their dinner horn and called their neighbors to aid them, but without finding trace of him.

This Mr. Wiley was a man who had suffered some years before from some mental aberration of a melancholic type; was unpopular among his neighbors; said to have a violent temper, which often manifested itself in brutal treatment of his animals; and this boy had on several occasions received very severe punishments at his hands, although no one denied that he had been generally kindly treated in this family, and that it was only in these uncontrollable outbursts of Mr. Wiley's temper that he was liable to suffer injury. Mr. Wiley's neighbors and many of his townspeople refused to credit his version of the boy's disappearance, and openly expressed the opinion that he had killed him and secreted the body.

The state police were early called into the case, — two of them responding, — and with two deputy sheriffs a thorough search was at once instituted for the lad, chiefly under the supposition that he had been killed and his body secreted somewhere about the Wiley premises. Two or three unused wells were opened up and explored; the cellar floors of the house and barn, and wher-

* Read at the annual meeting of the Massachusetts Medico-Legal Society, June 7, 1904.

ever there was any indication of recent disturbance of the ground about the locality carefully gone over, — several men spending three days in this work almost without intermission. Meanwhile the officers spent most of their time in questioning members of the Wiley family and others, hoping to get more clews to direct them in their investigation. But nothing was discovered, and after a few days the officers left town, though some of the neighbors still kept up a desultory search of outlying premises, and even sat up nights to watch for any appearance of a lantern, thinking this might lead to some discovery. Nothing having been found in the immediate locality, searching parties on several later occasions explored the neighboring fields and woods for some distance about, and it was on a Sunday afternoon, Oct. 19, twenty-six days after the disappearance, in an organized search by a large number of men, conducted by a deputy sheriff, that the body was found. It was about three fourths of a mile from the Wiley homestead, in a small collection of low growth hemlock, something like a third of a mile into woods of first growth timber, and just off from and in plain view of a wood road leading through.

My associate examiner, Dr. Fessenden of Ashfield, was notified, and at once went to the place and took charge of the body, and it is to his painstaking notes that I am indebted for the position of the body as found here, and his relation of circumstances from which the receding narrative is drawn.

The body clothed in blue overalls and calico shirt, with a weather-stained straw hat on the head, was lying front downwards on the leaves; toes resting on the ground; heels pointing up; right hand under the stomach; the left hand back downwards under the left side of the face, which was turned to one side, the attitude being as though the person had carelessly thrown himself down to rest. There were very few leaves or woods material on the surface of the body, and no apparent disturbance of the forest mold or objects about, but when the body was lifted it was found to have indented itself into the leafy mold beneath, which was very moist and offensive and covered with maggots. All the soft parts, except those covered with clothing, were thickly coated with large, white maggots, which had eaten the flesh to the skeleton. In the skeleton of the right hand was a half-ounce vial, half full of maggots and with a badly defaced strychnia poison label. The muscles of the trunk and thighs were so rigid that the body was lifted by the shoulders and knees without bending, and placed upon a rubber blanket, upon which it was then conveyed to the receiving vault in the Ashfield cemetery.

My first personal knowledge of this case was on the following day, Oct. 20, when I went to Ashfield by order of District Attorney Malone to make an autopsy on the body, in which I was assisted by Dr. Fessenden. I found the body lying on a table in the open field outside the cemetery vault, dressed in blue overalls and colored shirt, with straw hat lying by its side. It was literally covered with maggots and giving off a most horrid odor. Mr. Wiley, with whom the boy had lived, was present, and identified it as the body of the missing boy, chiefly by the clothing. This identification was confirmed by Dr. Fessenden and others present.

The body measured five feet three inches in length, and the head, face and neck presented nothing but the bare skeleton for inspection — the only exception to this statement being the crown of the head, which had probably been protected from the maggots by the hat which was found on his head where the scalp with its hair had dried down upon the cranium. Maggots had also eaten all the soft parts from hands and feet up to the point where the limbs were covered by clothes. On removal of clothing, the skin was found intact beneath, mostly dark red on the extremities and green over the abdomen, with marked rigidity of underlying muscles in the arms, but less in the thighs. The work of the maggots had extended below the clavicles on the front of the chest, and opened into the thorax, where the lungs were entirely decomposed and the heart partially so. These scavengers had not yet invaded the abdominal cavity, where the peritoneal covering of the stomach and intestines was quite glistening and firm. The stomach, about half full of what appeared to be liquid substance, was tied off at both ends, and placed in a glass jar, which was sealed up. Stomach and intestines not much decomposed, with normal vermiform appendix; liver and kidneys somewhat softened; gall bladder contained a small quantity of bile; urinary bladder empty. One kidney, with portion of liver and gall bladder, was placed in second jar and sealed.

The brain was entirely decomposed. The skull and bones of the face showed no marks of injury and the uncovered cervical vertebræ were intact, but about ready to separate, from the work of maggots and decomposition of attachments, upper and lower sets of teeth complete.

The jars with their contents were carefully packed and sent by express to Dr. William B. Hills, professor of chemistry at the Harvard Medical School, for examination. In separate parcels were also sent the pewter cup, brought to Dr. Fessenden on the night of the boy's disappearance, and the vial found with the body. Ten days later the following report was received from Dr. Hills: —

"I have made a qualitative analysis of the organs of Roland Dyer received from you Oct. 24 inst., and herewith report the presence in the stomach and in the liver of the alkaloid strychnine.

"The white powder adhering to the interior of the pewter cup from the house of Alec Wiley is a salt of strychnine.

"The bottle found near the hand of Roland Dyer contained a very small quantity of strychnine, not sufficient to be visible to the eye, but sufficient to be easily recognized by chemical tests."

This report was placed in the hands of the district attorney, who took no further action in the matter, and the case was dropped here, much to the disappointment of some who had previously been active in the matter and still refused to be convinced that the boy had died by his own hand. They made it so unpleasant for Mr. Wiley that a little later he disposed of his place and left town, which to their mind was further evidence of his guilt.

## Clinical Department.

### REPORT OF CASES FROM THE SURGICAL SERVICE OF THE CHILDREN'S HOSPITAL, BOSTON, MASS.

SECOND SERIES.

BY DRS. H. D. BURRELL, H. W CUSHING AND J. S. STONE.
REPORTED BY DR. J. S. STONE.

(Concluded from No. 25, p. 687.)

#### CICATRICIAL CONTRACTION OF THE RIGHT FOREARM AND HAND, WITH EXTENSIVE LOSS OF TISSUE. CORRECTION OF DEFORMITY. TRANSPLANTATION OF ABDOMINAL FLAP.

C. W., a boy of eight years, of Antrim, N. H., was admitted to the General Surgical Service of the Children's Hospital on April 6, 1903, for correction of cicatricial deformity of the right forearm and hand.

A year and ten months before the right arm had been caught in belting. The thumb had been very badly injured and there had been extensive destruction of tissues on the anterior radial surface of the forearm. At the same time there had been a greenstick fracture of both bones of the forearm. The boy had been treated for a time at the hospital in Hanover, N. H. The thumb had been injured so extensively that it sloughed off entirely. Cicatricial contraction followed.

The deformity existing at entrance is shown in the first picture. The right wrist was held flexed about 110°. The hand was also drawn strongly to the radial side, so that there was great prominence of the styloid process of the ulna. A firm scar extended from the junction of the upper and middle thirds of the forearm on the anterior radial surface down to the wrist. The thumb and thenar eminence were entirely gone. There was sharp flexion of the fore and middle fingers though they could still be moved a little voluntarily. These two fingers, particularly the forefinger, were atrophied as a result of disuse.

On April 11, the boy was etherized and the firm, thick part of the cicatrix was excised. At the edges in places the thinner flexible scar tissue was left untouched. The size of the denuded area is shown well in the second photograph. The scar tissue was excised down to the tendon sheaths and the wrist and fingers were then forcibly extended. The anterior ligaments of the wrist were torn somewhat and in one spot a tendon sheath was torn open slightly. The tendon of the flexor sublimis of the middle finger seemed to offer more resistance than any other structure. All the tight bands of facia were cut across in the forearm and in three places an oblique myotomy of the tight flexor muscles was done. The denuded area was dressed with tin foil and the arm put on a metal splint with the wrist extended 30°. The fore and middle fingers could not be quite fully extended because of the circulation. Very little pain followed the operation.

Six days later the dressing was removed and a healthy granulating surface was exposed. Blood clots were carefully removed so as not to start fresh bleeding and the whole area was washed with salt solution. A flap of skin and subcutaneous tissue, an inch and a half by six inches, was then dissected from the abdominal wall,



Cicatricial contracture of right forearm before operation.

being left attached by its upper and inner long side. The flap reached from the median line just above the umbilicus, upward and outward, on to the three lower ribs. The ends and the long free border of the abdominal flap were then carefully stitched with continuous catgut to the ends and the radial border of the denuded area of the forearm. The forearm was then fully supinated in order to bring the raw surfaces of the flap and forearm together; and partly in order to maintain this apposition and partly to narrow the denuded area on the abdomen two quilted sutures of catgut were passed through the bottom of the fold in the flap close to its attachment to the abdomen, downward behind the forearm and though the skin beneath the exposed area from which the flap had been taken. The corners of the abdominal wound were sewed together to narrow the raw surface which was left. This surface and the lines of suture were covered with tin foil and a large sterile gauze dressing. A plaster bandage fixed the hand in corrected position and prevented movement on the abdomen.

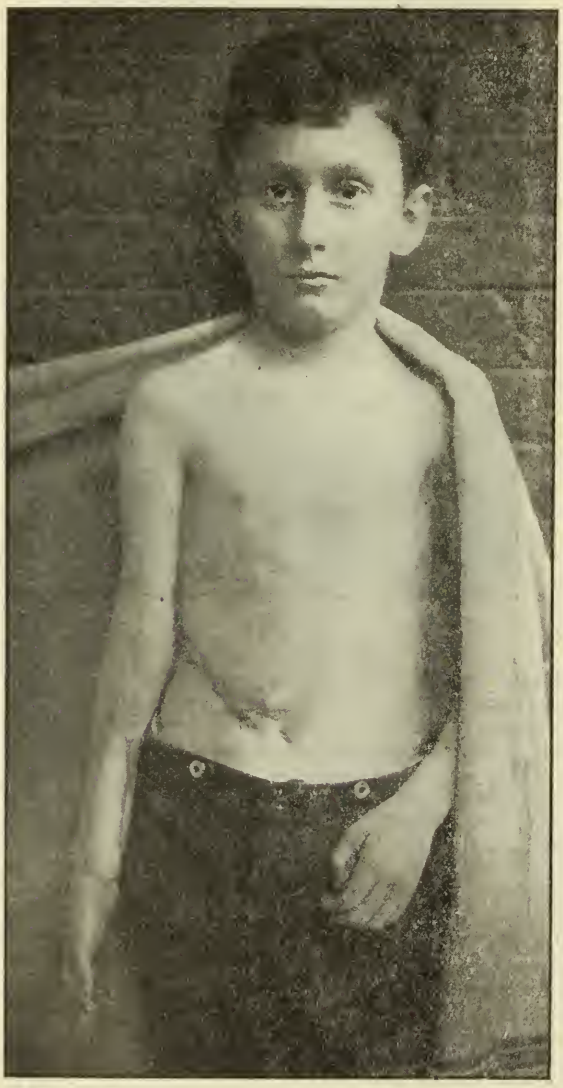
Two weeks later a window was cut in the plaster through which the dressing was changed several times as the odor of the discharge from the wound became offensive.

Twenty-three days after the abdominal flap had been sewed in position the plaster was removed and the flap cut free from its abdominal attachment. The circulation in the severed flap remained good enough to cause a very slight amount of bleeding. The discharge from the raw surfaces was carefully washed away with salt

solution and the edge of the flap stitched with interrupted catgut to the ulnar side of the raw area of the forearm. The contracted fingers were again forcibly over-corrected and put in a splint. The edges of the abdominal wound were drawn toward each other with adhesive strips.

Eleven days later, May 22, three Thiersch grafts from the thigh were placed on the abdominal wound. The forearm had healed entirely.

On June 4, fifty-four days after the first operation, the boy was discharged well except for a few small granulating areas between the grafts on the abdominal wall. The splint was omitted. There was no tendency



Cicatricial contracture of right forearm after operation.

to recurrence of the contraction, either in the wrist or fingers. The slight bowing of the bones of the forearm, the result of the fracture, remained. The subluxation of the hand toward the radial side was much diminished though not entirely corrected. The fingers were very stiff, though voluntary motion was possible, more free in the little and ring fingers than in the other two. The atrophy of the forefinger was unchanged and can be seen in the photograph. The transplanted flap was of normal color, soft and freely movable. The photograph shows well the condition at discharge, except that the slight subluxation of the hand to the radial side does not appear.

On Nov. 28 the boy was re-admitted because of some recontraction of the deeper tissues. The transplanted skin remained soft and pliable. Under ether the tissues were forcibly stretched and a celluloid splint was made for use at night to prevent any further contraction.

### ADENO-SARCOMA OF THE FEMORAL AND INGUINAL LYMPHATIC GLANDS. EXCISION. METASTASES. DEATH.

W. McG., a boy aged three years, of Hyde Park, was sent to the Out-Patient Department of the Children's Hospital on July 15, 1903, by Dr. Philip C. Means.

The family history was good except that one sister had "spinal trouble."

The child had always been well until two weeks before when lameness of the left leg had been noticed. This had come on without known cause. There were frequent night cries. There was pain in the left heel, ankle and thigh. The circumference of the right thigh was increased a quarter of an inch. There was no difference in the length of the legs. There was a slight limp in walking. Abduction and hyperextension of the thigh were limited. The child was put to bed for a few days and the pain ceased.

On Aug. 10, six weeks after the lameness was first noticed, the child reported again. The pain had come back again, and the night cries had recurred. The motions of the left hip were limited in hyper-extension and abduction, but were free in flexion and adduction and rotation. A mass could be felt in the left groin and iliac fossa. It was somewhat nodular, not tender, not fluctuating. It lay chiefly above the middle of Poupart's ligament, but some fullness could be felt in the upper part of Scarpa's triangle. Rectal examination showed the mass to be movable and much more nodular than appeared on external examination, and about the main mass distinct glands could be plainly felt. The mass lay to the left of the rectum close upon the ilio-psoas muscle, reaching upward from Poupart's ligament for about two inches and having about the same breadth. The spine was rigid but there was no knuckle. The reflexes were normal. The heart and lungs were normal. The rest of the abdomen was normal. The child had begun to lose flesh though still fairly nourished. The pallor was very noticeable. The urine was of normal color, acid in reaction, with sp. gr. of 1,035, and free from sugar and albumin. The urates were increased. The hemoglobin was 70%. The white count was 12,200. A stained specimen showed some achromia; no poikylocytosis; basophiles 50%, large 23%, small 27%; neutrophiles 50%, one eosinophile. The temperature ranged between 100 and 101. The pulse was 120, the respiration 30.

The child was admitted to the hospital and was kept under observation for a few days. The tumor increased a little in size.

On Aug. 18, seven weeks after the onset of the first symptoms, the child was etherized and the glands excised. The incision was made parallel with Poupart's ligament, about three inches long with the inner edge just above and outside of the external inguinal ring. The peritoneum was exposed and dissected back. The whole operation was performed extra-peritoneally. The glands were discrete, not adherent and varied in size up to a long diameter of 3 cm. Many were very soft and friable and were torn in being dissected out. The glands followed the course of the external and common iliac vessels. A number were dissected out from deep in the pelvis outside of the internal iliac vessels. A flap of skin was turned back and a large number of glands were dissected out from Scarpa's triangle.

An unbroken chain led directly under Poupart's ligament close to the femoral vein. These also were excised. All the glands which could be seen were excised and the wound was partially closed with silkworm gut sutures. The hemorrhage was moderate. On account of the oozing gauze wicks were put into the wound. The shock was marked. The condition after the operation was finished was poor.

Six days after the operation 1 minim of Coley's mixed toxins of streptococcus and bacillus prodigiosus, prepared by Parke, Davis & Co., was injected. No reaction whatever followed. On the seventh day, 2 minims, on the eighth, 3; on the ninth, 5; on the eleventh, 6; on the fifteenth, 10; on the seventeenth, 12; on the nineteenth, 14; and on the twenty-first day, 16 minims of the toxins were injected. No reaction whatever followed any of these injections. On the ninth day the temperature had reached 102.2°, but came down on the thirteenth day to 99° and 100°, finally going up to 101°.

During the first week after the operation the general condition seemed to improve a little. Then the child began to grow very dull and apathetic. The appetite failed. The cachexia became more and more marked. Marked edema of the face, particularly about the eyes, came on. Slight exophthalmos followed. The wound healed solidly within two weeks without local recurrence. No recurrence elsewhere could be definitely made out, though obviously the disease was steadily progressing. As the toxins seemed to be doing no good and as the parents wished to take the child home he was discharged on Sept. 13, not quite four weeks after the operation. The after history is contained in the following letter from Dr. Means:

"The child died Oct. 25. Glands in the bowels and neck, bulging below both temples, blindness the last week, cough and foul breath, and unconsciousness for the last thirty-six hours. There seemed to be no pain till the last two weeks and then not severe."

It seems probable that the first recurrence was cerebral. This might account for the profound apathy, the exophthalmos, the constantly increasing cachexia, without any discoverable local recurrence. The report of the pathologist showed the tumor to be adeno-sarcoma.

The case is of interest as showing the rapid course of the disease, the absence of local recurrence and the absence of any reaction to very large doses of the toxins of streptococcus and bacillus prodigiosus.

### URETHRAL FISTULA; THE RESULT OF A HAIR TIED ABOUT THE PENIS.

D. F., a boy aged three and a half years, of Chelsea was admitted to the Children's Hospital on Aug. 26, 1903. He was a Jew on whom ritual circumcision had been performed.

The only history of importance was that given by the mother in a rather unreliable and varied story. About ten months before she noticed a constriction about the penis which after a time caused retention of urine and considerable swelling below the constriction.

The person who had performed the circumcision was called in and found a hair which, it was later learned, the boy had voluntarily wound around the penis. After the hair was removed it was found to have cut its way into the urethra. The fistula closed a little at first, but for months before the boy was admitted it had remained in the same condition. Urine passed through both fistula and meatus.

On the under surface of the penis, about 5 cm. behind the frenum, was a fistula about 2 cm. in diameter, leading directly into the urethra. The edges of the fistula were thin, red, made up of unhealthy skin. Otherwise the child was well.

Under ether the edges of the fistula were dissected away down to healthy tissue and the adjacent skin was dissected away. As little tissue was sacrificed as was possible. A pursestring suture was tied around the fistula, drawing the mucous membrane firmly together and yet in no place perforating it. Outside of this the skin was drawn together by another stitch of fine catgut.

There was no leakage after the operation. Nine days later the child was discharged with the wound closed solidly.

The method of closing the fistula without elaborate plastic operation is of interest.

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## POST-OPERATIVE ERYSIPELATOUS DERMATITIS IN AN INFANT OF ONE MONTH; RECOVERY.

BY W. P. COUES, M.D., AND W. H. ROBEY, JR., M.D., BOSTON.

An Italian infant of one month was admitted to the Surgical Department of the Boston Dispensary on April 25, 1902. A tumor of the shoulder had existed since birth and the child was emaciated from a diarrhea of nearly the same duration.

Examination showed a well developed male child. On the anterior aspect of the right shoulder was a lobulated, movable tumor, the size of a walnut. The tumor did not fluctuate; its surface was slightly reddened. The tumor was removed on April 28 under ether. There was very little bleeding, the incision was closed with interrupted silk sutures and a sterile gauze dressing applied. The following day the wound was slightly reddened, so the next day the sutures were removed and the lower angle of the wound drained. The pathologist reported the tumor to be a lipoma.

On May 14 the wound was entirely healed save for a small granulating surface at the lower angle, but a well-marked blush was noticed on the right arm and forearm. There were no blebs nor induration noticed. The inflammation seemed very superficial and the inflamed skin was not glazed.

The next day, May 15, the redness had almost disappeared from the right arm and shoulder but a blush had appeared on the left arm and shoulder. The baby's temperature was 106° F. and he looked very sick. Dr. C. Morton Smith pronounced the skin lesion to be a toxic erysipelatous dermatitis, probably resulting from the wound in the right shoulder.

On the 19th the child had profuse diarrhea and was very sick; the blush had gone completely from the upper part of the body but covered the right thigh and part of the right leg. On the 20th the scrotum became edematous with the signs of the erysipelatous inflammation. The child had a septic finger which was opened. The swelling of the scrotum increased, the penis was ecchymosed and swollen with phimosis. Temperature, 101°.

There is a red line extending down the legs, sharply demarkated at the lower borders of the tibiæ.

On May 22 an area of gangrene had developed almost covering the scrotum and one half of the penis; there was paraphimosis. White count, 22,000.

June 3 the gangrenous area has not extended, the slough is rapidly disappearing from the scrotum and penis, and healthy granulations are forming. The child's general condition is steadily improving.

Cultures were made under the best conditions, at the time the various abscesses were opened, and the

cultures examined by us and the pathologist. The organism found in every case was the Staphylococcus albus. The infection, however, was undoubtedly due to the streptococcus.

It was formerly supposed that such lesions were due to a staphylococcus, but Sabouraud[1] has pointed out that the reason why we do not get the streptococcus is because our method is at fault — the common pus cocci crowd out the feebler and slower growth of the streptococcus. In a similar case which we have just seen in an infant at the Boston City Hospital the pathologist failed to grow the streptococcus. Sabouraud has succeeded in isolating the streptococcus in similar cases, and although we failed, the clinical course of our cases was interesting because of the power of such small infants to withstand a tremendous injection.

Allen [2] in the *Medical Record* reports 100 cases of erysipelas, 50% of which were traceable to pre-existing skin lesions. Chantemesse [3] says that the examination of the blood during and after the period of convalescence furnishes valuable information. He says that the leucocytic curve follows the temperature very closely. The polymorphonuclear leucocytes show an increase as soon as the malady is established when at the same time the mononuclear forms diminish. When recovery takes place it is signalized by a fall in the polynuclear elements. The eosinophiles which fall during the illness only appear again when the blood infection is entirely at an end. Douchez [4] considers such an erysipelas in the newborn as very unfavorable; serumtherapy may be of great value. Rosenberg has had under similar conditions great results from the use of ichthyol ointment. In our case the general condition was supported and the abscesses opened as soon as they appeared, and treated with a moist gauze dressing. The gangrenous areas were treated with dermatol and dry sterilized gauze.

[1] Sabouraud: Annales de Dermatologie et de Syphilographie, 4 ser. vol. I.
[2] Allen, C. W.: Medical Record, Nov. 23, 1895.
[3] Chantemesse: Lancet, Mar. 11, 1899.
[4] Douchez: La France, Nov. 12, 1897.

## Recent Literature.

*The Clinical Study of Blood Pressure.* A Guide to the Use of the Sphygmomanometer in Medical, Surgical and Obstetrical Practice. By THEODORE C. JANEWAY, M.D., Lecturer on Medical Diagnosis, University and Bellevue Hospital Medical College, and Visiting Physician to City Hospital, New York City. 300 pages, with 75 illustrations. New York and London: D. Appleton & Co.

No one can fail to recognize, after reading this book, that the winnowing process between wheat and chaff must continue a good while longer before the ultimate separation is concluded. There is no lack of experimental data; but in evolving it, such a variety of methods and instruments have been used that qualifying the results has been difficult, even in the hands of an expert. A universal instrument has yet to be devised, and although the Riva-Rocci type is in the ascendant, certain details like width of armlet, physical characteristics of the subject's arm, influence of posture, meals, psychical states, muscular exertion, etc., still stand in the way of uniform results. In drawing conclusions the author has checked the work of others, as far as he could, by results of his own investigations, and he aims to give an intelligent digest of all important work so far reported, with a list also of the original sources.

The book opens with a clear description of the various phenomena connected with blood pressure, followed by a critical account of the various instruments in common use. In the next chapters follows the discussion of pressure in health and disease with numerous general laws put into concise form. Careful consideration is given to the phenomena of collapse and shock and, for the most part, the well-known theories of Crile are accepted. The paragraphs devoted to arterio-sclerosis and the angio-sclerosis of v. Basch are very suggestive, and the problems of intracerebral pressure with the relative indications in hemorrhage and thrombosis are bravely attacked. Appropriate stress is laid upon the uselessness and possible danger of stimulating the heart when treatment should be directed to the vaso-motor system, and the means of such treatment are indicated. The weak part of the book is, of necessity, the effort to give information of value in regard to the individual diseases. In typhoid fever, by exception, there seems reason to look for help in the ever-difficult diagnosis of perforation. Since typhoid is almost invariably hypotensive and perforation and peritonitis apparently always attended by prompt rise, the indication for operative interference may come at a moment early enough to increase the chance of success, at best a slender one. To a number of other diseases considerable attention is given, but the reader looks instinctively to the future editions for more exact information. There are numerous illustrations and charts, and the letter-press is good, but more compactness in the arrangement of material would be an advantage.

*Outlines of Physiological Chemistry.* By S. P. BEEBE, Ph.D., Physiological Chemist to the Huntington Fund for Cancer Research, and B. H. BUXTON, M.D., Professor of Experimental Pathology, Cornell Medical College. New York and London: The Macmillan Co. 1904.

This small book consisting of about 200 pages is one which deals only with the theoretical side of physiological chemistry. It is not intended as a laboratory guide so that the various tests have not been described in detail. The object of the book is to explain the chemical reactions which take place when the tests are applied. The work would, therefore, appeal only to those who have a good understanding of physiological chemistry.

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# Medical and Surgical Journal.

THURSDAY, DECEMBER 29, 1904.

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## THE YEAR IN RETROSPECT.

The past year has not been particularly remarkable in medical achievement or discovery, in contrast to several which have preceded it. It has given birth to no new theories of importance, and its significance lies rather in the application of knowledge gained and in the testing of hypotheses already advanced, than in the development of new and fruitful theories. A tendency which has been gaining ground for many years found definite expression this year in the Congress of Arts and Sciences held at St. Louis. We refer to the recognition of medicine as one of the sciences to be classified in the general field of knowledge This increasingly closer relationship of medicine, both in its theoretical and practical aspects, with allied but hitherto distinct branches of science is a significant fact which the meeting at St. Louis did much to foster. The addresses in general, and medicine was not an exception, were designed to bring out the broader bearings of the subjects discussed, and to lay stress particularly upon relationships between the apparently increasingly diverse branches of knowledge. In this the meeting was an undoubted success, and so far as medicine is concerned, it has served its purpose well, of bringing into its proper and dignified place a profession which has at times been regarded as without the pale of the sciences.

Another manifestation of the same tendency has been shown in the somewhat rapid elevation of the standard of entrance to our best medical schools with a remarkable increase of facilities for teaching, combined with a somewhat surprising falling off in the number of students at certain of our institutions. The University of Pennsylvania has opened very extensive laboratories during the year, the Rockefeller Institute is rapidly perfecting its plans for work, the new Harvard Medical School is approaching completion, and in fact everywhere the new spirit of the higher medical education is in evidence. This last year has, however, shown that the student body is not increasing proportionately. It is our intention here merely to call attention to this fact. It may be only a temporary phase, or, as seems more probable, it may have a far-reaching significance. In any case, the matter is worthy of careful investigation.

The combat against tuberculosis in this country has assumed during the year a more definite form than ever before in the organization of a representative national society, which absolutely insures an exercise of the judgment and wisdom necessary in this problem at the present time. The formation of smaller local societies during the year has helped the cause. Such a society, for example, recently organized in Boston, has been carrying on its work with success. Public demonstrations of various matters relating to the disease have been given in Baltimore and Boston, as a further means of educating the public.

Another subject of less popular but much medical interest is the light which the work of the past year has thrown upon the so-called rheumatoid diseases. However vague the matter may still be, the classification of these affections has now been seriously attempted, and unquestionably the work which is being done both on the clinical and pathological sides of the subject will soon bring this obscure type of disease into a much more definite place than it has hitherto occupied. We have heard somewhat less of the theories of immunity than before, but this is no doubt due to the fact that the various hypotheses which have been propounded are undergoing verification. Small progress has been made in the solution of the etiology of cancer.

Perhaps the most noteworthy work in surgery has been the development of stomach surgery .The possibility of operating on the stomach for benign disease has opened a new field, which has been much discussed during the past year. Whatever the limitations of this department of surgery may prove to be in the future, it is evident that the stomach may be operated upon with comparative impunity, and that hereafter medicine and surgery must share with what grace they can the treatment of its diseases. In the general domain of surgery the lessons of the Japanese-Russian war are significant. It is apparent that the Japanese have brought the care of the

wounded to a high degree of perfection, that they have introduced new and useful methods of surgical procedure, and that their general management of the surgical and medical problems of a great army may well be regarded as one of the most significant medical events of the past year.

The medical profession has been fortunate in not losing many distinguished men by death during the past year. The unexpected death of Weigert, while still at the height of his powers, and Finsen's untimely, though long-expected, death removed two men who had already accomplished much, but nevertheless had they lived gave promise of much more work to come.

An event of much interest to Americans and to Englishmen was the decision of Dr. Wm. Osler to accept the Regius professorship of medicine at Oxford. He had been so long identified with this country and had so thoroughly adopted it that natural as his determination may have been, it came as a surprise to his colleagues and to the public.

In general the year has helped to define the lines of future work and has brought to the test of experience certain important medical and surgical problems. It will be remembered rather as a year of accomplishment than of discovery.

## THE QUESTION OF OBSERVATION WARDS.

THE question of observation wards or hospitals for patients suspected of mental disturbance will no doubt be discussed until some satisfactory solution of the matter is reached. Dr. L. Pierce Clark among others has been vigorously agitating the question in New York, and recently Dr. E. Stanley Abbot of Boston has published a paper of importance on the same topic. Not long since at a society meeting in Boston the matter was again discussed from various points of view, bringing out considerable diversity of opinion but in general recognizing the need. It may with justice be said that, whatever diversity of opinion there may be as to ways and means the necessity is apparent that we should have some means of observing cases on the border line between sanity and insanity before they are finally committed to established institutions. Those who have had experience with this important type of medical work, and particularly those physicians who have dealt with the problems which a great city presents in relation to its border line cases, will at once recognize the advisability of some sort of provision for the class of cases under consideration. Admitting, then, the necessity, the practical question of method at once presents itself and here naturally the chief difficulty lies. Shall the general hospitals set aside a ward or a pavilion for the care of the mentally unstable pending their future disposal? Shall an entirely separate hospital be established, distinct both from the general hospital and from insane hospitals, for the same purpose, or shall the existing insane hospitals so far extend their functions as to include the observation of these cases before their actual commitment?

In the first place, it has been proved possible to establish and conduct a ward of this character in connection with a general hospital by the experience of the so-called pavilion F at the Albany Hospital, to which we have in the past alluded. In general, this adjunct to the hospital has proved eminently satisfactory, and has, we believe, in no way been detrimental to the conduct of the general hospital. In Germany elaborate provisions for those suspected of mental disorder have been made, both in connection with general hospitals and separately. In discussing this question recently Dr. Clark suggested that the natural evolution of this new phase of hospital development is primarily to treat such suspected patients in the wards or in a ward of a general hospital, gradually isolating them as prejudice wears away to a greater and greater degree until finally a separate hospital may be established in conjunction with or ultimately independent of the parent institution. It is clear that a great part of the difficulty as now experienced lies in the prejudice attaching to this class of patients, a prejudice which we are convinced is imaginary rather than real. As a matter of fact many patients mentally disturbed are continually being treated in the wards of our general hospitals under different designations, and we can see no reason why one or several beds might not with propriety be occupied by patients whose disease is primarily mental. Could this be done and could such patients be regarded as in the same category with other occupants of the hospital, we are convinced that further steps would follow naturally. The first requisite clearly is to allay the popular impression, shared, we regret to say, by physicians, that patients with predominent mental disorder are in a category by themselves. With this false idea allayed, the desired reformation would not be long in coming. It has been argued that the admission of patients with mental disorder into a general hospital would introduce in the alcoholics, an undesirable class.

We fail to see wherein such reasoning has weight. Discrimination would naturally be used in the admission of these patients as in the admission of all others, which, if rigidly carried out, would certainly exclude that class of patients which are rightly dreaded by hospital authorities. There remain many others whom we are convinced would be much benefited by admission to the wards of a general hospital while awaiting decision as to the final outcome of their disease.

The policy of allaying prejudice through the introduction of such patients into a general hospital appears at present preferable to the establishment of separate hospitals for the observation of these cases. Could the former be accomplished the final separation would, no doubt, follow, as its necessity was more and more fully demonstrated. That the existing insane hospitals can at present fulfil the function also of observation wards in the sense intended seems for the time being impossible. In the first place their usual location, as Dr. Abbot has suggested, does not lend itself to the plan, and the prejudice against such hospitals, which, however much we may deplore, still exists, would not tend to be lessened by such a system. It is evident that what we now need is some simple plan whereby the individual bordering on mental alienation may be observed merely as a sick man by persons skilled in the recognition of such diseases. It is clear that such observation could be had at a general hospital.

Our intention at the present time is not to offer or even suggest a definite plan, but rather again to draw attention to the need which exists and which grows greater each year. Physicians in whatsoever line of work engaged should give their attention to this problem as they do to the problem of tuberculosis or to the many others which affect the municipality and not the individual alone. The recognition of the need, on the part of a large proportion of the medical public would unquestionably lead to the initiative which is necessary for the accomplishment of a definite result. The time is ripe for a wide discussion of the entire subject.

## THE FINANCIAL PROBLEM OF THE NEW YORK HOSPITALS.

Mr. Frank Tucker, vice-president of the Provident Loan Society, who a year ago investigated for *Charities*, the organ of the Charity Organization Society, the financial problems of the New York hospitals, has brought his investigations up to the present time, and finds that the condition has not improved. Last year the twenty private hospitals of the city were running with an aggregate annual deficit of nearly $500,000, and he states that the lean year just experienced by all these institutions is reflected in the recently published annual report of the Presbyterian Hospital, which shows a deficit of more than $70,000. The following extract from this report is quoted: "Unless the public conscience is quickened, and larger means for current expenses are provided, the hospital system of New York must at some date not long distant be changed. It means that, except for such provision, public hospitals under municipal management, supported by taxation, must in great part take the place of our present hospitals, which are private only in the sense that they were founded and have been supported by private benevolence and are under the direction of managers recruited by natural selection from our best citizens, and not subject, as is too often the case with municipal hospitals, to political change or popular caprice." Commenting on this statement, Mr. Tucker says that no better summing up of the hospital situation could be made. The deficit for 1904, after spending for maintenance $45,603.46 in legacies received during the year, was $72,936.74. Out of an original endowment fund of $651,600, $370,000 has now been spent to carry annual deficits in maintenance, so that only $281,600 remains to meet annual deficits in the future. The remedy for this condition of things in the various hospitals he thinks lies in the raising of a large endowment fund, to be used in supplementing their incomes.

## TWENTIETH ANNIVERSARY OF THE ANNALS OF SURGERY.

The current issue of the *Annals of Surgery* marks the first twenty years of its publication under the same editorial supervision. In spite of the very rapid development of surgery during this period, it is noteworthy that few journals devoted to this branch of medicine have appeared in the English language, although various subdepartments of surgery have had their own organs. During the comparatively short term of its existence the *Annals of Surgery* has consistently represented the best in surgical practice, and has reflected in a wholly adequate way the progress which this great department of medicine has made. The present issue, admirably

illustrated, may be regarded as a jubilee number, filling, as it does, two hundred and sixty-nine pages of text from the pens of many distinguished surgeons. We congratulate our contemporary on the completion of its first twenty years, and young as it may appear in comparison with many other medical publications, we have no doubt it has a future before it of which these early years are merely a forecast.

## MEDICAL NOTES.

CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS. — Dr. R. H. Fitz has been elected president of the next Congress of American Physicians and Surgeons which will be held in Washington in May, 1906.

THE MEMORIAL TO MR. WILLIAM CADGE. — The stained glass window erected in Norwich Cathedral in memory of Mr. William Cadge, F.R.C.S., for which some subscriptions were sent from this country, was unveiled by Mr. John Tweedy, President of the Royal College of Surgeons, on the 6th of December.

DOCTORS IN THE FRENCH CORPS LEGISLATIF. —The Paris correspondent of the *New York Medical Journal* says that: "Doctors compose one third of the Chamber of Deputies and half of the Senate, and an indescribably pleasant aroma clings to the whole civil fabric by virtue of the great number of physicians in office. M. Combes himself, as the whole world knows, started life as a priest, and is now a doctor of medicine. In the Postal Department there are twenty-seven male doctors, two surgeons, and five medical women. Galen can now say, 'État c'est moi.'"

### BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon Dec. 28, 1904, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 54, scarlatina 20, typhoid fever 8, measles 4, smallpox 0.

A CENTENARIAN. — Christina Ridder died December 21, in Reading, Mass., at the reputed age of one hundred years. She was born at The Hague, Oct. 19, 1804, and many of her immediate relatives lived to a ripe age.

MEETING OF THE RUTLAND RAILROAD SURGEONS. — A meeting of the surgeons of the Rutland Railroad Company was held at Burlington, Vt., December 15. The object of the meeting was to organize the staff permanently and to discuss matters relating to the railroad.

MEDICAL DICTIONARIES FOR TOWN CLERKS. — It has been suggested by Dr. C. A. Lindsley, Secretary of the State Board of Health of Connecticut, that much assistance might be rendered town clerks who are obliged to record certificates of the causes of death could they be provided, as a part of their office fittings, with adequate medical dictionaries. Dr. Lindsley is, no doubt, correct when he says that so long as town clerks unfamiliar with the nomenclature of disease are the legally appointed registrars of vital statistics the aid of a good medical dictionary is a necessity to them if they are to do good work.

CLOSING OF HOSPITAL FOR TUBERCULOSIS. — The hospital for tuberculosis, together with two wards of the main portion of the Hartford Hospital, has been closed since Nov. 21, 1903. Applications, except in rare instances, from tuberculous patients have of necessity been declined. The authorities feel that the hospital is not satisfying the public need, and suggest that the tuberculosis hospital be opened for incipient cases only, and two wards of the main hospital for advanced cases. This, however, cannot be done on account of expense. This is regrettable, but not an unusual experience of modern hospital affairs.

## Miscellany.

### MEDICAL REPORT ON THE SOUTH AFRICAN WAR.

THE report on the medical arrangements in the South African War has recently been issued by Surgeon-General Sir W. D. Wilson. It does not contain the vital statistics, the tabulation and analysis of these being not yet complete, but confines itself to a general account of the arrangements.

In commenting upon this report the *British Medical Journal* says:

"There is no attempt at a vindication of the medical service, no advocacy or apology, but only a calm recital of incontrovertible facts which clearly show that the acrimonious accusations so freely hurled at the medical service during the war were often founded on mere calumnious gossip, or, when they had any basis in fact, were grossly exaggerated; such shortcomings as did occur nearly all arose from circumstances entirely beyond the control of the medical department.

"The report confirms the impression that we began the war in a furtive fashion, neither realizing the vast preparations the Boers had made for hostilities, nor their intention of forcing them on us; thus our preparations were needlessly hampered by the unnecessary fear of offending the susceptibilities of resolute men at

Pretoria! We are here told that, when medical provision for war had perforce to be begun, it was done 'quietly,' because 'any overt preparation at the time was deprecated.' But even had more aggressive energy been displayed in the early stages, it is doubtful whether the results would be much better, for we are told that the 'medical service, like other branches, was hampered by an insufficiency of *personnel*, both officers and men, and the additions to it during the war were untrained in their special duties;' further, 'provision of hospital accommodation, as at first estimated, fell far short of the actual requirements.' Next, 'the changes in the plan of campaign, at an early stage, upset the field medical arrangements for a time;' and there was not 'sufficient elasticity' in the undermanned medical establishments to meet such a contingency; still further, 'the greatest obstacle to the work of the medical service was the transport difficulty.'

"It is stated that the 'deficiency of good non-commissioned officers (of the medical corps) was very greatly felt through the campaign.' It is small wonder, then, that slackness or confusion was at times seen in the work of scratch teams of hospital servants. It is really wonderful that under such adverse circumstances the medical service in the war worked so well, as this volume incontestably proves it did.

"We may quote as one illustration of this the operations extending from Magersfontein to Bloemfontein. The forced march for the relief of Kimberley necessitated the reduction of the ambulances to 'one fifth' of their proper strength; the subsequent pursuit of Cronje still further reduced hospital transport and supplies to the smallest dimensions, so that when the 1,200 casualties at Paardeberg had to be met, depletion was so complete that 'blankets and great coats of the non-commissioned officers and men of the medical corps were given up' to cover the wounded at the very time when these kindly men were heroically attending to their duties at the dressing stations under fire.

"So completely were the hospitals stripped and disorganized in the race for Bloemfontein that on arrival there, with the railway blocked, the needs of the medical service had to be satisfied at first with what was obtainable on the spot, and that was scanty. Bloemfontein already 'had a bad reputation on account of the prevalence of enteric fever,' and the severe outbreak among our troops is explained in this sentence: 'The local conditions were then an endemic area, provided with an impure water supply, and in a bad sanitary condition generally. To this was added the human factor — an army exhausted by excessive exertion, on a reduced diet, marching through a district where the only available water supply was scanty, and probably in many instances polluted.' Also, before the general hospitals arrived the sick had to be treated in the field hospitals, having neither beds nor clothing suited for the continuous treatment of serious cases. If the sensational critics, who so loudly condemned the medical service at Bloemfontein, were aware of these facts, it says little for their sense of justice or their candor.

"Expressions as free, frank and unreserved as those here given might be quoted as to incidents all over the theatre of war, did space permit; we could also refer to the criticisms on the civil hospitals, on invaliding, and on other matters of much interest."

This report should be laid to heart by all who are responsible for the efficiency of armies and navies when put to the touch of the sudden emergency of actual warfare. We believe that the heads of our own medical bureaus at Washington are fully alive to the vital importance to the army and navy of such efficiency, but it too often happens that other departments of government are only moved to action in such matters by the actual arrival of disaster. When the Japanese come to report on their medical administration during the present war with Russia, it seems probable that they will be able to do so with more self-satisfaction.

## Correspondence.

### LETTER FROM MUNICH.

"HEARERS;" VON WINCKEL; GYNECOLOGICAL FACILITIES; THE RED CROSS; COEDUCATION.

Munich, Germany, Nov. 5, 1904.

Mr. Editor: The regular work of the university began about the middle of October. So-called "hearers," those people, men and women, who by special arrangement with the various professors are admitted to the lectures without matriculating in the university, are also included in all departments of university work. Any accredited physician will find cordial welcome at the clinics, both those belonging especially to the university course and the more private work of the surgeons here. Volunteers are connected with all the hospitals. This staff includes those, both men and women, who enter the hospital, live in and attend to whatever duties may be assigned them in exchange for opportunities to see and to assist.

Winckel at the Frauenklinik is especially interested in this, as he also was when in Dresden. Von Winckel operates at the Frauenklinik and is most cordial to strangers. He works rapidly, and sits at abdominal operations, as well as at minor work. At least, he did when I saw him. Catgut, prepared by Cumol method, is in general use inside the abdomen, and for buried sutures in minor work; silkworm gut for external stitches. As in England, both chloroform and ether are used as anesthetics, ether a great deal in private work. A mixture called camphorol is the only stimulant I have seen used subcutaneously.

| | | |
|---|---|---|
| ℞ | Camphoræ tritæ, | 4—0 |
| | Olei Amygdalorum Dulcium, | 20.00 |

Three to five grammes being used as a dose.

The Fürbringen (Berlin) system of hand disinfection is used, namely, soap and water five to ten minutes with nail brush, alcohol, followed by corrosive (1 to 1,000) or cyanate of mercury (1 to 1,000). Gloves are not in general use, although I have seen both cotton and rubber gloves worn. Instruments and dressings, as with us, boiling for one and steam under pressure for the other.

Besides the Frauenklinik, the chirurgische klinik and that of mere medicine at the Allegemein Krankenhaus, and the Poliklinik furnish clinical material for the university. The Allegemein Krankenhaus — General City Hospital — furnishes, and very completely, mechanical means other than surgical for the use of the gynecologist. Baths of all kinds, including mud, both Moor and fango, the latter a finely divided mud taken from volcanic springs, now used all over Germany, are provided. The method of Brandt is also taught and used in private clinics. The Rotheskreuz is established here as elsewhere to train nurses for the government service. It has one hundred and fifty beds, soon to be increased to three hundred. It provides opportunity for private patients from all the provinces of Bavaria.

Since and according to the degree of the Bundesrath, about three years ago, women are now admitted to the examinations in medicine and pharmacy. The University of Munich, like the other German universities, is, therefore, coeducational. Although there is no central bureau of information for foreigners as in Paris, whoever comes to Munich will find himself most cordially directed by the individual doctor in whatever line he chooses to work.

Very truly yours,

Sarah Ellen Palmer, M.D.

## RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DECEMBER 17, 1904.

| CITIES. | Population Estimated, 1904. | Reported deaths in each. | Deaths under five years. | Percentage of deaths from Infectious diseases. | Acute lung diseases. | Diphtheria and croup. | Typhoid Fever. | Cerebro-spinal Meningitis. |
|---|---|---|---|---|---|---|---|---|
| New York . . | 3,908,644 | 1,380 | 386 | 21.45 | 22.03 | 2.90 | 1.16 | 2.39 |
| Chicago . . . | 2,021,086 | — | — | — | — | — | — | — |
| Philadelphia | 1,407,968 | 519 | 142 | 22.54 | 21.00 | 2.89 | 1.73 | — |
| St. Louis . . | 633,606 | — | — | — | — | — | — | — |
| Baltimore . . | 542,229 | 206 | 56 | 20.38 | 13.10 | — | 2.91 | 48 |
| Cleveland . . | 444,251 | — | — | — | — | — | — | — |
| Buffalo . . . | 406,645 | — | — | — | — | — | — | — |
| Pittsburg . . | 362,403 | — | — | — | — | — | — | — |
| Cincinnati . . | 338,277 | — | — | — | — | — | — | — |
| Milwaukee . | 325,990 | — | — | — | — | — | — | — |
| Washington . | 300,776 | — | — | — | — | — | — | — |
| Providence . | 196,744 | 74 | 21 | 17.56 | 13.51 | — | 1.35 | — |
| Boston . . . | 617,950 | 209 | 53 | 16.74 | 18.66 | 2.39 | 1.43 | .48 |
| Worcester . . | 136,925 | 38 | 7 | 2.63 | 15.78 | — | — | — |
| Fall River . . | 119,349 | 24 | 7 | 29.16 | 16.67 | 4.16 | — | — |
| Lowell . . . | 104,402 | 39 | 13 | 15.38 | 25.64 | 5.13 | — | — |
| Cambridge . | 100,998 | 20 | 5 | 10.00 | 30.00 | — | — | — |
| Lynn . . . . | 73,875 | 29 | 7 | 6.90 | 17.24 | 3.45 | 3.45 | — |
| Lawrence . . | 72,348 | 23 | 7 | 17.39 | 39.13 | — | 4.35 | — |
| Springfield . | 72,020 | 20 | 5 | 20.00 | 10.00 | 10.00 | — | — |
| Somerville . | 70,413 | 16 | 3 | 12.50 | 12.50 | 6.25 | — | 6.25 |
| New Bedford | 68,863 | 16 | 5 | 25.00 | 12.50 | — | 6.25 | — |
| Holyoke . . . | 50,538 | 12 | 6 | 25.00 | 16.67 | — | — | 8.33 |
| Brockton . . | 46,601 | 13 | 4 | 15.40 | 23.10 | — | — | 7.70 |
| Newton . . . | 39,310 | 8 | 3 | — | — | — | — | — |
| Haverhill . . | 39,061 | 16 | 2 | 12.50 | 6.25 | — | — | 6.25 |
| Malden . . . | 37,205 | 21 | 6 | — | 14.28 | — | — | — |
| Salem . . . . | 37,188 | 10 | 3 | — | — | — | — | — |
| Chelsea . . . | 36,499 | 20 | 3 | 35.00 | 15.00 | — | 10.00 | — |
| Fitchburg . . | 36,335 | 8 | 2 | 12.50 | 37.50 | — | 12.50 | — |
| Taunton . . . | 34,577 | 8 | 2 | — | — | — | — | — |
| Everett . . . | 30,209 | 2 | 1 | — | — | — | — | — |
| North Adams | 29,201 | 5 | 0 | 20.00 | 20.00 | 20.00 | — | — |
| Quincy . . . | 26,798 | 4 | 2 | 50.00 | — | — | — | — |
| Gloucester . | 26,121 | 6 | 1 | — | — | — | — | — |
| Waltham . . | 25,794 | 7 | 1 | — | 28.60 | — | — | — |
| Brookline . . | 23,576 | 8 | — | — | 12.50 | — | — | — |
| Pittsfield . . | 22,870 | 6 | 1 | — | 16.67 | — | — | — |
| Medford . . | 21,956 | 2 | 1 | — | — | — | — | — |
| Chicopee . . | 21,692 | 2 | 1 | — | 50.00 | — | — | — |
| Northampton | 20,314 | 11 | 0 | 27.27 | — | — | — | — |
| Beverly . . . | 15,807 | 6 | — | — | 50.00 | — | — | — |
| Leominster . | 15,711 | — | — | — | — | — | — | — |
| Clinton . . . | 15,694 | 2 | 0 | — | — | — | — | — |
| Adams . . . | 14,745 | 4 | 1 | — | 50.00 | — | — | — |
| Attleboro . . | 14,561 | — | — | — | — | — | — | — |
| Hyde Park . | 14,500 | 3 | 1 | — | — | — | — | — |
| Newburyport | 14,478 | 4 | 1 | 25 00 | — | — | — | — |
| Woburn . . . | 14,315 | 6 | 1 | 16.67 | 16.67 | — | — | — |
| Melrose . . . | 13,819 | 3 | 1 | 66 67 | — | — | — | — |
| Westfield . . | 13,809 | 6 | 2 | 66.67 | — | 16.67 | 33.33 | — |
| Milford . . . | 13,771 | — | — | — | — | — | — | — |
| Marlboro . . | 13,609 | 2 | 1 | 50.00 | — | — | — | 50.00 |
| Revere . . . | 13,609 | 1 | — | — | — | — | — | — |
| Framingham | 12,974 | — | — | — | — | — | — | — |
| Peabody . . | 12,406 | — | — | — | — | — | — | — |
| Gardner . . . | 12,324 | 4 | 2 | — | 50.00 | — | — | — |
| Southbridge | 11,716 | 2 | — | 50.00 | — | 50.00 | — | — |
| Watertown . | 11,575 | 6 | 1 | 33.33 | 33.33 | — | — | — |
| Weymouth . | 11,350 | 3 | 0 | — | 33.33 | — | — | — |
| Plymouth . . | 11,139 | — | — | — | — | — | — | — |

Deaths reported, 2,834; under five years of age, 767; principal infectious diseases (small pox, measles, scarlet fever, cerebro-spinal meningitis, diphtheria and croup, diarrheal diseases, whooping cough, erysipelas, fevers and consumption) 568; acute lung diseases 567, consumption 287, scarlet fever 24, whooping cough 8, cerebrospinal meningitis 40, small pox 0, erysipelas 8, puerperal fever 6, measles 12, typhoid fever 43, diarrheal diseases 68, diphtheria and croup 70.

From whooping cough, New York 7, Boston 1. From scarlet fever, New York 13, Philadelphia 2, Baltimore 6, Boston 1, Chelsea 2. From cerebrospinal meningitis, New York 33, Baltimore 1, Boston, Somerville, Holyoke, Brockton, Haverhill and Marlborough 1 each. From erysipelas, New York 6, Providence 1, Lawrence 1.

In the seventy-six great towns of England and Wales, with an estimated population of 15,271,287, for the week ending Dec. 3, the death-rate was 21.6. Deaths reported 6,326; acute diseases of the respiratory organs (London) 357, whooping cough 69, diphtheria 89, measles 151, small pox 3, scarlet fever 53.

The death-rate ranged from 5.8 in Hornsey to 32.4 in Tynemouth; London 21.7, West Ham 18.6, Brighton 20.2, Southampton 15.8, Plymouth 21.0, Bristol 25.7, Birmingham 23.9, Leicester 24.0, Nottingham 25.8, Birkenhead 29.1, Liverpool 26.5, Wigan 30.7, Bolton 19.0, Manchester 30.3, Salford 23.5, Halifax 18.4, Bradford 19.0, Leeds 17.0, Hull 19.3, Sheffield 17.5, Newcastle-on-Tyne 20.6, Cardiff 16.9, Rhondda 18.8, West Bromwich 23.3, South Shields 23.8.

## METEOROLOGICAL RECORD.

For the week ending December 17, in Boston, according to observations furnished by Sergeant J. W. Smith of the United States Signal Corps:

| DATE | Barometer. Daily mean. | Thermometer. Daily mean. | Thermometer. Maximum. | Thermometer. Minimum. | Relative humidity. 8.00 A.M. | Relative humidity. 8.00 P.M. | Relative humidity. Daily mean. | Direction of wind. 8.00 A.M. | Direction of wind. 8.00 P.M. | Velocity of wind. 8.00 A.M. | Velocity of wind. 8.00 P.M. | We'th'r * 8.00 A.M. | We'th'r * 8.00 P.M. | Rainfall in Inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S.. 11 | 30.12 | 14 | 20 | 9 | 59 | 43 | 51 | N W | W | 11 | 8 | C. | C. | T. |
| M. 12 | 30.02 | 22 | 30 | 14 | 56 | 88 | 72 | S W | N E | 4 | 18 | O. | O. | T. |
| T.. 13 | 29.92 | 24 | 29 | 18 | 69 | 54 | 62 | N | N W | 15 | 16 | O. | C. | .23 |
| W. 14 | 30.26 | 18 | 26 | 11 | 65 | 55 | 60 | N W | N W | 9 | 12 | C. | C. | 0 |
| T.. 15 | 30.32 | 20 | 30 | 10 | 74 | 82 | 78 | N W | N W | 7 | 6 | C. | O. | 0 |
| F.. 16 | 30.01 | 28 | 34 | 22 | 88 | 73 | 80 | N | N W | 18 | 7 | O. | C. | .08 |
| S.. 17 | 30.10 | 24 | 30 | 18 | 71 | 83 | 77 | W | N E | 5 | 5 | O. | O. | 0 |
| ☞ | 30.11 | | 28 | 15 | | | 69 | | | | | | | .31 |

*O., cloudy; C., clear; F., fair; G., fog; H., hazy; S., smoky; R., rain; T., threatening; N., snow; —, below zero. † Indicates trace of rainfall. ☞ Means for week.

## CHANGES IN THE MEDICAL CORPS U. S. NAVY THE WEEK ENDING DECEMBER 24, 1904.

NORTON, O. D., surgeon. Detached from the "Illinois" and granted sick leave for three weeks.

GEIGER, A. J., assistant surgeon. Ordered to the "Prairie."

PEASE, T. N., assistant surgeon. Detached from the "Hartford" and ordered to the "Columbia."

TOLFREE, H. M., assistant surgeon. Ordered to the "Hancock."

## SOCIETY NOTICE.

BOSTON MEDICAL LIBRARY MEETINGS.—The Boston Medical Library Meetings in conjunction with the Suffolk District Branch of the Massachusetts Medical Society. Program of Meeting of Section for Surgery on Jan. 4, 1905: Treatment of Appendicitis: The Choice of a Method of Incision. Dr. F. B. Harrington. The results of some experiments on Peritoneal Drainage, Dr. F. T. Murphy. Immediate Operation *versus* Delay, Dr. G. W. W. Brewster. Can we wait for Localization in Cases where the General Peritoneal Cavity is involved? Dr. C. A. Porter. Discussion opened by Dr. M. H. Richardson, followed by Dr. R. H. Fitz and Dr. William N. Swift of New Bedford, Mass.

## RECENT DEATHS.

CHARLES EBENEZER BIRTWELL, M.D., M.M.S.S., of Lawrence, died in Providence, R. I., Dec. 8, 1904, aged forty-three years.

JOSHUA BAYLEY GOULD, M.D., M.M.S.S., of West Somerville, died in Philadelphia December, 1904, aged eighty-five.

DR. WILLIAM GILFILLAN of Brooklyn, N. Y., died from bronchitis on Dec. 18. He was seventy-one years old, and a native of Derry, Ireland. He received the degree of M.D. from the University of Edinburgh in 1855 and came to this country in 1857. In 1859 he settled in St. Louis, where he remained for three years. He then removed to Brooklyn, where he continued to practice up to the time of his death. Dr. Gilfillan was the son of Alexander Gilfillan, a surgeon in the Royal Navy, who accompanied the members of the first Arctic expedition of Sir John Franklin.

DR. HENRY C. MCLEAN, a well-known physician of Brooklyn, N. Y., died on Dec. 23. He was born in New Hamburgh on the Hudson and was a graduate of Manhattan College, New York, and of the medical department of the University of the City of New York in 1873. He was for a number of years a member of the Board of Education of the old City of Brooklyn, and at the time of his death was attending physician to St. Mary's, the Maternity and Infant, and the Kings County Hospitals.

## OPERATIONS: BOSTON CITY HOSPITAL.

The following operations will be done and cases shown in the amphitheater of the Boston City Hospital on Dec. 30, from 10 A.M. until 12.30 P.M.: Appendectomy; Radical Cure of Inguinal Hernia; Varicocele; Hemorrhoids.

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